Los Angeles County
Metropolitan Transportation Authority

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Metro

August 6, 2015

TO: BOARD OF DIRECTORS

THROUGH: PHILLIP WASHINGTON PAW
CHIEF EXECUTIVE OFFICER

FROM: BRYAN PENNINGTON, BP
EXECUTIVE DIRECTOR
ENGINEERING & CONSTRUCTION

SUBJECT: WESTWOOD GREENWAY PROJECT UPDATE

ISSUE

The Metro Board of Directors had directed staff in January 2015 to conduct a feasibility study on the construction and operations and maintenance of the City of Los Angeles' Westwood Greenway project; including the identification of funding sources for the design and construction of the project. Two board boxes have been sent to the Board in March and May 2015 that provide updates on the progress of the feasibility study. Staff committed to complete the study in July 2015, including a summary of potential funding sources.

BACKGROUND

Low Impact Development (LID) strategies are highly effective and attractive approaches to controlling stormwater pollution while protecting watersheds and urbanized communities. These are preferred stormwater treatment methods by our state and local stormwater regulatory agencies. The Westwood Greenway project is an example of an LID strategy. It is a City of Los Angeles water treatment and community beautification project that has been proposed to be built adjacent to the Expo Line right-of-way between Westwood Boulevard and Overland Avenue.

Metro staff had met with various stakeholders in late summer 2014 and February 2015 to understand the parameters of the project, gather relevant information about the project, as well as determine and collate the types and extent of information that can be included our agency's understanding of our responsibilities to the design and construction of this project. Resulting from the January 2015 Board Motion related to the project (Attachment A), Metro staff

commissioned a feasibility study at the end of March 2015; and a draft feasibility study report was completed in late April 2015. The goal of the study was for Metro to determine the full limits of the project boundary and if any of the project's elements is within the Metro right-of-way, to determine our agency's share of responsibilities in implementing the project.

Metro staff reported on the progress of the study at the Exposition Light Rail Authority Board meeting on May 7, 2015. In its June 4, 2015 meeting, the Exposition Light Rail Authority Board directed Expo staff to complete the Expo Project as originally designed, with any additional proposed enhancements (such as the Westwood Greenway project) be considered only after the light rail project's completion.

Considering these developments, Metro staff completed its feasibility study of the Westwood Greenway project. The methodology staff used for this feasibility study considered a triple bottom-line (TBL) approach. This methodology identifies performance criteria that account for societal outcomes (beyond a simple cost perspective), which are individually ranked to allow for clear comparison across the alternatives. The methodology has been used in other parts of the country specifically in those situations where community impacts are most sensitive to final public project decisions.

Attachment B provides a visual depiction and description of the alternatives. Attachment C provides a summary of the results of the feasibility study. As the Westwood Greenway project is completely within the City of Los Angeles property, Metro staff determined that Metro has no obligation in implementing any of the elements of the Westwood Greenway project.

As required by the motion, staff also assessed which grant sources the Westwood Greenway project would have the highest likelihood of accessing based on a close match with grant criteria, the amount of funding available in upcoming grant cycles, and a history of the source for funding similar projects. Staff completed this assessment to assist in our Board's direction to work closely with the City and County of Los Angeles in identifying funding sources for the design and construction of the project. These sources are presented in Attachment D. Although Metro does not have any obligation to build this project, Metro staff provides this information to assist the City of Los Angeles in pursuing any of these funding opportunities for the project.

The whole Westwood Greenway Alternatives Analysis report is included in Attachment E.

With the completion of the report, staff has fulfilled all of the required action items of the original motion. There are no additional actions required of Metro regarding the Westwood Greenway Project.

NEXT STEPS

As the inclusion of LID strategies is already an integral part of Metro's design and construction efforts, staff will continue this best practice in all projects within the Metro right of way. Details on the implementation of these strategies are provided in Sustainability Plan reports that are required on any construction project overseen by Metro.

ATTACHMENTS

A. Copy of Item #80 Motion of the January 29, 2015 Board Meeting
B. Summary of Westwood Greenway Alternatives
C. Summary of Westwood Greenway Triple Bottomline Analysis
D. Summary of Possible Westwood Greenway Project Funding Sources
E. Westwood Greenway Alternatives Analysis Report

Prepared by: Cris B. Liban, EO, Projects Engineering, (213) 922-2471
Environmental Compliance and Sustainability

Attachment A. Copy of Item #80 Motion of the January 29, 2015 Board Meeting

80

REVISED MOTION BY:
MAYOR ERIC GARCETTI AND SUPERVISOR SHEILA KUEHL
Executive Management Committee Meeting
January 15, 2015
Item 80: Westwood Greenway

The Westwood Greenway is a water treatment and community beautification project ~~along~~ adjacent to the Expo Line right-of-way between Westwood Boulevard and Overland Avenue.

The Westwood Greenway will reduce the amount of ocean runoff and use natural and sustainable water treatment methods to remove lead, zinc, copper, and other pollutants from up to 48 million gallons of water per year.

The Westwood Greenway enjoys broad community and stakeholder support, and will provide recreation and education opportunities for the Los Angeles region.

MTA is an industry leader in sustainability, and has implemented similar stormwater treatment features in its system. Along the Orange Line, for instance, MTA installed bioswales, infiltration trenches, and infiltration basins that absorb the first three-fourths inch of every rainfall.

~~The Westwood Greenway covers land owner by both MTA and the City of Los Angeles.~~ Total project cost is estimated to be $2.5 million. ~~The City of Los Angeles is prepared to fund ongoing maintenance of the greenway in an amount proportional to the land area owned by the City, subject to a legally binding memorandum of understanding.~~

WE THEREFORE, MOVE that the Board instruct the CEO to:

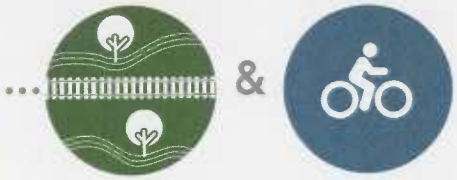
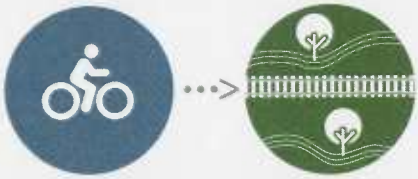
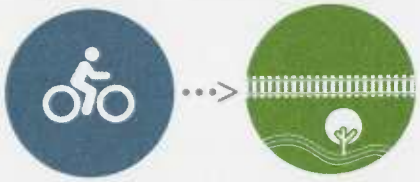
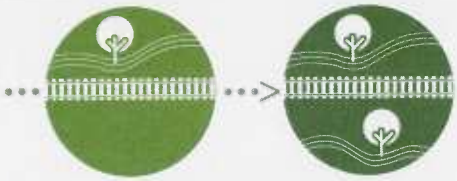
A. Work with ~~the Exposition Construction Authority,~~ the County of Los Angeles, and the City of Los Angeles, and in coordination with the Exposition Construction Authority to prepare ~~a feasibility~~ an analysis of the Westwood Greenway project ~~as well as a detailed cost estimate, including an estimate of the on-going maintenance costs.~~ Including project benefits, detailed capital and ongoing maintenance costs, and project delivery options.

B. Work with the County of Los Angeles and the City of Los Angeles to identify funding sources for the design and construction of the project.

C. Provide an oral report at the March 2015 Executive Management Committee on the progress of the feasibility analysis and identification of possible funding sources.

D. Report to the Ad Hoc Sustainability Committee within one year of the Westwood Greenway's completion with recommendations on the feasibility of including similar sustainable stormwater treatment features in future MTA projects.

Attachment B. Summary of Westwood Greenway Alternatives

Description / Depiction		Capital Cost	Construction Timeline
Alternative 1 Continue with Expo Bikeway construction as planned and do not construct the Greenway.		No additional cost	Complete in 2015
Alternative 2 Delay construction of the Expo Bikeway so that it can be constructed concurrently with the Greenway.		$2.5M	18 months, including the Bikeway
Alternative 3 Continue with Expo Bikeway construction as planned. Construct the Greenway (north and south side) at a later date as a separate project.		$2.6M	21 months
Alternative 4A Continue with Expo Bikeway construction as planned. At a later date, construct the Greenway on the south side of the Expo Line (up to $750K).		$750K	15 months
Alternative 4B After implementation of Alternative 4A and as funding is available, construct the Greenway on the north side of the Expo Line.		$2.7M (includes Alt 4A)	27 months (includes Alt 4A)

Attachment C. Summary of Westwood Greenway Triple Bottomline Analysis

	Alternative 1	Alternative 2	Alternative 3	Alternative 4A	Alternative 4B
TBL Results Overview	Least cost, construction, and noise impacts, but does not provide the social and environmental benefits associated with the Greenway (i.e., improved water quality, habitat, cultural, aesthetics, resilience, open space, and pedestrian environment).	This option provides social and environmental benefits similar to Alt 3 and Alt 4B, but the delay of the bikeway ultimately results in lower overall project benefit compared to the other alternatives evaluated.	Slightly higher capital costs, but does not have the negative impacts of delaying the Bikeway. This alternative ranks positive or significantly positive on several social and environment criteria due to the benefits associated with the Greenway.	Least expensive option after Alt 1. Does not rank as positively on social and environmental criteria compared to Alt 2 and Alt 3, because it includes ~60% of the square footage of the full Greenway and only treats wet-weather runoff.	Approximately 5% more expensive than Alt 3. Ranks significantly negative on construction and noise impacts due to the longer duration of construction. Ranks positive or significantly positive on several social and environment criteria due to the benefits associated with the Greenway.
Feasibility Considerations	Expo Bikeway scheduled for completion in late 2015. (Baseline Condition)	No longer feasible as Expo Board voted to complete Bikeway construction as planned in July 2015.	Feasible if project proponents secure funding (estimated at $2.5 million).	Feasible with funding levels currently secured by project proponents ($750K).	Feasible if project proponents secure additional funding at a later date.

Potential Funding Sources for Westwood Greenway Project

Funding Sources for Green Infrastructure and Low Impact Development

(Sources that the Westwood Greenway would have the highest likelihood of accessing are highlighted in yellow)

	Grant Title	Owner / Awarding Body	Total Funding	Max Possible per Grantee	Match Req	RFP Deadline	Award Criteria Description	Eligibility	Website / Address for Submission	Likelihood of Success (Low, Med, High)	Example Projects
City of Los Angeles	Proposition O Funds	City of Los Angeles	Up to $500 million As of March 2015, ~$60 million in bonds remain to be sold	No stated maximum	NA	Rolling	Projects must fall into one or more of the following categories: - Water quality protection - Water conservation, drinking water and source protection - Flood water reduction, river and neighborhood parks that prevent polluted runoff and improve water quality - Stormwater capture, clean up, and re-use	Administrative Oversight Committee and Citizens Oversight Advisory Committee administer the program funds	http://www.lastormwater.org/green-la/proposition-o/about-proposition-o/	High: Awarded grants for comparable projects have ranged between $300,000 to over $20 million	Albion Riverside Park Echo Park Lake Rehabilitation Westminister Dog Park South Los Angeles Wetlands Park
State of CA	Caltrans Sustainable Transportation Planning Grant Program	Caltrans	$9.8 Million (2015-2016 Cycle)	Depends according to a county-weighting formula	NA	Rolling	Demonstrate improvements to sustainability and safety	Local agencies should work through their Regional Transportation Planning Agency, County Transportation Commission, or Metropolitan Planning Organization to nominate projects.	http://www.dot.ca.gov/hq/LocalPrograms/STIP.htm	Medium: 51 grants totalling $9.8 million were awarded out of 190 total applications in last cycle (2015-2016)	Ventura, CA Green Streets
	Proposition 84 Stormwater Grants Program	California State Water Resources Board (SWRB)	$82 million (all funds have been allocated for rounds 1 and 2)	No stated maximum	NA	Round 3 has not yet been announced	Reduce and prevent stormwater contamination of rivers, lakes, and streams	Local public agencies	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/prop84/	Medium: Current funding cycle (round 2) is fully commited, but round 3 is anticipated to be announced later in 2015 - parties are already preparing potential bids for round 3. Westwood would have to demonstrate a strong case for reducing stormwater contamination	Los Angeles River Corridor A Street Mosaic Project in San Diego
	Environmental Enhancement and Mitigation (EEM) Program	California Natural Resources Agency	$7 million / fiscal year	$500,000 per project and up to $1 million if includes land acquisition	Not required	7/13/2015	Contribute to mitigation of the environmental effects of transportation facilities, offer mitigation through urban forestry, resource lands, or other projects beyond the scope of the lead agency	State, local, federal agencies and nonprofit organizations	http://resources.ca.gov/bonds_and_grants/eemp/	Medium: Project would have to demonstrate urban forest / planting benefits	Hollywood, CA ($712,000): Tree Planting & Community Greening Project Tulare, CA ($458,260.) SR 99 Cartmill Ave. Interchange Landscaping Project
	Clean Water Act State Revolving Fund (CWSRF)	Environmental Protection Agency (EPA) and SWRCB	$4.5 billion annually Loans average 1.7% interest up to 20 years	No stated maximum	Not required	Rolling	Demonstrate improvements involving water quality, protecting aquatic wildlife, protecting and restoring drinking water sources, and/or preserving our nation's waters for recreational use	Local and state public agencies	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/docs/final_policy_0215.pdf	High: Application process is ongoing and Westwood falls within eligible criteria	Hermosa Beach, CA Infiltration Trench El Cerrito, CA Green Streets Rain Gardens Redondo Beach, CA Alta Vista Park Diversion & Reuse Project
	Water Quality, Supply, and Infrastructure Improvement Act of 2014 (2014 Water Bond)	Grant process implemented by State agencies: SWRCB, various State conservancies, California Department of Fish and Wildlife, Department of Water Resources, etc	$ 7.545 billion	$ 50 million	Grant guidelines still under development	Grant guidelines still under development	Improve water quality, supply, and/or infrastructure	Grant guidelines still under development	http://www.acwa.com/spotlight/2014-water-bond	Medium: Grant process is still under development, however, once active, Westwood satisfies the core eligibilty requirements	None yet
	Urban and Community Forestry Greenhouse Gas Reduction Fund (GGRF) - 'Woods in the Neighborhood' Grants	State of California Department of Forestry & Fire Protection (CalFire)	$15.7 million for all GGRF grants (FY 14/15)	$0.2 - $1.5 million	Yes (75/25); 25 can be funds or in-kind	2014/2015 grant cycled closed	Expand and better the management of urban forests through the purchase of a vacant urban parcel or parcels and improving them with vegetation	Local public agencies and nonprofit organizations	http://calfire.ca.gov/resource_mgt/downloads/CALFIRE_UF_WoodsInNeighborhoodRFP2014_2015.pdf	Medium: Project would have to demonstrate that new plantings would not require heavy mantainence, project preference is given to disadvantaged / environmental justice communities	None yet; Grants to be awarded by June 2015
	Urban and Community Forestry GGRF - 'Green Innovations Project' Grants	CalFire	$15.7 million for all GGRF grants (FY 14/15)	$0.2 - $1.5 million	Yes (75/25); 25 can be funds or in-kind	2014/2015 grant cycled closed	Projects must be unique and forward-thinking urban green infrastructure projects that demonstrate greenhouse gas reduction, with strong focused on environmental justice communities	Local public agencies and nonprofit organizations	http://calfire.ca.gov/Grants/downloads/UrbanForestry/UCF_GGRF_QandA.pdf	Low: Funding is aimed at mature forests / forestland, project would have to demonstrate that it is a "forest" and has significant GHG reduction potential	None yet; Grants to be awarded by June 2015
Federal	Clean Water Act Nonpoint Source Grant (Section 319 Grants)	Environmental Protection Agency (EPA) with SWRCB	$165 million (per fiscal year)	$750,000 for implementation and $175,000 for planning/ assessment projects	Yes (at least 25 percent of the total project cost)	The solicitation process runs from August (of the previous year) through May of the following year	Must be a nonpoint source related project that requires technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and/or monitoring to assess the project's success. Ineligible projects are in areas that are under or affiliated with a NPDES Permit, or address an issue in a land use included in a MS4s Permit	Local public agencies and nonprofit organizations	http://www.waterboards.ca.gov/water_issues/programs/nps/grant_program.shtml	High: Westwood Greenway falls within established criteria and these funds have been allocated to similar projects	Los Angeles, CA: River Street Biofiltration Project Honolulu, HI: The Popoia Street and Rain Garden Retrofit Sandy Springs Georgia: Marsh Creek Preserve
	Urban Water Small Grants	Environmental Protection Agency (EPA)	$5.3 million since 2012	Up to $60,000		None at this time	The goal of the Urban Waters Small Grants program is to fund research, investigations, experiments, training, surveys, studies, and demonstrations that will advance the restoration of urban waters by improving water quality through activities that also support community revitalization and other local priorities.	State, local, federal agencies, nonprofit organizations, universities and colleges	http://www2.epa.gov/urbanwaters/urban-waters-small-grants	Medium: There is no outstanding RFP at this time, and none announced for the rest of 2015. However, there will likely be another round in 2016-2017, pending federal funding allocaiton. The grant could fund the educational components of the Greenway rather than construction costs.	Portland, Oregon: Design, planning and performance of water quality sampling and data collection activities Bozeman, Montana: Integrated stream monitoring program

Other Funding Sources For Public Space / Urban Greenways Funding

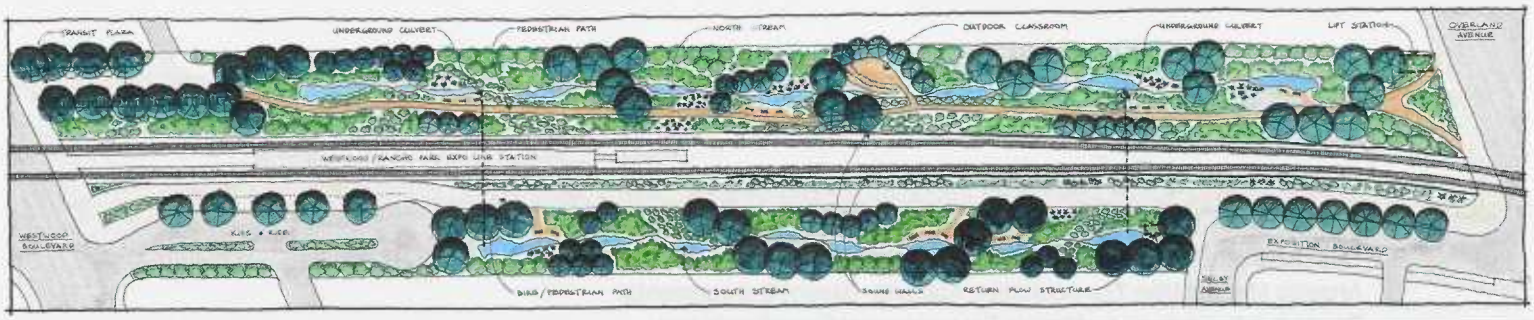
(Sources that the Westwood Greenway would have the highest likelihood of accessing are highlighted in yellow)

	Grant Title	Grant / Funding Body	Max Funding Per Grantee	Matching	RFP Deadline	Grant Criteria Description	Eligibility	Website / Address for Submission	Likelihood of Success (Low, Med, High)	Example Projects
City of Los Angeles	Public Art Grants	City of Los Angeles	$18.2 million (FY 2010/2011)	NA	NA	NA	Creation and/or maintenance of art within the public realm	Artists, Arts Groups, Community Organizations, and Projects and / or institutions where the arts, artists or arts groups are partners.	http://culturela.org/programs/index.html	Low: Art is a peripheral, rather than core element of the Greenway. Grants go to arts groups / artists rather than capital projects. Could be used at a later stage of the project.	NA
	City Cultural Grants	City of Los Angeles	$2.2 million annually	$75,000	NA	NA	Support community service providers and community artists in Los Angeles	Artists, Arts Groups, Neighborhoods, and Specific Sites	http://culturela.org/programs/index.html	Low: Same as above, but could be "Medium" if project expands its educational component.	NA
Public Art Funding (National)	Our Town Grants	National Endowment for the Arts	NA	$200,000	Yes	9/21/2015	Projects must represent the distinct character and quality of their communities. These projects require a partnership between a nonprofit organization and a local government entity, with one of the partners being a cultural organization	Organizations (Public and Private, including Municipalities and Neighborhoods)	http://arts.gov/grants/apply-grant/grants-	Low to Medium: Only a possibility if City of LA partners with a community organization for project development.	NA
	Art Works	National Endowment for the Arts	NA	$100,000	Yes	February and July, annually	To support the creation of art that meets the highest standards of excellence, public engagement with diverse and excellent art, lifelong learning in the arts, and the strengthening of communities through the arts	Organizations (Public and Private, including Municipalities and Neighborhoods)	http://arts.gov/grants/apply-grant/grants-organizations	Low: Could fund educational / arts components of the Greenway.	NA
	Challenge America	National Endowment for the Arts	NA	$10,000	Yes	4/16/2015	To support projects that extend the reach of the arts to underserved populations	Organizations (Public and Private, including Municipalities and Neighborhoods)	http://arts.gov/grants/apply-grant/grants-organizations	Low: Project is in a relatively affluent part of Los Angeles and would have to demonstrate social benefit to underserved community.	NA
Alternative Transport	Recreational Trails Program	Federal Highway Administration. Administered at State Level by California Department of Parks and Recreation	$85 million	Apportioned to States Equally. States Disburse based on particular formulas	NA	NA	Eligible projects include: maintenance and restoration of existing recreational trails; development and rehabilitation of trailside and trailhead facilities and trail linkages for recreational trails; construction of new recreational trails; acquisition of easements and fee simple title for recreational trail corridors; and assessment of trail conditions.	Local and state agencies and non-profit organizations with managmenet responsibilities of public land	http://www.americantrails.org/rtp/index.html http://www.parks.ca.gov/?page_id=24324	Medium: All funding allocated in current cycle, but there is an upcoming cycle to be announced later in 2015. Projects tend to score better if they connect to broader trail systems.	Duck River bike path / take / dam project in Alabama (Awarded $100,000)
	California Transportation Commission Active Transportation Program (ATP)	Caltrans Divison of Local Assistance	$120 million annually (FY15/16 - 18/19)	Minimum request considered is $250,000	Not required	6/1/2015 2016 Cycle Deadlines not yet announced	Eligible projects include: Trail facilities, Construction, planning, and design of bike/ped infrastructure; Rights-of-way improvements billboards, historic and archeological preservation, and vegetation management and erosion control; Stormwater management	Local agencies, regional transportation authorities, transit agencies, nautral resource or public land agencies, school districts	http://www.catc.ca.gov/programs/ATP.htm	High: Cycle 2 deadline was 1 June 2015, but project could be competitive for Cycle 3 (2016). Westwood Greenway matches other applications and falls within program criteria.	Norwalk, Connecticut: West Avenue Connectivity Plan

Attachment E. Westwood Greenway Alternatives Analysis Report (begins on the next page)

Los Angeles County
Metropolitan Transportation Authority

Westwood Greenway Alternatives Analysis



Metro

LOS ANGELES COUNTY METROPOLITAN AUTHORITY ACKNOLWEDGEMENTS

This document was prepared by AECOM under contract through Los Angeles Metropolitan Transportation Authority (Metro) Environmental Program administered by Metro's Environmental Compliance and Sustainability Department (ECSD).

