

Comments on the Arroyo Seco Water Reuse Project Draft Environmental Impact Report

Summary of Comments

These comments identify several fundamental deficiencies in the Draft Environmental Impact Report (DEIR) analysis of the proposed San Rafael Stormwater Capture Project and San Pascual Stormwater Capture Project. The comments do not question the importance of improving water quality, reducing pollutant loading, increasing beneficial uses of stormwater resources, or implementing projects consistent with watershed management objectives. Rather, they identify areas where the DEIR has failed to provide the information and analysis necessary to determine whether the proposed projects will actually achieve their stated objectives, whether the projects will protect applicable beneficial uses, and whether the selected configurations represent the most effective and environmentally appropriate approaches.

First, the DEIR has failed to adequately characterize existing water-quality conditions within the project areas. This deficiency is particularly important because the projects are intended to address regulatory water-quality objectives, including pollutant load reductions under watershed management programs and compliance with requirements administered by the Los Angeles Regional Water Quality Control Board. Recent field sampling, together with earlier water-quality investigations performed for the agencies involved in the projects, demonstrates that additional characterization is necessary before the existing pollutant sources, treatment requirements, and expected benefits of the proposed projects can be reliably evaluated.

Second, the DEIR has failed to demonstrate that the proposed project designs are based on representative operating conditions. The San Rafael Project relies on assumptions regarding diversion rates, treatment volumes, and pollutant removal that appear inconsistent with observed dry-weather flow conditions. Similarly, the San Pascual Project relies on infiltration performance assumptions that do not adequately address the effects of shallow groundwater, groundwater mounding, and potential reductions in infiltration capacity over time.

Third, the DEIR does not adequately distinguish between the different purposes and regulatory contexts of the two projects. The San Rafael Project is primarily intended to satisfy regulatory water-quality objectives associated with the Arroyo Seco Load Reduction Strategy, whereas the San Pascual Project is primarily presented as a Safe Clean Water Program (SCWP) multi-benefit project. Although both projects involve water-quality considerations, the environmental analyses required for each project are different and must evaluate the specific objectives, constraints, potential environmental consequences, and the public benefits that each project is intended to provide.

Finally, the DEIR has not demonstrated that the selected project configurations represent the most effective and environmentally appropriate approaches for achieving the stated objectives. Additional evaluation of source characterization, alternative treatment approaches, long-term infiltration performance, and potential impacts to beneficial uses of water resources is necessary before the conclusions presented in the DEIR can be supported by substantial evidence.

A. The DEIR Has Failed to Adequately Characterize Existing Water Quality Conditions, Pollutant Sources, and Regulatory Treatment Assumptions

The DEIR has failed to adequately characterize existing water quality conditions, pollutant sources, and treatment assumptions necessary to support its conclusions regarding the environmental benefits and impacts of the proposed stormwater capture facilities. While the San Rafael and San Pascual projects serve different primary purposes, both rely upon assumptions regarding pollutant removal that are not adequately supported by the environmental analysis.

The San Rafael project is principally intended to address existing dry-weather discharges associated with the Upper Los Angeles River Enhanced Watershed Management Program (ULAR EWMP) and the Los Angeles River/Arroyo Seco Bacteria Total Maximum Daily Load (TMDL). In contrast, the San Pascual project is principally presented as a SCWP multi-benefit project intended to provide water quality improvements, groundwater recharge, and water supply benefits. These differing objectives require different environmental analyses; however, both projects require an adequate characterization of existing water quality conditions before the claimed environmental benefits can be evaluated under CEQA.

With respect to the San Rafael project, the DEIR has failed to adequately evaluate the quality of the dry-weather flows proposed for diversion or the sources contributing to those pollutant loads. The City's own 2018 investigations (see Attachment 1) documented increasing *E. coli* concentrations between Johnston Lake and the beginning of the concrete San Rafael Creek channel, indicating that additional pollutant loading occurs downstream of Johnston Lake before the creek enters the Arroyo Seco. More recent dry-weather sampling conducted in 2026 (see Attachment 2) similarly documented a progressive increase in bacterial concentrations, with *E. coli* concentrations of approximately 235.9 MPN/100 mL at the Johnston Lake outlet, approximately 63.8 MPN/100 mL in the Arroyo Seco upstream of the San Rafael Creek confluence, and greater than 2,419.6 MPN/100 mL at the San Rafael Creek discharge to the Arroyo Seco. These data indicate that a substantial increase in bacterial loading occurs within the approximately one-half mile reach between Johnston Lake and the Arroyo Seco where the proposed diversion would intercept the flow.

Despite this evidence, the DEIR has failed to evaluate the source or causes of this substantial increase in bacterial concentrations or determine whether targeted source-control measures could reduce pollutant loading before concluding that continuous diversion and treatment of essentially the entire dry-weather flow represents the appropriate environmental solution. Identification of pollutant sources is particularly important where dry-weather discharges may originate from multiple causes, including aging infrastructure, illicit connections, groundwater seepage, wildlife, or other localized sources. Without such characterization, the DEIR has failed to establish that the proposed project represents the most effective means of achieving the stated regulatory objectives or that the environmental benefits claimed for the project are supported by substantial evidence.

The omission is also important because the DEIR relies upon the San Rafael project to demonstrate substantial water quality benefits under the SCWP, including treatment of zinc loads attributed to the project drainage area. Although bacteria constitutes the principal regulatory

driver for the project, the DEIR extends the claimed environmental benefits to include significant zinc load reductions without adequately characterizing existing zinc conditions, evaluating long-term treatment effectiveness for zinc, or demonstrating that the proposed diversion and treatment system will achieve the claimed pollutant reductions under actual operating conditions.

Furthermore, phosphorus is a constituent of concern in Upper Los Angeles River Watershed Area 2026 Initial Watershed Plan and is entirely absent from the DEIR. CEQA requires the environmental analysis supporting claimed project benefits to be supported by substantial evidence rather than assumptions developed solely for planning or grant application purposes.

The San Pascual project presents a different but equally important deficiency. Unlike the San Rafael project, the principal environmental benefit claimed for San Pascual is infiltration of captured runoff to provide groundwater recharge and water supply benefits in addition to pollutant removal. Because infiltration is the primary treatment mechanism, characterization of the quality of water proposed for infiltration is essential to evaluating potential impacts on groundwater quality and groundwater beneficial uses.

Recent dry-weather sampling indicates that water entering the proposed San Pascual infiltration system contains elevated bacterial concentrations, including *E. coli* concentrations of approximately 178.9 MPN/100 mL upstream of the diversion from the Arroyo Seco to the San Pascual Site, approximately 325.5 MPN/100 mL at the existing pond inlet, and approximately 517.2 MPN/100 mL at the existing pond outlet that flows to the golf course. These results indicate that the water proposed for infiltration is not uniformly low in bacterial concentrations and that water quality varies within the proposed treatment system. The DEIR has failed to evaluate these conditions or discuss their importance with respect to infiltration, groundwater recharge, or groundwater quality protection.

The omission is particularly important because the San Pascual optimization analysis identifies zinc as the limiting pollutant for evaluation of project performance and assumes that infiltration provides complete pollutant removal for diverted flows. However, the DEIR has failed to adequately characterize existing zinc conditions, evaluate long-term treatment performance under changing subsurface conditions, or analyze whether the assumed pollutant removal mechanisms remain effective if infiltration capacity declines over time. Consequently, the DEIR has failed to provide substantial evidence supporting the claimed pollutant removal and groundwater recharge benefits.

Finally, the DEIR improperly conflates regulatory compliance objectives with project benefit objectives. Regulatory compliance under the ULAR EWMP, the Bacteria TMDL, and Regional Water Quality Control Board requirements focuses on protection of beneficial uses and compliance with applicable water quality objectives. In contrast, SCWP scoring is intended to evaluate project benefits for funding purposes. Although the two regulatory frameworks are related, they are not interchangeable. The DEIR has failed to distinguish between these separate objectives and instead relies upon pollutant removal assumptions developed for SCWP benefit calculations without adequately demonstrating, through environmental analysis, that the proposed projects will achieve the claimed environmental benefits while protecting both surface-water and groundwater beneficial uses.

Pasadena's public "Facts Sheet – Additional Information" (see <https://www.cityofpasadena.net/public-works/wp-content/uploads/sites/29/Facts-Sheet-Additional-Information.pdf?v=1785446404747>) similarly emphasizes that the San Rafael Project was selected primarily as a response to regulatory obligations associated with bacteria loading and the Arroyo Seco Bacteria TMDL, while the San Pascual Project was selected to provide additional SCWP benefits, including groundwater recharge and habitat enhancement. These distinctions reinforce the need for separate environmental analyses of the two projects. Regulatory compliance projects require demonstration that pollutant reductions necessary to protect beneficial uses will be achieved. Multi-benefit stormwater projects require evaluation of whether claimed benefits can be achieved without creating new environmental impacts. The DEIR has not adequately made this distinction.

For all of these reasons, the DEIR has failed to provide an adequate baseline characterization of existing water quality conditions, pollutant sources, pollutant transport mechanisms, and treatment assumptions necessary to support its conclusions regarding project effectiveness and environmental impacts.

B. The DEIR Has Failed to Demonstrate That the Proposed Projects Are Sized and Operated to Meet Their Stated Objectives

The DEIR has failed to demonstrate that the proposed diversion rates, treatment capacities, and infiltration assumptions are reasonably related to the actual flow conditions that the facilities will experience or to the regulatory objectives that they are intended to satisfy.

The San Rafael and San Pascual projects are driven by different primary objectives and therefore require different analyses.

For the San Rafael Project, the primary purpose is implementation of the Upper Los Angeles River Enhanced Watershed Management Program (EWMP) Load Reduction Strategy for Priority Outfall AS-41. That objective is fundamentally regulatory. The project is intended to reduce pollutant loading to surface waters in order to satisfy requirements administered by the Los Angeles Regional Water Quality Control Board. Although the DEIR also discusses groundwater recharge and SCWP benefits, those are secondary considerations. The DEIR therefore should demonstrate that the proposed facility will reliably capture and treat the dry-weather flows that actually occur at AS-41 while protecting downstream beneficial uses and avoiding adverse impacts to groundwater quality and flood-control infrastructure.

