CITY OF LONG BEACH

Public Works
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April 21, 2026

Honorable Mayor and City Council
City of Long Beach
California

RECOMMENDATION:

Recommendation to receive and file a report on the construction progress of the Colorado Lagoon Open Channel Project. (District 3)

DISCUSSION

On March 24, 2026, City Council approved a recommendation requesting the City Manager to provide a presentation within 30 days on the Colorado Lagoon Open Channel Project, including an overview of the project, the causes of construction delays, the anticipated timeline for completion, and any lessons learned to help prevent similar delays in future City infrastructure projects. This item will allow staff to present an overview of the project to City Council.

Background

Colorado Lagoon History

The Colorado Lagoon (Lagoon) is an 18-acre saltwater tidal lagoon located at 5119 East Colorado Street. Since the 1960s, the Lagoon has been hydraulically connected to Alamitos Bay and the Pacific Ocean through a 900-ft long, underground box culvert which has been located under Marina Vista Park at 5355 East Eliot Way. The Lagoon serves three primary functions: (1) it hosts estuarine habitat, (2) provides public recreation including swimming, and (3) it retains and conveys storm water. The Lagoon site was formerly part of the vast Los Cerritos Wetlands complex and was naturally connected to what is now Marine Stadium. In 1923, the Colorado Lagoon and Marine Stadium were dredged taking on its characteristic shape. In the 1930s, the first impediment to tidal access was introduced with the connection of Colorado Street creating the first short culvert and tidal gate. The tidal gates allowed for the manual controlling of water depths at the Colorado Lagoon used for recreational swimming and diving. In 1932, the Los Angeles Olympic diving trials took place at the Colorado Lagoon.

In the 1960s, the north end of Marine Stadium was filled, and a 900-foot-long box culvert was constructed in anticipation of the Pacific Coast Freeway that would provide a cross-town connection. The freeway never materialized, and the filled lands and area became Marina Vista Park. Because the Lagoon is the natural low point in the sub-basin, 11 different storm drains discharged to the water body. After severe rain events, the Lagoon would suffer from erosion and trash accumulation, and for many years would receive an influx of contaminants from stormwater and urban runoff, which was exacerbated by the decreased tidal exchange.

These conditions created anoxic conditions for marine life and caused a degradation of water quality and habitat conditions for decades to come. In 2006, the Lagoon became an impaired waterbody pursuant to Section 303(d) of the Clean Water Act for multiple contaminants. In 2009, the Water Board took action and adopted Total Maximum Daily Loads (TMDL's) specifically for the Colorado Lagoon covering bacteria, trash, metals, pesticides, Polycyclic Aromatic Hydrocarbons (PAHs), and Polychlorinated Biphenyls (PCBs) requiring the implementation of the initial phase of the Master Restoration Plan.

Partnerships

The Colorado Lagoon Restoration Plan was born out of a community response to a Los Angeles County project. Community opposition to a new County storm drain project that would outlet at the already-impacted Lagoon fueled the development of the Colorado Lagoon Feasibility Study or Master Restoration Plan. The restoration plan required multiple partnerships to both fund and implement. Initial funding partners included the Rivers and Mountains Conservancy (RMC) and State Coastal Conservancy (SCC) to support the planning, engineering and development of the feasibility studies. The Master Restoration Plan was completed in 2005.

During this time, the City through its Parks, Recreation and Marine and Harbor Departments entered into a Memorandum of Understanding (MOU) to fund in the amount of $235,000 the Environmental Impact Report (EIR) necessary to proceed with regulatory permitting and construction, in exchange for the Harbor Department's first rights to any, and all, mitigation bank credits generated by the work. The development of a mitigation bank and the creation of mitigation credits have been an important aspect of multiple phases of the restoration of the site.