Technical input was provided by staff in Metro's ECSD and Exposition Construction Authority.

Cover image source: City of Los Angeles, 2014

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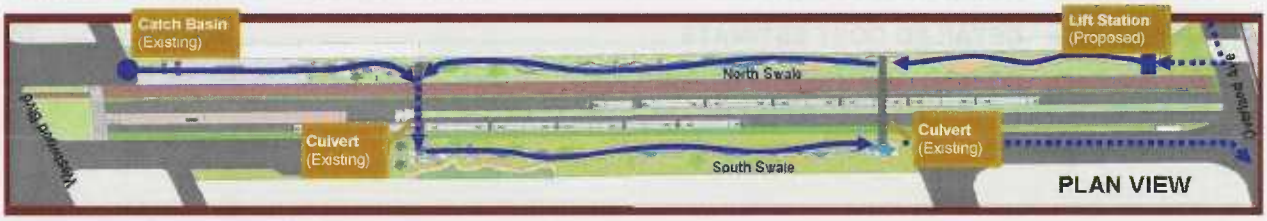
EXECUTIVE SUMMARY

As a part of the Exposition Corridor Light Rail Project Phase II (Expo Phase II) (due for completion in late 2015), the Exposition Light Rail Construction Authority (Expo) is constructing a 17-foot-wide Class I bikeway (12 feet for bicyclists, 5 feet for pedestrians) on the south side of the tracks in the Metropolitan Transportation Authority's (Metro) right of way. When completed, the Bikeway would connect Downtown Los Angeles to Santa Monica.

As a complementary sustainable design feature to the Expo Phase II project between Westwood Boulevard and Overland Avenue, the Westwood Neighborhood Greenway (Greenway) is being proposed as a stormwater management project that would divert and treat dry-weather runoff from the Overland storm drain (2,400 acre drainage area) to a bioswale on the north side of the Westwood/Rancho Park Station. A bioswale is a vegetated channel with gently sloped sides that receives rainfall runoff and absorbs a portion of the water (depending on storm intensity) into its underlying soils. As stormwater percolates through the soil layer, pollutants in the runoff become trapped by the filtering nature of the soil, which can also be absorbed by vegetation. This is commonly referred to as biofiltration (biological stormwater treatment).

In 2014, the City of Los Angeles Bureau of Sanitation developed a conceptual planning study for the Greenway, which sited the Greenway exclusively in the City of Los Angeles' right of way to the north of the Expo line and adjacent to the Expo Bikeway on the south side of the Expo Line (see Figure ES-1). The north swale would be connected to the south swale through an existing culvert that runs under the tracks.[1] During the wet season, stormwater runoff from 3 to 5 acres of residential and street areas would go through treatment in the south swale. In Figure ES-1, the only storm water infrastructure depicted that is already in place is the underground culvert that would connect the "North Swale" and "South Swale."

Figure ES-1: Westwood Greenway Plan View



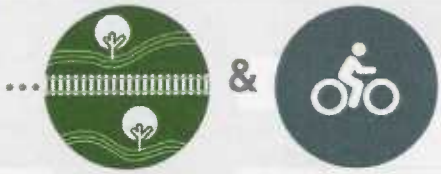
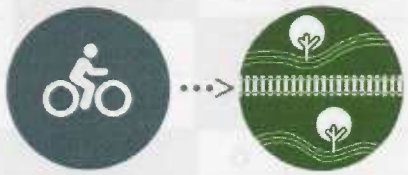
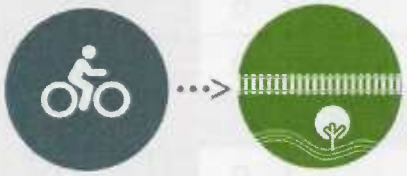
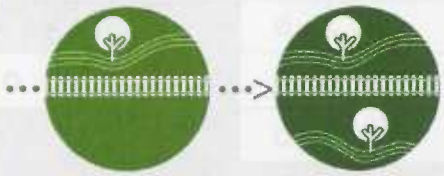
Source: City of Los Angeles, 2014

To evaluate the potential benefits associated with the social, environmental, and financial outcomes of different alternative configurations and construction phasing for the Greenway, Metro funded this analysis via an existing consulting agreement with AECOM. The purpose of this alternatives analysis is to explore the opportunity for integrating the Greenway into the larger transportation improvements being made by Expo. Given that Expo Phase II construction is expected to be completed in late 2015, this analysis also explores opportunities for implementing the Greenway separately and after Expo construction is complete.

[1] City of Los Angeles Bureau of Sanitation Watershed Protection Division, 2014. "Westwood Neighborhood Greenway. Preliminary Concept."

The analysis considered a variety of implementation alternatives (Table ES-1) that were developed based on general construction best practices and phasing strategies.

Table ES-1: Summary of Implementation Alternatives

Description / Depiction		Capital Cost	Construction Timeline
Alternative 1 Continue with Expo Bikeway construction as planned and do not construct the Greenway.		No additional cost	Complete in 2015
Alternative 2 Delay construction of the Expo Bikeway so that it can be constructed concurrently with the Greenway.		$2.5M	18 months, including the Bikeway
Alternative 3 Continue with Expo Bikeway construction as planned. Construct the Greenway (north and south side) at a later date as a separate project.		$2.6M	21 months
Alternative 4A Continue with Expo Bikeway construction as planned. At a later date, construct the Greenway on the south side of the Expo Line (up to $750K).		$750K	15 months
Alternative 4B After implementation of Alternative 4A and as funding is available, construct the Greenway on the north side of the Expo Line.		$2.7M (includes Alt 4A)	27 months (includes Alt 4A)

Since the Greenway concept has not yet been fully designed, limited cost information was available. Cost estimates provided in this analysis are based on those presented in the City of Los Angeles Bureau of Sanitation's "Westwood Neighborhood Greenway Preliminary Concept" report from June 2014, which were updated to represent 2015 escalated values. It is important to note that any alternative presented in this evaluation would require detailed design, cost estimating, and planning if selected for implementation.

Metro staff through AECOM evaluated the alternatives summarized above using a "Triple Bottom Line" (TBL) methodology, which assesses social, environmental, and financial outcomes of each alternative. This methodology identifies performance criteria that account for societal outcomes (beyond a simple cost perspective), which are individually ranked to allow for clear comparison across the alternatives. The criteria used and the comparative results are shown in Figure ES-2. The TBL methodology applied in this analysis has also been performed on a number of other infrastructure investment programs, including a $2.7 billion capital program for the San Francisco Public Utilities Commission, a major water quality improvement program with the Cape Cod Commission, and a flood mitigation alternatives analysis in Alberta Canada. This established method has been presented at the National Water Environment Federation Technical Conference (WEFTEC) and implemented on a transportation investment alternative analysis in the Greater Chicago Area.

Figure ES-2: Triple Bottom Line Assessment At-A-Glance

		Alt 1	Alt 2	Alt 3	Alt 4A	Alt 4B
SOCIAL & COMMUNITY						
S1	Pedestrian Environment	O	+	+	+	+
S2	Bicycle Environment	++	+	++	++	++
S3	Recreation/Open Space	O	+	+	O	+
S4	Noise Impacts	++	O	-	O	--
S5	Construction Impacts	++	O	-	O	--
S6	Resilience	O	+	+	+	+
S7	Cultural Resources	O	++	++	+	++
S8	Aesthetics	O	++	++	+	++
ENVIRONMENTAL						
E1	Water Quality	O	++	++	+	++
E2	Water Use	O	-	-	--	-
E3	Climate/ GHG	O	--	-	O	-
E4	Habitat	O	++	++	+	++
$$ FINANCIAL & OPERATIONAL						
F1	Capital Costs	++	--	--	++	--
F2	Operation & Maintenance Costs	++	-	-	O	-

++	Significantly Positive	-	Negative
+	Positive	--	Significantly Negative
O	Neutral		

Table ES-2 provides a general overview of the results of the TBL analysis and key feasibility considerations.

Table ES-2: Triple Bottom Line Assessment Results Overview and Feasibility Considerations

	Alternative 1	Alternative 2	Alternative 3	Alternative 4A	Alternative 4B
TBL Results Overview	Least cost, construction, and noise impacts, but does not provide the social and environmental benefits associated with the Greenway (i.e., improved water quality, habitat, cultural, aesthetics, resilience, open space, and pedestrian environment).	This option provides social and environmental benefits similar to Alt 3 and Alt 4B, but the delay of the bikeway ultimately results in lower overall project benefit compared to the other alternatives evaluated.	Slightly higher capital costs, but does not have the negative impacts of delaying the Bikeway. This alternative ranks positive or significantly positive on several social and environment criteria due to the benefits associated with the Greenway.	Least expensive option after Alt 1. Does not rank as positively on social and environmental criteria compared to Alt 2 and Alt 3, because it includes ~60% of the square footage of the full Greenway and only treats wet-weather runoff.	Approximately 5% more expensive than Alt 3. Ranks significantly negative on construction and noise impacts due to the longer duration of construction. Ranks positive or significantly positive on several social and environment criteria due to the benefits associated with the Greenway.
Feasibility Considerations	Expo Bikeway scheduled for completion in late 2015. (Baseline Condition)	No longer feasible as Expo Board voted to complete Bikeway construction as planned in July 2015.	Feasible if project proponents secure funding (estimated at $2.5 million).	Feasible with funding levels currently secured by project proponents ($750K).	Feasible if project proponents secure additional funding at a later date.

As shown in Table ES-2, Alternative 2 is not feasible because the bikeway is projected to be completed in late 2015. The alternative would delay the entire bikeway network currently under construction. Alternative 1 is the baseline condition at the site. Given community support for the Greenway, Alternatives 3, 4A, and 4B remain possible outcomes.

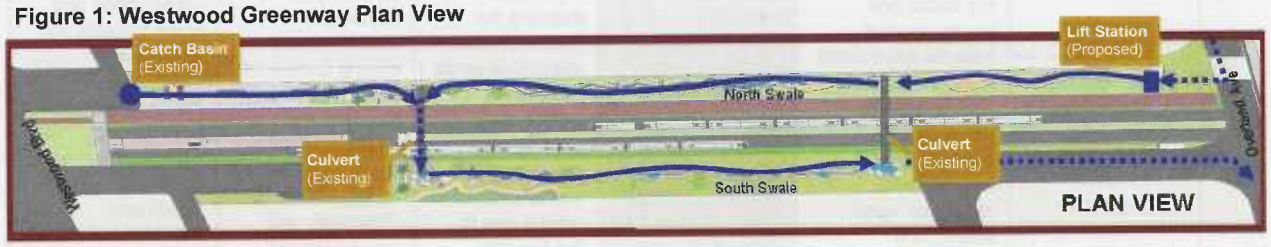
The difference between Alternative 3 and Alternative 4A/4B is that in 4A/4B, the Greenway is built in two distinct phases. If the Greenway project proponents are able to secure financing for the project in full, there would be little benefit of a phased approach because that would lengthen the construction duration and thus the associated construction and noise impacts on the surrounding neighborhood. In such a scenario, Alternative 3 would likely be superior. However, based on current funding commitments, the Greenway on the south side of the Expo Line could be installed first (Alternative 4A), providing social and environmental benefits and allowing project proponents more time to raise the funds for the rest of the project (Alternative 4B). **Note that this study makes no recommendation on a preferred alternative as the final decision will ultimately be at the discretion of the City who manages the right of way where the Greenway would be located.**

Given that funding is a major determinant of the feasibility of the alternatives, grant sources that the Westwood Greenway has the highest likelihood of accessing were identified as part of this study. These sources included: the City of Los Angeles Proposition O Funds, Clean Water Act State Revolving Fund, Clean Water Act Nonpoint Source Grant, and the California Active Transportation Program.

INTRODUCTION

AECOM was retained by Los Angeles County Metropolitan Transportation Authority (Metro) to evaluate the social, environmental, and financial outcomes associated with different phasing and configuration alternatives for constructing the Westwood Neighborhood Greenway (Greenway) located near the Exposition Light Rail Station (Westwood Station) between Westwood Boulevard and Overland Avenue. Figure 1 shows a conceptual plan of the Greenway. The purpose of this analysis is to explore the opportunity for integrating this green infrastructure project into the larger transportation investment being made in the area by the Exposition Light Rail Construction Authority (Expo) with the Expo Corridor Line Rail Project Phase II. Given that Expo Phase II project construction is scheduled for completion in late 2015, this analysis also explores opportunities for implementing the Greenway separately and after Expo construction is complete.

Figure 1: Westwood Greenway Plan View



Source: City of Los Angeles, 2014

PROJECT BACKGROUND

The Greenway is a proposed stormwater management project that would divert dry-weather flow from the Overland storm drain to capture and treat urban runoff from 2,400 acres of drainage area (see Figure 2). Diverted water would be hydraulically lifted (pumped) for water quality treatment and aesthetic value to a bioswale on the north side of the station. During the wet season, captured storm flow from 3 to 5 acres of residential and street areas would be designed to go through treatment in a bioswale out the south side of the station (after crossing an existing culvert that runs under the tracks, depicted as a dotted blue line in Figure 1).[2]

A bioswale is a vegetated channel with gently sloped sides that receives rainfall runoff and absorbs a portion of the water (depending on storm intensity) into its underlying soils. As stormwater percolates through the soil layer, pollutants in the runoff become trapped by the filtering nature of the soil, which can also be absorbed by vegetation. This is commonly referred to as biofiltration

Figure 2: Westwood Greenway Concept Plan, Visualization

Source: City of Los Angeles, 2014

[2] City of Los Angeles Bureau of Sanitation Watershed Protection Division, 2014. "Westwood Neighborhood Greenway. Preliminary Concept."

(biological stormwater treatment). In addition to the bioswales on the north and south side of the station, proposed Greenway project elements include:

- Educational and interpretive signs about local ecology and hydrology
- Native vegetation landscaping and smart irrigation (moisture sensors)
- Stormwater lift stations (Overland drain)
- Return flow structure
- A pedestrian walkway[3]

The Greenway has been the subject of a conceptual planning study by the City of Los Angeles Bureau of Sanitation,[4] which located the Greenway exclusively in the City of Los Angeles' right of way to the north of the Expo line and adjacent to the Expo Bikeway on the south side of the Expo Line (See Figure 1).That study provides a preliminary construction cost estimate of nearly $2.5 million for the Greenway. Greenway project proponents have indicated that they have secured $750,000 in funding thus far.[5] No other funds have been identified for the project at this time both for the one-time capital costs and for the ongoing operations and maintenance. This may further delay the larger $2.5-million project as funds will need to be secured before moving forward. Thus, the costs and associated timeline described in this analysis are very conservative as both could escalate depending on the time and effort it would take to secure funds.

As mentioned above, the Greenway is located near the Expo Light Rail Westwood/Rancho Park Station. As a part of the Exposition Corridor Light Rail Project Phase II (due for completion in late 2015), Expo and the Los Angeles Department of Transportation (LADOT) are constructing a 17-foot-wide Class I bikeway on the south side of the Expo tracks in the Metro right of way. The bikeway includes 12 feet for bicyclists, 5 feet for pedestrians, landscaping, and lighting. When completed, the bikeway would connect downtown Los Angeles to Santa Monica.[6] A small segment of the bikeway from Westwood Boulevard to Overland Avenue would be directly adjacent to the Greenway.

This analysis of project implementation alternatives relies primarily on the City of Los Angeles "Preliminary Concept" study for the details of the Greenway, including project elements and performance, without providing additional engineering design (See Appendix A). As such, this analysis provides an assessment of potential alternatives that would allow for a portion or all of the Greenway's stormwater management and vegetated filtration systems to be constructed exclusively in the City of Los Angeles right of way and directly adjacent to the Metro right of way.

As the Greenway is still in the planning phase, other entities have produced alternative concepts for the Greenway in which the distinction between the City of Los Angeles and Metro right of ways are less clear, the Expo bikeway appears to be integrated into the Greenway, and a sculptural outdoor learning center is included on the Greenway site.[7] However, this alternative could not be assessed in this study because it has not been the subject of a detailed planning study.

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[3] Ibid.
[4] City of Los Angeles Bureau of Sanitation Watershed Protection Division, 2014. "Westwood Neighborhood Greenway. Preliminary Concept."
[5] Conference call with Cris Liban, Deputy Executive Officer, Environmental Compliance and Services Department, April 1, 2015.
[6] Expo. "Frequently Asked Questions." Accessed April 16, 2015. http://www.buildexpo.org/about-expo/faq/
[7] You Tube. "Westwood Neighborhood Greenway with Outdoor Learning Center." Accessed May 4, 2015. https://www.youtube.com/watch?v=6h7nOReruwk

This infrastructure review and analysis has three objectives:

- Evaluate feasibility of either separate or concurrent construction of the Greenway project and ongoing Expo light rail construction, and develop implementation alternatives.
- Compare alternative approaches to phasing Greenway construction.
- Understand the financial, social, and environmental outcomes of the alternatives.

METHODOLOGY

DEVELOPMENT OF IMPLEMENTATION ALTERNATIVES

This analysis reviews the interfacing aspects of the Expo Project and the Greenway, and develops implementation alternatives involving either separate or concurrent construction based on general construction best practices. In developing such alternatives, AECOM has considered how Greenway and Expo Project elements function and their potential to impact each other.

EVALUATION OF IMPLEMENTATION ALTERNATIVES

This evaluation employs a "Triple Bottom Line" (TBL) methodology for comparing potential construction approach solutions, which assesses the social, environmental, and financial performance criteria of each alternative to understand the different societal consequences of the alternatives. This methodology will allow Metro to account for societal outcomes beyond a simple cost perspective. Criteria are individually ranked to allow for clear comparison across the alternatives.

TBL metrics are derived from local Metro and City policy documents. These include water quality, greenhouse gas reduction, recreation space, and employment goals. The TBL analysis then evaluates the performance metrics for each alternative's characteristics to understand how alternatives vary from one another (e.g., construction period, annual electricity demand, area of vegetated filtration, etc.). The method enables decision makers to make more informed and holistic decisions, accounting for social and environmental consequences in addition to financial consequences.

The TBL methodology applied in this analysis has also been performed on a number of other infrastructure investment programs, including a $2.7 billion capital program for the San Francisco Public Utilities Commission, a major water quality improvement program with the Cape Cod Commission, and a flood mitigation alternatives analysis in Alberta Canada. This established method has been presented at the National Water Environment Federation Technical Conference (WEFTEC) and implemented on a transportation investment alternative analysis in the Greater Chicago Area.

Evaluation Criteria

The following TBL criteria were selected for evaluation because they vary across the alternatives being considered and are also criteria that Metro internally evaluates through its Energy and Resource Report,[8] as well as impact criteria considered under the California Environmental Quality Act (CEQA). The selection criteria used in this analysis were considered the most relevant and useful in comparing the differences and tradeoffs between the alternatives at this stage.

[8] Los Angeles County Metropolitan Transportation Agency, 2014. "2014 Metro Energy and Resource Report."

Social Criteria

- Pedestrian Environment
  - To what extent does the alternative enhance the pedestrian environment in the long-term?
- Bicycle Environment
  - Does the alternative enhance the bicycle environment in the long-term?
  - Does the alternative delay Expo bikeway completion?
- Recreation/Open Space
  - To what extent does the alternative enhance recreation/open space?
- Noise Impacts[9]
  - To what extent does the alternative produce noise impacts in a residential area?
- Construction Impacts
  - Does the alternative influence the duration of the construction period?
- Resilience
  - Does the alternative enhance stormwater management thereby mitigating flood risks?
- Cultural Resources
  - Does the alternative enhance cultural resources available to the public such as demonstration landscapes with interpretative or educational signage?
- Aesthetics
  - Does the alternative enhance neighborhood aesthetics and community value?

Environmental Criteria

- Water Quality
  - To what extent does the alternative improve urban runoff water quality by removing pollutants?
- Water Use
  - To what extent does the alternative require less or more irrigation?
- Climate/Greenhouse Gases (GHG)[10]
  - Does the alternative generate emissions from fuel/electricity use that would result in increased GHG emissions?
- Habitat
  - To what extent does the alternative improve habitat by providing indigenous planting?

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[9] A noise assessment found that construction noise levels do not vary significantly between the alternatives. The assessment also found that operation of the pump system would not increase noise levels over the existing dominant noise source of vehicular traffic. As such, the level of construction noise does not vary between alternatives; rather the duration of construction noise varies. Refer to Appendix B for more information.

[10] GHG emissions due to construction activities were not included, because they are a temporary consequence rather than an on-going legacy consequence.

Financial Criteria

- Capital Costs[11]
- Operations & Maintenance Cost

STUDY LIMITATIONS

Since the Greenway concept has not yet been fully designed, limited cost information was available for this evaluation. Quantities used for cost estimates were based on those presented in the City of Los Angeles Bureau of Sanitation's "Westwood Neighborhood Greenway Preliminary Concept" report from June 2014, which were updated to 2015 values. Phasing utilized regular distributions of these quantities throughout the Greenway alignment. Appendix C provides additional detail on the cost estimates. Any alternative presented in this evaluation would require detailed design if selected for implementation consideration. AECOM did not perform additional engineering and design for Greenway elements in order to assess feasibility of the Greenway concept features or estimate costs.

The City of Los Angeles report did not include operations and maintenance (O&M) costs for the Greenway. However, AECOM estimates those costs based on similar green infrastructure projects implemented by the San Francisco Public Utilities Commission. While these costs are likely similar to City of Los Angeles, further study of O&M would be required in later design phases.

Where it was not feasible to evaluate criteria on a quantitative basis, a qualitative assessment was used for criteria such as for cultural resources, aesthetics, water quality, and water use. Additional details on quantitative pollutant removal estimates are provided in the "Westwood Neighborhood Greenway. Preliminary Concept" prepared by the City of Los Angeles Bureau of Sanitation Watershed Protection Division, 2014.