Instead, the technical analysis relies primarily on assumed diversion capacities of approximately 6.3 cubic feet per second (cfs) without evaluating the flow conditions that appear to exist during normal operation. The DEIR does not include dry weather flow conditions. In the absence of this information, we performed a field assessment on July 27, 2026 at the same time that surface water samples were collected by the UCLA research group that provided the water quality assessment in Attachment 2. We calculated the flow rate by recording the cross-sectional area and the velocity of flow and converted the measurement to cfs. This field measurement is only an approximation; however, it is informative. The difference between flow rate measurements in the Arroyo Seco channel made upstream and downstream of the confluence with the San Rafael

Creek channel indicate that current dry-weather flow in the San Rafael Creek at the proposed diversion is approximately 0.6 cfs. These observations suggest that the diversion capacities evaluated in the DEIR of 6.3 cfs represent relatively uncommon conditions rather than the flows that occur during most of the year. If pollutant loading, treatment efficiency, groundwater recharge, annual zinc removal, and other reported benefits are based principally on infrequent higher-flow conditions, the DEIR has failed to demonstrate that the project will perform as represented under the conditions that will govern day-to-day operation.

This issue is particularly important because the DEIR attributes approximately 25 acre-feet per year of treated runoff and essentially the entire anticipated zinc-removal benefit to the San Rafael Project. Yet the DEIR provides little discussion of whether these projected benefits remain achievable under the substantially lower dry-weather flows that appear to characterize the site during most of the year. Without such an analysis, the environmental document does not provide substantial evidence supporting its conclusions regarding pollutant removal, treatment performance, or compliance with watershed management objectives.

The deficiencies at the San Pascual Project are different. That project is presented primarily as a SCWP multi-benefit project emphasizing groundwater recharge, water supply, and pollutant reduction. However, infiltration itself raises separate environmental issues that must be evaluated under CEQA rather than assumed to be beneficial. This project proposes infiltration adjacent to a concrete flood-control channel in an area characterized by shallow groundwater, limited vadose zone thickness (the unsaturated layer of earth between the land surface and the water table below it), and documented groundwater constraints. The DEIR has failed to take these known concerns into consideration and failed to evaluate whether sustained infiltration could adversely affect groundwater quality, increase hydrostatic loading against flood-control structures, or reduce infiltration performance over time as groundwater mounding develops.

These concerns are reinforced by recent water quality sampling. Elevated *E. coli* concentrations have been observed within the San Pascual drainage system while comparatively low concentrations were measured in groundwater seepage emerging from the Arroyo Seco channel wall. Although additional investigation is warranted before drawing conclusions regarding contamination sources, these observations demonstrate that infiltration cannot simply be presumed to provide environmental benefit. Rather, the DEIR should evaluate whether introducing contaminated dry-weather runoff into soils with a limited vadose zone could adversely affect groundwater beneficial uses or diminish the natural treatment capacity upon which the project relies.

Accordingly, the DEIR has failed to demonstrate that either project has been evaluated using operational conditions that are representative of actual site conditions or that the proposed treatment systems will satisfy their respective regulatory and environmental objectives without creating potentially significant environmental impacts. Additional analysis supported by representative flow monitoring, water-quality characterization, and evaluation of long-term treatment performance is required before these conclusions can be supported by substantial evidence.

C. The DEIR Has Failed to Evaluate Long-Term Treatment Performance and Environmental Consequences

The DEIR has failed to evaluate whether the proposed infiltration facilities will continue to perform as assumed throughout the life of the Project or whether reasonably foreseeable reductions in infiltration capacity could create significant environmental impacts.

The analysis presented in the DEIR generally treats infiltration capacity as a fixed design parameter established through geotechnical testing. However, infiltration capacity is not a static property. It depends upon maintaining an adequate hydraulic gradient between the infiltration basin and the groundwater table. As groundwater mounding develops beneath a continuously operated infiltration basin, that hydraulic gradient diminishes and infiltration rates are expected to decline. Fine sediment accumulation, biological growth, and clogging of basin soils may further reduce infiltration performance over time. These are well-recognized processes that should be evaluated when infiltration is relied upon as a principal treatment mechanism.

The issue of infiltration is particularly important at the San Rafael site. The available geotechnical information indicates shallow groundwater, limited vadose zone thickness, and bedrock in relatively close proximity to the proposed infiltration basin. Ken Kules' previous comment letter discussed these conditions in detail. We offer a rapid and informal assessment to illustrate just how little infiltration could possibly occur. Recent field measurements indicate that dry-weather diversions may typically be on the order of approximately 0.6 cfs, substantially lower than the diversion capacity analyzed in the DEIR. Even using this observed flow rate, a simple water-balance analysis indicates that the available vadose-zone storage beneath the proposed basin could become saturated over relatively short operating period if groundwater drainage is limited to rates comparable to the existing subsurface drainage system incorporated into the original Arroyo Seco flood-control channel design. This supports, rather than contradicts, Ken Kules' previous observation that saturation of the vadose zone could occur over relatively short time periods. In light of the potentially substantial difference between the hypothetical and actual flow into the San Pascual Site diversion, we are concerned that similar potentially faulty assumptions have been made in the DEIR for dry weather diversion from San Rafael Creek catchment.

In any groundwater infiltration system, groundwater mounding has the potential to reduce infiltration capacity over time. There are several reasonably foreseeable consequences that should have been evaluated by the DEIR. These include reduced capacity for pollutant removal through infiltration, reduced groundwater recharge efficiency, increased reliance on mechanical filtration, increased bypass of untreated or partially treated flows, and increased hydrostatic loading against the adjacent Arroyo Seco flood-control channel. The DEIR does not evaluate any of these potential long-term operational conditions.

The issue is different, but equally important, at the San Pascual site. There, infiltration is presented primarily as a means of achieving SCWP water-supply and nature-based solution objectives. However, the environmental analysis largely assumes that additional infiltration is inherently beneficial without evaluating whether sustained infiltration of dry-weather runoff containing elevated bacterial concentrations and other pollutants could adversely affect

groundwater beneficial uses where groundwater is shallow and the vadose zone is limited. Recent water-quality sampling indicating elevated *E. coli* concentrations within the San Pascual drainage system reinforces the need for such an evaluation.

Accordingly, the DEIR has failed to evaluate a reasonably foreseeable operating condition in which infiltration performance declines over time and the environmental consequences of that decline. CEQA requires evaluation of reasonably foreseeable environmental impacts, not merely project performance under idealized design assumptions.

D. The DEIR Has Failed to Evaluate Whether the Proposed Project Configurations Represent the Most Effective Means of Achieving Their Intended Objectives

The deficiencies described in Sections A through C prevent meaningful evaluation of whether the selected project configurations represent the most effective and environmentally appropriate means of achieving the stated objectives of either project. Without an adequate understanding of existing pollutant conditions, pollutant sources, representative flow conditions, and long-term treatment performance, the DEIR cannot meaningfully compare alternative project configurations or determine whether the selected designs represent the environmentally superior approach required by CEQA. Nor has the DEIR demonstrated that the selected configurations maximize the public benefits relied upon to justify the projects.

The optimization analyses contained in the DEIR Appendices E-1 and E-2 primarily evaluate combinations of assumed diversion capacities, infiltration rates, filtration capacities, and storage volumes. They do not evaluate whether the underlying assumptions regarding representative dry-weather flows, pollutant sources, or long-term treatment performance are supported by sufficient field data. As a result, the optimization process optimizes assumptions rather than demonstrated site conditions.

Optimization of engineering design criteria, however, is not equivalent to environmental analysis under CEQA. While optimization may identify a preferred engineering configuration based upon selected assumptions, CEQA requires the DEIR to determine whether those assumptions are supported by substantial evidence and whether the resulting project represents the environmentally superior approach after considering environmental impacts, regulatory objectives, and public benefits.

For the San Rafael Project, the DEIR does not evaluate whether additional investigation and source identification could reduce pollutant loading more effectively than continuous capture and treatment of essentially the entire dry-weather flow. Pasadena's own "Facts Sheet – Additional Information" acknowledges that bacteria sources within the San Rafael Creek watershed may include a variety of potential contributors, including aging infrastructure, illicit connections, sewer-related sources, septic systems, wildlife, and other urban sources. Recent water-quality sampling (see Attachment 2), together with the 2018 investigations (see Attachment 1), further identified a substantial increase in *E. coli* concentrations between Johnston Lake and the outlet of San Rafael Creek to the Arroyo Seco. Although additional investigation is necessary before identifying specific sources, these results suggest that localized sources of bacterial contamination may exist within the intervening drainage corridor. The DEIR has not evaluated

whether additional source characterization or targeted source-control measures could reduce pollutant loading before committing to continuous capture and treatment of essentially the entire dry-weather flow.

Similarly, the DEIR attributes essentially the entire projected zinc-removal benefit needed to satisfy Pasadena's SCWP objectives to the San Rafael Project without adequately characterizing existing zinc concentrations or demonstrating that the projected annual treatment volumes are representative of actual operating conditions. Without representative water-quality and flow data, the claimed treatment benefits remain uncertain.

For the San Pascual Project, the DEIR similarly does not evaluate whether groundwater recharge objectives can be achieved without creating the potential groundwater quality concerns associated with infiltrating contaminated dry-weather runoff into an area characterized by shallow groundwater. While groundwater recharge is an important public benefit, CEQA requires that the environmental consequences of achieving that benefit also be evaluated.

The DEIR also relies heavily upon SCWP benefit calculations to justify the selected project configurations. The SCWP was established not only to improve stormwater quality and increase stormwater capture, but also to promote projects that maximize multiple public benefits, including water supply reliability, habitat enhancement, neighborhood improvements, community value, and long-term watershed resilience.

The DEIR, however, largely treats SCWP benefit accounting as a numerical optimization exercise focused on modeled treatment volumes and pollutant removal. It does not meaningfully evaluate whether the selected project configurations represent the most effective means of achieving the broader public benefits that the SCWP was established to promote. Nor does it evaluate whether alternative project configurations, greater emphasis on source characterization and source control, or a different allocation of treatment functions between the San Rafael and San Pascual facilities could better satisfy both the applicable regulatory objectives and the broader public-benefit objectives of the SCWP.

Accordingly, the DEIR has failed to evaluate whether the selected project configurations represent the environmentally superior approach rather than simply the preferred outcome of an engineering optimization process. CEQA requires evaluation of reasonable alternatives and project configurations that could better satisfy the applicable regulatory objectives while avoiding or reducing potentially significant environmental impacts. Additional field characterization, representative flow monitoring, comprehensive water-quality characterization, evaluation of long-term treatment performance, and comparison of alternative project configurations are necessary before the DEIR can conclude that the selected projects represent the environmentally superior means of achieving both the applicable regulatory objectives and the broader public benefits relied upon to justify the projects.

CONCLUSION

For the reasons discussed above, the DEIR has failed to provide substantial evidence supporting its conclusions regarding existing water-quality conditions, expected project performance, long-term

infiltration behavior, potential groundwater impacts, and the effectiveness of the selected project configurations. These deficiencies should be corrected and the DEIR revised and recirculated prior to certification.