Mitigation Bank

A compensatory mitigation bank or Bank Enabling Instrument (BEI) is an instrument allowed by State and Federal regulatory and resource agencies, where ecological restoration generates a quantity of mitigation credits. The more valuable a restoration activity or component is, the greater the number of mitigations credits that could possibly be generated. Port jurisdictions often maintain a portfolio of mitigation credits to offset impacts from development projects. From an operational standpoint, mitigation credits are acquired to provide flexibility in development, project planning and execution. Restoration activities both at the Lagoon and the new Open Channel would generate mitigation credits, which the City has elected to structure into a BEI. Through the development of a mitigation bank and the Port of Long Beach's (Port) election to said credit rights, the Port has been able to partner with the City to advance funds in the amount of $1.3 million for Phase 1 construction, fund the development of the Mitigation Bank Prospectus in the amount of $785,000, and provide funding for Phase 4, the Open Channel Project.

The City's mitigation bank was approved by the regulatory and resources agencies in 2019, which allowed the detailed planning and engineering of the Open Channel Project. That year, the Public Works and the Harbor Departments entered into an MOU outlining the structure and terms of mitigation credit generation and ownership. The Port is contributing the bulk of the funding required to deliver the Open Channel Project at $30.5 million in exchange for 22 acre-mitigation credits. Mitigation bank improvements require satisfaction of habitat and ecological performance standards and criteria for five years, in addition to maintenance and management

of the resources in perpetuity. The MOU allowed the Port to provide funding for design and construction prior to agency release of mitigation credits, allowing the work to begin.

Phased Restoration Implementation

The Colorado Lagoon Master Restoration Plan recommended improvements to address legacy contamination, restore water quality, prevent new contamination and restore tidal exchange. These recommendations and improvements were undertaken through a phased approach due to resource and funding constraints. The initial efforts to restore the Lagoon included the installation of trash traps and low flow diversion (LFD) systems to reduce point source contaminants from entering the lagoon. The LFD system at Colorado Lagoon, one of the first in the City, diverts low flows into a holding well and discharges this contaminated water to the sanitary sewer system for treatment, as opposed to directly discharging in the Lagoon water body. Underground trash capture vaults were also installed at three locations along 6th Streets and Monrovia Avenue to prevent trash and organic materials from being discharged into the Lagoon. Phase 1 activities were completed in 2009 intending to eliminate point sources of contamination, setting the project up for a larger remediation phase.

In 2011, the City embarked on a subsequent construction effort to remove 72,000 cubic yards of contaminated sediments from the Lagoon bottom to improve water quality, clarity, and remove dilapidated structures from the site in preparation for future park restoration. Through the partnership with the Port, the Project was able to repurpose materials at the Middle Harbor as confined fill, as opposed to trucking and disposal in Bakersfield or Kettleman City, making the project financially feasible. With the completion of both Phase 1 and Phase 2 of restoration work, the Lagoon saw drastic improvements to water quality. Both phases were also completed with grant funds from the U.S. Army Corps of Engineers, State Water Quality Control Board (SWRCB), State Coastal Conservancy and regional partners, such as the Rivers and Mountains Conservancy (RMC).

In 2016, Phase 3 activities commenced, which saw the expansion and creation of new habitat at the Lagoon. These efforts included the development of new subtidal habitat, expansion of intertidal habitat, and the planting of new marsh and upland plants, which expanded habitat diversity. At this time, the City installed and established the first eelgrass plots in the Lagoon. This project phase would help address residual contamination to support the City's TMDL requirements, while improving pedestrian access through the creation of brand-new pedestrian trails for passive recreation. The improvements have significantly contributed to improving park conditions, usability, and urban access to aquatic resources. The multi-benefit project also mitigated for eelgrass and subtidal impacts associated with Phase 1 and Phase 2 of the Naples Seawalls Replacement projects.

While the previous work continues to exceed expectations, the tidal exchange at the Lagoon remains muted due to the presence of an underground concrete culvert, which has become the single means of tidal exchange between the Lagoon and Alamitos Bay for well over 50 years. This concrete culvert is neither deep nor wide enough to allow for a full tidal exchange between the Lagoon and Alamitos Bay, limiting tidal flushing and exchange and stunting habitat growth. The current and final phase of restoration work will remedy this deficiency.