This study makes no recommendation on a preferred alternative as the final decision will ultimately be at the discretion of the City who manages the right of way where the Greenway would be located. Instead, this study evaluates the societal consequences of the potential alternatives available.

IMPLEMENTATION ALTERNATIVES

The implementation alternatives were developed based on different configurations for either separate or concurrent construction of the Greenway project and on-going Expo light rail construction based on general construction best practices and phasing strategies. These are presented below.

ALTERNATIVE 1

Description

In Alternative 1, construction of the Westwood/Rancho Park Station and bikeway continue as planned and the Greenway is not constructed.

[11] Costs for the Expo Bikeway are not available. Since the Bikeway is included in every alternative, the omission of this cost does not affect the analysis. The costs reported in this analysis are those of the Greenway.

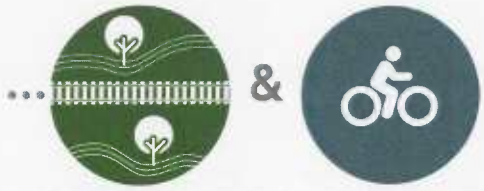
Capital Cost

- No additional cost above cost of Expo bikeway[12]

Construction Timeline

Construction of the Westwood/Rancho Park Station and bikeway are estimated to be complete in July 2015. The Expo Authority is contractually obligated to have substantial completion in 2015.

ALTERNATIVE 2



Description

In Alternative 2, construction of the Expo bikeway from Westwood Boulevard to Overland Avenue is delayed so that the Greenway and the bikeway can be constructed concurrently. Construction of the Westwood/Rancho Park Station and landscaping remain on schedule, with expected completion in late 2015. By building the bikeway and the Greenway concurrently, construction impacts on the neighborhood would be reduced because the two projects would be constructed at the same time. From an engineering and construction efficiency perspective, however, there is limited benefit to building them concurrently because the two projects have mostly separate infrastructure needs.

Capital Cost

- Cost of Expo bikeway + Cost of Expo bikeway delay + Greenway Alternative 2
    - Cost of Greenway Alternative 2: $2,538,000

The cost of delaying completion of Expo Light Rail Project Phase II is estimated to be $50,000 per day in liquidated damages per the construction contract.[13] Delivery of the bikeway is included in that contract. As such, a conservative estimate of an 18-month delay in bikeway completion could result in over $27 million in additional project costs. The legal ramifications and associated costs with a delay are not possible to estimate in this analysis, but could be significant. Therefore, the cost estimate for Alternative 2 is conservative and could be significantly higher.

Construction Timeline

The Greenway is currently in the conceptual planning stage. Pre-design, design, and bid/award are estimated to take 24 months. Following bid and award, construction is estimated to take 18 months.[14] Expo bikeway construction would also take place within that 18-month construction period. Total time from initiation to completion would be 42 months.

Note: As explained in greater detail under "Additional Feasibility Considerations," the June 4th Expo Board Meeting decision to complete bikeway construction as planned means that this alternative is no longer viable.

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[12] This cost is currently not available.
[13] "Expo Comments on Draft Westwood Greenway Alternatives Analysis" submitted 4/29/2015
[14] City of Los Angeles Bureau of Sanitation Watershed Protection Division, 2014. "Westwood Neighborhood Greenway. Preliminary Concept."

ALTERNATIVE 3

Description

Alternative 3 involves continuing with Expo bikeway construction as planned (late 2015 completion) and constructing the full Greenway at a later date independent of the Expo bikeway. This is a feasible alternative because the Greenway has been planned for the City of Los Angeles right of way and not the Metro right of way, and thus Greenway construction is not anticipated to impact the bikeway.

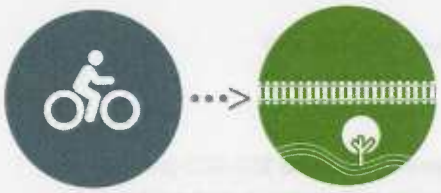
Capital Cost

- Cost of Expo bikeway + Greenway Alternative 3
  - Cost of Greenway Alternative 3: $2,603,000

Construction Timeline

The Expo bikeway is estimated to be complete by late 2015. Greenway pre-design, design, and bid/award are estimated to take 24 months. Following bid and award, construction is estimated to take 18 months.

ALTERNATIVE 4A



Description

In Alternatives 4A and 4B, the Greenway is built in two phases. Alternative 4A involves continuing with the Expo Authority's bikeway construction as planned (completion in late 2015). Then at a later date, the Greenway would be constructed only on the south side of the Expo Line and bikeway in the City of Los Angeles right of way. The bioswale the south side of the Expo Line would be dry most of the time as it would only have wet weather flow draining from 3 to 5 acres of residential and street areas. In other words, the stream would only flow during a rain storm to manage stormwater.

Capital Cost

- Cost of Expo bikeway + Greenway Alternative 4A
  - Greenway Alternative 4A: $753,000

Construction Timeline

The Expo bikeway portion would be complete in late 2015. Greenway pre-design, design, and bid/award are estimated to take 24 months.[15] Construction of the stormwater management elements (4A) would take approximately 12 months.[16]

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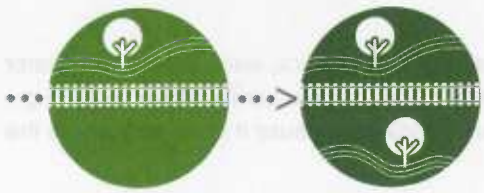
[15] City of Los Angeles Bureau of Sanitation Watershed Protection Division, 2014. "Westwood Neighborhood Greenway. Preliminary Concept."

[16] This estimate was derived from the City of Los Angeles 2014 "Westwood Neighborhood Greenway: Preliminary Concept" report which indicates that construction duration for the full Greenway would be 18 months. It was assumed that constructing elements of the Greenway separately as described in alternatives 4A and 4B would add some inefficiencies. As such, a 12-month construction duration, rather than 9 months (half of 18 months), was estimated for 4A and 4B.

ALTERNATIVE 4B



Description

Alternative 4B occurs after the implementation of Alternative 4A once sufficient funding has been secured and involves constructing the Greenway on the north side of the Expo Line in the City of Los Angeles right of way. This alternative includes constructing the infrastructure needed to divert and pump dry-weather flow from the Overland drain to the Greenway bioswale on the north side of the station. This north stream would be hydraulically connected to the south stream through an existing culvert that would convey flow under the railway tracks. At the completion of 4B, the full Greenway would be installed.

Capital Cost

- Cost of Expo bikeway + Greenway Alternative 4A and 4B
  - Greenway Alternative 4A: $753,000+
  - Greenway Alternative 4B: $1,968,000
  - (Greenway Total: $2,721,000)

Construction Timeline

Following implementation of Alternative 4A, and once funding is available, construction of the pumping infrastructure and bioswale on the north side of the station would take an additional 12 months, approximately. As such, the total project timeline and period of construction would expand in this scenario.

ALTERNATIVES ANALYSIS

HOW TO READ THE TBL ASSESSMENT RESULTS

Rankings in the TBL assessment range from significantly negative to significantly positive, and illustrate differences between the alternatives. Where quantitative data was available, a negative ranking reflects performance below the average of the alternatives while a positive ranking reflects performance above the average. In that way, the alternatives are ranked against each other with an average performance ranked as neutral.[17] The TBL assessment uses ordinal ranking system (i.e., significantly negative, negative, neutral, positive, and significantly positive) to compare the impacts of the alternatives rather than a full monetization of the social and environmental externalities.

The TBL outputs are color-coded with red representing negative outcomes and blue representing positive outcomes (i.e., dark red is significantly negative, red is negative, white is neutral, blue is positive, and dark blue is significantly positive). This methodology recognizes the stage of evaluation where there is sufficient information to understand the relative difference in impacts across alternatives, but not precisely the

[17] A standard error of 20% was used to rank alternatives above and below the mean, which is the contingency factor used in the construction cost estimate from City of Los Angeles Bureau of Sanitation's 2014 report, "Westwood Neighborhood Greenway: Preliminary Concept." A positive or negative score are between one and two standard errors from the mean (20–40%). A significantly positive or significantly negative score are two or more standard errors away from the mean (>40%).

quantitative consequence of each social and environmental externality. In this current evaluation, the analysis does not weight any of the criteria over another. In other words, the social, environmental, and financial criteria are weighted evenly within their respective categories.

Some criteria are ranked on a qualitative basis, such as cultural resources, aesthetics, water quality, and water use. In these cases, the analysis considers the extent of improvement to differentiate across alternatives (e.g., cultural resources ranks positive for Alternative 4A but not significantly positive because it does not provide the full improvements envisioned under the entire Greenway plan).

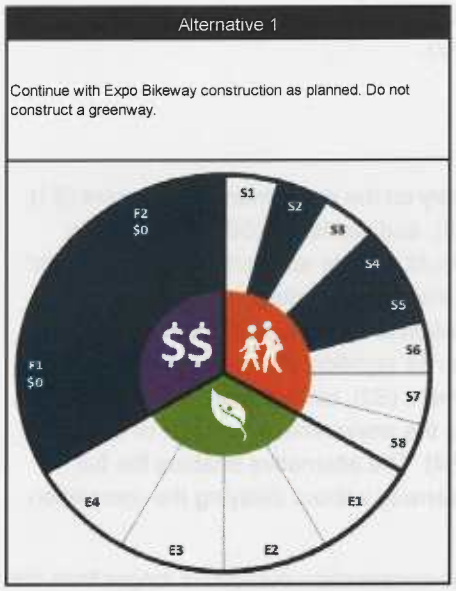
Key

Figure 3 below provides a key for the TBL output graphics that follow. Additional information on the definition of each criteria is provided on pages 11 and 12.

Figure 3: Key for TBL graphs

TBL ASSESSMENT RESULTS

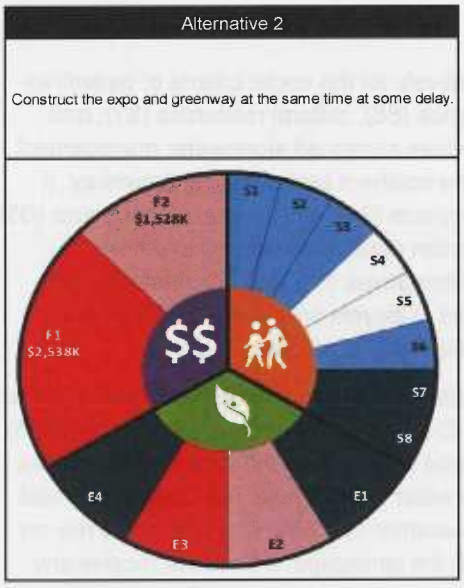
The following section provides a discussion of the results of the TBL assessment for each of the alternatives and then a side-by-side comparative view of the results.



Alternative 1

Alternative 1 receives a neutral score for many criteria, because it does not provide additional social and environmental benefits associated with the Greenway beyond what is already under construction. However, it is ranked significantly positive in financial consequences (F1) because it would not result in any additional costs. It receives a neutral ranking for the social criteria of pedestrian environment (S1), recreation/open space (S3), resilience (S6), cultural resources (S7), and aesthetics (S8). The alternative ranks significantly positive in bicycle environment (S2) as this alternative results in no interruption or delay of the bikeway currently under construction.

This alternative ranks significantly positive on noise impacts (S4), construction (S5), capital costs (F1) and operation and maintenance (O&M) costs (F2), because it does not include the Greenway, which requires greater investment, maintenance, and construction time. The construction period would remain the same, thereby limiting *additional* construction noise, air quality, and traffic consequences associated with building the Greenway. However, under this alternative, there is no additional water quality (E1), safety, cultural resource, or habitat benefit (E4) realized. It also ranks neutral (E3) on climate because the project does not require additional pumping envisioned under the Greenway project.



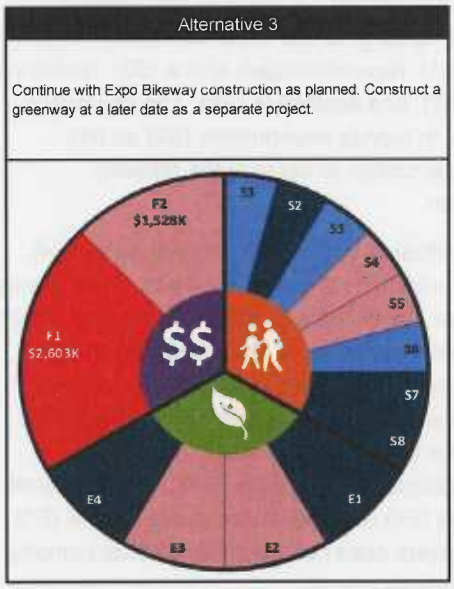
Alternative 2

Alternative 2 ranks positively in pedestrian environment (S1), recreation/open space (S3), and resilience (S6) social criteria because it includes construction of the full Greenway. It has a positive ranking for bicycle environment (S2) because it results in the eventual completion of the Expo bikeway, but completion is delayed by approximately 42 months. It also ranks neutral on construction impacts (S5) and noise impacts (S4) as the 18-month construction duration is similar to the average of the alternatives being considered.

Due to completion of the full Greenway, Alternative 2 ranks significantly positive on the social criteria of cultural resources (S7) and aesthetics (S8), as well as the environmental criteria of water quality (E1) and habitat (E4). The project would add significant cultural and educational elements as well as provide more water quality benefits than Alternatives 1 and 4A. However, the Greenway would require additional irrigation, resulting in a negative ranking on water use (E2). It would also require pumping dry-weather flow from the storm water lift station, resulting in a

marginal increase in GHG emissions. In addition, an 18-month delay in completion of the Expo bikeway would result in approximately 800 unmitigated metric tons of CO_2e compared to having the bike lane in place due to lost bicycle trips. As a result of those factors, this alternative receives a significantly negative score in Climate/GHG (E3).

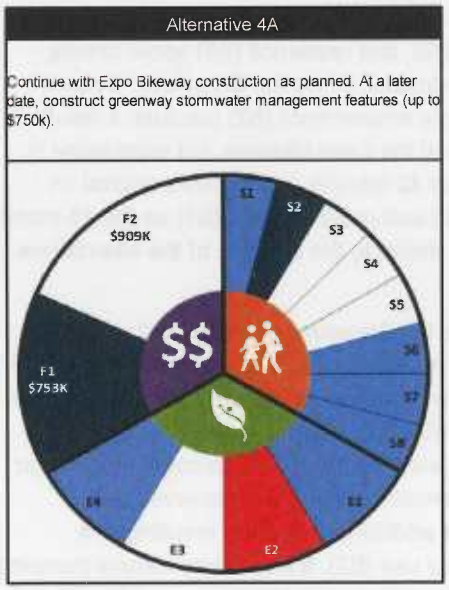
Intuitively, the construction of the full Greenway also adds to the cost of implementation, which is reflected in the significantly negative capital costs (F1) and negative O&M costs (F2).



Alternative 3

Alternative 3 ranks positively on the pedestrian environment (S1), recreation/open space (S3), and resilience (S6) social criteria because the Greenway would provide additional open space and incorporate a stormwater management design to reduce wet-weather ponding at Exposition and Westwood Boulevards. In addition, this alternative ranks significantly positive for the social criteria of bicycle environment (S2), cultural resources (S7), and aesthetics (S8), as well as the environmental criteria of water quality (E1) and habitat (E4). The alternative enables the full implementation of the Greenway without delaying the completion of the bikeway.

Despite these benefits, the construction duration is longer than the average of the alternatives considered, resulting in negative rankings for noise impacts (S4) and construction impacts (S5). This alternative also ranks negative on O&M costs and significantly negative on capital costs due to the costs associated with constructing the full Greenway, especially in consideration of Alternatives 1 and 4A, which are significantly less costly.



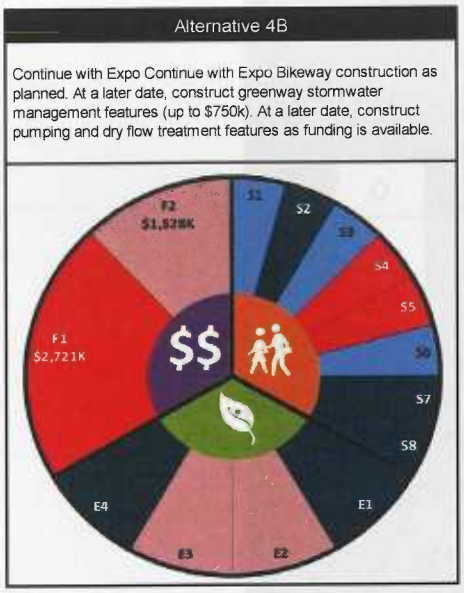
Alternative 4A

Alternative 4A ranks positively for the social criteria of pedestrian environment (S1), resilience (S6), cultural resources (S7), and aesthetics (S8) as it provides enhanced stormwater management and implementation of the southern portion of the Greenway. It ranks neutral on noise impacts (S4), and construction impacts (S5) due to a shorter construction duration compared to other alternatives. Similar to Alternatives 1, 3, and 4B, Alternative 4A ranks significantly positive in bicycle environment (S2) as the project would not delay bikeway completion.

Alternative 4A ranks positive on the environmental criteria of water quality (E1) and habitat (E4). It ranks neutral on climate/GHG (E3) because it does not include the pumping infrastructure, but ranks significantly negative on water use because the Greenway would not benefit from the dry-weather flow diversion and would rely on more irrigation to sustain the landscape. It does not receive any social or environmental criteria ranks in the significantly positive

range as Alternative 3 and 4 do because it only provides for construction of the Greenway on the south side of the Expo Line.

On financial criteria, this alternative ranks significantly positive on construction costs due to the $750,000 funding limitation and neutral on O&M costs because costs are lower without the full Greenway to maintain.



Alternative 4B

Alternative 4B, which includes the elements of 4A in addition to the construction of the creek and pumping station on the north side of the Expo line, ranks positively on the social criteria of pedestrian environment (S1), recreation/open space (S3), and resilience (S6). It ranks significantly positive on the social criteria of cultural resource (S7) and aesthetics (S8), as well as the environmental criteria of water quality (E1) and habitat (E4). Compared to the other alternatives, it ranks negative on water use (E2) due to a marginal increase in irrigation. It also ranks negative on climate/GHG due to ongoing pumping operations (E3).

In comparison with the other alternatives, this alternative ranks significantly negative on capital costs (F1) due to the construction of the full Greenway and some inefficiencies of constructing it in two phases. Alternative 4B is estimated to be the most expensive of the alternatives due to the additional phasing and mobilization costs required. It also ranks negative on O&M (F2) due to maintenance of the full Greenway, although O&M represents only a marginal portion of the total estimated life cycle costs of the Greenway.

Comparative TBL Assessment Results

Figure 4 shows a side-by-side comparison of the TBL assessment results.

Figure 4: Triple Bottom Line Assessment At-A-Glance

		Alt 1	Alt 2	Alt 3	Alt 4A	Alt 4B
	SOCIAL & COMMUNITY					
S1	Pedestrian Environment	O	+	+	+	+
S2	Bicycle Environment	++	+	++	++	++
S3	Recreation/Open Space	O	+	+	O	+
S4	Noise Impacts	++	O	-	O	--
S5	Construction Impacts	++	O	-	O	--
S6	Resilience	O	+	+	+	+
S7	Cultural Resources	O	++	++	+	++
S8	Aesthetics	O	++	++	+	++
	ENVIRONMENTAL					
E1	Water Quality	O	++	++	+	++
E2	Water Use	O	-	-	--	-
E3	Climate/ GHG	O	--	-	O	-
E4	Habitat	O	++	++	+	++
	$$ FINANCIAL & OPERATIONAL					
F1	Capital Costs	++	--	--	++	--
F2	Operation & Maintenance Costs	++	-	-	O	-

++	Significantly Positive	-	Negative
+	Positive	--	Significantly Negative
O	Neutral		

ADDITIONAL FEASIBILITY CONSIDERATIONS

June 4th Exposition Authority Decision

At the June 4th Exposition Construction Authority Board Meeting, the Board voted to continue with the Expo bikeway construction as planned with completion expected in late 2015. The Board expressed the intent to integrate the Greenway into Westwood/Rancho Park station area as much as feasible at a later date when the project has sufficient funding commitments to move forward with implementation. This board decision means that any options that involve delay of the Expo bikeway construction are no longer viable, as Expo will move forward with completing construction in late 2015. With respect to the alternatives analysis, this decision means that Alternative 2, which includes a delay of the Expo bikeway, is no longer a viable option.

Funding Sources

While Greenway project proponents have indicated that they have secured $750,000 in funding thus far, construction of the full Greenway is estimated to cost at least $2.5 million. As such, grant and other funding options for the Greenway have been identified that could potentially fill that gap. As the Greenway is primarily a stormwater management project, most of the funding sources relate directly to that objective. However, because the Greenway is also a public space that includes interpretive signs, a walkway, and adjacency to a bikeway and light rail station, the list also includes public art and alternative transportation funding sources. Appendix D provides details on these funding sources, such as the minimum/ maximum grant sizes, criteria, eligibility, and deadlines. Examples of projects that have utilized these funds are also provided where applicable.

AECOM assessed which grant sources the Westwood Greenway would have the highest likelihood of accessing based on a close match with grant criteria, considerable funding available in upcoming grant cycles, and a history of the source funding similar projects. Based on this assessment, the most promising sources are the City of Los Angeles Proposition O Funds, Clean Water Act State Revolving Fund, Clean Water Act Nonpoint Source Grant, and the California Active Transportation Program, which are highlighted in Appendix D.

CONCLUSION

This analysis developed and assessed four alternative options for the incorporation of the Greenway into the ongoing Expo Light Rail Phase II construction. Table 1 provides an overview of the results of the TBL analysis and key feasibility considerations.

Table 1: Triple Bottom Line Assessment Results Overview and Feasibility Considerations

	Alternative 1	Alternative 2	Alternative 3	Alternative 4A	Alternative 4B
TBL Results Overview	Least cost, construction, and noise impacts, but does not provide the social and environmental benefits associated with the Greenway (i.e., improved water quality, habitat, cultural, aesthetics, resilience, open space, and pedestrian environment).	This option provides social and environmental benefits similar to Alt 3 and Alt 4B, but the delay of the bikeway ultimately results in lower overall project benefit compared to the other alternatives evaluated.	Slightly higher capital costs, but does not have the negative impacts of delaying the Bikeway. This alternative ranks positive or significantly positive on several social and environment criteria due to the benefits associated with the Greenway.	Least expensive option after Alt 1. Does not rank as positively on social and environmental criteria compared to Alt 2 and Alt 3, because it includes ~60% of the square footage of the full Greenway and only treats wet-weather runoff.	Approximately 5% more expensive than Alt 3. Ranks significantly negative on construction and noise impacts due to the longer duration of construction. Ranks positive or significantly positive on several social and environment criteria due to the benefits associated with the Greenway.
Feasibility Considerations	Expo Bikeway scheduled for completion in 2015. (Baseline Condition)	No longer feasible as Expo Board voted to complete Bikeway construction as planned in July 2015.	Feasible if project proponents secure funding (estimated at $2.5 million).	Feasible with funding levels currently secured by project proponents ($750K).	Feasible if project proponents secure additional funding at a later date.