Ken Kules, PE (C30589)

Alexandra Huttinger Ntazinda, MPH, MPhil, PhD Candidate

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November 28, 2018

Deborah Smith, Executive Officer
Los Angeles Regional Water Quality Control Board
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Attention: Renee Purdy / Ivar Ridgeway

Dear Ms. Smith:

REQUEST FOR TIME EXTENSION TO COMPLETE THE IMPLEMENTATION OF LOAD REDUCTION STRATEGIES FOR SEGMENT B OF LOS ANGELES RIVER AND ARROYO SECO

The City of Los Angeles, the City of Pasadena, and the County of Los Angeles are requesting the Los Angeles Water Board a time extension for completing the implementation of the Load Reduction Strategies (LRS) for Los Angeles River Segment B and Arroyo Seco. While several projects have already been completed and are in operation, others are facing unexpected challenges that necessitate this request. The following sections provide an update on the current status of implementation and the proposed steps for completing the LRS projects.

Background

The Los Angeles River Watershed Bacteria Total Maximum Daily Load (Bacteria TMDL) provides the Load Reduction Strategies (LRS) as an optional dry-weather compliance approach. The LRS for Segment B of the Los Angeles River and Arroyo Seco were submitted to your Board on June 25, 2015 and March 23, 2016, respectively. By developing and implementing the optional LRS approach, the Upper Los Angeles River Enhanced Watershed Management Program (ULAR EWMP) Group qualifies for a second phase of Bacteria TMDL implementation, if needed. The LA River Segment B LRS for the ULAR EWMP Group addresses portions of the cities of Los Angeles, Alhambra, South Pasadena, and Monterey Park, unincorporated Los Angeles County, and Los Angeles County Flood Control District. The Arroyo Seco LRS for the ULAR EWMP Group

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addresses portions of the cities of Los Angeles, Glendale, Pasadena, La Canada-Flintridge, and South Pasadena, unincorporated Los Angeles County, and Los Angeles County Flood Control District. The LRS for Los Angeles River Segment B and Arroyo Seco specify completion dates of March 2019 and September 2020, respectively.

The LRS process is based on identification of, and implementation actions for, two categories of outfalls:

- Priority Outfalls have relatively consistent, problematic discharges that drive storm drain loading rates above the Wasteload Allocations (WLAs). As such, Priority Outfalls are the highest priority for source abatement and are subject to *specific implementation actions* in the LRS.
- Outlier Outfalls have episodic, high loading-rate *E. coli* discharges that may infrequently drive storm drain *E. coli* loading rates above the WLA. As such, Outlier Outfalls are subject to *follow-up investigations* during LRS implementation.

LA River Segment B LRS Status

For the LA River Segment B LRS, four Priority Outfalls were identified for specific implementation actions: R2-A, R2-K, R2-02, and R2-04. The table below, taken from the submitted LRS document, shows the current status of the projects.

LA River Segment B Priority Outfall Analysis: Monte Carlo *E. Coli* Loading versus the Final WLA

Priority Outfall	Proposed LRS Action	Lead Agency	Expected <i>E. Coli</i> Loading Rate from Outfall after Proposed LRS Actions (10 ⁹ MPN per day)	Expected <i>E. Coli</i> Loading Rate from all ULAR EWMP Group outfalls to Segment B after Proposed LRS Actions (10 ⁹ MPN per day)	Status
Baseline Loading Prior to LRS Actions = 929					
R2-A	Low Flow Diversion	Los Angeles	0 (100% removal)	532	Completed
R2-K	Low Flow Diversion	Los Angeles	0 (100% removal)	406	Completed
R2-02	Reuse and Removal Urban Flow System	Los Angeles	0 (100% removal)	313	Design
R2-04	Infiltration Wetland	Uninc. County and LACFCD	0 (100% removal)	274*	Pre-Design

* - Below WLA of 281 billion MPN per day

To date, the City of Los Angeles has completed two of the three projects (the LFDs at Priority Outfalls R2-A and R2-K) and they are fully operational. One project expanded its scope to create the Ed P. Reyes River Greenway, which transformed a former Brownfield site into a recreational greenspace and ecological resource in an underserved community that lacked any access to open space (see Exhibit A). In addition to setting the standard for diversion projects adjacent to LA River, the Ed P. Reyes Greenway has received two awards of excellence: 1) 2014 Storm Water Solutions “top Project;” and 2) 2015 National Association of Clean Water Agencies (NACWA) Operations and Environmental Performance Award. The City of Los Angeles’ third project is at Priority Outfall R2-02 and it recently underwent concept design revisions to address utility conflicts and traffic mitigation issues in the project area. This project currently is in design, and it is anticipated that it will be completed by September 2022 (see Exhibit B).

The County of Los Angeles submitted a project concept for an infiltration wetland to divert dry weather flow from Priority Outfall R2-04. This project is located within the Los Angeles Department of Water and Power’s (LADWP) right-of-way. The County of Los Angeles and LADWP have discussed potential collaboration opportunities to expand the project to not only divert and capture dry weather flow, but to also divert and capture wet weather flow. However, soil investigations at the project site indicated lead contamination originating from the Exide facility. Currently, the Department of Toxic Substances Control is cleaning up the contamination and this effort will extend beyond the original LRS deadline of March 23, 2019. As an alternative to the infiltration wetland, the County of Los Angeles proposes to divert dry weather flow into an existing sewer line owned and operated by the Los Angeles County Sanitation Districts (Districts). The County of Los Angeles and the Districts have already determined that there is sufficient capacity in the sewer line to accept the dry weather flow. The County of Los Angeles has recently developed the 30-percent design plans and is working towards the final design plans (see Exhibit C). The County anticipates it will require an additional five years to finalize the design plans and complete the construction of the project at Priority Outfall R2-04.

Arroyo Seco LRS Status

For the Arroyo Seco LRS, four Priority Outfalls were identified for specific implementation items: AS-21+AS-22, AS-15, AS-41, and ARS-234. The table below, taken from the submitted LRS document, shows the current status of the projects.

Arroyo Seco Priority Outfall Analysis: Monte Carlo *E. Coli* Loading versus the Final WLA

Priority Outfall	Proposed LRS Action	Lead Agency	Expected <i>E. Coli</i> Loading Rate from Outfall after Proposed LRS Actions (10 ⁹ MPN per day)	Expected <i>E. Coli</i> Loading Rate from all ULAR EWMP Group outfalls to Segment B after Proposed LRS Actions (10 ⁹ MPN per day)	Status
Baseline Loading Prior to LRS Actions = 61.4					
AS-21 +AS-22	Low Flow Diversion	Los Angeles	0 (100% removal)	42.2	Design
AS-15	Low Flow Diversion	Los Angeles	0 (100% removal)	27.8	Design
AS-41	Diversion to dry well system	Pasadena	0 (100% removal)	17.0	Pre-Design
ARS-234	Diversion to dry well	Uninc. County	0 (100% removal)	12.6*	Pre-Design

* - Below WLA of 16.41 billion MPN per day

The City of Los Angeles recently revised the concept reports for the two LFD projects at Priority Outfalls AS-21+AS-22 and AS-15 to address the constraints of the project sites as they are located in a heavily urbanized residential corridor adjacent to the Arroyo Seco. The two projects are anticipated to be completed and operational by December 2022 (see Exhibit B).

The County of Los Angeles submitted a proposal to divert dry weather flows at Priority Outfall ARS-234 into a dry-well at a nearby California Department of Transportation (Caltrans) facility yard. Unfortunately, during feasibility investigations, an existing underground storage tank was identified that cannot be removed. In addition, the construction of a dry-well or other best management practices within the Caltrans facility would greatly disrupt the daily activity of the yard. As an alternative, the County of Los Angeles investigated diverting dry weather flow into dry-wells between the Brookside Golf and Country Club and Rosemont Avenue (see Exhibit D). The County of Los Angeles met with the City of Pasadena at the project site to discuss logistics for soil investigation, timeline, and potential project impacts to the area, and obtained an encroachment permit to perform the soil investigation. Unfortunately, soil engineers discovered a black odorous organic material at the project site, which was determined to be the result of illegal dumping. Therefore, infiltration in this area would require costly environmental investigations and remediation, which was determined to be not feasible. The County of Los Angeles is now investigating a third alternative that includes diversion to an existing sewer line.

The City of Pasadena has been engaged in extensive research to determine the best course of action for Priority Outfall AS-41, which has a large tributary drainage area of 697 acres that includes the Annandale Golf Course, Johnston Lake, and San Rafael Creek. They have performed source investigations, televised various storm drains for illicit connections, performed additional water

quality monitoring, and conducted soil/percolation tests at Lower Arroyo Park (see **Exhibit E**). The City of Pasadena is constrained by a high water table at the termination point, reducing infiltration possibilities. Opportunities to divert the flow to the sewer system are limited due to the outfall's location near a creek and distant from the nearest sewer mains. Additionally, the outfall area itself is

in a jurisdictional area with multiple overlapping jurisdictions, including the City of Los Angeles and the County of Los Angeles. The City of Pasadena anticipates it will require a minimum of five years to identify the most effective design, as well as to investigate grant and funding opportunities to provide a source of revenue.

Request

As demonstrated in the previous sections, the City of Los Angeles, the City of Pasadena, and the County of Los Angeles have made significant progress in fulfilling their commitments to abating flows from the Priority Outfalls in Los Angeles River Segment B and Arroyo Seco. However, despite our best efforts, it has become apparent that not all projects will be completed and operational by the required deadline as stated in the LRS submitted to the Los Angeles Water Board (March 2019 and September 2020 for Segment B and Arroyo Seco, respectively.)

Therefore, the City of Los Angeles, the City of Pasadena, and the County of Los Angeles respectfully request that the Los Angeles Water Board consider a five year time extension to allow us to complete the projects at Priority Outfalls R2-02, AS-21+AS22, AS-15, AS-41, and ARS-234. As explained in previous sections, this extension is necessary to address unforeseen contamination issues, explore alternative designs, conduct public and stakeholder outreach, mitigate road and traffic issues, and address other site constraints that have been identified during the design of these projects. The additional 5-year period will also allow us to investigate grant and funding opportunities to support the development and construction of the projects.

If you have any questions about this request or wish to discuss this further, please contact me at (213) 485-0587 or Shahram.Kharaghani@lacity.org or your staff may contact Alfredo Magallanes (213) 485-3958 or Alfredo.Magallanes@lacity.org.