Alternative 4A – Open Channel Project

In 2010, an Alternatives Analysis was prepared for the Open Channel. The Alternatives Analysis outlined five concepts for increasing the tidal exchange between the Lagoon and Alamitos Bay, each with its own varying degree of cost and impact. In 2010, the Long Beach City Council upheld a Planning Commission decision to approve an Addendum with changes to the project, and approved a concept for the Open Channel, known as "Alternative 4A." The approved alternative proposed an open, earthen channel with two vehicular bridge crossings. By replacing the underground culvert with an open, earthen channel, the improvements would provide the maximum tidal exchange and create the largest amount of new habitat. The work would relocate restrooms, construct new bridges, and require the re-configuration of active recreational uses at Marina Vista Park. Altogether, the Open Channel Project would convert parkland to create 3.5 acres of new tidal habitat, improve 18 acres of habitat, and improve water quality in the Lagoon.

Construction Overview

Original Construction Timeline

Throughout the design phase and community engagement, construction durations ranged from 18-24 months based on the engineer's estimates of the time necessary to complete the project. The documents released for bidding in 2021 estimated an 18-month project duration.

After the contract was awarded, the contractor submitted a 29-month baseline schedule outlining concerns due to supply chain constraints, material availability and the sequence of work planned. Various project experts reviewed multiple iterations of the project schedule and concurred with the 29-month schedule. To minimize the duration, the Contractor proposed concurrent construction activities and a revised sequencing of work, which resulted in a baseline schedule of 22 months. Construction began on this final phase of restoration in November 2022. The approved baseline schedule, without weather impacts or unforeseen conditions, expected the construction work to be completed 22 months later in Fall 2024.

Road Closures

Due to the confluence of multiple utilities, a complex sewer siphon system, and a new bridge, Colorado Street was expected to be closed for the duration of the project from the Colorado Lagoon Playgroup building east, past Orlena Ave. This closure is necessary for the aforementioned work to be completed along with utility connections at the Eliot Street intersection. The construction drawings originally contemplated that while the Eliot and Colorado intersection would be closed for the duration of the project, Eliot Street could partially open in advance of project completion providing access to Larry Curtis Park and Fire Station 14. However, per the baseline schedule negotiations noted previously, the phased sequencing was eliminated for a baseline schedule of 22 months. For Colorado Street to open, all utility work must be completed, temporary bypass systems removed, and the roadway fully constructed.

Construction Activities Completed to Date

As required by the regulatory agencies, major excavation has been completed at Marina Vista Park and the material reused at the central basin of the Lagoon to support habitat growth.

Given the need to balance as much cut and fill on site, Marina Vista Park was filled using excavated materials from the open channel cuts. This prompted the complete removal of legacy irrigation systems providing an opportunity for major field improvements with more modern irrigation systems including new controllers, electrical pedestals, and new pumps and improved soil conditions for turf. Furthermore, site grading, installation of concrete pads for ballfield elements, dug outs, fence posts, and pathways were all completed in 2025. Continuous leaching and soil amendments have been required to address the high amounts of salinity in salvaged topsoils, which historically have contributed to poor grass conditions at Marina Vista Park. Additionally, the reuse of topsoils aims to achieve an environmental consideration for the work, which was to reduce overall vehicle truck trips associated with disposal and import activities, and reduce costs where feasible. In March 2026, tree planting and sod installation began.

Eliot Street bridge, Eliot Street utilities, curbs, gutters, sidewalks, and bike paths have been completed.

Colorado Street bridge is fully constructed along with major utility relocations. Notably the new sewer siphon has been installed more than 25 ft below ground as it needs to both clear the base of the bridge and the existing culvert. The demolition of the previous sewer system has also been completed.

