Public Review Draft
Initial Study/Mitigated Negative Declaration

Lynwood Park Stormwater Capture Project
City of Lynwood, California

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ACRONYM LIST

$\mu g/m^3$	micrograms per cubic meter
^0F	degrees Fahrenheit
AAM	Annual Arithmetic Mean
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ADA	Americans with Disabilities Act
AF	acre-foot
AQMP	Air Quality Management Plan
BMPs	Best Management Practices
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Prevention
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CalGEM	California Geologic Energy Management Division
CALGreen Code	California Green Building Standards Code
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CHRIS	California Historical Resources Information System
City	City of Lynwood
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO Protocol	Transportation Project Level Carbon Monoxide Protocol
Cortese List	Hazardous Waste and Substances Site List
County	County of Los Angeles
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
cy	cubic yards
dB	decibel
dBA	A-weighted decibel scale
DG	decomposed granite
DLRP	Division of Land Resource Protection
DPM	diesel particulate matter
EFZ	Earthquake Fault Zone
EISA	Energy Independence and Security Act
EMFAC 2021	EMissions FACtor 2021 model
EO	Executive Order
FEMA	Federal Emergency Management Agency

FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
ft	feet
FTA	Federal Transportation Administration
General Plan	City of Lynwood General Plan
GHG	greenhouse gas
GPM	gallon per minute
HVAC	heating, ventilation, and air conditioning
I	Interstate
in/sec	inches per second
IS/MND	Initial Study/Mitigated Negative Declaration
JWPCP	Joint Water Pollution Control Plant
km	kilometer
km/hr	Kilometers per hour
LACM	Natural History Museum of Los Angeles County
LAFCD	Los Angeles County Flood Control District
LARWQCB	Los Angeles Regional Water Quality Control Board
lbs/day	pounds per day
L_{eq}	Average noise level
L_{eq} dBA	Average noise energy in A-weighted decibels
LLAR	Lower Los Angeles River
LLARWMG	Lower Los Angeles River Watershed Management Group
LLARWMP 2015	Lower Los Angeles River Watershed Management Program
L_{max}	maximum noise level
LMC	Lynwood Municipal Code
L_{min}	minimum noise level
LOS	Level of service
LST	localized significance threshold
m	meter
MBTA	Migratory Bird Treaty Act
mg/m^3	milligrams per cubic meter
MMRP	Mitigation Monitoring and Reporting Program
MMs	Mitigation Measures
mph	Miles per hour
MRZ-1	Mineral Resource Zone-1 (an area with no significant mineral deposits)
MRZ-2	Mineral Resource Zone-2 (an area with significant mineral deposits)
MRZ-3	Mineral Resource Zone-3 (an area containing known mineral resources of undetermined significance)
MRZs	Mineral Resources Zones
MS4 Permit	Municipal Separate Storm Sewer System Permit Order No. R4-2012-0175
$MTCO_2e$	metric tons of carbon dioxide equivalent
$MTCO_2e/yr$	metric tons of carbon dioxide equivalent per year

NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP/HCP	Natural Community Conservation Plan/Habitat Conservation Plan
NO_2	nitrogen dioxide
NOx	Oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O&M	Operations and maintenance
O_3	ozone
OHP	Office of Historic Preservation
OS	Open Space
OS-1	Open Space zoning designation
Park	Lynwood Park
PM10	respirable particulate matter with a diameter of 10 microns or less
PM2.5	fine particulate matter with a diameter of 2.5 microns or less
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
Project	Lynwood Park Stormwater Capture Project
RCNM	Roadway Construction Noise Model
rms	root mean square
ROGs	Reactive organic gases
ROW	Right-of-way
RPS	California Renewables Portfolio Standard
RPZ	Runway Protection Zone
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCCIC	South-Central Coastal Information Center
SCGC	Southern California Gas Company
SCWP	Los Angeles County Safe, Clean Water Program
SGMA	Sustainable Groundwater Management Act
SLF	Sacred Lands File
SLM	Sound level meter
SO_2	sulfur dioxide
SoCAB	South Coast Air Basin
SO_x	Oxides of Sulfur
SR	State Route
State	State of California
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TCP	Traffic Control Plan
TCR	Tribal Cultural Resource
UMTA	Urban Mass Transit Administration
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
VHFHSZ	Very High Fire Hazard Severity Zone
VMT	vehicle miles traveled
VOC	volatile organic compound
WATCH	Work Area Traffic Control Handbook
WMP	Watershed Management Program

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1.0 INTRODUCTION

1.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

In accordance with the California Environmental Quality Act (CEQA) (*California Public Resources Code* Section 21000 et seq.) and the State CEQA Guidelines (*California Code of Regulations,* Title 14, Section 15000 et seq.), this Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared as documentation for the proposed Lynwood Park Stormwater Capture Project (Project).

Pursuant to Section 15367 of the State CEQA Guidelines, the City of Lynwood (City) is the Lead Agency for the Project. The Lead Agency is the public agency that has the principal responsibility for carrying out a project and has the authority to approve the Project and its accompanying environmental documentation. This IS/MND includes a description of the Project; the location and setting of the Project site; an evaluation of the potential environmental impacts of Project implementation; and recommended mitigation measures to lessen or avoid impacts on the environment, where applicable.

This IS/MND is organized into the following five sections:

Section 1, Introduction: This section provides an introduction to this IS/MND and the CEQA process; provides a Project overview; summarizes the findings of the IS/MND; and describes the opportunities for public review and comment.

Section 2, Environmental Setting and Project Description: This section provides a description of the Project's location and existing environmental setting; the Project's components, construction scenario, and operational and maintenance needs; and required Project-related approvals.