As shown in Table 1, Alternative 2 is not feasible because the bikeway is projected to be completed in late 2015 and this alternative would delay the entire bikeway network currently under construction. Alternative 1 is essentially the baseline condition at the site. Given community support for the Greenway, Alternatives 3, 4A, and 4B remain possible outcomes.

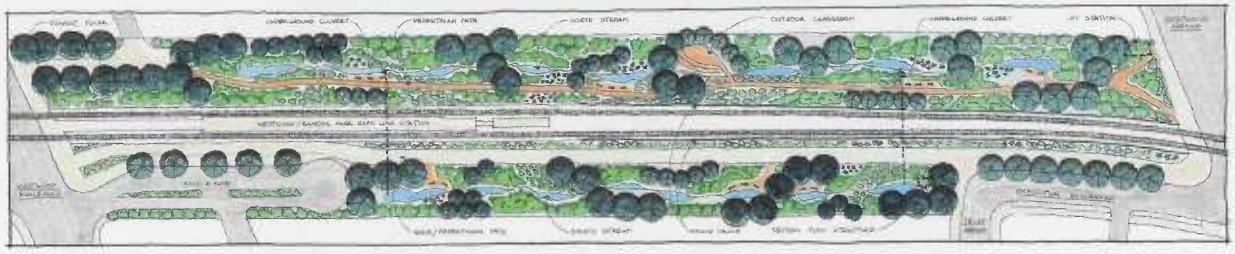
The difference between Alternative 3 and Alternative 4A/4B is that in 4A/4B, the Greenway is built in two distinct phases. If the Greenway project proponents are able to secure financing for the project in full in the near-term, there would be little benefit of a phased approach because it would lengthen the construction duration and thus the associated construction and noise impacts on the surrounding neighborhood. In such a scenario, Alternative 3 would likely be superior. However, based on current funding commitments, the Greenway on the south side of the Expo Line could be installed first (Alternative 4A), providing social and environmental benefits and allowing project proponents more time to raise the funds for the rest of the project (Alternative 4B). **Note that this study makes no recommendation on a preferred alternative as the final decision will ultimately be at the discretion of the City who manages the right of way where the Greenway would be located.**

Given that funding is a major determinant of the feasibility of the alternatives, grant sources that the Westwood Greenway has the highest likelihood of accessing were identified. These sources included: the City of Los Angeles Proposition O Funds, Clean Water Act State Revolving Fund, Clean Water Act Nonpoint Source Grant, and the California Active Transportation Program.

APPENDIX A:

"WESTWOOD NEIGHBORHOOD GREENWAY PRELIMINARY CONCEPT"

Westwood Neighborhood Greenway



Preliminary Concept

Bureau of Sanitation
Watershed Protection Division

CITY OF LOS ANGELES
SANITATION
DEPARTMENT OF
PUBLIC WORKS

June 2014

WATERSHED
PROTECTION
DIVISION

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1 EXECUTIVE SUMMARY

Westwood Neighborhood Greenway Project is located at the Exposition Light Rail Transit Station (Westwood Station) between Westwood Blvd and Overland Ave. Although the Greenway will be constructed as a separate project, the elements of the Greenway are designed to complement the objectives of the Expo Light Rail. The multi-benefit project will provide urban runoff treatment, green space, access to public transit, educational and recreational opportunities. Project elements include:

- Simulated streams (vegetated swales) on north and south side of the station
- Educational and interpretive signs about local ecology and hydrology
- Native vegetation community (landscaping) and smart irrigation
- Stormwater lift stations (Overland drain) and
- Return flow structure
- Pedestrian walkway on the north side of the station*

Project proposes diversion of dry-weather flow from Overland drain to capture runoff from 2,400 acres of drainage area. Diverted water will be lifted to the stream on the north side of the Station (North Stream) for physical and biological treatment by flowing through various plant communities, soil medium, and through exposure to sunlight. The North Stream will be connected to the South Stream through a culvert that runs under the tracks. During the dry-weather approximately 23 to 135 gallons per minute of dry weather flow is expected to be continuously captured and treated by the swales.

During the wet season, the alley on the north side of Westwood station experiences flooding and water ponding. This project proposes catch basins and underground culvert on the north side to capture stormwater runoff from 3 to 5 acres of residential and street areas. Captured stormflow will be designed to go through physical and biological treatment in the south swale. Excess treated water will flow back into Overland drain through the return flow structure.

*A 17-ft wide Class I bike path will be constructed by Expo and LADOT on the south side of the tracks. The bike path will include 12 ft for bicyclists and 5 ft for pedestrians. Visitors will be able to enjoy the decomposed granite and grassy walkways and appropriately placed native plants and interpretive signs along the streams.

All the components will provide year-round treatment of urban runoff, water conservation and beneficial use, educational opportunity for local K-12 schools, additional green recreational space, and reduce heat-island effect. The continuous flow in the streams will fulfill the site irrigation demand. This "rails with trails" concept will improve water quality, showcase the Exposition light rail line, encourage ridership, and provide a unique transit experience in the City of Los Angeles.

Estimated cost for the project is $2.50 million and construction period is estimated to be around 24 to 36 months. Bureau of Sanitation-Watershed Protection Division, office of the Council District 5, and local residents have met with representatives from MTA-Expo, LADOT, and Phase II Design-Built Contractors. Discussions with local homeowner associations and neighborhood councils were also conducted to collect inputs and comments from the community.

2 INTRODUCTION

2.1 Ballona Creek and Watershed

Through a network of underground stormdrains and several open channels, Ballona Creek receives runoff from 128 square miles of watershed area that consists of several cities, state and county lands, before discharging into Santa Monica Bay by Marina del Rey harbor. The watershed is shared by City of Los Angeles, County of Los Angeles, California Department of Transportation, City of Culver City, City of Beverly Hills, City of West Hollywood, City of Inglewood, and City of Santa Monica (*Figure 1*). The Watershed is bounded by the Santa Monica Mountains to the north and Baldwin Hills to the south and is highly developed, with the exception of the headwaters in the northern portions of the watershed in the Santa Monica Mountains.

Figure 1 – Ballona Creek Watershed and Project Location

Ballona Creek flows as an open channel for about nine miles. Except the last three miles in the Ballona Estuary, Ballona Creek is a concrete-lined. Concrete is replaced by grouted riprap sides and earth bottom after Centinela Ave crossing. Major tributaries include Centinela Creek, Sepulveda Channel, and Benedict Canyon Channel.

2.2 Regulatory Background and Total Maximum Daily Loads

As required by the Clean Water Act (CWA), the California Water Quality Control Board, Los Angeles Region sets water quality standards for the Los Angeles Region, which includes beneficial uses for surface and ground water, numeric and narrative objectives or Total Maximum Daily Loads (TMDLs) necessary to support beneficial uses to protect all waters in the region. A TMDL defines the maximum amount of a pollutant that a waterbody can receive and still meet the applicable water quality standards for that pollutant and a TMDL Implementation Plan defines strategies for meeting the TMDLs.

TMDLs were developed for coliform bacteria, heavy metals, estuary toxics, and trash in Ballona Creek. The City of Los Angeles submitted TMDL Implementation Plans strategizing how the City and other agencies intend to meet the water quality standards in Ballona Creek. The Plans propose structural projects and institutional measures, also known as Best Management Practices (BMPs) throughout the watershed. The City has identified eight large-scale (regional) structural project locations and 27 smaller (distributed) projects throughout the watershed. Proposed BMPs were identified in collaboration with the watershed stakeholders.

2.3 Exposition Light Rail Phase II

The Exposition Corridor Light Rail Project Phase II is currently under construction. The 8.6-mile route that begins in Culver City and terminates in Santa Monica is expected to be completed in 2015.

Figure 2 – Existing Condition between Overland Ave and Westwood Blvd.

The Exposition Light Rail line features an urban design concept for the alignment called the Exposition Transit Parkway. As proposed by the LACMTA, the Exposition Transit Parkway includes the light rail transit alignment, bikeway facilities, pedestrian linkages, landscape design, public art, and related system facilities of the alignment as a multi-modal transit corridor. The Exposition Line is being constructed primarily at-grade within the existing Exposition ROW. The right-of-way spans 100-200 feet in some areas. Other portions may be less than 100 feet. The area between Overland Ave and Westwood Blvd is approximately 200 ft wide. For the purposes of the project, the assumption has been made that the remaining right of way will consist of a minimum of 35 feet or more on each side of the rail line and be constructed at-grade within the project area.

Figure 3 – Water Ponding at Exposition Blvd and Westwood Blvd (North Side)

The goal of this concept is to integrate the light rail transit alignment, a bikeway, streets and pedestrian linkages in a safe, balanced and cohesive parkway setting. In addition to passive and active recreation in the form of bikeways and pedestrian paths, there will be additional parkway space available that could serve other purposes.

Utilizing the parkway for urban runoff treatment is ideal because of a major storm drain that intersects the Exposition ROW at Overland Ave. Integrating water treatment elements will not only establish a multi-modal transit corridor, but also a multi-benefit transit corridor. Including water treatment systems

that mimic natural hydrologic processes will improve water quality, aesthetics, and enhance passive and active recreational opportunities.

3 SITE CHARACTERISTICS

The project area is approximately a 1,200 feet stretch of ROW located along Exposition Boulevard between Overland Ave and Westwood Blvd in West Los Angeles. There are four major storm drains that traverse the Exposition Parkway in the project area: 1) the Sawtelle-Westwood stormdrain that runs along Overland Avenue and is under the jurisdiction of the City of Los Angeles; 2) a stormdrain located between Midvale and Kelton streets also under the jurisdiction of the City of Los Angeles; 3) a storm drain running along Military Avenue that is under the jurisdiction of the County of Los Angeles; and 4) a storm drain along Rountree Road under the jurisdiction of the City of Los Angeles. Figure 5 shows the locations of stormdrains that traverse the ROW.

Figure 4 – Drainage Area (~2,400 Acres) of Overland Drain

Although the storm drains along Rountree Road and Kelton/Midvale Avenue are large in size, the drainage area is relatively small at approximately 570 and 500 acres, respectively. The drains along Overland Avenue and Military Avenue have large drainage areas (2,490 acres and 7,145 acres, respectively) capable of conveying significant dry weather flow year round. Preliminary analysis indicates that the Overland Avenue storm drain can be utilized to supply the parkway with a source of runoff year round. Drain flow during the dry weather can be diverted to the project site for treatment and beneficial use. Field observations conducted in 2012 and 2014 indicate that typical dry-weather flows in Overland Ave stormdrain range from 20 to 130 gallons per minutes.

The storm drains are located approximately 10-15 feet below grade and the project will require a pump system to bring water to the surface of the ROW. Diversion pumps will divert dry weather runoff from the Overland Avenue storm drain up to the ground surface of the parkway. The drainage area (Figure 4) is entirely within City of Los Angeles. It may be possible to also divert a portion of wet weather runoff from residential parcels and streets along Westwood Blvd from Pico Blvd to Exposition Blvd.

Figure 5 – Existing Drainage Systems

Minor grading may be required provide continuous flow through the parkway. The pumps will be installed at strategic locations so that the storm drains will supply continuous flow of water to both the northern and southern portions of the parkway. Site elevation and hydraulic profile is shown in Appendix D.

In 2012, an underground petroleum line on the north side and high-pressure gas line was also identified to be on the south side of the project area. Geotechnical reports conducted by the City of Los Angeles indicate that the soil is predominantly lean clay (Appendix C).

Figure 6 – Wet-Weather Drainage Area

After evaluating several alternatives, the simulated stream (bioswale) with surface infiltration concept is most likely a feasible option that could be designed with lower maintenance requirements, controllable flows, and an impermeable side liner. MTA/ Expo should be a partner in the planning and implementation of any proposed concepts.

4 PROJECT CONCEPT

The multi-benefit project will be designed to provide urban runoff treatment, green space, access to public transit, and recreational opportunities. This "rails with trails" concept will improve water quality, showcase the Exposition light rail, encourage ridership, and provide a unique transit experience in the City of Los Angeles.

Figure 7 – Simulated Stream with Appropriate Plants Found in Riparian Habitats.

Several treatment systems will be integrated into the project area to treat urban runoff while mimicking natural hydrologic processes. A simulated stream and a tree-lined vegetated buffer will be integrated into the Project area to facilitate biofiltration of the urban runoff. Due to the Project's close proximity to the Light Rail and low soil permeability, infiltration of the captured flow poses challenge. As a result, until further geotechnical investigation are conducted, this Concept proposes a swale system lined with an impermeable barrier (geomembrane) along the banks.

Project elements include:

- Simulated stream (bioswale) on the north and south side of the railroad tracks
- Pedestrian walkways and foot bridges
- Class I Bikebath (by LADOT) and
- Aesthetic and educational amenities.

Figure 8 – Streambed with Appropriate Plants Found in Riparian Habitats.

4.1 Simulated Stream (Bioswale)

This project proposes two simulated streams on north and south side of the railroad tracks. South Stream and a portion of North Stream are designed to capture wet-weather runoff from 3 to 5 acres of residential parcels and streets along Westwood between Pico and Exposition while both North and South Streams are designed to capture and carry dry-weather runoff from the stormdrain line that runs along Overland Avenue. The two streams combined will provide approximately 1,800 linear feet of treatment for up to 2,400 acres of dry-weather runoff.

Runoff will be diverted to a bioswale, a linear low-lying natural topographic drainage feature that will run parallel to the railroad tracks. Through biofiltration with engineered sand filter and deep rooted plant communities, the bioswale will

Figure 9 – Artist's Rendering of the North Stream, Bike Path, and Educational Display

trap particulate pollutants (suspended solids and trace metals). The bioswale will be planted with native vegetation (native plants listed in Table 1 are preferred over turf grasses because the swale will offer higher resistance to flow and provide a better environment for filtering and trapping pollutant from urban runoff). Plant Palette and landscaping scheme is described in Figure 7 to 9 and Table 1. Following the treatment, runoff will be returned to the storm drain system through the return-flow structure on the south side. Native plant communities will be established along the stream bank. The deep-rooted vegetation will slow runoff velocities, reduce soil erosion, and provide passive treatment of urban runoff. Dry-weather runoff from Overland Drain is estimated to be approximately 20 to 130 gallons per minute (gpm) based on drainage area and drain geometry. The flow diagram of the streams is shown in Figure 10.

The simulated stream also enhances aesthetics, creates habitat, and provides educational opportunities. Pedestrians and bicyclists will follow the path of the stream as they continue along the parkway. Pollutant load removal (effluent concentrations) and flow calculations are shown in Appendix B.

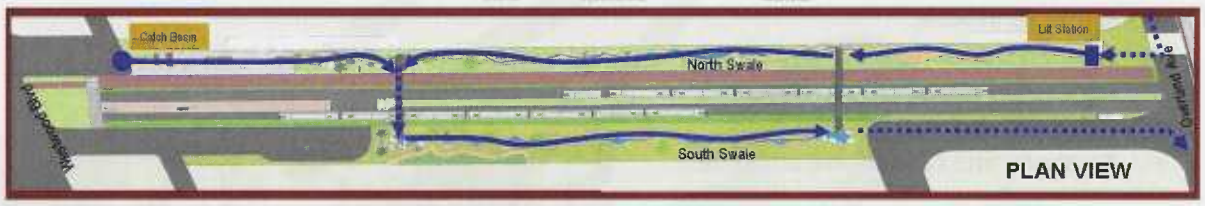


Figure 10 – Flow diagram of the streams. Dotted lines represent underground flow.

North Stream: Urban runoff from Overland stormdrain will be pumped to the northeast side of the project area and flow through 800 to 1,000 linear feet of soil medium and plant community. The excess stream flow will be diverted to the South Stream through a culvert and flow back into the Overland Drain at a downstream location. Pumps, additional flow diversion structures, and underground culverts are required for North Stream. Expo has constructed two lateral culverts in 2013 upon request from the City of Los Angeles. Elements of North Stream includes pedestrian walkway, foot bridges, educational display boards of local hydrology, flora and fauna, water conservation, and urban runoff. Based on existing site topography, runoff drains east to west with elevation difference of 4 to 5 feet. Careful grading should be accomplished in order for the dry-weather runoff to flow to the west.

South Stream: As shown in Figure 3, the low point of the area located at the alleyway the northwest corner of Westwood Blvd and Exposition Blvd causes water ponding and occasional flooding collected in that area. The South Stream will alleviate flooding and divert the storm runoff into the swale that flows from west to east. Wet-weather runoff will be diverted into a catch basin and underdrain at the from the alley. By gravity, diverted runoff will flow through a culvert than runs across the light rail

tracks to the South Swale and 450 to 800 linear feet of sand medium and plant communities before it reaches the other end of the stream discharging treated runoff into the Overland Drain.

Typical configurations of the Streams are shown in Figure 11, and Appendix E. The top width of the stream ranges from 15 to 30 feet and bottom width is 5 to 7 ft wide. The side slopes of the stream ranges from 1:1 to 1:3 and average depth is approximately 4.5 to 5 ft. During typical dry-weather events, the bottom of the streams is expected to be covered with 1 to 2 inch of laminar flow.

4.2 Pedestrian Walkway

Along both North and South Swales, pedestrian walkways are proposed. The decomposed granite covered path extends from the northwest parking lot from Westwood Blvd to Overland on the north side and from Kiss-And-Ride area to Overland on the south side. The visitors will walk along the creek, through different plant communities and experience the native flora seen in the Southern California riparian habitats. The walkway is 5 to 15 ft wide. The walkway includes footbridges that cross the creek and offer unique viewpoint to observe the stream and observe various plants on both sides.

4.3 Bike Path (By MTA and LADOT)

The "rails-with-trails" concept provides opportunities for the creation of trail systems that enhance local transportation systems and offer safe and attractive community connections. A Class I bike path is proposed on the south side of the tracks next to the soundwall. The bike path will go parallel to the South Stream extending from Westwood Blvd to Overland Ave. Native shrubs and other vegetation will be placed between the swale and the bike path. Visitors will be able to assess both the bike path and the walkway from Westwood Blvd and Overland Ave.

4.4 Esthetic and Educational Amenities

Major parts of the project include educational signage about the local hydrology, native plant communities, urban runoff issues, and water conservation themes. Display boards will be placed at two entrances and half way along the North Swale. At designated areas, visitors and students will be able to observe the hydrologic cycle, learn about the functions of plant community, and ways to conserve water.

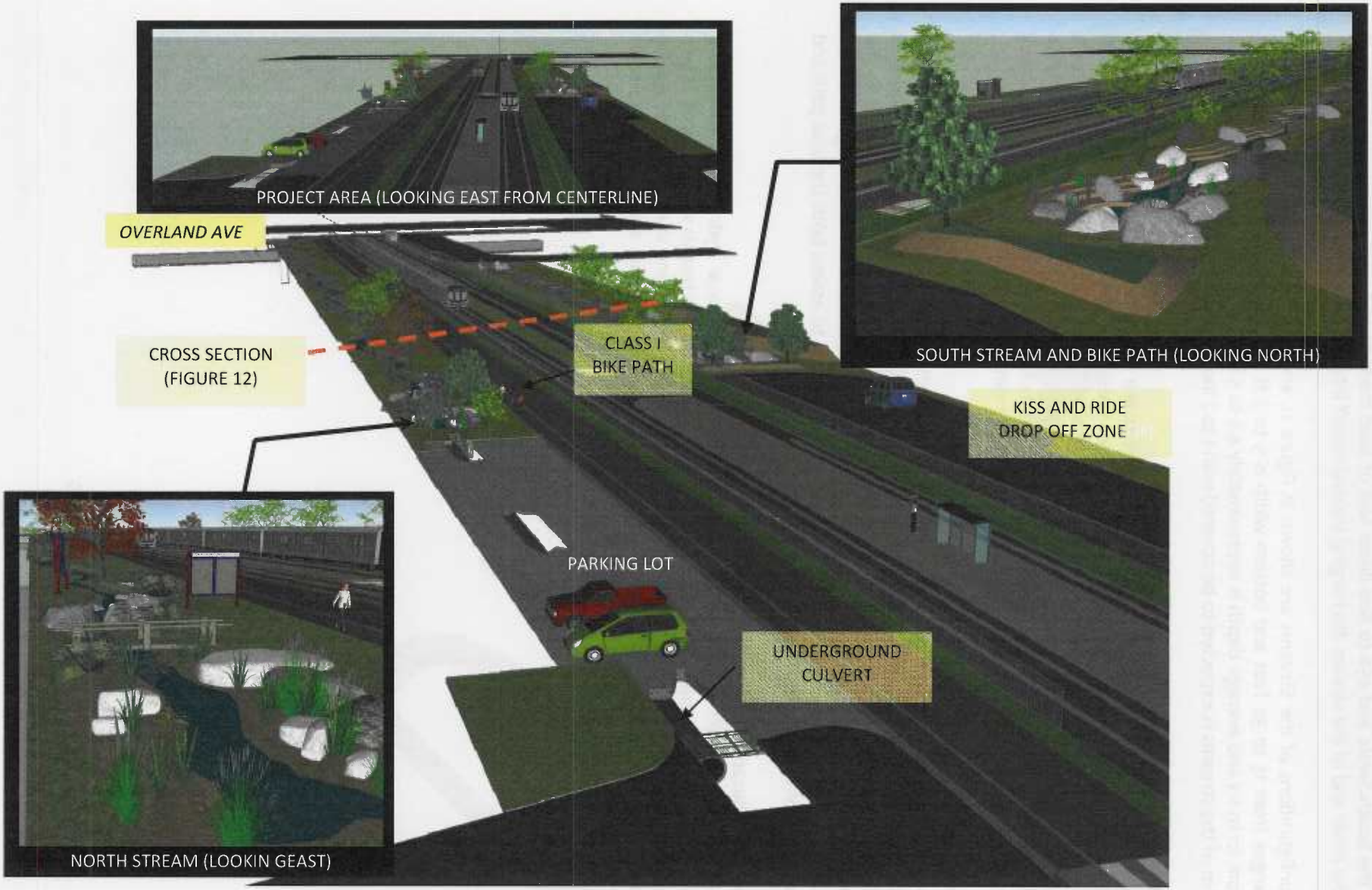


Figure 11 – Layout of Westwood Station with Simulated Streams, Vegetations, Walkway and Bike Path.