Sincerely,



SHAHRAM KHARAGHANI, PhD, PE, BCEE
Program Manager

SK:AM:am
WPDCR9461

Attachment

cc: Barry Berggren, City of Los Angeles, LASAN
Alfredo Magallanes, City of Los Angeles, LASAN
Paul Alva, Los Angeles County
Mark Lombos, Los Angeles County
Kris Markanian, City of Pasadena
Sean Singletary, City of Pasadena

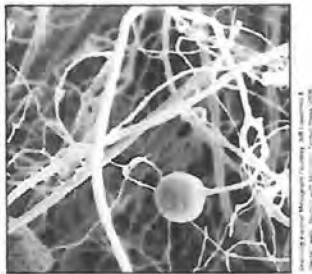
EXHIBIT A

Arroyo Seco Load Reduction Strategy

Ed P. Reyes River Greenway

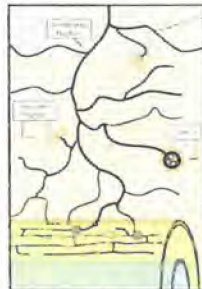
Fact Sheet

Green infrastructure relies on the power of sunlight, and the organisms in soils and on plant roots to treat pollutants in stormwater runoff. Because it is economical and provides recreational and habitat benefits, it is the City's preferred approach to maintain healthy waters and to support sustainable communities. Unlike traditional storm drain systems, which rely on pipes to move and to dispose of rainwater, green infrastructure directs runoff to locations where vegetation and natural processes help to control pollution. Infiltration and reuse also helps to reduce flooding downstream. Replacing concrete with living soils and other permeable surfaces, and providing more space for natural processes to flourish within our urban environments, enhances flood management, air quality, habitat, and recreational opportunities. The Ed P. Reyes River Greenway at the terminus of Humboldt Street is one of the first among many greenways proposed to extend the natural benefits of green infrastructure upstream into our urban watersheds.



Mycorrhizae

While infiltration and evaporation reduce the volumes of water that flow downstream, specialized fungi called "mycorrhizae" create a vast network of cells called "hyphae" in the soil. The hyphae seek out water and nutrients bringing them nearer to root zones where bacteria, working in association with plant root hairs, naturally degrade or absorb pollutants.



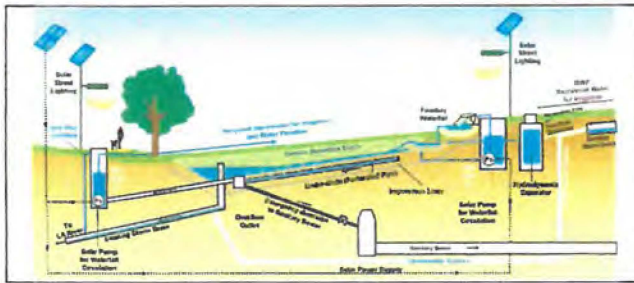
Plant Root with Mycorrhizal Fungi



The project is located in the Lincoln Heights community and within a sub-drainage area of the 870 square-mile Los Angeles River Watershed, where it helps to meet the City's water quality, natural open space, and river revitalization goals.



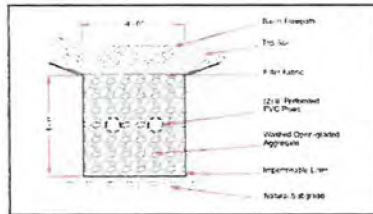
THE ED P. REYES RIVER GREENWAY



Prior to the natural treatment process large quantities of trash and sediment are removed with a structure called a hydrodynamic separator. This allows large sized pollutants to be easily collected and removed. Next, dry-weather runoff and a managed volume of the most polluted stormwater runoff called the "first-flush" enters the basin. Larger storm volumes either bypass the hydrodynamic separator, or enter the basin to overflow back to the original storm drain. Solar panels drive the pumps that circulate stormwater to areas where it can be further treated, or "polished" by bacterial organisms, and used to water plants in the landscape.



Project Site

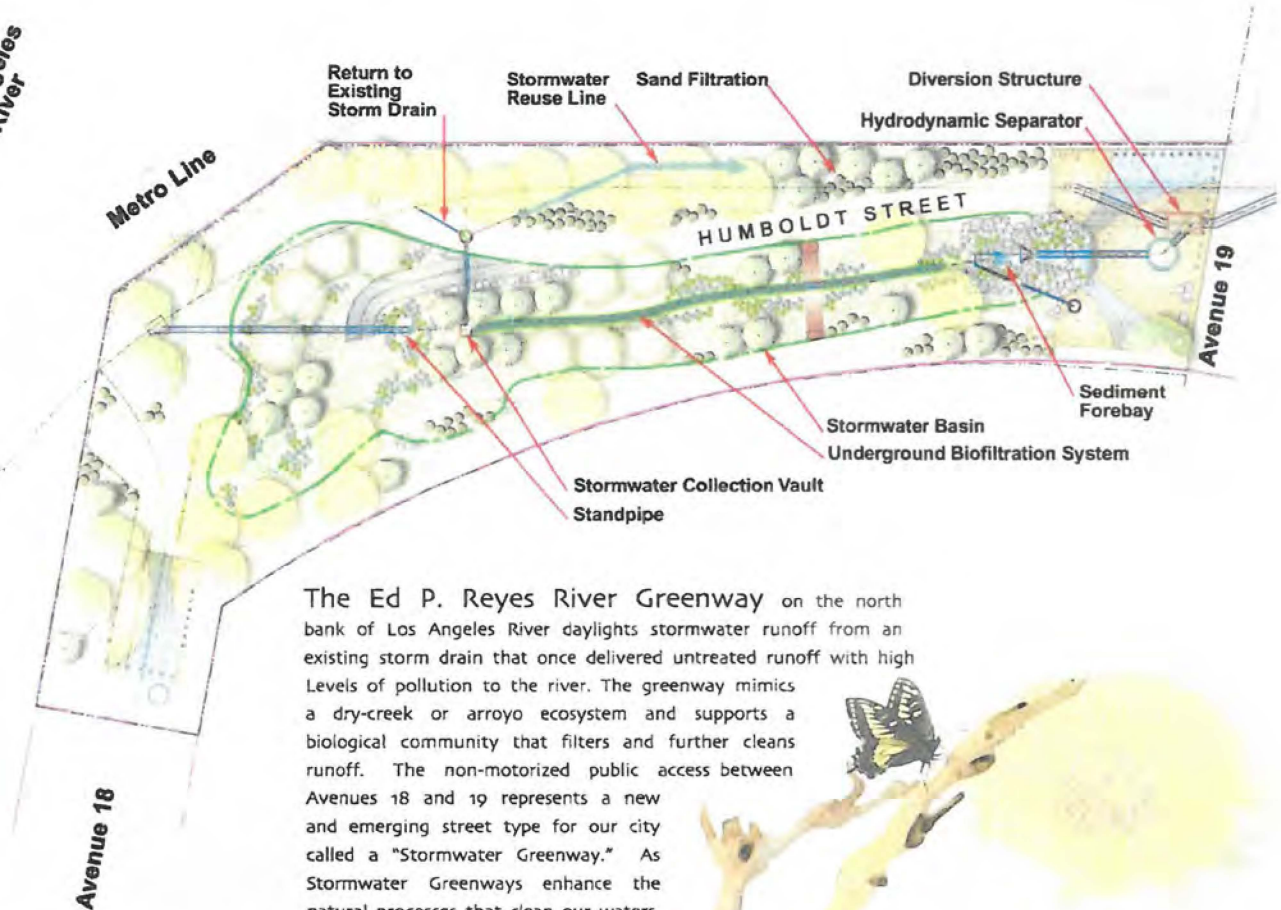


Cross Section
Underground Biofiltration System



Site Before Construction

Los Angeles River



The Ed P. Reyes River Greenway on the north bank of Los Angeles River daylights stormwater runoff from an existing storm drain that once delivered untreated runoff with high Levels of pollution to the river. The greenway mimics a dry-creek or arroyo ecosystem and supports a biological community that filters and further cleans runoff. The non-motorized public access between Avenues 18 and 19 represents a new and emerging street type for our city called a "Stormwater Greenway." As Stormwater Greenways enhance the natural processes that clean our waters, they also transform our streets by offering new economic, environmental, and social opportunities.

2013



EXHIBIT B

Bureau of Engineering
Los Angeles River Segment B and Arroyo Seco
Proposed LFD Design and Construction Schedule

CITY OF LOS ANGELES
INTERDEPARTMENTAL CORRESPONDENCE

DATE: July 19, 2018

TO: Enrique C. Zaldivar, Director
LA Sanitation and Environment

FROM: Gary Lee Moore, City Engineer
Bureau of Engineering



**SUBJECT: IMPLEMENTATION FOR DESIGN AND CONSTRUCTION
MANAGEMENT OF FIVE (5) LOW FLOW DIVERSION PROJECTS
ALONG THE LOS ANGELES RIVER AND ARROYO SECO**

The Bureau of Engineering (BOE) has reviewed the "Concept Report Revisions for the Three Downtown and Two Highland Park Low Flow Diversion Systems" (Concept Report) provided by LA Sanitation (LASAN). As confirmed in the meeting attended by staff from both bureaus on July 3, 2018, BOE will provide project implementation including pre-design, design, bid and award, and construction management for the five (5) Low Flow Diversion (LFD) systems along the Los Angeles River and Arroyo Seco.

To ensure attainment of water quality standards per Total Maximum Daily Load (TMDL) regulations, the BOE understands the necessity of the five proposed LFD systems intended to direct the dry weather flows to the nearby sanitary sewer system to meet water quality goals and standards set forth by the Los Angeles Regional Water Quality Control Board (LARWQCB). BOE has also reviewed the stringent regulatory compliance timeline set forth by the LARWQCB. Based on our review of the Concept Report, our knowledge and experience gained from the delivery of previous Proposition O Clean Water Division LFD Projects in the Palisades, we have developed feasible yet efficient delivery schedules with a 49 month and a 52 month project delivery duration for the Los Angeles River and Arroyo Seco LFD Projects respectively. The project schedules anticipate the delivery of each of the five LFD systems to occur in parallel with the projects starting in September 2018 and construction phase completions in September 2022 (Los Angeles River LFDs) and December 2022 (Arroyo Seco LFDs). See attached schedule which is subject to Program Review Committee authorization.