Section 3, Environmental Checklist: The environmental checklist provides an analysis of potential adverse environmental impacts of all environmental topics, that may result from Project implementation and, if appropriate, identifies mitigation measures to eliminate potential significant effects or reduce them to a less than significant level.

Section 4, Document Preparers and Contributors: This section includes a list of those persons or agencies who participated in or contributed to preparing the IS/MND.

Section 5, References: This section identifies the references used to prepare the IS/MND.

1.2 PROJECT OVERVIEW

The City proposes to construct a regional stormwater runoff capture facility within Lynwood Park to provide multiple benefits including improved flood control, water quality, and water supply (through infiltration to groundwater). The Project would also include nature-based parking lot enhancements with sustainable native landscaping, permeable pavement, and bioswales, as well as recreational enhancements to the park with an ephemeral stream and butterfly garden. The Project has the potential to offer runoff storage and water quality

benefits for Lynwood and South Gate jurisdictions that can address the additional needs for stormwater management. More detailed information on the proposed Project is provided in Section 2.2 of this IS/MND.

1.2.1 SUMMARY OF FINDINGS

This IS/MND evaluates the potential environmental impacts of Project implementation. It includes significance determinations from the environmental analyses and sets forth mitigation measures (MMs) that will lessen or avoid potentially significant Project impacts on the environment.

The City will confirm that all MMs are included in the Contractor Specifications and bid documents, as appropriate, and verified as part of the Mitigation Monitoring and Reporting Program (MMRP).

The analysis in Section 3 of this IS/MND finds that implementation of the Project would have no impact or less than significant impacts for the following environmental topics:

- Aesthetics;
- Air Quality;
- Agriculture and Forestry Resources;
- Energy;
- Greenhouse Gas Emissions;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;
- Land Use and Planning;
- Mineral Resources;
- Population and Housing;
- Public Services;
- Transportation;
- Utilities and Service Systems; and
- Wildfire.

As described in Section 3 of this IS/MND, the Project would have significant impacts related to the following environmental topics unless the recommended MMs are implemented:

- Biological Resources;
- Cultural Resources;
- Geology and Soils;
- Noise and Vibration;
- Recreation; and
- Tribal Cultural Resources (to be included if mitigation is determined to be necessary).

Table 1, Summary of Mitigation Measures, presents the recommended mitigation measures that would reduce or avoid environmental impacts if the Project were implemented. With implementation of these MMs, the Project would have less than significant impacts for each of these environmental topics. Therefore, no significant and unavoidable impacts would

result due to Project implementation. According to Section 15070 to 15075 of the State CEQA Guidelines, an IS/MND is the appropriate environmental document for the Project because, after incorporation of the recommended mitigation measures, potentially significant environmental impacts would be eliminated or reduced to a level considered less than significant.

TABLE 1
SUMMARY OF MITIGATION MEASURES

No.	Mitigation Measure
Biological Resources	
MM BIO-1	The Project shall be conducted in compliance with the conditions set forth in the Migratory Bird Treaty Act (MBTA) and *California Fish and Game Code* with methods approved by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) to protect active bird/raptor nests. As the Project requires that work be initiated during the breeding season for nesting birds (i.e., March 1–September 15) and nesting raptors (i.e., January 1–July 31), the City of Pasadena shall perform, or direct the performance of, a pre-construction survey for nesting birds and/or raptors shall be conducted by a qualified Biologist within three days prior to any construction activities on the Project site and in the immediately surrounding area (i.e., perform survey within 300 ft for nesting birds and within 500 ft for nesting raptors). A qualified Biologist shall be knowledgeable and experienced in conducting nesting bird surveys within Southern California and in determining appropriate buffer size to prevent bird nesting failure. If the Biologist does not find any active nests in or immediately adjacent to the Project site, the construction work shall be allowed to proceed, and no further mitigation is required. If the Biologist finds an active nest in or immediately adjacent to the Project site and determines that the nest may be impacted or breeding activities substantially disrupted due to planned construction activities, the Biologist shall delineate an appropriate buffer zone around the nest depending on the sensitivity of the species and the nature of the construction activity. Any nest found during survey efforts shall be mapped on the construction plans. The active nest shall be protected until nesting activity has ended. To protect any nest site, the following restrictions to construction activities shall be required until nests are no longer active, as determined by a qualified Biologist: (1) construction limits shall be established within a buffer around any occupied nest (the buffer shall be 25–100 ft for nesting birds and 300–500 ft for nesting raptors), unless otherwise determined by a qualified Biologist and (2) access and surveying shall be restricted within the buffer of any occupied nest, unless otherwise determined by a qualified Biologist. Encroachment into the buffer area around a known nest shall only be allowed if the Biologist determines that the proposed activity would not disturb the nest occupants. Construction in a buffer area can proceed when the qualified Biologist has determined that fledglings have left the nest or the nest has failed. These requirements shall be monitored by the City of Lynwood.
Cultural Resources	
MM CUL-1	Prior to the initiation of any earthmoving activity in which native soil is disturbed, the City shall be responsible for retaining a qualified Archaeologist to observe grading activities and to salvage and catalogue archaeological resources, as necessary. The Archaeologist shall be present at the pre-grade conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the City or its designee, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of any discovered artifacts as appropriate. If archaeological resources are found to be significant pursuant to Section 15064.5 of the State CEQA Guidelines, the Archaeologist shall determine appropriate actions, in cooperation with the City or its designee, for exploration and/or recovery. The Archaeologist shall also prepare a report of findings. The report shall