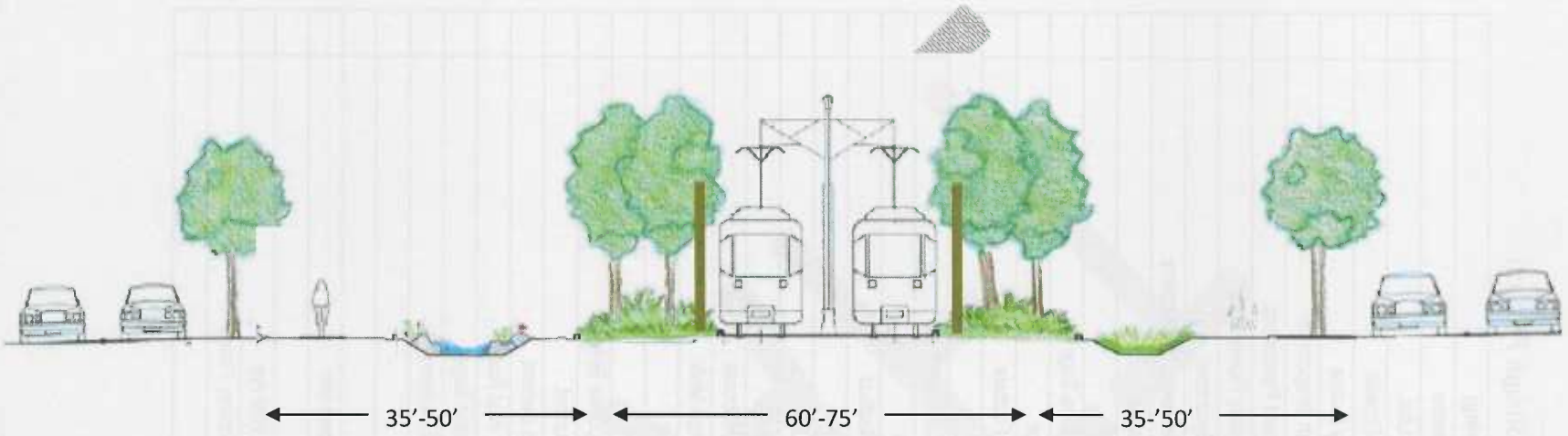


Figure 12. Cross section of the proposed concepts (not to scale).

Table 1. Native Plant Palette (*adapted from Bimini Slough Project*)

Drought Tolerant (Sun Loving)		
Carpenteria California	Bush anemone	
Ceanothus Grisues Var	California Lilac	
Encelia California	California Encelia	
Feijoa Sellowiana	Strawberry Guava	
Galvezia Speciosa	Island Bush Snapdragon	
Keckiella Corofolia	Heart-Leaved Penstemon	
Mimulus Aurantiacus	Sticky Monkey Flower	
Platanus Racemosa	Western Sycamore	
Ribes Speciosum	Fuchsia Flowering Gooseberry	
Romneya Coulterii	Matilija Poppy	
Rubus Ursinus	Blackberry	
Salvia Clevelandi	California Blue Sage	
Salvia Mellifera	Black Sage	
Zauschneria Californica	California Fuchsia	
Shade Tolerant		
Aquilegia Formosa	Western Columbine	
Calycanthus Occidentalis	Sice Bush	
Cercis Occidentalis	Western Redbud	
Heuchera Hybrids	Coral Bells	
Lilium Paradalinum	Leopard Lily	
Mahonia Aquifolium	Oregon Grape	
Mahonia Repens	Creeping Mahonia	
Melica Imperfecta	Coast Range Melic	
Muhlebergia Rigens	Deer Grass	
Rhamnus Californica	Coffee Berry	
Rhamnus Californica Seaview	Seaview Coffee Berry	
Ribes Aurem	Golden Current	
Ribes Viburnifolium	Evergreen Current	
Rosa Californica	California Wild Rose	
Salvia Soatchacea	Hummingbird Sage	
Sambuscus Mexicana	Mexican Elderberry	
Streamside		
Carex Barbarae	Sedge	
Iris Douglasiana	Pacific Coast Iris	
Juncus Patens	Rush	
Leymus Triticoides	Creeping Wild rye	
Mimulus Cardinalis	Scarlet Monkey Flower	

5 BENEFITS

5.1 Water Quality Benefits

Storm water runoff from the surrounding areas has the potential to contribute trash, oil and grease, suspended solids, metals, gasoline, and pathogens to the stormwater conveyance system. The goal of the Project is to minimize, to the extent practicable, the introduction of pollutants of concern that may result in significant impacts to the storm water conveyance system which is tributary to Ballona Creek. Utilizing the Exposition Greenway Corridor to manage urban runoff will assist in complying with current and future TMDL regulations for Ballona Creek. Targeted pollutants include metals, bacteria, toxics, and bacteria.

The tree-lined swales/streams with plants and sand medium reduces flow velocities allowing sediment, nutrients, pesticides, and other pollutants to settle and by providing uv exposure and evapotranspiration. The plants will also intercept on-site runoff and increase the amount of aerobic microbial environment in water-logged soils. The bioswale will be planted with native vegetation (native plants are preferred over turf grasses because the swale will offer higher resistance to flow and provide a better environment for filtering and trapping pollutant from urban runoff). Well-established plant community provides longer detention time in the streams. Table 2 describes the pollutant load removal from the swales. The load removal is expected to increase when the plant community is fully established and as a result the detention time increase up to 12 hours. The optimal performance takes two to three years after the project completion. Within a few years, water quality benefits are expected to increase when the plant community is fully established and the detention time in the streams is optimized. Details of water quality calculations are shown in Appendix B.

Table 2. Pollutant Loads Removed from Overland Stormdrain during dry-weather.

	Nitrate (Kg/yr)	Tot Copper (Kg/yr)	Tot Lead (Kg/yr)	Tot Zinc (Kg/yr)	FC (MPN/yr)	TSS (kg/yr)
Pollutant Loads in Overland Drain	65	906.64	458	6706	3.70E+10	5018
Pollutant Loads Removed by the Project	17	362	161	1940	2.07E+10	1147
Percent Removal	27%	40%	35%	29%	56%	23%
Load removal efficiencies and effluent concentration are based on the values published on International BMP Database for a flow-through bioswale and media filter, except for fecal coliform, which is assumed to be 50% removal. Load removals account for loss of flow due to evaporation, site irrigation, and partial infiltration (approximately 6% of total flow).						

Water demand for site irrigation is calculated to be 2% of the total flow based on the number of irrigated areas and density of trees. The dry-weather flow is more than adequate to fulfill onsite irrigation needs and could be used, if needed, to irrigate the landscaping along Expo LRT.

5.2 Educational and Recreational Benefits

The project includes carefully placed display boards that describe the native flora and fauna, hydrologic cycle, water conservation, and water quality components. The plants placed along the streams will bear tags and interpretive signs that describe the role they play in the ecosystem and water quality benefits they provide. The continuous flow in the Streams will provide opportunity for local students to do

scientific experiments in the area of Biology, Botany, Ecology, and Environmental Science. Tree line along the streams will provide shade and comfort to the joggers, cyclists and transit passengers.

6 COMMUNITY OUTREACH AND COORDINATION

To fully understand and address all the concerns from various stakeholders, Watershed Protection Division (WPD), Bureau of Sanitation, throughout the development of this report, is coordinating with following offices, groups, and associations:

-Office of the Council District 5
-Department of Transportation, City of Los Angeles
-MTA-Expo
-Westwood area residents (Westwood Gardens Civic Association)
-Expo Greenway (www.expogreenway.org)
-National Resources Defense Council (NRDC)

WPD met with the office of the office of the Council District 5, representatives from homeowners, and neighborhood councils to fully capture the comments concerns on this project. Draft renderings of the Project have been shared with the stakeholders and their input on each project element is incorporated. WPD continues to work together with MTA-Expo Authorities and the residents to successfully implement the project.

Stakeholders expressed the following issues which were addressed by the WPD as follow. Additional discussion points at several community meetings are described in Attachment A.

Increased amount of trash-this project will include adequate number of trash cans and recycling containers along the streams and by the interpretive signs.

Odor associated with stormwater-the streams are designed to have a consistent flow velocity to reduce ponding. Periodical maintenance activities such as checking blockages, flow obstructing objects in the stream will ensure that odor-causing problems will be prevented.

Vector associated with the swale-vectors such as mosquitoes are common problem with stagnant water. Consistently flowing streams with velocity of ~ 0.25 fps, total resident time (detention time) of ~3 hours will provide adequate hydraulics to prevent mosquitoes, eggs, and larvae.

Overnight transients-The area along the streams and the walkway can be designed to slope down towards the stream (10 to 20% slopes) so that it will discourage prolonged or overnight stay at the area. Additionally, installing entrance gates at both sides of the tracks and having the area open from sunrise to sunset will prevent transients from staying overnight.

Vandalism -the display boards, foot bridges, trees and other structures could be the target for vandals during night time. Installing entrance gates at both sides of the tracks and having the area open from sunrise to sunset could prevent vandalism.

7 OPERATION AND MAINTENANCE

Regular upkeep of the bioswales and pathway components will be necessary. Plant communities require one to two years to fully establish and thrive. Continuous flow from Overland Drain during dry-weather is considered to meet irrigation demand of the streamside plants. Sun loving and shade tolerant plants that are placed farther from the stream bed may require irrigation lines, especially during plant establishment phase.

The headwater area of the swale will require additional weed (invasive species) control, litter removal clearing of debris, sediments and blockages, and vegetation trimming.

Other maintenance activities may include inspection of the stream banks and bottoms for erosion and washouts. The pedestrian walkway and bike path will require periodical trash pick-ups from the receptacles. The tree-lined vegetated buffers will require standard landscaping maintenance as well. The irrigation system will need to be periodically inspected to assure proper functioning.

8 SCHEDULE

The project is currently at the Planning Stage. After pre-design, design, and bid and award, the construction period is expected to take from 12 to 18 months. Detail phasing and schedule is described below.

	Year 1		Year 2		Year 3		Year 4	
Planning								
Pre-Design								
Design								
Bid & Award								
Construction								

8 RELIMINARY COST ESTIMATE

This estimate is preliminary. A detailed cost estimate will be prepared following further analysis of the proposed project.

Preliminary Cost Estimate-Westwood Neighborhood Greenway

	INLET AND OUTLET				
		Unit	Quantity	Price	Item Total
1	Storm Flow Diversion and Catch Basins	EA	0	$ 45,000	$ -
2	Return Flow Connection Structure	EA	0	$ 90,000	$ -
3	Lift Station	EA	1	$ 375,000	$ 375,000
4	Pump (South to North Swale)	EA	1	$ 20,000	$ 20,000
5	Piping and Valves	EA	500	$ 100	$ 50,000
6	Filter Medium	LS	1	$ 85,000	$ 85,000
7	Screens and Hydrodynamic Separator	LS	1	$ 90,000	$ 90,000
8	Instrumentation and Control System	EA			$ 50,000
9	Mobilization	LS			$ 33,500.00
10	Traffic control	LS			$ 5,000
11	Project planning	LS			$ 10,000
12	Permits	LS			$ 50,000
13	Predesign and design (22%)	LS			$ 158,070
14	Construction & Post-construction Mgmt (12%)	LS			$ 86,220
15	**SUBTOTAL**				**$ 1,012,790**
16	Escalation (3% per year)				$ 91,151
17	Estimation contigency (25%)				$ 230,410
18	Constructioin Contigency (20%)				$ 184,326
	GRAND TOTAL				**$ 1,518,679**
	BIOSWALE				
		Unit	Quantity	Price	Item Total
19	Sand	CY	15	$ 50	$ 750
20	River Pebbles	CY	10	$ 120	$ 1,200
21	Mountain Gray Boulders (48"+ diameter)	MT TON	80	$ 760	$ 60,800
22	Yosemite Boulders (18" to 30")	MT TON	30	$ 480	$ 14,400
23	Cinder Blocks (Stream Bottom Cover)	SF	10000	$ 2.50	$ 25,000
24	One gal shrubs	EA	400	$ 15	$ 6,000
25	Clearing and Grabbing	LS	1	$ 60,000	$ 60,000
26	Grading	CY	5926	$ 18	$ 106,667
27	Mobilization (5%)	LS			$ 5,408
28	Permits	LS			$ 25,000
29	Predesign and design (22%)	LS			$ 60,460
30	Project planning	LS			$ 20,000
31	Construction & Post-construction Mgmt (12%)	LS			$ 32,978
32	**SUBTOTAL**				**$ 418,662**
33	Escalation (3% per year)				$ 12,560
34	Estimation contigency (25%)				$ 104,665
35	Constructioin Contigency (20%)				$ 83,732
	GRAND TOTAL				**$ 619,620**
	SWALESIDE LANDSCAPING				
		Unit	Quantity	Price	Item Total
36	Planting 1 gal Shrubs (1 per 5 sf)	EA	400	$ 15	$ 6,000
37	Planting Liner Shrubs	EA	800	$ 10	$ 8,000
38	Assorted Native Trees (5' to 7')	EA	200	$ 150	$ 30,000
39	Decomposed Granite	CY	142	$ 75	$ 10,650
40	Mulch	CY	23	$ 30	$ 690
41	Signage	EA	6	$ 500	$ 3,000
42	Mountain Gray Boulders (48"+ diameter)	MT TON	80	$ 760	$ 60,800
43	Yosemite Boulders (18" to 30")	MT TON	30	$ 480	$ 14,400
44	Mobilization (5%)	LS			$ 6,677
45	Permits	LS			$ 25,000
46	Predesign and design (22%)	LS			$ 29,379
47	Project planning	LS			$ 20,000
48	Construction & Post-construction Mgmt (12%)	LS			$ 16,025
49	**SUBTOTAL**				**$ 230,621**
50	Escalation (3% per year)				$ 13,837
51	Estimation Contigency (25%)				$ 57,655
52	Construction Contigency (20%)				$ 46,124
	GRAND TOTAL				**$ 348,237**
	PROJECT TOTAL				**$ 2,486,535**

9. PROJECT STATUS (June 2014)

In 2012 City of Los Angeles Bureau of Sanitation (BOS) transmitted a formal memorandum to Exposition Construction Authority (Expo) requesting the construction of two lateral culverts. The construction was completed in 2013. Additionally Expo is working with BOS and Bureau of Engineering (BOE) to design and construct a stub-out structure that will allow the pump station to connect to when the Greenway is constructed. Total cost of the two operations is approximately $200,000.

BOS continues to meet with the Project Oversight Advisory Committee and continue to coordinate with the offices of CD 5, County's Supervisor, State Senator, and Mayor's Office. BOS also continue to actively pursue additional funding from various Grant Agencies, State and Local Water Quality Control Board. Following is a list of grant applications submitted for the Project:

- Environmental Enhancement Mitigation Program 2011
- MTA Call for Project—Pedestrian Improvement Program 2012
- Prop 84 Urban Greening Grant 2012
- Prop 84 Stormwater Low Impact Development 2013

APPENDIX A – FAQs

What are the minimum widths required for the stream, walkway, and bikepath?
The stream will require 10 ft, the walkway will require 5 to 10 ft, and the Class I bike path will require 17 ft.

What will be the minimum width required for the Project on the north side of the tracks?
The north side requires a minimum of 30 ft for the stream, walkway, vegetated and tree buffer, and fencing. It will be up to 50 ft at the widest cross section.

What will be the minimum width required for the Project on the south side of the tracks?
The south side requires minimum of 37 ft (stream, bikepath, vegetated and tree buffer and fencing). It will be as wide as 50 ft at the largest cross section.

What is the detention time (residence time) of the stormwater from Overland Drain?
The two streams combined offer approximately 2,200 linear ft of flowthrough. Assuming a flow velocity of 0.25 fps, the detention time from the lift station to the return flow structure is approximately 4 hours.

What makes Westwood Station different from other areas along the Expo Light Rail?
Expo Right of Way (ROW), the stretch of land from Overland Blvd from the east to Westwood Blvd is sandwitched by similar size City owned ROW land on both side of the Expo ROW, offering wider stretch of land than other parts of the ROW.

Can this project concept be replicated elsewhere along the Expo Light Rail?
Yes, given there is enough land on either side of the ROW.

Are there any buried utility lines on City owned ROW? If so, will they interfere with the Project scope?
Yes, there is a petroleum line on the north side and SC Gas line on the south side. The streams on either side of the tracks are designed to be shallow (<5 ft deep) with waterproof geotextile that will prevent water infiltration. Utility lines are not expected to significantly interfere with the Project scope.

How will the flow from Overland drain be captured?
It will be captured using a lift station. The invert elevation of the drain is approximately 20 ft below grade.

What is the flow rate in the Overland drain?
The dry-weather flow in the drain is calculated to be from 0.05 to 0.3 cfs based on calculations using landuse-based runoff rates and observation data from similar large drains. Wet weather flow is much larger.

How is the water treated and what happens to the excess water?
Water is treated through physical and biological process. The stream offers up to 2,200 linear feet of flow through plant root structures, sand medium. Plant root structures absorb and break down heavy metals, pesticides, and trap other particle-bond contaminants. Larger particles are filtered out at the headworks through screens and sieves. Surface flow is also exposed to heat and UV that are effective in disinfecting biomatters such as coliform bacteria. Water in the streams can also be used to irrigate the adjacent plants by use of smart irrigation (drip irrigation). Excess treated water will rejoin the Overland drain through the Return Flow Structure.

Although a design issue with EXPO, The Kiss-and-Ride should be shortened adding more greenspace.
This could be resolved with Expo authorities. It is preferable for the Kiss-and-Ride area to be shortened. It will provide more green space.

Although a design issue with EXPO, Could and should the resident parking be eliminated adding more space available to the greenspace project?
If it is approved by the community, additional green space will bring more benefits.

Would adding more area increase funding possibilities?
Not necessarily from funding standpoint.

How wide is the bike path expected to be? (see Appendix A FAQs)
Class I bike path, together with the pedestrian walkway is expected to be 17 ft (12 ft for cyclists, and 5 ft for pedestrians). There can also be striping (dividing line between cyclist and pedestrian areas) to prevent accidents.

A walking path should be included in the green areas on both the north and south parts with access from both Westwood and Overland. The walkway should be gravel or some substance that won't attract skateboarders etc.
Agree. Trail (walkway) will be included in both sides. They will be either gravel or decomposed granite.

Where would the funding come from?
Currently City is looking for funding from several sources. One example is Prop 84-State Park and Recreation grant.

There was talk of exercise/stretching stations along the walk. Should this be included?
It can be included as they are fairly easy to incorporate into the project.

Who or what department is in charge of security? This could be an attractive option for homeless encampments or loitering especially given that there is a proposed station with late hours of operation.
Security issue is to be discussed. The project could be designed so that it will be difficult to stay overnight (ie, grading the area sloped down towards the creek, providing few level ground except the outdoor classroom area, filling up the area with knee to waist height plants, etc so that the area doesn't have blind spots)

Who or what department would be in charge of maintenance (planting, clearing of brush, trash removal)? Will this be maintained and preserved from a budgetary standpoint? The maintenance should be organic and presented as such in the educational areas.
Maintenance has three components; 1) landscaping 2) hardscape (pump stations and piping) and 3) effectiveness monitoring (water quality sampling). City is currently coordinating amongst different departments as well as with NGOs.

Trees should be California native and include California Pepper trees and others that are evergreen and or bloom. We should include botanists and University help and input.
All plants selected will be California native. Any assistance and input from Universities and community is warmly welcomed. City also has excellent landscape architects who are highly knowledgeable for this type of project.

Where has this type of project been done already?
City has experience with variety of stormwater projects. Examples are 1) Elmer Street Stormwater Project, 2) South LA Wetland Project and 3) Mar Vista Park Stormwater Project. City has also participated in projects such as Bimini Slough in Los Angeles Eco Village.

Secured Electrical sockets should be included at regular intervals along both north and south sections. There may be optional permitted small community events.
Agree. It could be included during the design phase

Handicap friendly/access
All amenities will be ADA approved.

What would be the result to the neighborhood resulting from a power failure to the pumps?
The result will be that the stream be dry until power to the pumps is restored.

Access to the daylighted water. Would this be a liability for the city?
Adding warning signs (ie. Non body-contact water, No wading, swimming in the stream, etc) are a few things we can do to reduce liability and discourage unwanted activities in the garden.

What departments, agencies or governmental bodies would need to approve the design and project?
Bureau of Sanitation and Bureau of Engineering, Dept of Transportation, Dept of Building and Safety, and Council District 5.

Is an Environmental Impact Report required?
The project is subject to CEQA Process.

What does "Class 1" signify in terms of a bike path?
Class 1 bikepaths are designated as bike-only, not sharing with other motorized vehicles.

A TPSS is shown on 2 different locations on the drawings looking west from Overland Ave. The TPSS will be an issue and needs more discussion.
Location for TPSS is negotiable by the MTA/EXPO Design.

Walls (high ones incl optional gates) between resident's backyards and the greenspace could be included in the discussion.
Comments noted.

Additional notes:

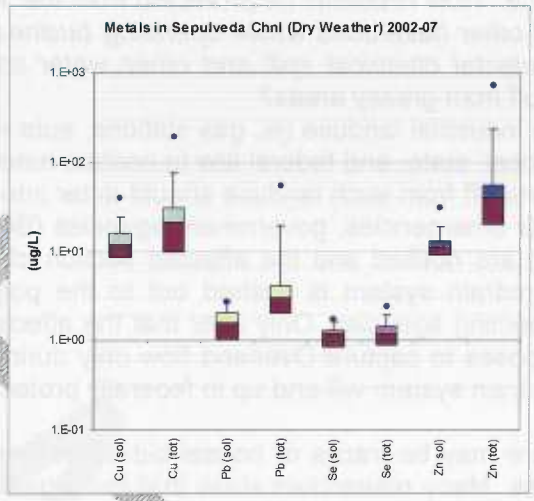
Trash cans and maintenance of them?
Curbside trash cans are serviced by LA Bureau of Street Services (BOSS) and Dept of Transportation (DOT) and those that are located in City Parks are serviced by Dept of Rec and Parks(RAP) which include cleaning up of cans and transfer of waste to larger bins which are picked up by Bureau of Sanitation (BOS). BOS is responsible for residential, municipal solid waste that also includes bulky items and e-waste. Currently we are looking into which City department will be able to best service the trash cans located in the project site.

What is the quality of water that is being daylighted? Can we get a baseline measurement now (without spending money)? Does WPD have this recent data already?