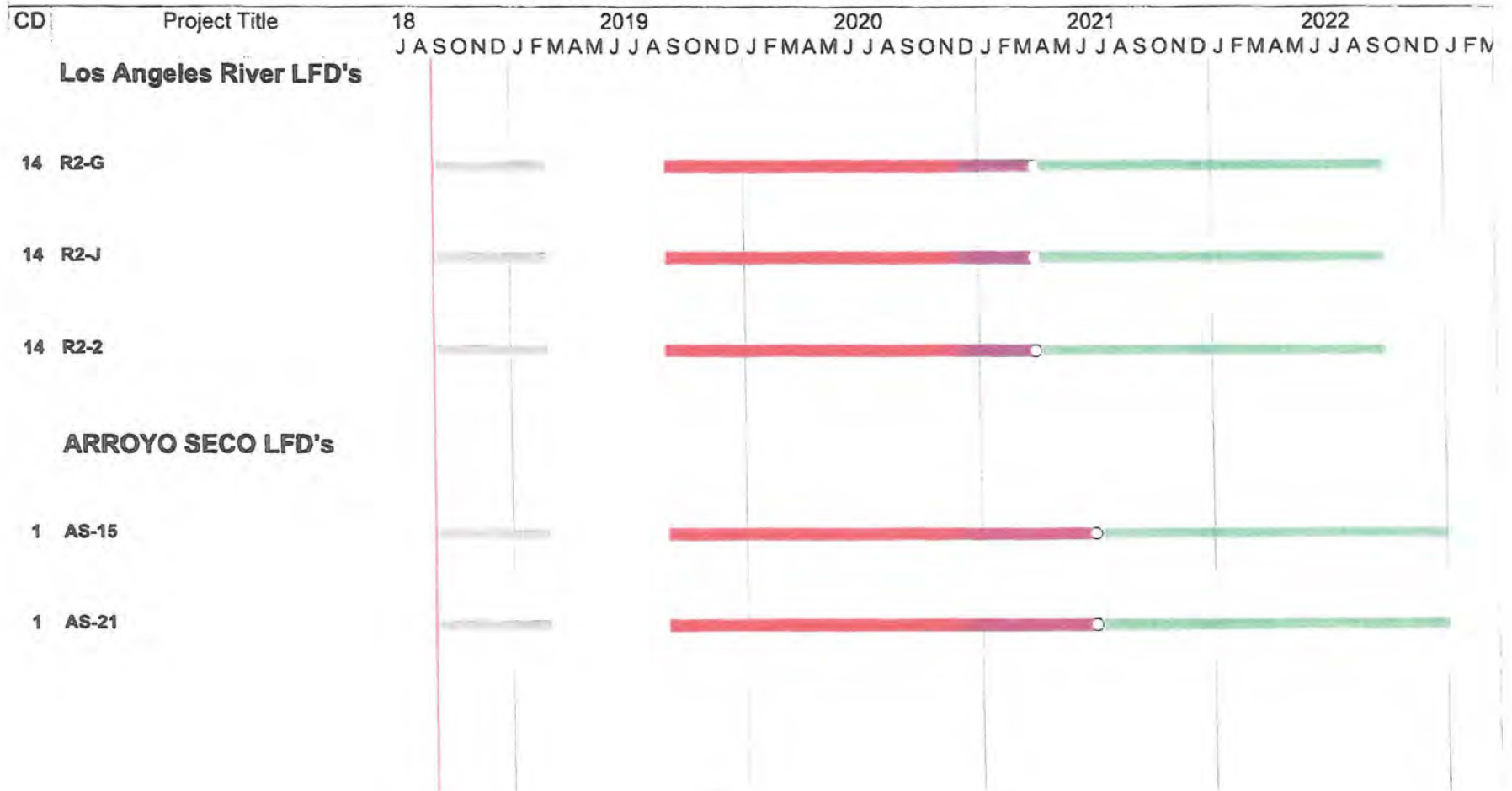
Should you have any questions or need additional information, please contact Christopher Johnson at (213) 485-1165, or Andy Flores at (213) 485-4496.

Attachment

CJ/CAF: nk

cc: Adel Hagekhalil, LASAN
Lisa Mowrey, LASAN
Shahram Kharaghani, LASAN
Alfredo Magallanes, LASAN
Ken Redd, BOE
Chris Johnson, BOE
Andy Flores, BOE

**PROPOSED SCHEDULE FOR FIVE (5) LOW FLOW DIVERSION SYSTEMS
ALONG THE LOS ANGELES RIVER AND ARROYO SECO**

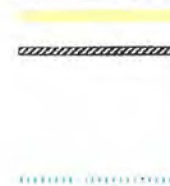


Status Date: Sun 9/2/18
Printed Date: Tue 7/17/18

No Schedule
PreDesign
Design
BidAward
Cons
TOS Development



Approvals
Progress
Inactive Milestone
Inactive Summary
Manual Task
Duration-only



Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone

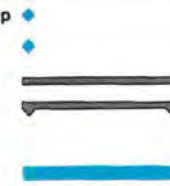


EXHIBIT C

Los Angeles River Segment B Load Reduction Strategy

30 Percent Design Plans

Diversion into existing Los Angeles County Sanitation Districts' sewer line

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

DDI 26

INDEX TO PROJECT PLANS

SH. NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL NOTES AND INDEX TO STANDARD PLANS
3	PLAN AND PROFILE

UTILITIES

WATER:	CALIFORNIA WATER SERVICE COMPANY
GAS:	SOUTHERN CALIFORNIA GAS COMPANY (SCGAL)
CABLE:	CITY OF VERNON GAS AND ELECTRIC (VERNON)
TELEPHONE:	AT&T
SEWER:	SANITATION DISTRICT OF LOS ANGELES COUNTY
STORM DRAIN:	LOS ANGELES COUNTY FLOOD CONTROL DISTRICT (LACFD)
	CITY OF VERNON (VERNON)

REFERENCES

SURVEY FIELD NOTES: PWFB 1122, PG. 1-4
AS-BUILT DRAWINGS: 11A-FD3.2
11B-FD3.3
11B-FD3.4



LOCATION MAP

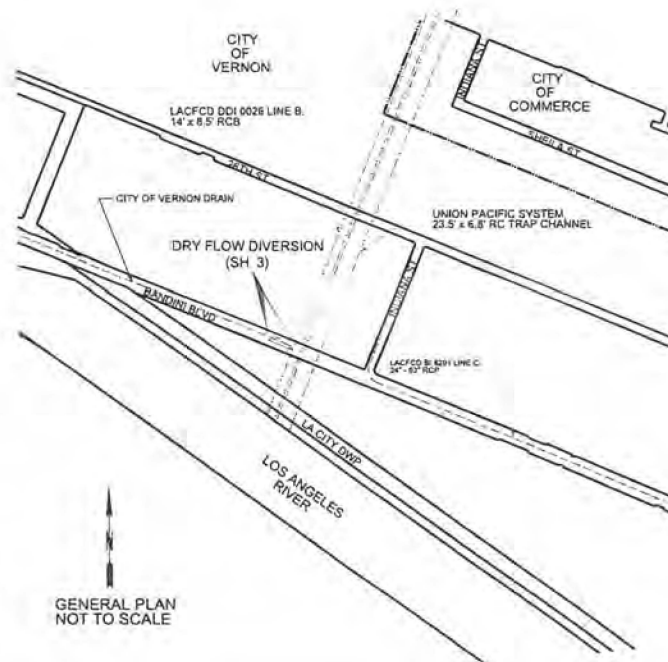
RESURFACING SCHEDULE		
SYMBOL	EXISTING PAVEMENT	NEW PAVEMENT

RESURFACING NOTES:

1. AC PAVEMENT AND BASE FOR TRENCH RESURFACING SHALL EXTEND A MINIMUM OF 12 INCHES BEYOND THE TRENCH WALL.

ABBREVIATIONS

ABBREVIATION	WORD OR WORDS	ABBREVIATION	WORD OR WORDS
AC	ASPHALT CONCRETE	LACDPM	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
BM	BENCH MARK	MH	MANHOLE
CL	CENTER LINE	PT	POINT
CLF	CHAIN LINK FENCE	RW	RIGHT OF WAY
CMP	CORRUGATED METAL PIPE	RC	REINFORCED CONCRETE
CONST.	CONSTRUCT. CONSTRUCTION	S	SLOPE
CY	CUBIC YARD	SD	STORM DRAIN
DIA.	DIAMETER	SF	SQUARE FOOT
D/S	DOWNSTREAM	SPEC.	SPECIFICATIONS
DWG	DRAWING	SWR	SANITARY SEWER
EC	END OF CURVE	ST	STREET
EL.	ELEVATION	STA.	STATION
EXST.	EXISTING	STD.	STANDARD
FL	FLOW LINE	TYP.	TYPICAL
GC	GRADE CHANGE	US	UPSTREAM
INT.	INTERSECTION	VERT.	VERTICAL
HRDZ.	HORIZONTAL		
INV.	INVERT		
L	LENGTH		