TABLE 1
SUMMARY OF MITIGATION MEASURES

No.	Mitigation Measure
	include the period of inspection, an analysis of any artifacts found, and the present repository of the artifacts. The Archaeologist shall prepare excavated material to the point of identification and curation. The City or its designee shall pay curatorial fees associated with the cost of curation.
Geology and Soils	
MM GEO-1	In the event that paleontological resources are inadvertently unearthed during excavation activities, the contractor shall immediately cease all earth-disturbing activities within a 100-foot radius of the area of discovery and the contractor shall contact the City's Community Development Director immediately. The City shall retain a qualified professional paleontologist to evaluate the significance of the find, and in consultation with the City, determine an appropriate course of action. If the paleontological resources are found to be significant, the paleontologist, in consultation with the City, shall determine appropriate actions for exploration and salvage. After the find has been appropriately avoided or otherwise mitigated, work in that area may resume.
Noise and Vibration	
MM NOI-1	Construction Timing: Avoid construction during evening and nighttime hours (7:00 p.m. to 7:00 a.m.) and on weekends and holidays.
MM NOI-2	Equipment Noise Abatement Maintenance: Ensure that all construction equipment has the manufacturers' recommended noise abatement measures, such as mufflers and engine enclosures, and is intact, in good condition, and operational.
MM NOI-3	Equipment Idling: Turn off idling equipment that isn't imminently needed during construction activities.
MM NOI-4	Prior to the issuance of a grading permit, the project Applicant or designee must produce evidence acceptable to the City of Lynwood Community Development Director demonstrating that any pile driving done during the Project must be done using drilled piles, a sonic/vibratory pile driver, or a push pile driver.
Tribal Cultural Resources	
MM TCR-1	To be included if mitigation is determined to be necessary.

2.0 ENVIRONMENTAL SETTING AND PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The Project is located within the northeastern portion of Lynwood Park (Park), at 11301 Bullis Road within the City of Lynwood (City) and County of Los Angeles (County). Within a regional context, the Project site is located approximately 0.4 mile north of Interstate (I)105, 1.5 miles west of I-710, 4.4 miles east of I-110, and 1.7 miles south of State Route (SR) 42.

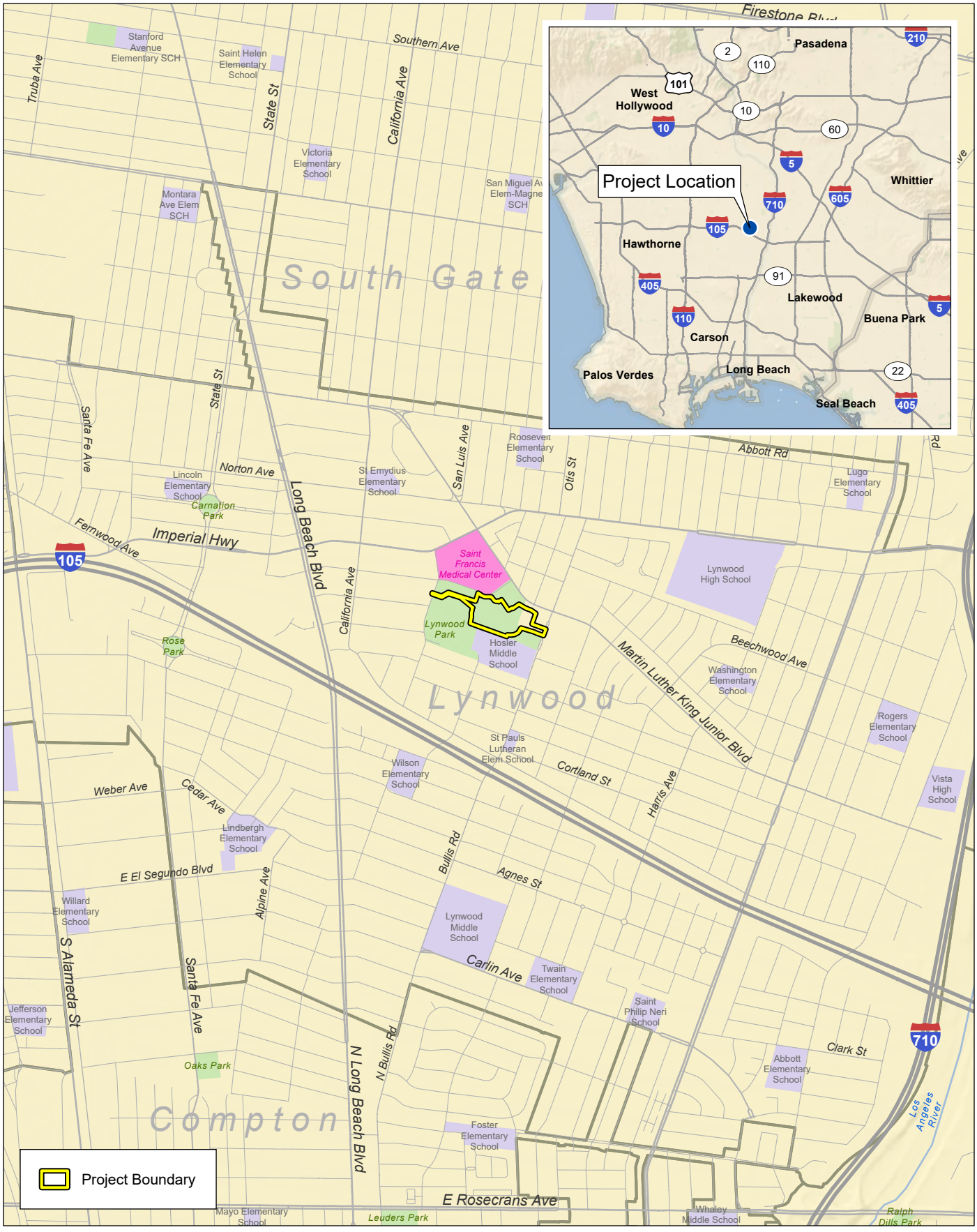
Within a local context, the Project site is bound on the north by Ceaser E. Chavez Lane and Martin Luther King Jr. Boulevard, on the east by Bullis Road and the Lynwood City Hall, on the south and southeast by Hosier Middle School and Spruce Street, and on the west by Birch Street and multiple-family residential properties, as shown on Exhibit 1, Regional Location and Local Vicinity. Primary vehicular access to the Project site is provided at multiple ingress points, including Bullis Road located east of the site, Martin Luther King Jr. Boulevard located northeast of the site, and Spruce Street located south of the site.