Based on field samples collected through the years by public agencies, research institutes, and private entities, the concentrations of pollutants vary by landuse (residential, commercial, transportation, education, open space, etc).

Overland stormdrain, which this project proposes to daylight, discharges into Sepulveda Channel which joins Ballona Creek in Mar Vista. The tributary area (drainage area) of Overland drain is ~ 2,400 acres and that of Sepulveda Channel is ~12,000 acres. Landuse characteristics of Overland Drain are very similar to those of Sepulveda Channel (similar water quality).

City conducts weekly and monthly water quality sampling for contaminants such as coliform bacteria and heavy metals. Samples are collected from various locations along Ballona Creek and its tributaries. From 2002 to 2007, the median concentration of E. coli bacteria (indicator bacteria that is associated with and share ninche with the types of bacteria that cause sickness) in Sepulveda Channel was 1,100 MPN/100 mL (most probably number or colony forming bacteria per 100 mL of water). The table contains typical concentrations of metals found in Sepulveda Channel (Cu (sol) means concentration of dissolved copper and Pb (tot) means total recoverable Lead).



What hours will it be open?
Sunrise to sunset.

Will there be lights?
The lighting in the garden may follow the plans of the Bike Path. If DOT and MTA plans to install lights along the bike path it will make it easier to include additional light poles in the garden.

Will there be food and drink and alcohol allowed?
Food and drinks should not be allowed around the stream and walkway to prevent vermin issue and trash falling into the stream. No alcohol is allowed in any of City's premises. No drugs either!

Where are people going to the park their cars?
There will be a designated parking area on the northwest side of the Project (or at least there will be parking made available by MTA but location may change).

How do people get in and out of the park?
The Garden could be accessible from south side (along the bike path), east side (from Overland) as well as from west side (Westwood).

Will the runoff water be monitored and tested?
Water coming in and out of the stream will be tested periodically. Performance and health of landscaped plants will also be monitored to ensure optimal performance in terms of pollutant removal.

How often would the stream bottom net will be replaced or flushed off in order to decrease waste accumulation and increase runoff water cleanup?

The frequency will depend on the concentrations of the effluent water at the exit point. If the influent concentration (entrance) and effluent concentration of the water is the same it means that the components of the pollutant removal mechanism (soil, plants, screens, etc) have reached its saturation point and one or more of the components will need to be serviced or replaced. Accumulated pollutants will be removed from site.

The runoff water source will include a very large area compared to the open water treatment space. How residents be protected from the VOC due to the runoff from gas stations, dry cleaners and other hazardous waste operating businesses, runoff water from the lawns of private houses, accidental chemical spill and other water contaminating sources such as herbicides/pesticides runoff from grassy areas?
The industrial landuse (ie, gas stations, auto repair shops, car washes, factories, etc) are required by local, state, and federal law to contain runoff within their own parcels up to 0.75 inch of rainfall. No runoff from such landuse should enter into the storm drains. In the event of chemical spills and other emergencies, government agencies (BOS, County Fire, Dept of Fish and Game, to name a few) are notified and the affected section of the storm drain is closed off, spill is removed, and stormdrain system is flushed out to the point that it is deemed acceptable by regulating and inspecting agencies. Only after that the affected stormdrain system will convey runoff. The project proposes to capture Overland flow only during the dry weather. Note that anything that goes into the drain system will end up in federally protected waterways such as Ballona Creek.

There may be traces of household herbicides and pesticides that may come off from residential areas. Many researches show that the organics, herbicides and pesticides adhere almost entirely to suspended solids. The headworks (screening, soil medium, etc that mimic the headworks of a water reclamation plants) at the influent area (where water first comes into the project) will be designed to remove and contain such suspended solids in a small area (which will be periodically inspected). Low level of contaminants that escape the screens will be broken down and absorbed by plant root structure into a simpler chemical compounds.

Kids love to stick theirs fingers into the water. Is it dangerous? If so, what precautions will be taking to minimize the exposure to children, pets and wildlife?
The quality of water in the stream will be comparable to those in Reseda Lake, Echo Park Lake, and MacArthur Park Lake, which are exposed to public through the year. However they are not designated for body contact recreation. But people (even children) have been known to have had body contact with these waterbodies and there has been no cases of sickness due to slight body contact, such as dipping fingers in these waterbodies. In order to reinforce what public health officials say, always wash your hands after you touch foreign materials (even soil, pavement, and plants in one's backyard has household contaminants).

City could follow procedures that are in place for facilities that contain non body-contact waters. Signs could be placed along the stream to discourage touching the water and wading in the stream. Dogs have to be on a 6 ft or shorter leash in public areas (required by law). Wildlife that thrives in Ballona Creek concrete channel may find the garden attractive. These species that can thrive in untreated water in Ballona Creek are expected to do well in the garden.

During the dry season will there be any water in the artificial stream?
It will have flow during both wet and dry weather. Dry weather flow will be from Overland drain and wet weather flow will be from street runoff along a section of Westwood Blvd and its alley. See Appendix A for more info about flow.

Who will be replacing and watering the beneficial plants and how often?

The detail is being worked out by the City. Potential responsible agencies are BOS, DOT, RAP, BOSS. Non profit organizations may step in and provide maintenance in terms of landscaping. Frequency will vary. In the beginning it may require more frequent care as the plant community establishes healthy and sustaining colonies. Maintenance may be less frequent one to two years after the project.

What could be a scenario in the case of an Earthquake?
The pumps will shut down and the stream will not be in operation until it is inspected and considered safe by officials.

How will the high pressure gas line currently located below ground be dealt with?
High pressure gas line will be relocated (based on conversations with MTA and DOT).

Could there be or should there be benches?
There will be benches along the stream, as well as educational display boards and interpretive signs.

Why is there a bridge over the stream? ..
To serve as an observation deck where visitors can look down directly into the stream.

Should there be a restrooms? Would this be a requirement? If so, where and how many?
The concept design doesn't include restrooms as they are not a requirement.

Graffiti should be addressed and the design should make it difficult for taggers to vandalize.
Comment noted.

Pathway design should be of a type that won't attract skateboarding, stunt bikes or graffitti.
Pathway will be paved by decomposed granite that looks like a natural ground cover that one will experience when he/she goes hiking in Santa Monica mountaions. It will be very difficult for skateboarders or free riders to do any tricks and stunts in the area.

will the north stream mixing with the runoff from the underground channel below Overland negate the previous filtration benefits before pumping up to the south stream?
The dry weather flow will be pumped to the North swale first then it will flow through culvert to the south swale which discharges the treated water back into the stormdrain at a downstream location therefore there is no cross contamination.

Other than having access to transit, "incorporating into phase 2" probably isn't accurate. Zev's rep mentioned that MTA has nothing to do with what is put on this parcel of city owned land.
Noted

Bike path is part of the funding?
Bike path is not a part of the funding.

What is a Heat-Island effect?
Head Island Effect: Daytime heat in the form of solar radiation and waste heat (human generated heat from combustion of fossil fuel) being trapped by impervious surfaces (such as roof, asphalt, concrete) released to the atmosphere. Note that it feels hotter to walk on concrete sidewalk than unpaved ground or grassy area. Plants absorb heat and light energy and use it to produce energy.

Gates at either end of the greenway closed from Sunset to Sunrise. would not stop transients, the train would run later than sunset, and people walk/jog at all hours. I think design can preclude attractiveness to transients, and trash cans and vigilance will help with both issues. Open access would also allow LAPD access as necessary and preclude issues of keys, locks, etc.
Comment noted. Open Access is a preferred option.

Gates may actually cause the greenway to be a secluded attraction for transients and gangs.
Agree. Comment noted.

What does cfs mean when speaking about flow rate? Cubic feet per second?
Cfs = cubic ft per second.

APPENDIX B – CALCULATIONS

Please see pdf documents.

APPENDIX C – SITE ELEVATION AND HYDRAULIC PLAND AND PROFILE

Please see pdf documents.

APPENDIX D – GEOTECHNICAL REPORT

Please see pdf documents.

APPENDIX E – PICTURES

Please see pdf documents.

APPENDIX F

Please see pdf documents.

APPENDIX B:

NOISE ASSESSMENT

ENTECH CONSULTING GROUP
PLANNING • ENVIRONMENTAL • CONSTRUCTION MANAGEMENT

TECHNICAL MEMORANDUM

DATE:	April 22, 2015
PREPARED FOR:	Mark Williams, CPSWQ, CPESC, QSD Associate Principal, Water Resources AECOM
PREPARED BY:	Michelle Jones, Principal Entech Consulting Group
SUBJECT:	Noise Assessment – Westwood Neighborhood Greenway Project

Introduction

The Westwood Neighborhood Greenway (Greenway) project, located near the new Exposition (Expo) Light Rail station being constructed between Westwood Boulevard and Overland Avenue, is proposing to divert dry-weather flow from the Overland drain to capture runoff from 2,400 acres of drainage area. Diverted water would be hydraulically lifted to a bioswale stream on the north side of the station (North Stream). The bioswale would provide physical and biological water quality treatment by flowing through various plant communities, infiltrating into soil medium, and exposure to sunlight. The North Stream would connect to a South Stream through a culvert that runs under the Expo rail tracks. During the dry-weather approximately 23 to 135 gallons per minute of dry weather flow is expected to be continuously captured and treated by the bioswales.

The elements of the Greenway project are designed to complement the objectives of the Expo Light Rail. The multi-benefit project would provide urban runoff treatment, green space, access to public transit, educational and recreational opportunities. Project elements would include:

- Simulated streams (vegetated swales) on north and south side of the station
- Educational and interpretive signs about local ecology and hydrology
- Native vegetation community (landscaping) and smart irrigation
- Stormwater lift stations (Overland drain) and
- Return flow structure
- Pedestrian walkway on the north side of the station

Currently, the Exposition Corridor Light Rail Project Phase II is under construction and is expected to be completed in mid-2015. Because of the complimenting nature of the proposed project and the potential for economic feasibility, aspects of the Greenway are being considered for tandem construction with the Expo project. Four alternatives are being considered, which include the following:

1. **Alternative 1-** Construction of the Westwood/Rancho Park Station and Bikeway would continue as planned and the proposed Greenway would not be constructed.

2. **Alternative 2-** Construction of the Expo Bikeway would be delayed so that the Greenway and the Bikeway can be constructed concurrently. Construction of the Westwood/Rancho Park Station would remain on schedule, with expected completion in July 2015. By building the Bikeway and the Greenway concurrently, construction impacts on the neighborhood would be reduced. While the period of construction would be delayed, it would be a shorter overall construction period

compared to having the Bikeway and Greenway constructed independently. Construction is estimated to take 18 months.[1]

3. **Alternative 3-** Construction of the Bikeway would continue as planned for completion in July 2015, and the Greenway would be constructed at a later date independently. However, the option of incorporating the Bikeway with a new alignment in the Greenway would be lost, as this alternative assumes no demolition and reconstruction of the Bikeway. Construction is estimated to take 18 months.

4. **Alternative 4-** This alternative is comprised of two parts:

    a. Alternative 4A involves continuing with Expo Bikeway construction as planned (completion in July 2015). Then, the stormwater management features of the Greenway, primarily on the south side of the Expo Line would be completed. Construction of the stormwater management elements (4A) would take approximately 12 months.[2]

    b. Alternative 4B involves adding the infrastructure for pumping and diverting dry-weatherflow for the Greenway on the north side of the Expo Line as funding is available. Construction of the infrastructure would take an additional 12 months of construction once the funding is available.

Project Location

The project area is approximately a 1,200-foot stretch of ROW located along Exposition Boulevard between Westwood Boulevard and Overland Avenue in West Los Angeles. There are four major storm drains that traverse the Exposition Parkway in the project area: 1) the Sawtelle-Westwood stormdrain that runs along Overland Avenue and is under the jurisdiction of the City of Los Angeles; 2) a stormdrain located between Midvale and Kelton streets also under the jurisdiction of the City of Los Angeles; 3) a storm drain running along Military Avenue that is under the jurisdiction of the County of Los Angeles; and 4) a storm drain along Rountree Road under the jurisdiction of the City of Los Angeles.

Regulatory Setting

The City of Los Angeles has developed noise ordinances to regulate and control noise that could adversely affect citizens and residential land uses within Los Angeles. The following is a description of noise requirements for the operation and construction of the proposed project.

City of Los Angeles

Regarding operational noise, the Los Angeles Municipal Code (LAMC) states that operational activities shall not create noise which would cause the noise level on the premises of any other occupied property, or, if a condominium, apartment house, duplex, or attached business, within any adjoining unit, to exceed the ambient noise level by more than 5 dB.[3] For construction, the LAMC states that no construction or repair work shall be performed between the hours of 9:00 p.m. and 7:00 a.m. since such activities would generate loud noises and disturb persons occupying sleeping quarters in any adjacent dwelling, hotel, apartment or other place of residence. If construction, repair or excavation work were to occur between

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1 City of Los Angeles Bureau of Sanitation Watershed Protection Division, 2014. "Westwood Neighborhood Greenway. Preliminary Concept."

2 This estimate was derived from the City of Los Angeles 2014 "Westwood Neighborhood Greenway: Preliminary Concept" report which indicates that construction duration for the full Greenway would be 18 months. AECOM assumed that constructing elements of the Greenway separately as described in alternatives 4a and 4b would add some inefficiencies. As such, a 12 month construction duration, rather than 9 months (half of 18 months), was estimated for 4A and 4B.

3 City of Los Angeles *Section. 112.04. Powered Equipment Intended for Repetitive Use in Residential Areas and Other Machinery, Equipment, and Devices*

these hours, written permission of the Board of Police Commissioners through its Executive Director must be obtained.[4]

The LAMC also specifies the maximum noise level of powered equipment. Any powered equipment that produces a maximum noise level exceeding 75 dBA at a distance of 50 feet is prohibited. However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means the above noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of equipment.[5]

The City of Los Angeles has published the City of Los Angeles CEQA Thresholds Guide (2006), which includes significance thresholds for construction and operational noise. For construction noise, the significance thresholds apply if activity occurs within 500 feet of a residential use or between the hours identified in the Noise Ordinance. The proposed project would have construction activities occurring within 500 feet of residential land uses; therefore, the significance thresholds would be applicable. The Thresholds Guide defines a significant construction noise impact from a proposed project if:

(a) construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a residential land use;

(b) construction activities lasting more than 10 days in a three month period would exceed existing ambient exterior noise levels by 5 dBA or more at a residential land use; or

(c) construction activities would exceed the ambient noise level by 5 dBA at a residential land use between the hours of 9:00 p.m. and 7:00 a.m., Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday.

The operational thresholds are applicable for land development projects if:

(a) there are stationary sources that are likely to be audible beyond the property line of the project site; or

(b) there are 75 or more dwelling units, 100,000 square feet or greater of nonresidential development, or has the potential to generate 1,000 or more average daily vehicle trips.

This proposed project would not meet these conditions; therefore, the operational thresholds would not be applicable. However, the City of Los Angeles Noise Ordinance for operational noise would apply and are used to assess noise impacts from the proposed project in this memorandum.

Existing Environment

A noise study was performed to evaluate the potential impacts generated by the construction and operation of the Exposition Corridor Light Rail Project Phase II. The existing noise conditions along the proposed Expo Phase II, near the proposed project site, were documented through monitoring performed at representative noise sensitive sites along the proposed alignments. Noise-sensitive receivers identified within the Westwood neighborhood include single-family residences and the Overland Elementary School for Advanced Studies. Two short-term and one long-term noise measurements were performed within the proposed project area. The location and noise levels at each noise measurement location are shown in Table 1. Noise levels in Table 1 are expressed in L_{eq}, an equivalent sound level that represents an average of the sound energy occurring over a specified period.

[4] City of Los Angeles *Section. 41.40. Noise Due to Construction, Excavation Work – When Prohibited*

[5] City of Los Angeles *Section. 112.05. Maximum Noise Level of Powered Equipment or Powered Hand Tools*

Table 1. Summary of Noise Measurement Results

Receiver ID	Location	Primary Noise Source	Measurement Start		Measured L_{eq} (dBA)
			Date	Time	
ST2	Southeast corner of Exposition Boulevard and Westwood Boulevard	Westwood Boulevard	4/12/2007	3:18 P.M.	67
ST3	Northeast corner of Overland Avenue and Northvale Road	Overland Avenue	4/12/2007	3:56 P.M.	67
LT5	Backyard of a single-family residence on Ashby Avenue	Overland Avenue	5/8/2007	7:51 P.M.	58[1]

Notes:
Source: Exposition Corridor Transit Project Phase 2 FEIR, December 2009.
1. Long-term noise measurements are in L_{dn}.

Construction Noise Impact Analysis

Potential increases to existing ambient noise levels were evaluated for the construction of the proposed Greenway project because construction can generate short-term noise impacts to residential land uses within the proposed project area. If the lift station was also installed, operational noise impacts may also occur from the pump system that would be required to divert and deliver urban runoff to the surface of the ROW.

The assessment of construction noise impacts must be relatively general at this phase of the project because many of the decisions affecting noise will be at the discretion of the contractor. However, an assessment based on the type of equipment expected to be used by the contractor can provide a reasonable estimate of potential noise impacts and the need for noise mitigation. A list of construction equipment that would be utilized for each alternative is presented in Table 2, along with their associated maximum noise level (L_{max}) values.

Table 2. Construction Equipment Noise

Equipment	Maximum Noise Level (L_{max} dBA at 50 feet)
Alternative 4A	
Excavator	85
Backhoe	80
Loader	84
Grader	85
Alternative 2,3, and 4B	
Crane	85
Concrete Mixer Truck	85
Generator	82

Source: Federal Transit Administration 1995.

This information along with usage factors served as inputs into the FHWA Road Construction Noise Model (RCNM)[6]. Existing baseline day and night L_{eq} noise levels were also entered into the model from field measurement data. L_{max} and L_{eq} noise levels were calculated at the nearest residential land use for each piece of equipment and respective construction phase. Noise levels were estimated based on a worst-case scenario, which assumed all pieces of equipment would be operated simultaneously during each

[6] The Federal Transit Administration (FTA) incorporates the FHWA RCNM methodology for assessing construction noise impacts from transit projects as discussed in Section 12.1.2 of FTA's guidance manual (*Transit Noise and Vibration Impact Assessment*). The FTA guidance shows the acoustical formulas that the FHWA RCNM uses in the model.

construction phase. The calculated noise level was then compared to the respective local noise regulation to determine if construction would cause a short-term noise impact at nearby residential land uses.

Alternatives 2 and 3 are expected to occur over a period of 18 months. Construction of Alternative 4A would take approximately 12 months to complete, and Alternative 4B would take an additional 12 months. Although the construction activity is short in duration, receiver distance to the construction activity along with the construction equipment operating at maximum load would have the greatest influence on construction noise levels experienced at residential land uses.

Alternative 4A

Alternative 4A would involve construction of Greenway stormwater management features primarily on the south side of the Expo Line. Construction noise impacts were determined at a minimum distance of 50 feet, per the City of Los Angeles' maximum noise limit of 75 dBA L_{eq} at 50 feet. First-row single-family residential properties located north of the proposed project area are approximately 40 feet from the center of the construction activity. First-row single-family residential located south of the proposed project area are approximately 50 feet from the center of the construction activity. Table 3 presents the existing noise levels and the total construction noise level 50 feet from the construction sites estimated by RCNM.

As shown in Table 3, the L_{max} noise levels for the majority of the construction equipment are greater than the City of Los Angeles' maximum noise limit of 75 dBA L_{eq} at 50 feet. However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means the above noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of equipment.

When evaluating estimated construction noise increases over ambient background noise levels for the nearest noise-sensitive receivers, it was determined that potential impacts would increase ambient noise levels at nearby residential land uses over the CEQA threshold of 10 dB. These exceedances are largely due to the construction activity occurring within close proximity to residential land uses and the simultaneous operation of construction equipment. However, it is anticipated that construction work would not occur on Sunday; therefore, the Sunday noise restrictions do not apply to the construction of the proposed project.

Table 3. Predicted Construction Noise Levels – Alternative 4A

Construction Equipment	Existing Noise Level, dBA L_{eq}	Estimated Construction Noise Level, dBA L_{eq}	Increase over Ambient of 10 dB or greater?[a]	Increase over Ambient of 5 dB or greater on Sundays?[b]
	50 feet from construction activity			
Excavator	67	85	Yes	Yes
Backhoe				
Tractor				
Grader				

Notes:
a) Hourly limitation is between the hours of 9:00 p.m. and 7:00 a.m., Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday.
b) Construction is not expected to occur on Sunday.

Alternative 2, 3, and 4B

Alternatives 2, 3, and 4B will include the construction activity and equipment activity from Alternative 4A, as well as construction of the structure that houses the lift station. Construction of Alternatives 2 and 3 will take approximately 18 months to complete and will include additional construction equipment. Construction of Alternative 4B will take approximately 12 months to complete. Table 4 presents the

existing noise level and the total construction noise level 50 feet from the construction site estimated by RCNM.

As shown in Table 4, the L_{max} noise levels for the majority of the construction equipment are greater than the City of Los Angeles' maximum noise limit of 75 dBA L_{eq} at 50 feet before mitigation is employed. When evaluating estimated construction noise increases over ambient background noise levels for the nearest noise sensitive receivers, it was determined that potential impacts would increase ambient noise levels at nearby residential land uses over the CEQA threshold of 10 dB. These exceedances are largely due to the construction activity occurring within close proximity to residential land uses and the simultaneous operation of construction equipment. However, it is anticipated that construction work would not occur on Sunday; therefore, the Sunday noise restrictions do not apply to the construction of the proposed project. Further, mitigation measures can be employed where technically feasible such as the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of equipment. However, if these mitigation measures are found to be technically infeasible, the construction noise limitations do not apply.

Table 4. Predicted Construction Noise Levels – Alternatives 2, 3, and 4B

Construction Equipment	Existing Noise Level, dBA L_{eq}	Estimated Construction Noise Level, dBA L_{eq}	Increase over Ambient of 10 dB or greater?[a]	Increase over Ambient of 5 dB or greater on Sundays?[b]
	50 feet from construction activity			
Excavator	67	86	Yes	Yes
Backhoe				
Tractor				
Grader				
Dozer				
Crane				
Concrete Mixer Truck				
Generator				

Notes:
a) Hourly limitation is between the hours of 9:00 p.m. and 7:00 a.m., Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday.
b) Construction is not expected to occur on Sunday.