GENERAL PLAN
NOT TO SCALE



APPROVED NAME (PRINT) TITLE (PRINT) DATE

PREPARED BY: DATE

DESIGNED BY: DATE

CHECKED BY: DATE

DATE DATE

REVISIONS



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

DDI 26
SEGMENT B LOAD REDUCTION

TITLE SHEET

C:\WAU0000012\PCA_F2181624.DWG SHEET 1 OF 3

GENERAL NOTES

1. ELEVATIONS SHOWN ARE IN FEET BASED ON THE HOLLYDALE 2005 ADJUSTMENT, NAVD 88.
2. STATIONING SHOWN ON THE PLANS ARE ALONG CENTER LINE OF CONDUIT OR ON A LINE NORMAL TO CENTER LINE OF CONDUIT.
3. ALL PIPE IN OPEN TRENCH SHALL BE BEDDED ACCORDING TO LACDPW STANDARD PLAN 3000-3, CASE II, EXCEPT BELL AND SPIGOT PIPE WHICH SHALL BE CASE I BEDDING. UNLESS OTHERWISE SHOWN, "W" VALUES SHALL BE AS SPECIFIED ON STANDARD PLAN 3000-3 FOR CASE II BEDDING. NOTES (A) AND (B) IF THE "W" VALUE AT THE TOP OF THE PIPE IS EXCEEDED, THE BEDDING SHALL BE MODIFIED, AND/OR PIPE OF ADDITIONAL STRENGTH SHALL BE PROVIDED. THE PROPOSED MODIFICATION SHALL BE APPROVED BY THE AGENCY.
4. CONCRETE BACKFILL SHALL BE PROVIDED AROUND PIPE 21 INCHES IN DIAMETER OR LESS WHERE THE COVER IS EQUAL TO OR LESS THAN 2'-0". AROUND PIPE GREATER THAN 21 INCHES IN DIAMETER BUT LESS THAN 28 INCHES WHERE THE COVER IS LESS THAN 1'-0", AND FOR PIPE 28 INCHES OR GREATER WHERE THE COVER IS LESS THAN 1'-0". THE CONCRETE BACKFILL SHALL BE AS SPECIFIED ON LACDPW STANDARD PLAN 3000-3, NOTE 4.
5. ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE THE PROPERTY OF THE OWNERS LISTED ON SHEET 1, UNLESS OTHERWISE NOTED.
6. EXISTING UTILITIES SHALL BE PROTECTED IN PLACE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.
7. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS TO DETERMINE THE DEPTH AND LOCATION OF EXISTING UTILITIES WHERE SO INDICATED BY THE SYMBOL "A".
8. UTILITIES DESIGNATED BY THE SYMBOL "X" WILL BE ABANDONED IN PLACE AND THE OWNER WILL INSTALL A NEW SECTION OF THE AFFECTED UTILITY AT A LOCATION IN CLOSE PROXIMITY TO, BUT WHICH DOES NOT PHYSICALLY INTERFERE WITH, THE PROPOSED STORM DRAIN CONDUIT AND APPURTENANT STRUCTURES.
9. EXISTING UTILITIES SHALL BE MAINTAINED IN PLACE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED, AND ALL UTILITIES CROSSING THE TRENCH SHALL BE TEMPORARILY SUPPORTED TO SATISFACTION OF THE OWNER.
10. WHERE THE UTILITIES ARE INDICATED ON THE PLANS TO BE SUPPORTED, SAID SUPPORTS SHALL BE IN ACCORDANCE WITH SPPWC STANDARD PLAN 224-2 UNLESS OTHERWISE INDICATED.
11. ALL OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES SHALL BE SEALED WITH 8 INCHES OF BRICK AND MORTAR OR 6 INCHES OF CONCRETE, UNLESS OTHERWISE SHOWN.
12. ALL RESURFACING, CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED SHALL BE CONSTRUCTED AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS, UNLESS OTHERWISE NOTED.
13. MANHOLES SHALL USE THE SPPWC STANDARD PLAN FOR PUBLIC WORKS CONSTRUCTION E30-4 FOR THE "FRAME AND COVER" AND E30-3 OR E30-2 FOR THE "STANDARD DROP STEP". STORM DRAIN MANHOLE COVERS SHALL BE CAST WITH THE LETTERS, "L.A.C.F.C.D.". THE LETTER SIZE SHALL BE 1 INCH HIGH AND PLACED BELOW THE LETTER "O" IN THE CENTER OF THE COVER. CATCH BASIN MANHOLE COVERS SHALL BE CAST WITHOUT THE LETTERS, "L.A.C.F.C.D.".
14. TEMPORARY SUPPORTS FOR WATER LINES SHALL BE IN ACCORDANCE WITH DWP STANDARD PLAN A-3615-A OR B-1453-1A, UNLESS OTHERWISE SHOWN.
15. OVERHEAD UTILITY LINES ARE NOT SHOWN ON THE PROJECT PLANS WHICH MAY IMPACT THE CONTRACTOR'S OPERATIONS. PROSPECTIVE BIDDERS ARE ADVISED TO VISIT THE PROJECT SITE BEFORE PREPARING A BID.
16. STRUCTURAL NOTES WILL BE FOUND ON THE APPLICABLE STRUCTURAL SHEETS.
17. EXISTING TREES SHALL BE REMOVED ONLY IF SO DESIGNATED BY SYMBOL "R". THOSE TREES NOT INTERFERING WITH CONSTRUCTION SHALL BE PROTECTED IN PLACE.
18. ALL FIELD BOOK REFERENCES ARE TO LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS FIELD BOOKS, UNLESS OTHERWISE NOTED.
19. LOCATIONS SHOWN ON THE PLANS FOR EXISTING SANITARY SEWER HOUSE CONNECTIONS ARE APPROXIMATE ONLY.
20. SANITARY SEWER AND HOUSE CONNECTION REMODEL AND RECONNECTION SHALL BE IN ACCORDANCE WITH SPPWC STANDARD PLAN NO. 223-1.
21. SANITARY SEWERS AND HOUSE CONNECTIONS CROSSING OVER THE STORM DRAIN SHALL BE SUPPORTED IN ACCORDANCE WITH SPPWC STANDARD PLAN NO. 224-1. IN THE CASE OF SANITARY SEWER SUPPORTS PER CASES 1, 2, AND 4, THE SEWER SHALL BE ENCASED. THE ENCASEMENT SHALL BE A MINIMUM OF 6 INCHES WIDER ON EACH SIDE OF THE SEWER (O.D. PLUS 12 INCHES) AND A MINIMUM OF 6 INCHES ABOVE THE TOP OF THE SEWER. THE SUPPORT BEAM OR SUPPORT WALL SHALL BE WIDENED TO THE SIDE OF THE ENCASEMENT AND SHALL BE LENGTHENED TO FULLY SUPPORT THE ENCASEMENT.
22. WHEN INDICATED ON THE PLANS, SANITARY SEWERS AND HOUSE CONNECTIONS SHALL BE PROTECTED IN ACCORDANCE WITH SPPWC STANDARD PLAN NO. 225-1.
23. THE WORK SHOWN ON THESE PLANS REQUIRES THE PRIME CONTRACTOR TO HAVE A VALID CLASS A OR C LICENSE ISSUED BY THE STATE OF CALIFORNIA.

INDEX TO STANDARD PLANS

STD. PLAN	LACDPW TITLE
3000-3	PIPE BEDDING IN TRENCHES
3000-1	CRITERIA FOR THE DESIGN OF SHORING FOR EXCAVATIONS
3001-1	SAMPLE SHEET FOR USE AS A GUIDE IN PREPARING CALCULATIONS FOR SHORING OF EXCAVATIONS
2003-1	UNIFIED SOIL CLASSIFICATION SYSTEM
5002-1	PORTABLE SECURITY FENCE FOR OPEN TRENCHES
6000-1	MINIMUM PUBLIC SAFETY REQUIREMENT FOR OPEN EXCAVATIONS
STD. PLAN	SPPWC TITLE
224-2	SUPPORTS FOR CONDUITS ACROSS TRENCHES
325-2	MANHOLE - CONCRETE BOX STORM DRAIN
327-2	MANHOLE FOR EXISTING RCB
331-3	JUNCTION STRUCTURE - PIPE TO PIPE
335-2	PIPE CONNECTIONS TO EXISTING STORM DRAINS

DIVERSION FLOW CAPACITY

FLOW	VOLUME
18 GPM	15 400 GAL



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

DDI 26
SEGMENT B LOAD REDUCTION

GENERAL NOTES AND INDEX TO STANDARD PLANS

NO. 000000012 | PCA F2141824 | DWG | SHEET 3 OF 3

DATE

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EXHIBIT D

Arroyo Seco Load Reduction Strategy

Third Project Concept:

Diversion to Existing Sewer Line



EXHIBIT E

Arroyo Seco Load Reduction Strategy
Johnston Lake and San Raphael Creek
Monitoring Data

Data Report

Johnston Lake Sampling

April 25, 2018

This report presents the results from the collection of dry weather water samples from Johnston Lake and San Raphael Creek in the City of Pasadena. Dry weather sampling consisted of grab sampling by Kinnetic Laboratories, Inc. and a representative from John L. Hunter and Associates on March 16, 2018. Four water samples were collected from three monitoring locations shown on Figure 1. One sample was collected at an outfall prior to its discharge point to Johnston Lake (Site 2). Another sample plus a field duplicate sample (identified as Site 5) were collected from the lake prior to its discharge point to San Raphael Creek (Site 3). The last sample was collected was collected in San Raphael Creek (Site 4). There was no discharge from the Annandale County Club (Site 1) to the storm drain system (Figure 3), so a sample from this site could not be collected.

At the time of sampling, observations, photographs and water quality measurements were made at each site. These photographs are presented in Figures 2 through 7. Temperature, pH, percent dissolved oxygen, specific conductance, and turbidity measurements were made using a Multi-Parameter Sonde. Water quality measurements and observations are provided in Table 1.

The four water samples collected were submitted to Weck Laboratories, Inc. in the City of Industry immediately following sampling. These samples were analyzed for *E. Coli* by Method SM 9221F and the results are provided in Table 2.

The *E. Coli* data were checked for completeness, accuracy and precision. All samples were analyzed within the EPA recommended holding time and laboratory blanks were performed as necessary. Blank results were non-detect (ND). The Site 3 sample and corresponding field duplicate had a relative percent difference (RPD) of 0, indicating very good precision. However, no data qualifications were necessary.

The *E. Coli* results were compared to criteria from the Los Angeles Regional Water Quality Board (LARWQCB) Basin Plan, which sets numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's antidegradation policy, and implements programs to protect all waters in the LA Region. All *E. Coli* results were less than the Single Sample Limit for Fresh Waters Designated for Water Contact Recreation (REC-1) and all

results were well below the Single Sample Limit for Fresh Waters Designated for Limited Contact Recreation (LREC-1).

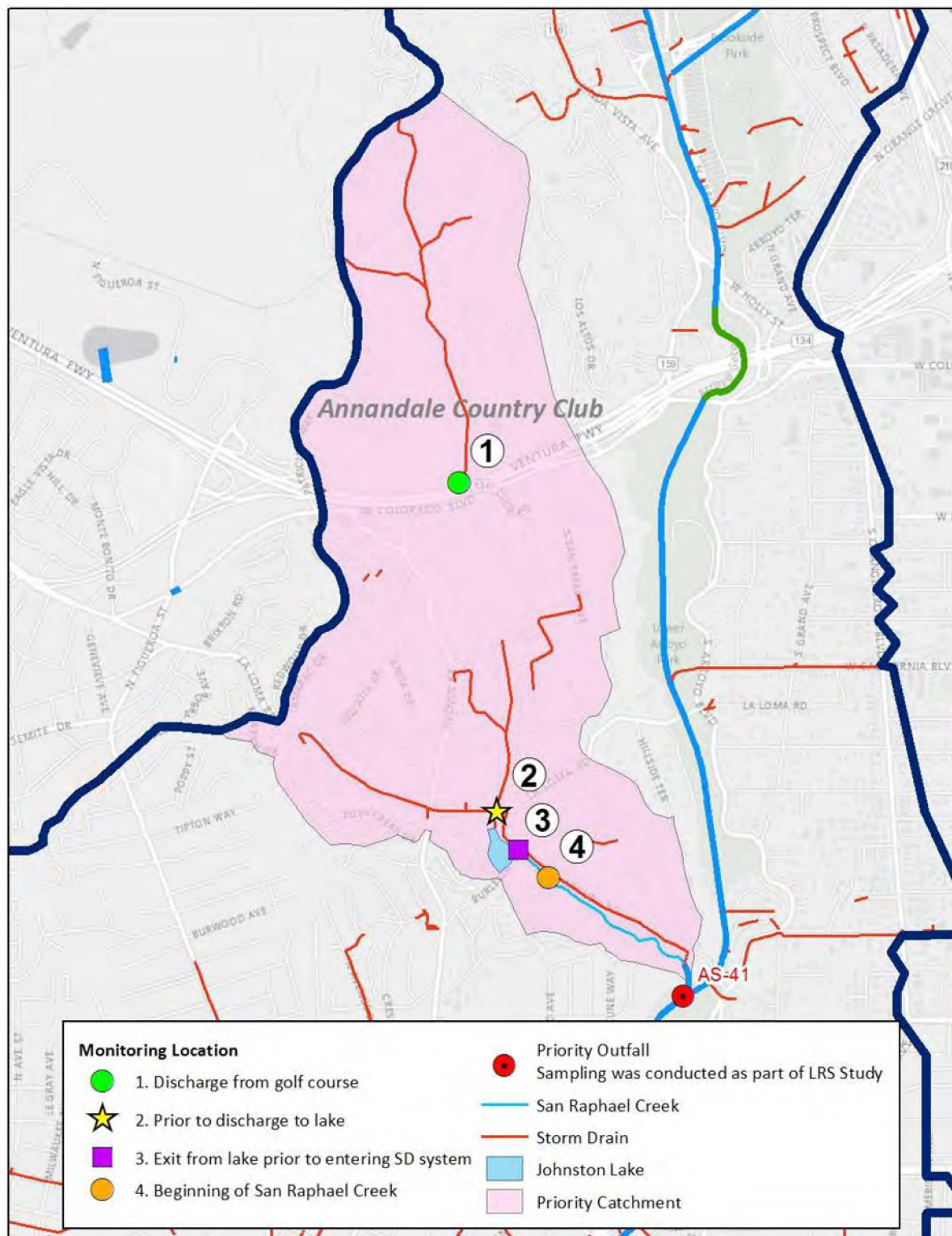


Figure 1. Map of Sampling Locations



Figure 2. Johnston Lake in Pasadena, CA



Figure 3. Outfall discharging from the Annandale County Club (Site 1)