Construction Activities Remaining

Five major activities remain before the project can be completed including:

1. Completion of utilities and removal of associated bypass system - the sewer airline is nearly complete at which time pressure testing, activation, and acceptance by the County Sanitation District is necessary. Then the temporary sewer bypass will be decommissioned and removed
2. Colorado Street curbs, gutters, sidewalks and roadway
3. Final open channel excavation, grading and contouring
4. Demolition of the existing underground culvert and activation of the new tidal channel
5. Wetlands and marsh planting, and installation of decomposed granite along the nature trail

Construction Challenges, Delays, and Impacts

General Complexity of Project

As presented to Council in March 2025, the project has encountered challenges associated with site conditions encountered during excavation, including the presence of utilities not reflected in available records, discovery of materials requiring specialized handling, and field conditions that

have required design coordination and adjustments. Additionally, adverse weather impacts, cost escalation, delays and requirements from third-party entities and protracted back-and-forward reviews have extended the construction duration.

Most construction activities required to complete the Open Channel project are tied to the work on Colorado Street, making them all critical path activities. The critical path method (CPM) is the scheduling methodology used by the City and Public Works to understand activities relative to project completion. The critical path is the longest sequence of dependent work or activities that a Contractor must perform to complete the job (e.g. chain of tasks). If one task on the critical path slips, the entire project is delayed. For the Open Channel Project, most activities are on the critical path such that nearly all delays to various tasks have resulted in a downstream delay to the overall project.

To illustrate, the sewer siphon, as discussed above, is one of the most complex components of the work. To begin construction of the siphon, several predecessor activities had to be completed. This included major demolition of roads, excavation, utilities relocation and/or removal, construction of temporary utilities (e.g. main water lines, recycled water lines, and relocation of electrical systems), in addition to excavation itself. The actual siphon construction start was impeded by the presence of utilities not reflected in available records, which required identification of ownership, reporting, and compliance with abatement requirements. During construction, utilities not reflected in available records were encountered. Certain materials required evaluation and handling in accordance with applicable regulatory requirements, including, where applicable, notification and reporting. Excavation to the grades necessary took significantly longer given the issues encountered. Furthermore, when elevations were reached, and work was being conducted, different site conditions also presented themselves; areas that were thought to be competent substrate were in fact clay, which required alternate designs and utility installation methods.

Furthermore, the contractor elected to bypass the sewer system to maintain sanitary connections for the neighborhood. This work added time for engineering, reviews by AHJs, adjustments and re-approvals of plans, and the time to construct said systems before the existing sewer line along Colorado Street was demolished. The sewer siphon is a deep utility line, requiring even deeper excavations in materials not previously disturbed since 1930s and 1960s.

During general excavation, asbestos containing fragments and debris have been found in filled areas of the park. Pieces of debris are often six inches or less and upon discovery require the stop of work, the mobilization of the City's Certified Asbestos Consultant (CAC) and testing of materials. Upon receipt of lab results, the City's CAC also prepares a Procedure for its proper handling and removal, which is submitted by the Contractor to the regional air management district before the work can continue.

The Colorado Lagoon Restoration Project is complex because of the heavy civil work and improvements combined with major utility reconstruction. The work aims to balance environmental considerations and costs, and was designed to maximize cut and fill balance on site. Another objective of the design was to maintain utility services to avoid impacts to the community, and to keep the Lagoon hydraulically connected. During the work, the project aimed to provide constant pedestrian access through site, necessitating splitting the construction site

into two. All these considerations contribute to the complexities of the job.

Discovery of Asbestos Containing Materials (ACM)

Asbestos is a naturally occurring fibrous mineral (long thin crystals) found throughout the world. The California state rock is serpentine and is known to contain asbestos chrysotile. Chrysotile asbestos was the dominant type of asbestos material and accounted for about 90-95% of asbestos used in the world. Chrysotile was commonly used in building materials due to strength, heat resistance, and insulating properties and used in Transite piping. It is also commonly seen in older building materials such as building mastic, adhesives, or insulation. Throughout the state, many cities and counties have naturally occurring asbestos (NOA) in soils due to presence of serpentinite rock, which are managed, if construction occurs in areas with NOA.