2.2 PROJECT BACKGROUND AND NEED

The Project is funded by the Los Angeles County Safe, Clean Water Program (SCWP), which aims to plan, build, and maintain multi-benefit watershed-based projects that improve water quality and increase water supply and/or enhance communities. The SCWP is developed in collaboration with public health, environmental groups, cities, businesses, labor, and community-based organizations.

The Project site has the potential to provide significant benefits for the jurisdictions of Lynwood and South Gate, including a sizable drainage area – 955 acres-- 36.8 percent of which is occupied by the City and available development space within the Project site that can offer runoff storage and water quality benefits. The Project would also address the additional need for stormwater management identified to achieve compliance with *Lower Los Angeles River Watershed Management Program* (LLARWMP 2015), as the City is a member of the Lower Los Angeles River Watershed Management Group (LLARWMG).

The LLARWMP Group is comprised of the Los Angeles County Flood Control District (LACFCD), Caltrans, and the Cities of Downey, Lakewood, Long Beach, Lynwood, Paramount, Pico Rivera, Signal Hill, and South Gate. The LLARWMP Group was established in response to provisions of the County National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System Permit Order No. R4-2012-0175 (MS4 Permit), and the City of Long Beach MS4 Permit Order No. R4-2014-0024. The Watershed Management Program (WMP) Group, through a cooperative and collaborative process, developed a WMP Plan. The Final WMP Plan, dated June 2015 (later modified and reapproved in August 2017), was approved, with conditions, by the Los Angeles Regional Water Quality Board (LARWQB) on April 28, 2015. The WMP Plan was identified as a suite of watershed control measures and Best Management Practices (BMPs), including regional priority projects. Potential sites



Regional Location and Local Vicinity

Exhibit 1

Lynwood Park Stormwater Capture Project IS/MND

N
W E
S

0 1,000 2,000
Feet

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for targeted control measures were identified in the WMP Plan and recommended by the LLARWMP Group for further evaluation and potential implementation to meet compliance for the watershed. The Lynwood Park location was one of the identified regional stormwater capture sites within the LLARWMP (LLARWMP 2017).

The performance of the proposed BMP, the regional stormwater capture facility, must meet the performance metrics established for the Project in the SCWP transfer agreement, which highlights the major mechanisms by which the Project would achieve the targets including through diversion, runoff/pollutant filtration, and recharge. The Project would address zinc and bacteria as stormwater runoff pollutants.

2.3 PROJECT SITE AND SURROUNDING AREA SETTING

2.3.1 ON-SITE AND SURROUNDING LAND USES

The existing Lynwood Park is a 23-acre, multi-purpose facility that provides multiple amenities for both active and passive recreation owned and operated by the City. The approximate 9.7-acres Project site includes a large grass and infield soil area used as three lighted soccer fields, a parking lot, concrete walking paths, landscaped areas, and approximately 0.3-acres of public rights-of-way (ROW), primarily comprised of a portion of street within Bullis Road and Birch Street, associated with the diversion structure and drain lines. The *City of Lynwood General Plan (*General Plan) land use designation for the Project site, not including the public ROW, is Open Space and the zoning is OS (Open Space).

The remainder of Lynwood Park is located immediately south and southwest of the Project site. Lynwood Park is situated in a densely developed, urban area with commercial, public, and residential, primarily single- and multi-family land uses located nearby. Public facilities near the Project site include Hosier Middle School, located immediately to the south of the site, and Lynwood City Hall and Library, immediately to the east across Bullis Road. Commercial uses, including the St. Francis Medical Center, are located north of the Project site across E. Ceaser Chavez Lane and Martin Luther King Jr. Boulevard, as well as northeast across Bullis Road. Multi-family residential uses are immediately to the west of the Project site across Birch Street and townhomes are located to the south of the Project site across Spruce Street. The sensitive receptors near the Project site are detailed in Section 3.3, Air Quality, of this IS/MND.

2.3.2 PHYSICAL SETTING

Topography and Geology

The Project site is located within the Los Angeles Basin of the Peninsular Ranges Geomorphic Province (Ninyo & Moore 2023). The basin has been divided into four blocks, the northeastern, northwestern, southwestern, and central blocks that are separated by prominent fault systems.

The Project site is located within the central block, which is underlain by up to approximately 35,000 feet of Cretaceous to Pleistocene-age marine and non-marine sedimentary rock. The sedimentary rock is overlain by late Pleistocene to Holocene-age alluvial deposits associated with the ancestral Los Angeles and San Gabriel Rivers. According to the Geotechnical Report, the Project site is generally underlain by Holocene to late Pleistocene-age young alluvium consisting of poorly consolidated, poorly sorted, permeable floodplain deposits of soft, clay and silt, and loose to moderately dense, sand and silty sand (Ninyo & Moore 2023). The California Department of Mines and Geology has also mapped the site as being underlain by young alluvium deposits consisting of loose to medium dense, very coarse- to very fine-grained sand, gravel, and silt that overlap laterally into each other. Various fills are anticipated at the site associated with past earthwork, including building construction and underground utility installation (Ninyo & Moore 2023).