Operation Noise Impacts

Long-term impacts were assessed from the operation of the proposed project to determine whether increases would occur over ambient noise levels at the noise sensitive receivers within the project area. Operational impacts are not expected to occur for Alternative 4A, as there are no operational activities that could generate additional noise within the proposed project area. Alternative 2, 3, and 4B will require a pump system to bring water to the surface of the ROW. Since dry-weather urban runoff at the diversion location is essentially continuous, the pump system operation is assumed to be continuous (24 hours each day). Operation of the lift station would include a 2-horsepower (hp) pump to handle 1 cubic feet per second (cfs) of water will be housed in a maintenance shed.

Under these conditions, the pump system would generate a noise level of approximately 45 dBA at a reference distance of 3 feet. As sound radiates uniformally outward, the levels would attenuate or drop off at a rate of 6 dBA for each doubling of the distance. As the nearest single-family residence is 40 feet from the proposed project site, the attenuation of the pump system would be nearly negligible by the time the sound radiates to the noise sensitive receivers. Therefore, the operation of pump system would not cause an increase in noise levels of 5 dB, therefore a significant increase in noise levels would not occur at residential land uses surrounding the project site.

Mitigation Measures

The construction of Alternatives 2, 3 and 4 would potentially generate noise impacts at nearby residential land uses. Proposed mitigation measures to reduce construction noise levels shall include limiting construction hours, reducing the amount of equipment operating simultaneously, constructing temporary noise barriers, maintaining construction equipment in proper operating condition and equipping construction equipment with appropriate mufflers will reduce construction noise impacts to less than significant levels.

Conclusion

Operation of the pump system would not cause an increase in noise levels over the existing ambient noise levels. Sound levels generated by the pump system will steadily decrease as the sound travels closer to the nearby residential land uses. Therefore, operation of the pump system would not cause a significant increase in noise levels to residential land uses surrounding the project site.

The construction of the proposed projects noise levels without mitigation would exceed the City of Los Angeles maximum noise limit of 75 dBA at 50 feet while equipment is operating simultaneously. Further, unmitigated construction noise levels would increase the ambient noise level above 10 dB.

The recommended mitigation measures for the proposed project include limiting construction hours, reducing the amount of equipment operating simultaneously, maintaining construction equipment in proper operating condition and utilizing mufflers. Additional, constructing temporary noise barriers that break the line-of-sight between the nearby residential land uses and the construction activity can reduce construction noise levels by 8 to 10 dB. Implementing these mitigation measures would reduce increases in ambient construction noise levels at nearby residential lanes uses to below CEQA thresholds, resulting in a less than significant impact. It is also anticipated that construction work would not occur on Sunday; therefore, the Sunday noise restrictions do not apply to the construction of the proposed project. However, if these mitigation measures are found to be technically infeasible, the construction noise limitations do not apply.

References

City of LA 2002 — City of Los Angeles, CEQA Guidelines, July 2002

City of LA 2013 — City of Los Angeles Municipal Code Chapter XI Noise Regulation. http://www.amlegal.com/nxt/gateway.dll/California/lamc/municipalcode?f=templates$fn=default.htm$3.0$vid=amlegal:losangeles_ca_mc. Website checked July 2013.

City of LA 2014 — City of Los Angeles Bureau of Sanitation Watershed Protection Division. "Westwood Neighborhood Greenway. Preliminary Concept." June 2014

FHWA 2006 — United States Department of Transportation, FHWA Roadway Construction Noise Model. RCNM. January 2006.

FTA 2006 — Federal Transit Administration. *Transit Noise and Vibration Impact Assessment.* May 2006.

APPENDIX C:

DETAILED COST ESTIMATE

WESTWOOD NEIGHBORHOOD GREENWAY

SUMMARY OF ALTERNATIVE ESTIMATED COSTS - 4/17/2015

ITEM	Alt 1	Alt 2	Alt 3	Alt 4A	Alt 4B	Total Alt 4
Inlet and Outlet	$ -	$ 1,534,302	$ 1,549,247	$ 117,517	$ 1,465,475	$ 1,582,993
Bioswale	$ -	$ 644,742	$ 651,022	$ 394,545	$ 313,511	$ 708,056
Swaleside Landscaping	$ -	$ 359,006	$ 402,492	$ 240,813	$ 189,008	$ 429,822
TOTAL	**$ -**	**$ 2,538,050**	**$ 2,602,761**	**$ 752,876**	**$ 1,967,995**	**$ 2,720,871**

Notes:

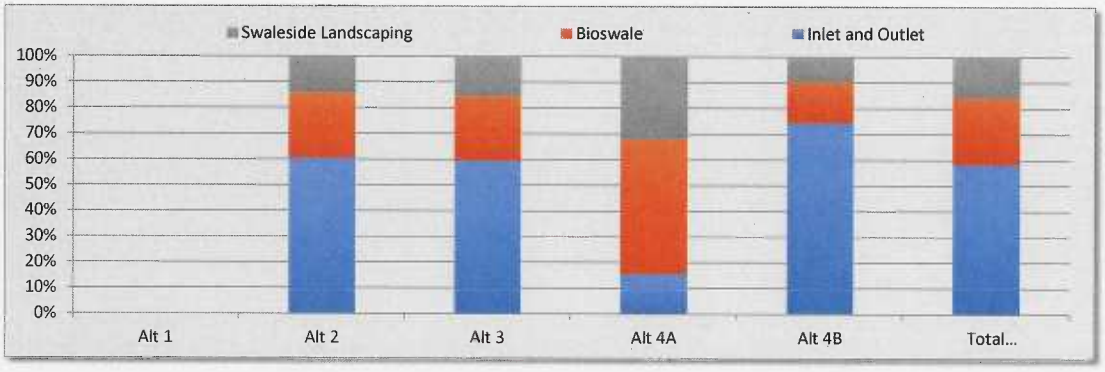
Alternative 1: Estimate assumes only the costs associated with the bike path, without greenery.

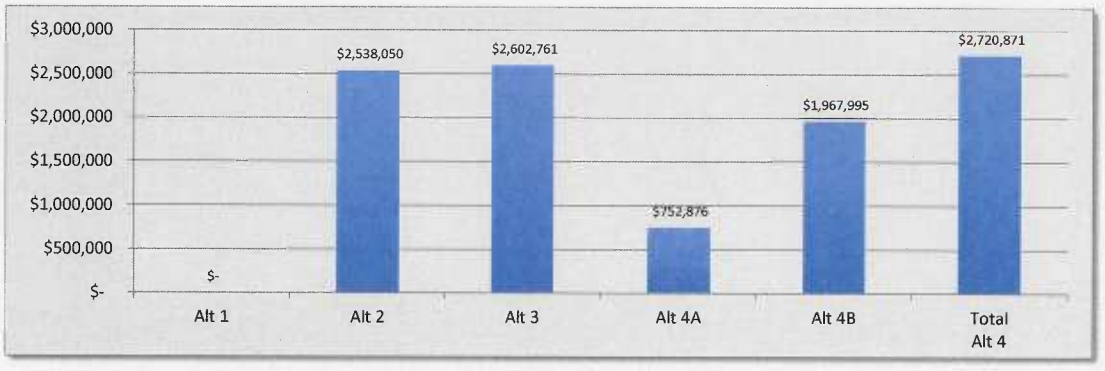
Alternative 2: Is apparently the best alternative with respect to schedule and only marginally more expensive than Alternative 3.

Alternative 3: The cost for this alternative would exceed alternative 2 were any demolition to be done.

Alternative 4: By delaying the lift station and pump to the second phase of construction, it is possible to meet the $750K ceiling. The costs relative to a number of percentage completions have been calculated in the details provided in tabs 4a and 4b.

Assumptions for each alternative are provided under each tab. The assumptions tab is a compilation of the information provided by AECOM.





Alternative 1

Preliminary Cost Estimate-Westwood Neighborhood Greenway

	INLET AND OUTLET				
		Unit	Quantity	Price	Item Total
1	Storm Flow Diversion and Catch Basins	EA	0	$45,000	$ -
2	Return Flow Connection Structure	EA	0	$90,000	$ -
3	Lift Station	EA	0	$375,000	$0
4	Pump (South to North Swale)	EA	0	$20,000	$0
5	Piping and Valves	EA	0	$100	$0
6	Filter Medium	LS	0	$85,000	$0
7	Screens and Hydrodynamic Separator	LS	0	$90,000	$0
8	Instrumentation and Control System	EA			$0
9	Mobilization (5%)	LS			$0
10	Traffic Control	LS			$0
11	Project Planning	LS			$0
12	Permits	LS			$0
13	Predesign and design (22%)	LS			$0
14	Construction & Post-construction Mgmt (12%)	LS			$0
15	**SUBTOTAL**				$0
16	Escalation (3% per year)				$0
17	Estimation contingency (25%)				$0
18	Construction Contingency (20%)				$0
	TOTAL				$0
	BIOSWALE				
		Unit	Quantity	Price	Item Total
19	Sand	CY	0	$50	$0
20	River Pebbles	CY	0	$120	$0
21	Mountain Gray Boulders (48"+ diameter)	MT TON	0	$760	$0
22	Yosemite Boulders (18" to 30")	MT TON	0	$480	$0
23	Cinder Blocks (Stream Bottom Cover)	SF	0	$2.50	$0
24	One gal shrubs	EA	0	$15	$0
25	Clearing and Grubbing	LS	0.00	$60,000	$0
26	Grading	CY	0	$18	$0
27	Mobilization (5%)	LS			$0
28	Permits	LS			$0
29	Predesign and design (22%)	LS			$0
30	Project planning	LS			$0
31	Construction & Post-construction Mgmt (12%)	LS			$0
32	**SUBTOTAL**				$0
33	Escalation (3% per year)				$0
34	Estimation contingency (25%)				$0
35	Construction Contingency (20%)				$0
	TOTAL				$0

Alternative 1

Preliminary Cost Estimate-Westwood Neighborhood Greenway

	SWALESIDE LANDSCAPING				
		Unit	Quantity	Price	Item Total
36	Planting 1 gal Shrubs (1 per 5 sq ft)	EA	0	$15	$0
37	Planting Liner Shrubs	EA	0	$10	$0
38	Assorted Native Trees (5' to 7')	EA	0	$150	$0
39	Decomposed Granite	CY	0	$75	$0
40	Mulch	CY	0	$30	$0
41	Signage	EA	0	$500	$0
42	Mountain Gray Boulders (48"+ diameter)	MT TON	0	$760	$0
43	Yosemite Boulders (18" to 30")	MT TON	0	$480	$0
44	Mobilization (5%)	LS			$0
45	Permits	LS			$0
46	Predesign and design (22%)	LS			$0
47	Project Planning	LS			$0
48	Construction & Post-construction Mgmt (12%)	LS			$0
49	**SUBTOTAL**				$0
50	Escalation (3% per year)				$0
51	Estimation contingency (25%)				$0
52	Construction Contingency (20%)				$0
	TOTAL				$0

GRAND TOTAL $ -

ASSUMPTIONS

Alternative 1

Description

In Alternative 1, construction of the Expo Station and Bikeway would continue as planned and a Greenway would not be constructed.

Cost

- [Expo Cost only]

Construction Timeline

Construction of the Station and Bikeway are estimated to be complete in July 2015.

Note: Under Alternative 1, the 'Expo cost only' effectively zeros out everything

Alternative 2

Preliminary Cost Estimate - Westwood Neighborhood Greenway

	INLET AND OUTLET				
		Unit	Quantity	Price	Item Total
1	Storm Flow Diversion and Catch Basins	EA	0	$45,000	$ -
2	Return Flow Connection Structure	EA	0	$90,000	$ -
3	Lift Station	EA	1	$375,000	$375,000
4	Pump (South to North Swale)	EA	1	$20,000	$20,000
5	Piping and Valves	EA	500	$100	$50,000
6	Filter Medium	LS	1	$85,000	$85,000
7	Screens and Hydrodynamic Separator	LS	1	$90,000	$90,000
8	Instrumentation and Control System	EA			$50,000
9	Mobilization (5%)	LS			$33,500
10	Traffic Control	LS			$5,000
11	Project Planning	LS			$10,000
12	Permits	LS			$50,000
13	Predesign and design (22%)	LS			$147,400
14	Construction & Post-construction Mgmt (12%)	LS			$80,400
15	**SUBTOTAL**				$996,300
16	Escalation (3% per year)				$89,667
17	Estimation contingency (25%)				$249,075
18	Construction Contingency (20%)				$199,260
	TOTAL				$1,534,302
	BIOSWALE				
		Unit	Quantity	Price	Item Total
19	Sand	CY	15	$50	$750
20	River Pebbles	CY	10	$120	$1,200
21	Mountain Gray Boulders (48"+ diameter)	MT TON	80	$760	$60,800
22	Yosemite Boulders (18" to 30")	MT TON	30	$480	$14,400
23	Cinder Blocks (Stream Bottom Cover)	SF	10000	$2.50	$25,000
24	One gal shrubs	EA	400	$15	$6,000
25	Clearing and Grubbing	LS	1	$60,000	$60,000
26	Grading	CY	5926	$18	$106,668
27	Mobilization (5%)	LS			$5,408
28	Permits	LS			$25,000
29	Predesign and design (22%)	LS			$60,460
30	Project planning	LS			$20,000
31	Construction & Post-construction Mgmt (12%)	LS			$32,978
32	**SUBTOTAL**				$418,664
33	Escalation (3% per year)				$37,680
34	Estimation contingency (25%)				$104,666
35	Construction Contingency (20%)				$83,733
	TOTAL				$644,742

Alternative 2

Preliminary Cost Estimate - Westwood Neighborhood Greenway

	SWALESIDE LANDSCAPING				
		Unit	Quantity	Price	Item Total
36	Planting 1 gal Shrubs (1 per 5 sq ft)	EA	400	$15	$6,000
37	Planting Liner Shrubs	EA	800	$10	$8,000
38	Assorted Native Trees (5' to 7')	EA	200	$150	$30,000
39	Decomposed Granite	CY	142	$75	$10,650
40	Mulch	CY	23	$30	$690
41	Signage	EA	6	$500	$3,000
42	Mountain Gray Boulders (48"+ diameter)	MT TON	80	$760	$60,800
43	Yosemite Boulders (18" to 30")	MT TON	30	$480	$14,400
44	Mobilization (5%)	LS			$6,677
45	Permits	LS			$27,500
46	Predesign and design (22%)	LS			$29,379
47	Project Planning	LS			$20,000
48	Construction & Post-construction Mgmt (12%)	LS			$16,024.80
49	**SUBTOTAL**				$233,121
50	Escalation (3% per year)				$20,981
51	Estimation contingency (25%)				$58,280
52	Construction Contingency (20%)				$46,624
	TOTAL				$359,006

GRAND TOTAL $ 2,538,050

Mobilization - no impact because delay is from the Expo side
Permits - 10% impact
ASSUMPTIONS

Alternative 2

Description

In Alternative 2, construction of the Expo Bikeway would be delayed so that the Greenway and the Bikeway can be constructed concurrently. Construction of the Expo station would remain on schedule, with expected completion in July 2015. By building the bikeway and the greenway concurrently, construction impacts on the neighborhood would be reduced. While the period of construction would be delayed, it would be a shorter overall construction period compared to having the Bikeway and Greenway constructed independently. From an engineering and construction efficiency perspective, however, there is not much benefit to building concurrently, because the two projects have mostly separate infrastructure. Though not currently planned, this alternative also allows for the possibility of re-aligning the Bikeway to be incorporated into the Greenway on the City of Los Angeles Right of Way as part of detailed greenway design.

Cost

Alternative 2
Preliminary Cost Estimate - Westwood Neighborhood Greenway

- [Cost of Expo] +
- [Cost of Expo delay] +
- [Cost of Greenway]

Construction Timeline

The Greenway is currently in the planning stage. Pre-design, design, and bid and award are estimated to take 24 months. Following bid and award, construction is estimated to take 18 months.[1] Expo Bikeway construction would also take place within that 18 month construction period. Total timeline from initiation to completion would be 42 months.

Modify the estimate to incorporate cost for a 2-year delay in the construction of the Expo bike path

[1] City of Los Angeles Bureau of Sanitation Watershed Protection Division, 2014. "Westwood Neighborhood Greenway. Preliminary Concept."

Alternative 3

Preliminary Cost Estimate - Westwood Neighborhood Greenway

	INLET AND OUTLET				
		Unit	Quantity	Price	Item Total
1	Storm Flow Diversion and Catch Basins	EA	0	$45,000	$ -
2	Return Flow Connection Structure	EA	0	$90,000	$ -
3	Lift Station	EA	1	$375,000	$375,000
4	Pump (South to North Swale)	EA	1	$20,000	$20,000
5	Piping and Valves	EA	500	$100	$50,000
6	Filter Medium	LS	1	$85,000	$85,000
7	Screens and Hydrodynamic Separator	LS	1	$90,000	$90,000
8	Instrumentation and Control System	EA			$50,000
9	Mobilization (5%)	LS			$33,500
10	Traffic Control	LS			$5,000
11	Project Planning	LS			$10,000
12	Permits	LS			$50,000
13	Predesign and design (22%)	LS			$147,400
14	Construction & Post-construction Mgmt (12%)	LS			$80,400
15	**SUBTOTAL**				$996,300
16	Escalation (3% per year)				$104,612
17	Estimation contingency (25%)				$249,075
18	Construction Contingency (20%)				$199,260
	TOTAL				$1,549,247
	BIOSWALE				
		Unit	Quantity	Price	Item Total
19	Sand	CY	15	$50	$750
20	River Pebbles	CY	10	$120	$1,200
21	Mountain Gray Boulders (48"+ diameter)	MT TON	80	$760	$60,800
22	Yosemite Boulders (18" to 30")	MT TON	30	$480	$14,400
23	Cinder Blocks (Stream Bottom Cover)	SF	10000	$2.50	$25,000
24	One gal shrubs	EA	400	$15	$6,000
25	Clearing and Grubbing	LS	1	$60,000	$60,000
26	Grading	CY	5926	$18	$106,668
27	Mobilization (5%)	LS			$5,408
28	Permits	LS			$25,000
29	Predesign and design (22%)	LS			$60,460
30	Project planning	LS			$20,000
31	Construction & Post-construction Mgmt (12%)	LS			$32,978
32	**SUBTOTAL**				$418,664
33	Escalation (3% per year)				$43,960
34	Estimation contingency (25%)				$104,666
35	Construction Contingency (20%)				$83,733
	TOTAL				$651,022

Alternative 3
Preliminary Cost Estimate - Westwood Neighborhood Greenway

	SWALESIDE LANDSCAPING				
		Unit	Quantity	Price	Item Total
36	Planting 1 gal Shrubs (1 per 5 sq ft)	EA	600	$15	$9,000
37	Planting Liner Shrubs	EA	1200	$10	$12,000
38	Assorted Native Trees (5' to 7')	EA	200	$150	$30,000
39	Decomposed Granite	CY	142	$75	$10,650
40	Mulch	CY	46	$30	$1,380
41	Signage	EA	6	$500	$3,000
42	Mountain Gray Boulders (48"+ diameter)	MT TON	80	$760	$60,800
43	Yosemite Boulders (18" to 30")	MT TON	30	$480	$14,400
44	Mobilization (5%)	LS			$20,031
45	Permits	LS			$31,250
46	Predesign and design (22%)	LS			$29,379
47	Project Planning	LS			$20,000
48	Construction & Post-construction Mgmt (12%)	LS			$16,948
49	**SUBTOTAL**				$258,838
50	Escalation (3% per year)				$27,178
51	Estimation contingency (25%)				$64,709
52	Construction Contingency (20%)				$51,768
	TOTAL				$402,492

GRAND TOTAL $ 2,602,761

Escalation impact - 3.5 years

Permits impact - 25% permit fee increase due to delay

ASSUMPTIONS

Alternative 3

Description

Alternative 3 involves continuing with Expo Bikeway construction as planned to be completed in July 2015. The Greenway would be constructed at a later date independently of the Expo Bikeway. Since the Greenway has been planned for the City of Los Angeles Right of Way and not the Metro Right of Way, this is a feasible alternative. The Bikeway would not be demolished, and it is not anticipated that Greenway construction would impact the Bikeway. However, the option of incorporating the Bikeway with a new alignment in the Greenway would be lost, as this alternative assumes no demolition and reconstruction of the bikeway.

Cost

- [Expo cost] +
- [Greenway cost]

Construction Timeline

Alternative 3

Preliminary Cost Estimate - Westwood Neighborhood Greenway

Expo Bikeway would be complete by July 2015. Greenway pre-design, design, and bid and award are estimated to take 24 months. Following bid and award, construction is estimated to take 18 months. Total Greenway timeline from initiation to completion would be 42 months.