Asbestos-containing material (ACM) means any material containing more than one percent (1%) asbestos. ACMs are routinely encountered in utility and building renovations, and the work must be environmentally managed and abated under established regulations by the Air Quality Management District (AQMD). The Colorado Lagoon project encountered 16 instances of ACM, primarily as part of incidental debris discovery during excavation or through the unearthing of 20 utilities not reflected in available records of abandoned utility lines. However, these two (2) types of ACMs are reported and managed slightly differently. For incidental ACM debris co-mingled with excavated soils, AQMD would consider those materials disturbed and for handling to be done differently. As such, if the debris is suspected to contain ACM, work in that excavation area is paused, confined, tested by the City's CAC, and a procedure developed and submitted to the AQMD for its management, handling, and removal. ACM fragments are bagged or wrapped and transported to an approved disposal facility. The remaining soils are retested prior to their reuse or export and disposal. Overall, these discoveries added delays, additional costs for environmental testing, consultant oversight, the work of licensed abatement subcontractors specialized handling and disposal, elective air monitoring by the City, and has contributed to additional time and costs.

In 2025, after community concerns were raised about the presence of ACM discovered in 2024, the CAC collected over 200 soil samples across the open channel and Marina Vista Park site. The results of these soil samples were found to be non-detect for asbestos demonstrating it is not inherently part of the soil strata. The ACMs discovered on site have been discrete, associated with miscellaneous debris that were likely mixed with soils that were utilized as part of the 1960s fill activities. The ACM debris discoveries are often six inches or less in size. All other ACM discoveries have been intact piping, primarily associated with utilities not reflected in available records and abandoned utility lines. To date, the impact of asbestos management has contributed many months of delays and over $1.4 million in approved change orders.

Inclement Weather

Since construction began, the project has experienced nearly 60 working days or roughly three months of adverse weather impacts. Extreme weather events, including atmospheric rivers and tropical storm impacts have resulted in saturated site conditions, which require time to dewater and dry prior to resuming construction activities. In addition, due to inclement weather, the project saw the rescheduling of critical path utility cutovers by AHJs. Utility providers such as

Southern California Edison (SCE) must provide multiple weeks of advance notice for electrical disruptions or cutovers. Impacts to scheduled work dates from rain events have led to multiple postponements, re-noticing, and rescheduling of activities on the job, which resulted in impacts to the critical path.

Pre-Design Investigations

Numerous studies, regulatory input, and field investigations have informed how the work was designed and the environmental considerations that had to be made. For projects requiring utility coordination, multiple rounds of utility notices and collaboration meetings are held to understand what utilities are present, are active, and what conflicts exist that require technical coordination. The project team met with eleven utility owners and five oil operators to inform the engineering of the project and determine the utility coordination that was expected during construction.

Additionally, to inform bridge design and environmental considerations for the work, the project collected nearly 60 separate soil cores for environmental and geotechnical design considerations. An additional 18 potholing confirmations were conducted via air vacuum excavation to verify the precise alignment and location of key utilities. Best practices in engineering were applied for subsurface utility investigations for Colorado Lagoon, including review of records, mapping, as-built records, and notification and engagement with the City's list of known utility operators. Potholing is typically performed to verify the location of known utilities; utilities not identified in available records or through standard detection methods may not be discovered until construction activities occur. Lastly, soil samples collected on the job are meant to be representative of the soil conditions of the entire site. The soil sampling conducted during design did not indicate presence of asbestos debris and asbestos in soils.

Lessons Learned to Apply to Future Major Improvements

Alternate Subsurface Investigations

Projects like wetlands restoration, where decades of human-made interventions are systematically reversed and reconfigured, are inherently complex and face unforeseen conditions. These projects require reintroducing natural coastal processes in environments that have long been reshaped by modern development and infrastructure, which the public has come to rely on. The desire to maintain roadways through bridge structures required the incorporation of a sewer siphon. This then led to designs with deeper excavations than most capital projects. Balancing habitat restoration goals and maintaining ecological enhancements to the Lagoon, required complex phasing considerations that are unique to this work. These types of projects occur once-in-a-generation and encounter unique issues and are recognizably impactful to the community.