2.4 PROJECT DESCRIPTION

The proposed Project would construct a regional stormwater runoff capture facility, or a BMP, within Lynwood Park to provide multiple benefits including improved flood control, water quality, and water supply (through infiltration to groundwater), as shown on Exhibit 2, Site Plan. The stormwater facility would involve two stormwater diversion structures which would divert water from LACFCD East Compton Creek storm drains located along Bullis Road and Birch Street into an underground capture, treatment, and infiltration facility situated beneath the existing soccer fields. The Project represents an opportunity to implement regional-scale pollutant load reductions from a sizeable drainage area in the Lower Los Angeles River (LLAR) Watershed as well as increase infiltration to the underlying groundwater aquifer.

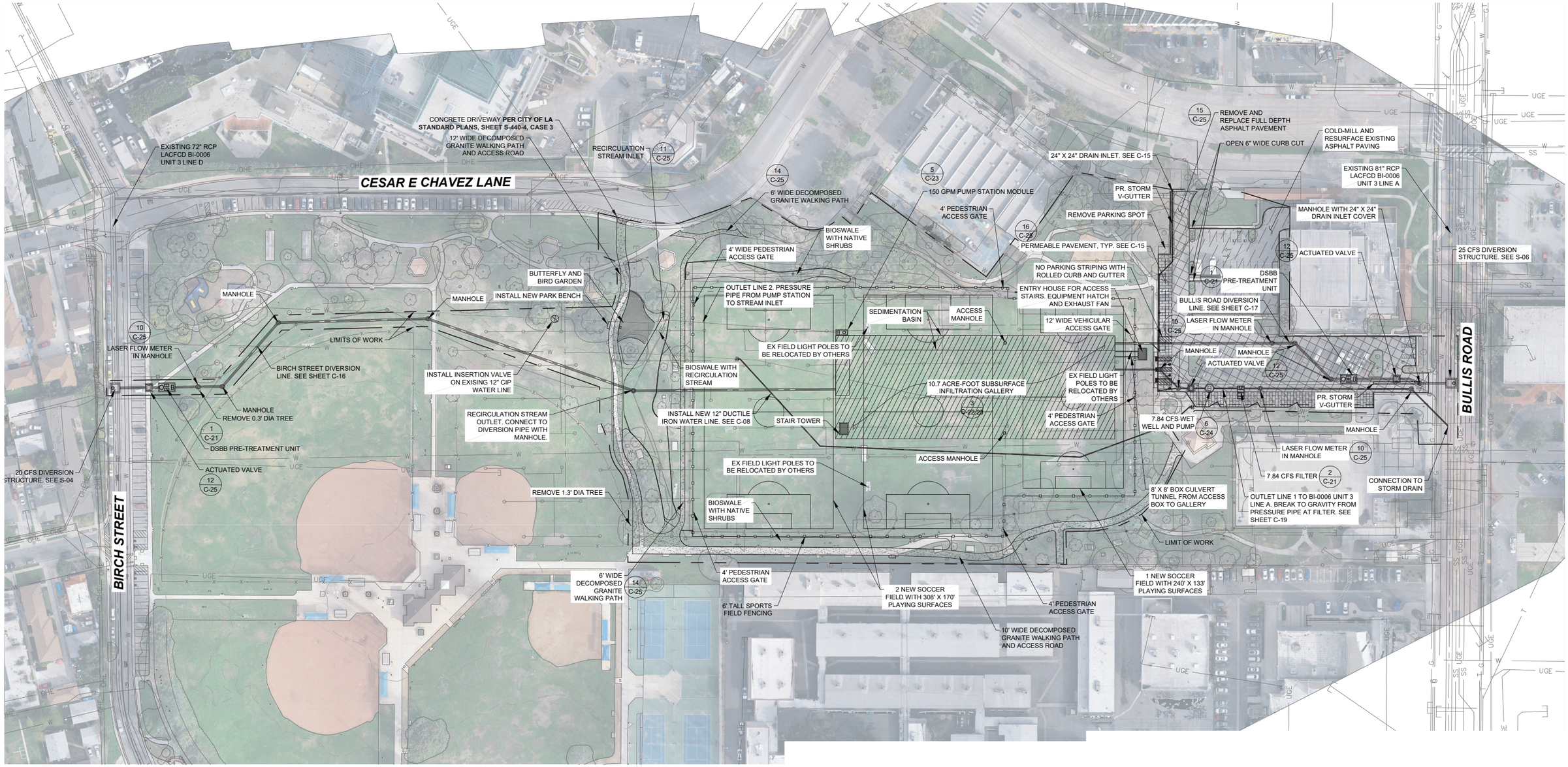
The Project would provide in-kind replacement of the existing soccer field facilities, which would provide the City an opportunity to rehabilitate these recreation facilities as part of the SCWP. The Project would also include parking lot enhancements, such as native landscaping, permeable pavement and bioswales, an ephemeral stream and a butterfly garden. The proposed Project components are discussed below.

2.4.1 PROJECT COMPONENTS

Stormwater Management

Diversion structures generally apply to off-line regional projects where stormwater is diverted from a major water conveyance and directed to a separate, engineered site at a predetermined maximum rate. The Project proposes two stormwater diversion structures from two branches of the LACFCD East Compton Creek storm drains, which would divert 25 cubic feet per second (cfs) from Bullis Road through an 81-inch reinforced concrete pipeline and 20 cfs from Birch Street through a 72-inch reinforced concrete pipeline.