Alternate 4A

Preliminary Cost Estimate - Westwood Neighborhood Greenway

	INLET AND OUTLET				
		Unit	Quantity	Price	Item Total
1	Storm Flow Diversion and Catch Basins	EA	0	$45,000	
2	Return Flow Connection Structure	EA	0	$90,000	
3	Lift Station	EA	0	$375,000	$ -
4	Pump (South to North Swale)	EA	0	$20,000	$ -
5	Piping and Valves	EA	250	$100	$ 25,000.00
6	Filter Medium	LS	0	$85,000	$ -
7	Screens and Hydrodynamic Separator	LS	0	$90,000	$ -
8	Instrumentation and Control System	EA	0	$50,000	$ -
9	Mobilization	LS			$ 750.00
10	Traffic Control	LS			$ 3,000.00
11	Project Planning	LS			$ 6,000.00
12	Permits	LS			$ 30,000.00
13	Predesign and design (22%)	LS			$ 7,480.00
14	Construction & Post-construction Mgmt (12%)	LS			$ 4,080.00
15	**SUBTOTAL**				$ 76,310.00
16	Escalation (3% per year)				$ 6,867.90
17	Estimation contingency (25%)				$ 19,077.50
18	Construction Contingency (20%)				$ 15,262.00
	GRAND TOTAL				$ 117,517.40
	BIOSWALE				
		Unit	Quantity	Price	Item Total
19	Sand	CY	15	$50	$ 450.00
20	River Pebbles	CY	10	$120	$ 720.00
21	Mountain Gray Boulders (48"+ diameter)	MT TON	80	$760	$ 36,480.00
22	Yosemite Boulders (18" to 30")	MT TON	30	$480	$ 8,640.00
23	Cinder Blocks (Stream Bottom Cover)	SF	10000	$2.50	$ 15,000.00
24	One gal shrubs	EA	400	$15	$ 3,600.00
25	Clearing and Grabbing	LS	1	$60,000	$ 36,000.00
26	Grading	CY	5926	$18	$ 64,000.80
27	Mobilization (5%)	LS			$ 8,244.54
28	Permits	LS			$ 15,000.00
29	Predesign and design (22%)	LS			$ 36,275.98
30	Project planning	LS			$ 12,000.00
31	Construction & Post-construction Mgmt (12%)	LS			$ 19,786.90
32	**SUBTOTAL**				$ 256,198.21
33	Escalation (3% per year)				$ 23,057.84
34	Estimation contingency (25%)				$ 64,049.55
35	Construction Contingency (20%)				$ 51,239.64
	GRAND TOTAL				$ 394,545.25

Alternate 4A

Preliminary Cost Estimate - Westwood Neighborhood Greenway

	SWALESIDE LANDSCAPING				
		Unit	Quantity	Price	Item Total
36	Planting 1 gal Shrubs (1 per 5 sq ft)	EA	400	$15	$ 3,600.00
37	Planting Liner Shrubs	EA	800	$10	$ 4,800.00
38	Assorted Native Trees (5' to 7')	EA	200	$150	$ 18,000.00
39	Decomposed Granite	CY	142	$75	$ 6,390.00
40	Mulch	CY	23	$30	$ 414.00
41	Signage	EA	6	$500	$ 1,800.00
42	Mountain Gray Boulders (48"+ diameter)	MT TON	80	$760	$ 36,480.00
43	Yosemite Boulders (18" to 30")	MT TON	30	$480	$ 8,640.00
44	Mobilization (5%)	LS			$ 4,006.20
45	Permits	LS			$ 25,000.00
46	Predesign and design (22%)	LS			$ 17,627.28
47	Project Planning	LS			$ 20,000.00
48	Construction & Post-construction Mgmt (12%)	LS			$ 9,614.88
49	**SUBTOTAL**				$ 156,372.36
50	Escalation (3% per year)				$ 14,073.51
51	Estimation contingency (25%)				$ 39,093.09
52	Construction Contingency (20%)				$ 31,274.47
	TOTAL				$ 240,813.43

GRAND TOTAL	**$ 752,876**

ASSUMPTIONS

Alternative 4a and 4b

Description

This alternative is comprised of two parts, A and B. Alternative 4A involves continuing with Expo Bikeway construction as planned to be completed in July 2015. Then, up to $750,000[1] of stormwater management features of the Greenway, primarily on the south side of the Expo Line would be completed. Alternative 4B involves adding the pumping and dry flow features of the Greenway on the north side of the Expo Line as funding is available.

Cost

- [Expo Cost] +
- [Greenway 60% cost] +
- [Greenway 40% cost+inefficiency]

Construction Timeline

Alternate 4A
Preliminary Cost Estimate - Westwood Neighborhood Greenway

The Expo bikeway portion would be complete in July 2015. For the Greenway, pre-design, design, and bid and award are estimated to take 24 months.[2] Construction of the stormwater management elements (4A) would take approximately 12 months.[3] Construction of the pumping and dry flow treatment features would take an additional 12 months of construction once the funding is available. Total Greenway project timeline would expand in this scenario to a minimum of 48 months and possibly more depending on availability of funds.

18-month additional escalation

[1] Greenway project proponents have indicated that they have secured $750,000 in financing thus far.

[2] City of Los Angeles Bureau of Sanitation Watershed Protection Division, 2014. "Westwood Neighborhood Greenway. Preliminary Concept."

[3] This estimate was derived from the City of Los Angeles 2014 "Westwood Neighborhood Greenway: Preliminary Concept" report which indicates that construction duration for the full Greenway would be 18 months. AECOM assumed that constructing elements of the Greenway separately as described in alternatives 4a and 4b would add some inefficiencies. As such, a 12 month construction duration, rather than 9 months (half of 18 months), was estimated for 4A and 4B.

Alternative 4B

Preliminary Cost Estimate - Westwood Neighborhood Greenway

	INLET AND OUTLET				
		Unit	Quantity	Price	Item Total
1	Storm Flow Diversion and Catch Basins	EA	0	$45,000	
2	Return Flow Connection Structure	EA	0	$90,000	
3	Lift Station	EA	1	$375,000	$ 375,000.00
4	Pump (South to North Swale)	EA	1	$20,000	$ 20,000.00
5	Piping and Valves	EA	250	$100	$ 25,000.00
6	Filter Medium	LS	1	$85,000	$ 85,000.00
7	Screens and Hydrodynamic Separator	LS	1	$90,000	$ 90,000.00
8	Instrumentation and Control System	EA	1	$50,000	$ 50,000.00
9	Mobilization (5%)	LS			$ 32,250.00
10	Traffic Control	LS			$ 2,000.00
11	Project Planning	LS			$ 4,000.00
12	Permits	LS			$ 20,000.00
13	Predesign and design (22%)	LS			$ 143,220.00
14	Construction & Post-construction Mgmt (12%	LS			$ 78,120.00
15	**SUBTOTAL**				$ 924,590.00
16	Escalation (4.5% per year)				$ 124,819.65
17	Estimation contingency (25%)				$ 231,147.50
18	Construction Contingency (20%)				$ 184,918.00
	TOTAL				**$ 1,465,475.15**
	BIOSWALE				
		Unit	Quantity	Price	Item Total
19	Sand	CY	15	$50	$ 300.00
20	River Pebbles	CY	10	$120	$ 480.00
21	Mountain Gray Boulders (48"+ diameter)	MT TON	80	$760	$ 24,320.00
22	Yosemite Boulders (18" to 30")	MT TON	30	$480	$ 5,760.00
23	Cinder Blocks (Stream Bottom Cover)	SF	10000	$2.50	$ 10,000.00
24	One gal shrubs	EA	400	$15	$ 2,400.00
25	Clearing and Grabbing	LS	1	$60,000	$ 24,000.00
26	Grading	CY	5926	$18	$ 42,667.20
27	Mobilization (5%)	LS			$ 5,496.36
28	Permits	LS			$ 25,000.00
29	Predesign and design (22%)	LS			$ 24,183.98
30	Project planning	LS			$ 20,000.00
31	Construction & Post-construction Mgmt (12%	LS			$ 13,191.26
32	**SUBTOTAL**				$ 197,798.81
33	Escalation (4.5% per year)				$ 26,702.84
34	Estimation contingency (25%)				$ 49,449.70
35	Construction Contingency (20%)				$ 39,559.76
	TOTAL				$ 313,511.11

Alternative 4B

Preliminary Cost Estimate - Westwood Neighborhood Greenway

	SWALESIDE LANDSCAPING				
		Unit	Quantity	Price	Item Total
36	Planting 1 gal Shrubs (1 per 5 sq ft)	EA	400	$15	$ 2,400.00
37	Planting Liner Shrubs	EA	800	$10	$ 3,200.00
38	Assorted Native Trees (5' to 7')	EA	200	$150	$ 12,000.00
39	Decomposed Granite	CY	142	$75	$ 4,260.00
40	Mulch	CY	23	$30	$ 276.00
41	Signage	EA	6	$500	$ 1,200.00
42	Mountain Gray Boulders (48"+ diameter)	MT TON	80	$760	$ 24,320.00
43	Yosemite Boulders (18" to 30")	MT TON	30	$480	$ 5,760.00
44	Mobilization (5%)	LS			$ 2,670.80
45	Permits	LS			$ 25,000.00
46	Predesign and design (22%)	LS			$ 11,751.52
47	Project Planning	LS			$ 20,000.00
48	Construction & Post-construction Mgmt (12%	LS			$ 6,409.92
49	**SUBTOTAL**				$ 119,248.24
50	Escalation (4.5% per year)				$ 16,098.51
51	Estimation contingency (25%)				$ 29,812.06
52	Construction Contingency (20%)				$ 23,849.65
	TOTAL				$ 189,008.46

GRAND TOTAL	**$ 1,967,995**

Alternative 4 Total

Preliminary Cost Estimate - Westwood Neighborhood Greenway

	INLET AND OUTLET				
		Unit	Quantity	Price	Item Total
1	Storm Flow Diversion and Catch Basins	EA	0	$45,000	$0
2	Return Flow Connection Structure	EA	0	$90,000	$0
3	Lift Station	EA	1	$375,000	$375,000
4	Pump (South to North Swale)	EA	1	$20,000	$20,000
5	Piping and Valves	EA	500	$100	$50,000
6	Filter Medium	LS	1	$85,000	$85,000
7	Screens and Hydrodynamic Separator	LS	1	$90,000	$90,000
8	Instrumentation and Control System	EA			$50,000
9	Mobilization	LS			$33,000
10	Traffic Control	LS			$5,000
11	Project Planning	LS			$10,000
12	Permits	LS			$50,000
13	Predesign and design (22%)	LS			$150,700
14	Construction & Post-construction Mgmt (12%)	LS			$82,200
15	**SUBTOTAL**				$1,000,900
16	Escalation (3% per year)				$131,688
17	Estimation contingency (25%)				$250,225
18	Construction Contingency (20%)				$200,180
	TOTAL				$1,582,993
	BIOSWALE				
		Unit	Quantity	Price	Item Total
19	Sand	CY	30	$50	$750
20	River Pebbles	CY	20	$120	$1,200
21	Mountain Gray Boulders (48"+ diameter)	MT TON	160	$760	$60,800
22	Yosemite Boulders (18" to 30")	MT TON	60	$480	$14,400
23	Cinder Blocks (Stream Bottom Cover)	SF	20000	$2.50	$25,000
24	One gal shrubs	EA	800	$15	$6,000
25	Clearing and Grabbing	LS	2	$60,000	$60,000
26	Grading	CY	11852	$18	$106,668
27	Mobilization (5%)	LS			$13,741
28	Permits	LS			$40,000
29	Predesign and design (22%)	LS			$60,460
30	Project planning	LS			$32,000
31	Construction & Post-construction Mgmt (12%)	LS			$32,978
32	**SUBTOTAL**				$453,997
33	Escalation (3% per year)				$49,761
34	Estimation contingency (25%)				$113,499
35	Construction Contingency (20%)				$90,799
	TOTAL				$708,056

Alternative 4 Total

Preliminary Cost Estimate - Westwood Neighborhood Greenway

	SWALESIDE LANDSCAPING				
		Unit	Quantity	Price	Item Total
36	Planting 1 gal Shrubs (1 per 5 sq ft)	EA	800	$15	$12,000
37	Planting Liner Shrubs	EA	1600	$10	$16,000
38	Assorted Native Trees (5' to 7')	EA	400	$150	$60,000
39	Decomposed Granite	CY	284	$75	$21,300
40	Mulch	CY	46	$30	$1,380
41	Signage	EA	12	$500	$6,000
42	Mountain Gray Boulders (48"+ diameter)	MT TON	160	$760	$121,600
43	Yosemite Boulders (18" to 30")	MT TON	60	$480	$28,800
44	Mobilization (5%)	LS			$6,677
45	Permits	LS			$50,000
46	Predesign and design (22%)	LS			$29,379
47	Project Planning	LS			$40,000
48	Construction & Post-construction Mgmt (12%)	LS			$16,025
49	**SUBTOTAL**				$275,621
50	Escalation (3% per year)				$30,172
51	Estimation contingency (25%)				$68,905
52	Construction Contingency (20%)				$55,124
	TOTAL				$429,822

GRAND TOTAL $ 2,720,871

APPENDIX D: POTENTIAL FUNDING SOURCES

Potential Funding Sources for Westwood Greenway Project

Funding Sources for Green Infrastructure and Low Impact Development

(Sources that the Westwood Greenway would have the highest likelihood of accessing are highlighted in yellow)

	Grant Title	Donor / Awarding Body	Total Funding	Max Funding per Grantee	Matching	RFP Deadline	Award Criteria Description	Eligibility	Website / Address for Submission	Likelihood of Success Score (Red = High)	Success Projects
City of Los Angeles	Proposition O Funds	City of Los Angeles	Up to $500 million As of March 2015, ~$60 million in bonds remain to be sold	No stated maximum	NA	Rolling	Projects must fall into one or more of the following categories: - Water quality protection - Water conservation, drinking water and source protection - Flood water reduction, river and neighborhood parks that prevent polluted runoff and improve water quality - Stormwater capture, clean-up, and re-use	Administrative Oversight Committee and Citizens Oversight Advisory Committee administer the program funds	http://www.lastormwater.org/green-la/proposition-o/about-proposition-o/	High: Awarded grants for comparable projects have ranged between $300,000 to over $20 million	Albion Riverside Park Echo Park Lake Rehabilitation Westminster Dog Park South Los Angeles Wetlands Park
State of CA	Caltrans Sustainable Transportation Planning Grant Program	Caltrans	$9.8 Million (2015-2016 Cycle)	Depends according to a county-weighting formula	NA	Rolling	Demonstrate improvements to sustainability and safety	Local agencies should work through their Regional Transportation Planning Agency, County Transportation Commission, or Metropolitan Planning Organization to nominate projects.	http://www.dot.ca.gov/hq/LocalPrograms/STIP.htm	Medium: 51 grants totalling $9.8 million were awarded out of 190 total applications in last cycle (2015-2016)	Ventura, CA Green Streets
	Proposition 84 Stormwater Grants Program	California State Water Resources Board (SWRB)	$82 million (all funds have been allocated for rounds 1 and 2)	No stated maximum	NA	Round 3 has not yet been announced	Reduce and prevent stormwater contamination of rivers, lakes, and streams	Local public agencies	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/prop84/	Medium: Current funding cycle (round 2) is fully commited, but round 3 is anticipated to be announced later in 2015 – parties are already preparing potential bids for round 3. Westwoood would have to demonstrate a strong case for reducing stormwater contamination.	Los Angeles River Corridor A Street Mosaic Project in San Diego
	Environmental Enhancement and Mitigation (EEM) Program	California Natural Resources Agency	$7 million / fiscal year	$500,000 per project and up to $1 million if includes land acquisition	Not required	7/13/2015	Contribute to mitigation of the environmental effects of transportation facilities, offer mitigation through urban forestry, resource lands, or other projects beyond the scope of the lead agency	State, local, federal agencies and nonprofit organizations	http://resources.ca.gov/bonds_and_grants/eemp/	Medium: Project would have to demonstrate urban forest / planting benefits	Hollywood, CA ($712,000): Tree Planting & Community Greening Project Tulare, CA ($458,260.) SR 99-Cartmill Ave. Interchange Landscaping Project
	Clean Water Act State Revolving Fund (CWSRF)	Environmental Protection Agency (EPA) and SWRCB	$4.5 billion annually Loans average 1.7% interest up to 20 years	No stated maximum	Not required	Rolling	Demonstrate improvements involving water quality, protecting aquatic wildlife, protecting and restoring drinking water sources, and/or preserving our nation's waters for recreational use	Local and state public agencies	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/docs/final_policy_0215.pdf	High: Application process is ongoing and Westwood falls within eligible criteria.	Hermosa Beach, CA Infiltration Trench El Cerrito, CA Green Streets Rain Gardens Redondo Beach, CA Alta Vista Park Diversion & Reuse Project
	Water Quality, Supply, and Infrastructure Improvement Act of 2014 (2014 Water Bond)	Grant process implemented by State agencies: SWRCB, various State conservancies, California Department of Fish and Wildlife, Department of Water Resources, etc.	$ 7.545 billion	$ 50 million	Grant guidelines still under development	Grant guidelines still under development	Improve water quality, supply, and/or infrastructure	Grant guidelines still under development	http://www.acwa.com/spotlight/2014-water-bond	Medium: Grant process is still under development; however, once active, Westwood satisfies the core eligibilty requirements.	None yet
	Urban and Community Forestry Greenhouse Gas Reduction Fund (GGRF) - 'Woods in the Neighborhood' Grants	State of California Department of Forestry & Fire Protection (CalFire)	$15.7 million for all GGRF grants (FY 14/15)	$0.2 - $1.5 million	Yes (75/25); 25 can be funds or in-kind	2014/2015 grant cycled closed	Expand and better the management of urban forests through the purchase of a vacant urban parcel or parcels and improving them with vegetation	Local public agencies and nonprofit organizations	http://calfire.ca.gov/resource_mgt/downloads/CALFIRE_UF_WoodsInNeighborhoodRFP2014_2015.pdf	Medium: Project would have to demonstrate that new plantings would not require heavy mantainence; project preference is given to disadvantaged / environmental justice communities	None yet; Grants to be awarded by June 2015
	Urban and Community Forestry GGRF - 'Green Innovations Project' Grants	CalFire	$15.7 million for all GGRF grants (FY 14/15)	$0.2 - $1.5 million	Yes (75/25); 25 can be funds or in-kind	2014/2015 grant cycled closed	Projects must be unique and forward-thinking urban green infrastructure projects that demonstrate greenhouse gas reduction, with strong focused on environmental justice communities	Local public agencies and nonprofit organizations	http://calfire.ca.gov/Grants/downloads/UrbanForestry/UCF_GGRF_QandA.pdf	Low: Funding is aimed at mature forests / forestland; project would have to demonstrate that it is a "forest" and has significant GHG reduction potential	None yet; Grants to be awarded by June 2015
Federal	Clean Water Act Nonpoint Source Grant (Section 319 Grants)	Environmental Protection Agency (EPA) with SWRCB	$165 million (per fiscal year)	$750,000 for implementation and $175,000 for planning/ assessment projects	Yes (at least 25 percent of the total project cost)	The solicitation process runs from August (of the previous year) through May of the following year	Must be a nonpoint source related project that requires technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and/or monitoring to assess the project's success. Ineligible projects are in areas that are under or affiliated with a NPDES Permit, or address an issue in a land use included in a MS4s Permit	Local public agencies and nonprofit organizations	http://www.waterboards.ca.gov/water_issues/programs/nps/grant_program.shtml	High: Westwood Greenway falls within established criteria and these funds have been allocated to similar projects.	Los Angeles, CA: River Street Biofiltration Project Honolulu, HI: The Popoia Street and Rain Garden Retrofit Sandy Springs Georgia: Marsh Creek Preserve
	Urban Water Small Grants	Environmental Protection Agency (EPA)	$5.3 million since 2012	Up to $60,000		None at this time	The goal of the Urban Waters Small Grants program is to fund research, investigations, experiments, training, surveys, studies, and demonstrations that will advance the restoration of urban waters by improving water quality through activities that also support community revitalization and other local priorities.	State, local, federal agencies, nonprofit organizations, universities and colleges	http://www2.epa.gov/urbanwaters/urban-waters-small-grants	Medium: There is no outstanding RFP at this time, and none announced for the rest of 2015. However, there will likely be another round in 2016-2017, pending federal funding allocaiton. The grant could fund the educational components of the Greenway rather than construction costs.	Portland, Oregon: Design, planning and performance of water quality sampling and data collection activities Bozeman, Montana: Integrated stream monitoring program

Other Funding Sources For Public Space / Urban Greenways Funding

(Sources that the Westwood Greenway would have the highest likelihood of accessing are highlighted in yellow)

	Grant Title	Source / Awarding Body	Total Funding	Max Funding per Grantee	Matching	RFP Deadline	Award Criteria Description	Eligibility	Website / Address for Submissions	Likelihood of Success (Low, Med, High)	Example Projects
City of Los Angeles	**Public Art Grants**	City of Los Angeles	$18.2 million (FY 2010/2011)	NA	NA	NA	Creation and/or maintenance of art within the public realm	Artists, Arts Groups, Community Organizations, and Projects and / or institutions where the arts, artists or arts groups are partners	http://culturela.org/programs/index.html	Low: Art is a peripheral, rather than core element of the Greenway. Grants go to arts groups / artists rather than capital projects. Could be used at a later stage of the project.	NA
	City Cultural Grants	City of Los Angeles	$2.2 million annually	$75,000	NA	NA	Support community service providers and community artists in Los Angeles	Artists, Arts Groups, Neighborhoods, and Specific Sites	http://culturela.org/programs/index.html	Low: Same as above, but could be "Medium" if project expands its educational component.	NA
Public Art Funding (National)	**Our Town Grants**	National Endowment for the Arts	NA	$200,000	Yes	9/21/2015	Projects must represent the distinct character and quality of their communities. These projects require a partnership between a nonprofit organization and a local government entity, with one of the partners being a cultural organization	Organizations (Public and Private, including Municipalities and Neighborhoods)	http://arts.gov/grants/apply-grant/grants	Low to Medium: Only a possibility if City of LA partners with a community organization for project development	NA
	Art Works	National Endowment for the Arts	NA	$100,000	Yes	February and July, annually	To support the creation of art that meets the highest standards of excellence; public engagement with diverse and excellent art; lifelong learning in the arts; and the strengthening of communities through the arts	Organizations (Public and Private, including Municipalities and Neighborhoods)	http://arts.gov/grants/apply-grant/grants-organizations	Low: Could fund educational / arts components of the Greenway	NA
	Challenge America	National Endowment for the Arts	NA	$10,000	Yes	4/16/2015	To support projects that extend the reach of the arts to underserved populations	Organizations (Public and Private, including Municipalities and Neighborhoods)	http://arts.gov/grants/apply-grant/grants-organizations	Low: Project is in a relatively affluent part of Los Angeles and would have to demonstrate social benefit to underserved community	NA
Alternative Transport	**Recreational Trails Program**	Federal Highway Administration; Administered at State Level by California Department of Parks and Recreation	$85 million	Apportioned to States Equally; States Disburse based on particular formulas	NA	NA	Eligible projects include: maintenance and restoration of existing recreational trails; development and rehabilitation of trailside and trailhead facilities and trail linkages for recreational trails; construction of new recreational trails; acquisition of easements and fee simple title for recreational trail corridors; and assessment of trail conditions.	Local and state agencies and non-profit organizations with managmenet responsibilities of public land	http://www.americantrails.org/rtp/index.html http://www.parks.ca.gov/?page_id=24324	Medium: All funding allocated in current cycle, but there is an upcoming cycle to be announced later in 2015. Projects tend to score better if they connect to broader trail systems.	Duck River bike path / lake / dam project in Alabama (Awarded $100,000)
	California Transportation Commission Active Transportation Program (ATP)	Caltrans Divison of Local Assistance	$120 million annually (FY15/16 - 18/19)	Minimum request considered is $250,000	Not required	6/1/2015 2016 Cycle Deadlines not yet announced	Eligible projects include: Trail facilities, Construction, planning, and design of bike/ped infrastructure. Rights-of-way improvements: billboards, historic and archeological preservation, and vegetation management and erosion control. Stormwater management	Local agencies, regional transportation authorities, transit agencies, nautral resource or public land agencies, school districts	http://www.catc.ca.gov/programs/ATP.htm	High: Cycle 2 deadline was 1 June, 2015, but project could be competitive for Cycle 3 (2016). Westwood Greenway matches other applications and falls within program criteria	Norwalk, Connecticut: West Avenue Connectivity Plan

Metro®

Westwood Greenway
Alternatives Analysis

Los Angeles County
Metropolitan Transportation Authority