Other parks and civil improvement projects which are often smaller and are easier to replicate have a higher probability of coming in on time and on budget. Projects such as street rehabilitations, slurry seal, and park and playground improvements are more likely to be completed within the construction durations communicated and advertised. Examples include MacArthur Park Rehabilitation, Ramona Signature Park Playground and Silverado Park Playground to name a few that have re-opened within the last year. Street projects tied to the

five-year slurry program and five-year residential program also receive the benefits of being on time and on schedule.

Preconstruction investigations included standard soil testing and subsurface review methods. These efforts did not identify the presence of ACM debris at Marina Vista Park. As with most subsurface investigations, available methods, including geotechnical testing and geophysical tools such as ground penetrating radar (GPR), have inherent limitations and may not detect all underground conditions, particularly in coastal environments with higher groundwater levels. As a result, certain conditions may only become apparent during construction and are addressed in accordance with applicable regulatory and project requirements.

Enhanced Communication of Baseline Schedules and Assumptions

Project scheduling and public communications were developed based on standard assumptions at the time of design and bid. During construction, the project experienced extended weather events and broader market and supply conditions that affected the anticipated duration of certain activities. As is typical for complex infrastructure projects, initial schedules may require adjustments as conditions evolve. The City continues to evaluate and improve scheduling assumptions and communication practices to support accurate public information and project delivery.

Impacts To Overall Schedule and Costs

During construction, schedule impacts may arise from a variety of factors, including site conditions, coordination requirements, regulatory review processes, and field performance. In accordance with the contract documents, the City evaluates asserted impacts on a case-by-case basis to determine entitlement, if any, consistent with the contract terms and applicable standards. Where applicable, contract provisions addressing time extensions, compensation, and liquidated damages are administered in accordance with the contract requirements. The construction management and inspections teams document and assess these matters throughout the project to support appropriate resolution.

Total Investments to the Colorado Lagoon and Benefits

The City, the Port, the community and State and Regional partners have contributed an immense amount of time, energy and resources to make the restoration of a once highly degraded water body that was on Heal the Bay's Beach Bummer List to one of the most vibrant, coastal lagoons in the region. Adjusted for inflation, between 2010 and 2017, the City and its partners have invested $30 million dollars to improve the Lagoon, and are further investing over $40 million dollars with the current open channel improvements, making this restoration project one of the largest investments to public park space in City history, with 75% of the funding come from outside grantors or partners.

After the Project is complete, the site will feature 3.5 acres of new tidal wetlands, 1.5 acres of current eelgrass beds with potential for over 8 acres, and over 22 acres of cumulatively restored habitat space. The Lagoon is on the trajectory to meet its TMDL obligations, and will see improved park space, including greener grass at Marina Vista Park, better access to active

recreation and passive open spaces, and the expansion of outdoor classrooms and opportunities for learning especially as the City faces climate impacts. The benefits of wetlands to combat climate change are more necessary than ever.

This matter was reviewed by Deputy City Attorney Vanessa S. Ibarra, Procurement Analyst Tommy Ryan, and Budget Management Officer Nader Kaamoush on April 7, 2026.

TIMING CONSIDERATIONS

This action is requested on April 21, 2026, to respond to the original City Council request for a presentation within 30 days.

FISCAL IMPACT

There is no fiscal impact to present these updates to the City Council. A related item requesting an increase in contract authority for the Colorado Lagoon project is also included on the April 21, 2026, City Council agenda.

SUGGESTED ACTION:

Approve recommendation.

Respectfully submitted,

Joshua Hickman
Director
Public Works

APPROVED:

THOMAS B. MODICA
CITY MANAGER