The diverted and captured water on both Bullis Road and Birch Street would be filtered by a hydrodynamic separator known as a baffle box, which provides primary treatment through physically separating out trash and sediment. The filtered runoff would then be directed to



Source: Craft Water Engineering 2024

Site Plan

Exhibit 2

Lynwood Park Stormwater Capture Project IS/MND

Map not to scale

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the subsurface storage and infiltration reservoir located below the northern portion of the site. The stormwater would be infiltrated in a 10.7 acre-foot (AF) underground storage reservoir at a depth of 22 feet. The infiltration facility would require two access hatches along the eastern and western edges. Except for the access hatches and stream inlet and outlet, all proposed engineering infrastructure would be located underground. The stream infrastructure would be minimally visible at the surface with a naturalized surface condition.

A portion of the stormwater would also be diverted to the sediment basin for storage, located at the northern portion of the infiltration facility, which would then be pumped up to the surface at the 150 gallon per minute (GPM) pump station, and continue towards the stream feature and bioswale. Through this interconnected system, the stream feature would recirculate pre-treated runoff. The proposed bioswale and garden area would include native shrubs, such as Narrowleaf Milkweed and Coyote Brush.

Additionally, a portion of the captured runoff from the infiltration gallery would be pumped back via a wet well and pump towards a proposed outlet line located on the eastern portion of the site and through a 7.84 cfs secondary treatment filter. The treated stormwater would then be returned to the existing storm drain connection located in Bullis Road.

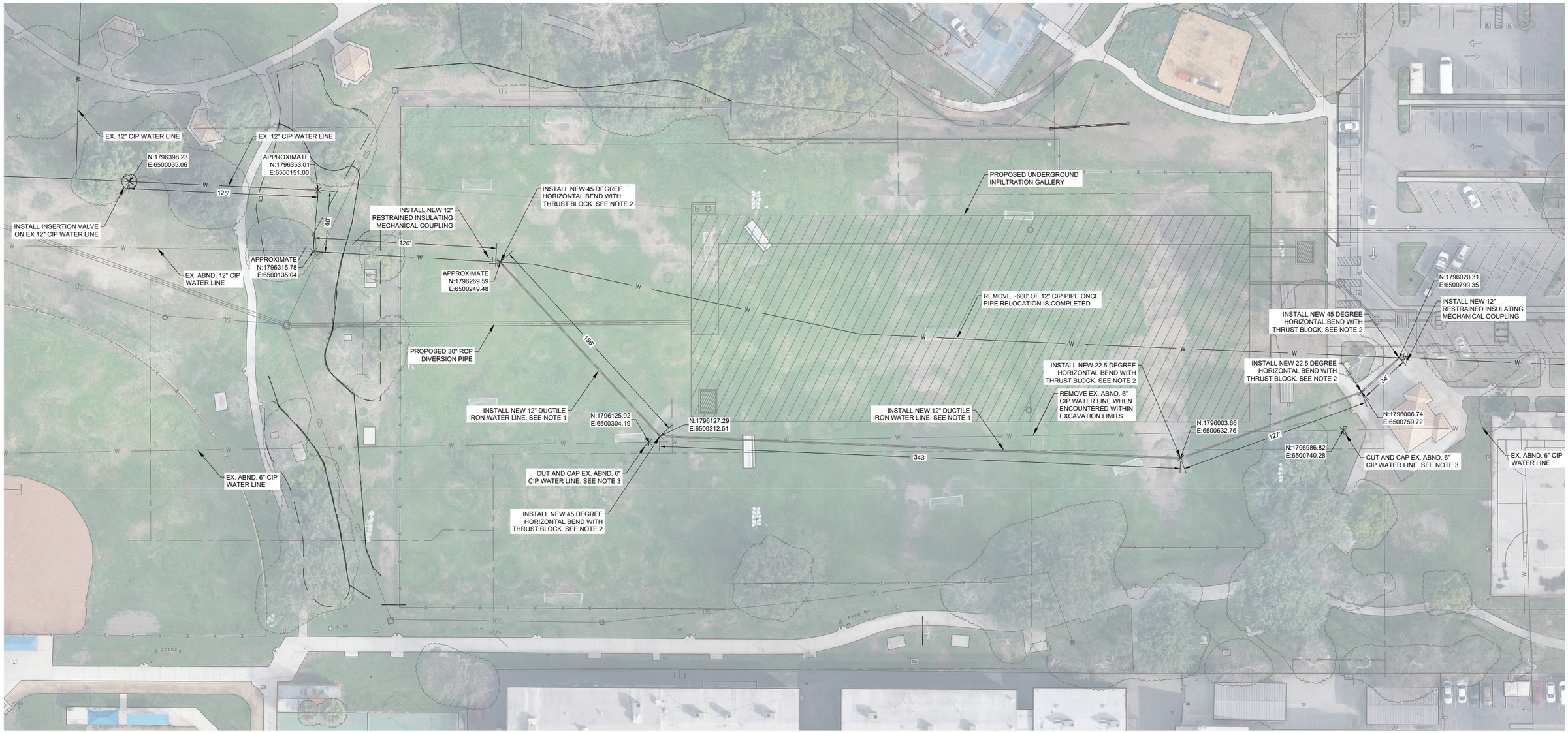
Recreation Facilities, Hardscape, and Landscape

The new facilities proposed, upon installation of the stormwater infrastructure, include three soccer fields of slightly varying sizes with 6-foot-tall fences along the field perimeters and new striping; and unbolted bleachers. The Project would provide parking lot enhancements to the existing parking lot in the northeast corner of the Project site; these improvements would include permeable pavement to provide further opportunities for infiltration of local runoff. Additionally, the Project would include a 10-foot wide-decomposed granite (DG) walking path and access road along the perimeter of the soccer fields as a new passive recreation opportunity in the park. The existing concrete path located at the western edge of the parking lot would be removed and replaced by Americans with Disabilities Act (ADA)-compliant access ramps to facilitate universal access. Also, the Project site would provide a butterfly and bird garden adjacent to the recirculated stream feature for additional recreational opportunities on-site and install an additional park bench. The improvements would also include replacement of the existing on-site water line which runs east-west across the site, as shown on Exhibit 3, Water Line Relocation Plan.