Figure 4. Outfall discharging into lake (Site 2)



Figure 5. Outfall discharging from lake prior to SD system (Site 3)

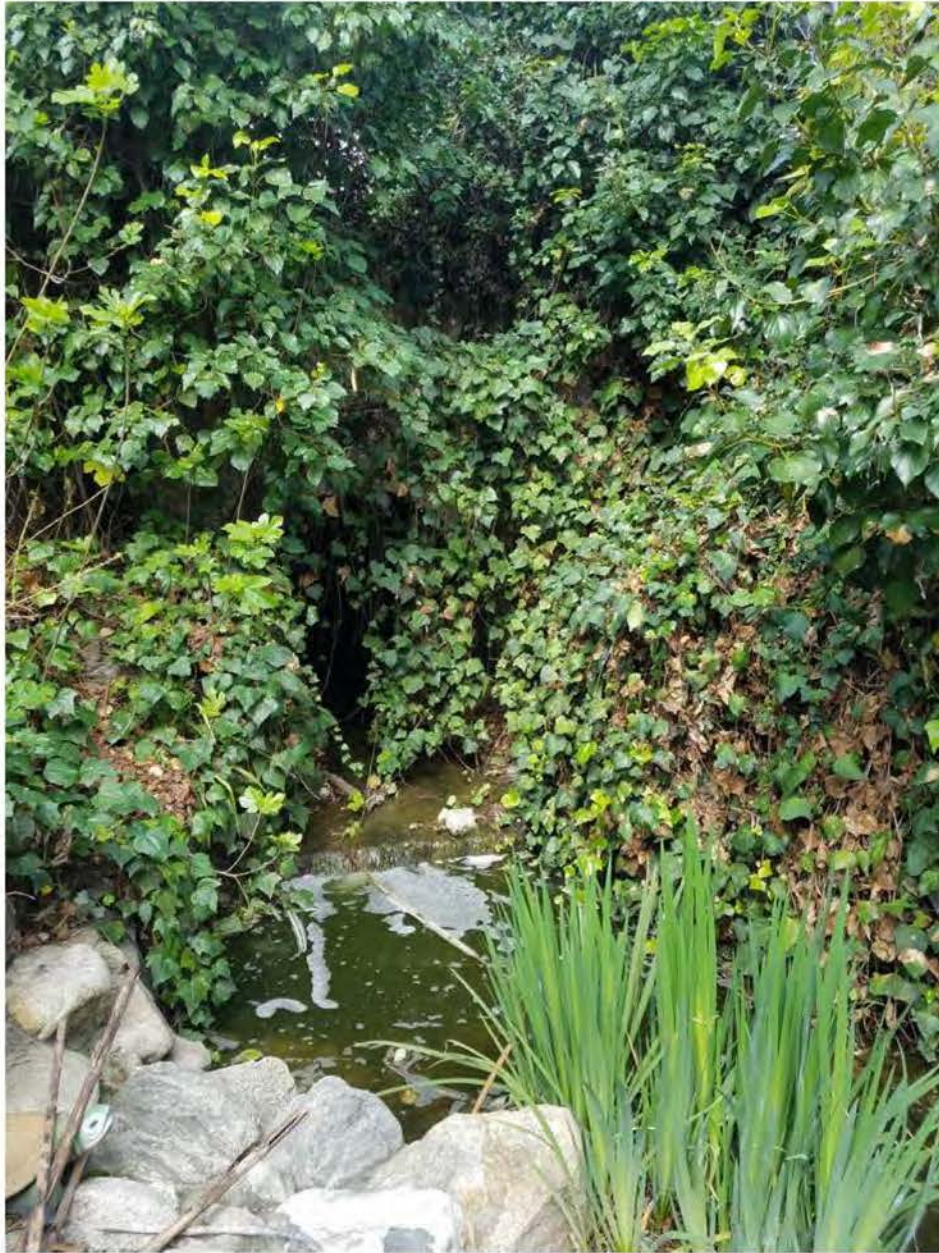


Figure 6. Beginning of San Raphael Creek (Site 4)



Figure 7. Beginning of San Raphael Creek (Site 4)

Table 1. Dry Weather Water Quality Measurements

Site ID	Site Location	Date	Time	Temp (°C)	pH	Dissolved Oxygen (%)	Specific Conductance (µs/cm)	Turbidity (NTU)	Observations
Site 1	Discharge from Golf Course	3/16/18	N/A	N/A	N/A	N/A	N/A	N/A	Dry, no flow from outfall.
Site 2	Outfall discharging to lake	3/16/18	1044	17.22	7.84	66.4	1.86	2.1	Water from the outfall was clear in color. Occasional sulfur odor in area.
Site 3	Discharging from lake	3/16/18	1055	17.49	8.50	158.0	1.362	16.7	Water greenish in color. Sulfur odor in area.
Site 4	Beginning of San Raphael Creek	3/16/18	1110	17.40	8.53	107.3	1.363	81.9	Water was slightly foamy and turbid.

Table 2. Bacteria Results for Johnston Lake Sampling

Analyte Name	Units	Site 1	Site 2	Site 3	Site 4	Site 5	LARWQCB Basin Plan ¹	
		Discharge from Golf Course	Outfall discharging to lake	Discharging from lake	Beginning of San Raphael Creek	Field Duplicate of Site 3	SS Freshwater Rec Contact (Rec-1)	SS Limited Freshwater Contact (LRec-1)
<i>E. Coli</i>	MPN/100ml	NS	78	79	200	79	235	576

Notes:

1. Los Angeles Regional Water Quality Board (LARWQCB). 2014. Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties.

NS= Not sampled

Attached to this report are the following Appendices:

Appendix A. Field Log Sheets

Appendix B. Laboratory Analytical Report

Appendix A.

Field Log Sheets

Bacteria Sampling Log Sheet

GENERAL INFORMATION

Arrival Time: 11:30 Date: 3/16/16
 Site ID: Site 2 - Discharge from Golf Course Sampling Personnel: D. Gonsman, A. Alba
 GPS Coordinates: (lat) 34.143936 (long) -118.171227 Picture/Video #: _____

OBSERVATIONS

Weather: Cloudy, cold
 Water Color: _____ Water Activity: 2.0
 Water Characteristics (flow-type, algae, odor, floatables, turbidity): N/A
 Other comments (trash, wildlife, recreational uses, homeless activity, etc. - Use notes section if more room is needed):
off street manhole catch basin

In situ WATER QUALITY MEASUREMENTS

Time	Temp (°C)	pH	Specific Cond. (mS/cm)	Salinity (PSS)	Turbidity (NTU)

Water Quality Instrument: _____

COLLECTED WATER QUALITY SAMPLES

Sample ID	Analysis	Time	Volume	Notes
<u>N/A</u>	<u>E. Coli</u>	_____	_____	_____
_____	<u>E. Coli</u>	_____	_____	Field Duplicate

ADDITIONAL WATER QUALITY SAMPLING NOTES:

Dry - no flow in or from manhole -
prior to Annendale Golf Club

Bacteria Sampling Log Sheet

GENERAL INFORMATION

Arrival Time: 10:30 Date: 3/16/18
 Site ID: Site 2 - Prior to discharge to lake Sampling Personnel: D. Gonsman, A. Alba
 GPS Coordinates: (lat) 34.130096 (long) -118.174323 Picture/Video #: _____

OBSERVATIONS

Weather: Cloudy, cold
 Water Color: Greenish lake Water Activity: Birds, a lot
 Water Characteristics (flow-type, algae, odor, floatables, turbidity): algae, some turbidity, floatables
 Other comments (trash, wildlife, recreational uses, homeless activity, etc. - Use notes section if more room is needed):
Algae in lake but actual sample discharging was clear

In situ WATER QUALITY MEASUREMENTS

Time	Temp (°C)	pH	Specific Cond. (mS/cm)	Salinity (PSS)	Turbidity (NTU)
1044	17.22	7.84	1.86	0.94	2.1

Water Quality Instrument: Quanta

COLLECTED WATER QUALITY SAMPLES

Sample ID	Analysis	Time	Volume	Notes
Site 2-2018-03	E. Coli	1045	120 mL	Clear sample
	E. Coli			Field Duplicate

ADDITIONAL WATER QUALITY SAMPLING NOTES:

— Water from inlet to lake is very clear—
 prior to entering lake. Water was
 DO: 66.4% Warm with no turbidity.
 — Occasional sulfur smell.
 — inlet was behind trees—collected directly
 from this—not the lake
 DO%: 66.4

Bacteria Sampling Log Sheet

GENERAL INFORMATION

Arrival Time: 1050 Date: 3/16/18
 Site ID: Site 3 - Exit lake prior to SD system Sampling Personnel: D. Grossman, A. Alba
 GPS Coordinates: (lat) 34.129639 (long) -118.173674 Picture/Video #: _____

OBSERVATIONS

Weather: Cloudy, cold
 Water Color: Slightly green Water Activity: birds all over lake
 Water Characteristics (flow-type, algae, odor, floatables, turbidity): Algae, some floatables, turbidity
 Other comments (trash, wildlife, recreational uses, homeless activity, etc. - Use notes section if more room is needed):

In situ WATER QUALITY MEASUREMENTS

Time	Temp (°C)	pH	Specific Cond. (mS/cm)	Salinity (PSS)	Turbidity (NTU)
1055	17.49	8.50	1.362	0.67	16.7