Five existing trees would be removed and replaced with nine new trees. As shown on Exhibit 4a through 4f, Landscaping Plans, new landscaping with native and/or drought tolerant plant species would be installed throughout the Project site, primarily around the soccer field areas, the new walking path, and recirculated stream and butterfly/bird garden features.

2.4.2 PROJECT CONSTRUCTION

The Project would be constructed in one phase lasting approximately 18 months, beginning in Spring 2027. Construction of the Project would comply with Section 3-12.13, Construction



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Source: Craft Water Engineering 2024

Water Line Relocation Plan

Exhibit 3

Lynwood Park Stormwater Capture Project IS/MND

N E S W

Map not to scale

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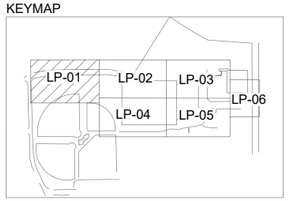


PLANT SCHEDULE

SYMBOL	BOTANICAL / COMMON NAME	SIZE
TREES		
	CELTIS RETICULATA / NETLEAF HACKBERRY	36"
	PISTACIA X 'RED PUSH' / RED PUSH PISTACHE	36"
	PLATANUS RACEMOSA / CALIFORNIA SYCAMORE MULTI-TRUNK	36"
	QUERCUS AGRIFOLIA / COAST LIVE OAK	24"
PROTECTED TREES		
	EXISTING TREE	-
	EXISTING TREE	-
TREE REMOVAL		
	0.3' DIAMETER TREE	-
	1.3' DIAMETER TREE	-
	1.5' DAIMTERE TREE	-
	2.0 DIAMETER TREE	-
SHRUBS		
	ASCLEPIAS FASCICULARIS / NARROWLEAF MILKWEED	1 GAL.
	BACCHARIS PILULARIS 'PIGEON POINT' / COYOTE BRUSH	1 GAL.
	CAREX TUMULICOLA / FOOTHILL SEDGE	1 GAL.
	CEANOTHUS THYRSIFLORUS 'SKYLARK' / SKYLARK BLUEBLOSSOM	5 GAL.
	ERIOGONUM FASCICULATUM / CALIFORNIA BUCKWHEAT	1 GAL.
	ERIOGONUM FASCICULATUM `WARRINER LYTLE` / WARRINER LYTLE CALIFORNIA BUCKWHEAT	1 GAL.
	JUNCUS EFFUSUS 'ELFIN GREEN' / ELFIN GREEN SOFT RUSH	1 GAL.
	LOMANDRA LONGIFOLIA `LM300` / BREEZE™ MAT RUSH	1 GAL.
	LOTUS SCOPARIUS / DEERWEED	---
	MUHLENBERGIA CAPILLARIS / PINK MUHLY GRASS	1 GAL.
	MUHLENBERGIA RIGENS / DEER GRASS	1 GAL.
	PRUNUS ILICIFOLIA / HOLLYLEAF CHERRY	5 GAL.
	RHAMNUS CALIFORNICA / CALIFORNIA COFFEEBERRY	5 GAL.
	RIBES VIBURNIFOLIUM / EVERGREEN CURRANT	1 GAL.
	SALVIA CLEVELANDII / CLEVELAND SAGE	1 GAL.
	ZAUSCHNERIA CALIFORNICA / CALIFORNIA FUCHSIA	1 GAL.
GROUND COVERS		
	/ MULCH, BARK	---
	/ GRAVEL	---
	CYNODON X 'TIFTON 328' / TIFGREEN BERMUDAGRASS	FLAT

NOTES:
ALL PLANTING AREAS TO BE COMPLETELY COVERED WITH 3" THICK LAYER OF LARGE BARK MULCH.