Water Quality Instrument: Quanta 4546

COLLECTED WATER QUALITY SAMPLES

Sample ID	Analysis	Time	Volume	Notes
Site 3-2018-03	E. Coli	1050	110 mL	Dup site
Site 5-2018-03	E. Coli	1055	120 mL	Field Duplicate

ADDITIONAL WATER QUALITY SAMPLING NOTES:

— Collected water discharging from lake - slightly greenish.
 Water moving quickly to discharge
 DO: % 158.0
 — Sulfur odor

Bacteria Sampling Log Sheet

GENERAL INFORMATION

Arrival Time: 1100 Date: 3/16/18
 Site ID: Site 4- Beg. of San Rafael Creek Sampling Personnel: D. Gonsman, A. Alba
 GPS Coordinates: (lat) 34.129598 (long) -118.173313 Picture/Video #: _____

OBSERVATIONS

Weather: Cloudy, cold
 Water Color: Greenish Water Activity: None
 Water Characteristics (flow-type, algae, odor, floatables, turbidity): Algae (a lot)
 Other comments (trash, wildlife, recreational uses, homeless activity, etc. - Use notes section if more room is needed):
Rocky area w/ a lot of plants, concrete bottom to soft bottom

In situ WATER QUALITY MEASUREMENTS

Time	Temp (°C)	pH	Specific Cond. (mS/cm)	Salinity (PSS)	Turbidity (NTU)
1110	17.40	8.53	1.363	0.67	81.9

Water Quality Instrument: Quanta 4546

COLLECTED WATER QUALITY SAMPLES

Sample ID	Analysis	Time	Volume	Notes
Site-4- 2018-03	E. Coli	1115	115 mL	bubbles
_____	E. Coli			Field Duplicate

ADDITIONAL WATER QUALITY SAMPLING NOTES:

DO: 107.3 %

- Collected water that is discharged from lake; Starting of the San Rafael Creek. Transitions to soft/rock bottom
- Sample was a little foamy, some turbidity

Appendix B.

Laboratory Analytical Report

Work Orders: 8C16053

Report Date: 4/24/2018

Project: 5811 Johnston Lake Bacteria Sampling

Received Date: 3/16/2018

Turnaround Time: Normal

Phones: (562) 357-4685

Fax: -

P.O. #:

Billing Code:

Attn: Danielle Gonsman

Client: Kinnetic Laboratories, Inc. - Long Beach
10377 Los Alamitos Blvd.
Los Alamitos, CA 90720

Dear Danielle Gonsman :

Enclosed are the results of analyses for samples received 3/16/2018 with the Chain-of-Custody document. The samples were received in good condition, at 4.2 °C and on ice. All analysis met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sample Results

Sample: Site-2-2018-03, Alias: Upstream Lake 8C16053-01 (Water)						Sampled: 03/16/18 10:45 by Client	
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier	
Method: SM 9221F	Batch ID: W8D0782	Instr: Inst	Prepared: 03/16/18 14:14	Analyst: kvm			
E. coli	78	1.8	MPN/100ml	1	03/31/18 14:55		
Sample: Site-3-2018-03, Alias: Upstream SD System 8C16053-02 (Water)						Sampled: 03/16/18 10:50 by Client	
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier	
Method: SM 9221F	Batch ID: W8D0782	Instr: Inst	Prepared: 03/16/18 14:14	Analyst: kvm			
E. coli	79	1.8	MPN/100ml	1	04/14/18 16:02		
Sample: Site-4-2018-03, Alias: San Raphael Creek 8C16053-03 (Water)						Sampled: 03/16/18 11:15 by Client	
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier	
Method: SM 9221F	Batch ID: W8D0782	Instr: Inst	Prepared: 03/16/18 14:14	Analyst: kvm			
E. coli	200	1.8	MPN/100ml	1	03/31/18 14:55		
Sample: Site-5-2018-03, Alias: Long Beach 8C16053-04 (Water)						Sampled: 03/16/18 10:55 by Client	
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier	
Method: SM 9221F	Batch ID: W8D0782	Instr: Inst	Prepared: 03/16/18 14:14	Analyst: kvm			
E. coli	79	1.8	MPN/100ml	1	04/14/18 16:02		

Notes and Definitions

Item	Definition
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec.	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.
 An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)
 All results are expressed on wet weight basis unless otherwise specified.
 All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.

Not Certified Analyses Summary

Analyte	CAS #	Not Accredited By
SM 9221F in Water		
E. coli		NELAP

Reviewed by:



Chris Samatmanakit
Project Manager



DoD-ELAP #L2457 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • ISO 17025 #L2457.01 • LACSD #10143 • NJ-DEP #CA015

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Chain of Custody Record

8C16053

Page 1 of 1

To: Week Laboratories, Inc. 14859 East Clark Avenue Industry, CA 91745 Phone: (626)336-2139	Date Received: Lab #:	From: Kinnetic Laboratories, Inc 10377 Los Alamitos Blvd. Los Alamitos, CA 90720 (562) 357-4685	
Contact: Chris Samatmanakit		Contact: Danielle Gonsman	

Project: Johnston Lake Bacteria Sampling **Matrix:** Freshwater **Project #:** 5811
Complete by: Standard TAT

Sample ID	Station ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
Site-1-2018-03	Golf Course			Grab	<i>E. coli</i> (SM 9221 FMTFT)	120 mL Sterile HDPE	Na ₂ S ₂ O ₃	1	3/16/18	
Site-2-2018-03	Upstream Lake	3/16/18	1045	Grab	<i>E. coli</i> (SM 9221 FMTFT)	120 mL Sterile HDPE	Na ₂ S ₂ O ₃	1		
Site-3-2018-03	Upstream SD System		1050	Grab	<i>E. coli</i> (SM 9221 FMTFT)	120 mL Sterile HDPE	Na ₂ S ₂ O ₃	1		
Site-4-2018-03	San Raphael Creek		1115	Grab	<i>E. coli</i> (SM 9221 FMTFT)	120 mL Sterile HDPE	Na ₂ S ₂ O ₃	1		
Site-5-2018-03	Long Beach		1055	Grab	<i>E. coli</i> (SM 9221 FMTFT)	120 mL Sterile HDPE	Na ₂ S ₂ O ₃	1		

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. All times on this sheet are military time. Email reports/invoices/EDDs to edd@kinneticlabs.net.

Special Instructions/Comments: *E. Coli* by enumeration method.

4.2⁺

Sampled and Relinquished By:	Date/Time:	Transporter:	Received By:	Date/Time:
<i>[Signature]</i>	3/16/18	KLI	<i>[Signature]</i>	3/16/18 12:15
Relinquished By:	Date/Time:	Transporter:	Received By:	Date/Time:

KLI Sample Control Use:

Arroyo Seco Water Quality Assessment July 2026

A citizen science collaboration with UCLA School of Engineering Center for Community Engagement and Environmental Justice (CEEJ)

Water sample identification and testing results summary

Sample ID	Sampling order	Sample site description	<i>E.coli</i> (MPN/100 mL) ^[1]	95% CI for <i>E.coli</i>	Salinity (µS/cm)	Turbidity (NTU)	Nitrate (mg/L NO ₃ -N) ^[2]	Ammonia (mg/L NH ₃ -N) ^[3]	Reactive Phosphorus (PO ₄ mg/L) ^[4]
1	1st	San Pascual site. Pond 1. Inlet to San Pascual wetland.	325.5	206.6 - 498.1	1747.67	7.09	0.86	0.03	<0.01 undetectable
2	3rd	San Pascual site. Pond 2. Inlet to golf course.	517.2	338.4 - 763.6	.33	6.54	0.88	0.07	0.08
3	2nd	Environs. Garfias Spring. Catch basin at bottom of bluff.	435.2	276.2 - 650	1983.33	8.19	3.31	0.03	0.48
3*	8th	Environs. Garfias Spring. Concrete reinforced spring at top of bluff.	0	0 - 3.7	2360	5.13	3.47	<0.01 undetectable	0.06
4	4th	Arroyo Seco channel. Low flow drainage/seepage from channel wall below San Pascual site.	7.3	2.9 - 13.9	2763.34	8.01	10.20	0.02	0.56
5	5th	Arroyo Seco channel. Upstream of San Pascual site diversion.	178.9	124 - 257.8	1477.67	9.09	0.89	<0.01 undetectable	0.04
6	7th	Arroyo Seco Channel. San Rafael Creek channel outlet to Arroyo Seco. AS-41.	>2419.6	not applicable - infinite	2263.33	18.75	0.38	0.02	0.46
7	6th	Arroyo Seco channel. Upstream of San Rafael Creek confluence.	63.8	45.5 - 87.2	1360.33	7.95	1.12	<0.01 undetectable	0.01
8	9th	Johnston Lake outlet towards San Rafael Creek.	235.9	159 - 360	2383.33	2.21	1.04	0.05	<0.01 undetectable

TABLE NOTE: This table summarizes results of water sampling and testing conducted by UCLA research scientists on Jul 27, 2026 that followed EPA standard procedures for surface water sampling and EPA standard methods for detection of microbiological, physical and chemical properties of the sampled water. A report including sample site rationale, methods, raw data and analysis can be provided upon request. These results are a single point in time, single sample assessment for 9 surface water sampling points in the Arroyo Seco subwatershed and San Rafael Creek catchment. These results offer an indication and assessment of water quality, they are not a definitive evaluation nor a repeated sample monitoring process as called for in state and regional recreational water and stormwater management policy. In the absence of public information on water quality, these results offer insight into the actual, observed state of water quality. This study was a citizen science collaboration between UCLA research scientists and Pasadena and Los Angeles residents.

[1] Per EPA 2012 RWQC and California 2018 SWRCB, recreational surface water *E.coli* should not exceed 320 cfu/100mL for a single sample value (SSV) nor a geometric mean exceed 100 cfu/100mL over a rolling 6-week period. Samples 1, 2, 3 and 6 exceed the SSV threshold. MPN is cfu equivalent per Standard Methods. Results for sample 6 indicate a need for further testing to include dilution of sample to estimate *E.coli* MPN.

[2] The legal Maximum Contaminant Level (MCL) enforced by the California SWRCB to prevent acute health risks is <10 mg/L of Nitrate as NO₃-N. Concentrations ≥ 1.00 mg/L are considered to be elevated and >3.00 mg/L to be highly elevated. Samples 7, 8 are elevated; samples 3, 3*, 4 are highly elevated.

[3] No samples exceed ammonia annual average Numeric Action Level (NAL) for Ammonia is 2.19 mg/ per California Industrial General Stormwater Permit; exceeding this baseline annual value triggers mandatory response actions.

[4] No samples exceed reactive phosphorous threshold of 6.13mg/L in wastewater per EPA standard.