KEYMAP



Source: Craft Water Engineering 2024

Landscaping Plans

Exhibit 4a

Lynwood Park Stormwater Capture Project IS/MND

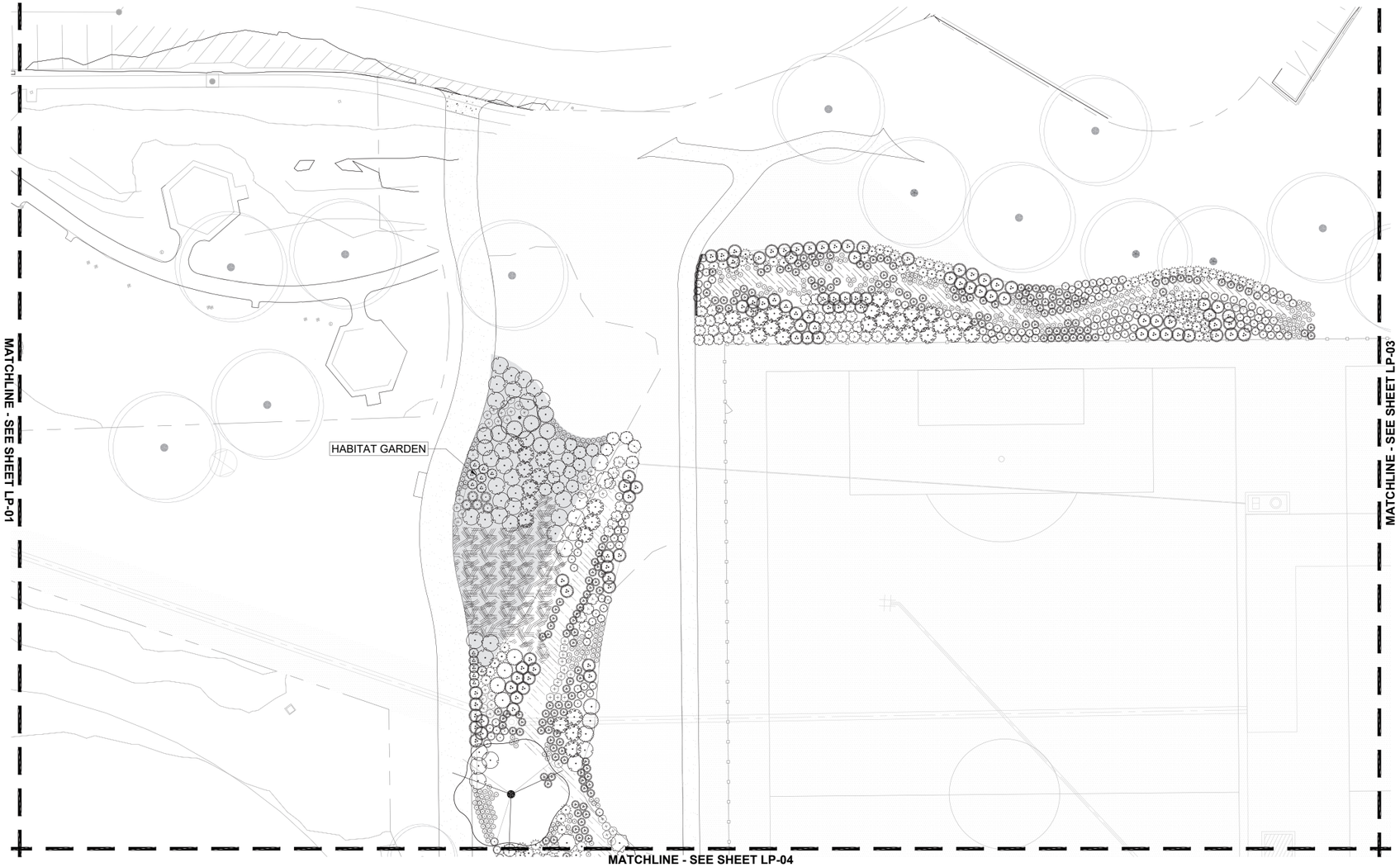
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Map not to scale

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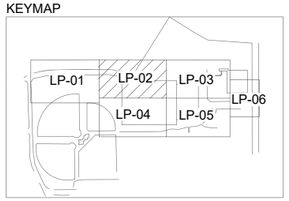


PLANT SCHEDULE

SYMBOL	BOTANICAL / COMMON NAME	SIZE	QTY
TREES			
	CELTIS RETICULATA / NETLEAF HACKBERRY	36"	3
	PISTACIA X 'RED PUSH' / RED PUSH PISTACHE	36"	5
	PLATANUS RACEMOSA / CALIFORNIA SYCAMORE MULTI-TRUNK	36"	1
	QUERCUS AGRIFOLIA / COAST LIVE OAK	24"	3
PROTECTED TREES			
	EXISTING TREE	-	13
	EXISTING TREE	-	34
TREE REMOVAL			
	0.3' DIAMETER TREE	-	1
	1.3' DIAMETER TREE	-	2
	1.5' DAIMTERE TREE	-	1
	2.0 DIAMETER TREE	-	1
SHRUBS			
	ASCLEPIAS FASCICULARIS / NARROWLEAF MILKWEED	1 GAL.	57
	BACCHARIS PILULARIS 'PIGEON POINT' / COYOTE BRUSH	1 GAL.	49
	CAREX TUMULICOLA / FOOTHILL SEDGE	1 GAL.	434
	CEANOTHUS THYRSIFLORUS 'SKYLARK' / SKYLARK BLUEBLOSSOM	5 GAL.	17
	ERIOGONUM FASCICULATUM / CALIFORNIA BUCKWHEAT	1 GAL.	9
	ERIOGONUM FASCICULATUM `WARRINER LYTLE` / WARRINER LYTLE CALIFORNIA BUCKWHEAT	1 GAL.	7
	JUNCUS EFFUSUS 'ELFIN GREEN' / ELFIN GREEN SOFT RUSH	1 GAL.	274
	LOMANDRA LONGIFOLIA `LM300` / BREEZE™ MAT RUSH	1 GAL.	341
	LOTUS SCOPARIUS / DEERWEED	---	13
	MUHLENBERGIA CAPILLARIS / PINK MUHLY GRASS	1 GAL.	263
	MUHLENBERGIA RIGENS / DEER GRASS	1 GAL.	161
	PRUNUS ILICIFOLIA / HOLLYLEAF CHERRY	5 GAL.	1
	RHAMNUS CALIFORNICA / CALIFORNIA COFFEEBERRY	5 GAL.	20
	RIBES VIBURNIFOLIUM / EVERGREEN CURRANT	1 GAL.	3
	SALVIA CLEVELANDII / CLEVELAND SAGE	1 GAL.	52
	ZAUSCHNERIA CALIFORNICA / CALIFORNIA FUCHSIA	1 GAL.	58
GROUND COVERS			
	/ MULCH, BARK	---	3,152
	/ GRAVEL	---	4,491
	CYNODON X 'TIFTON 328' / TIFGREEN BERMUDAGRASS	FLAT	454,9

NOTES:
ALL PLANTING AREAS TO BE COMPLETELY COVERED WITH 3" THICK LAYER OF LARGE BARK MULCH.

KEYMAP



Source: Craft Water Engineering 2024

Landscaping Plans

Exhibit 4b

Lynwood Park Stormwater Capture Project IS/MND

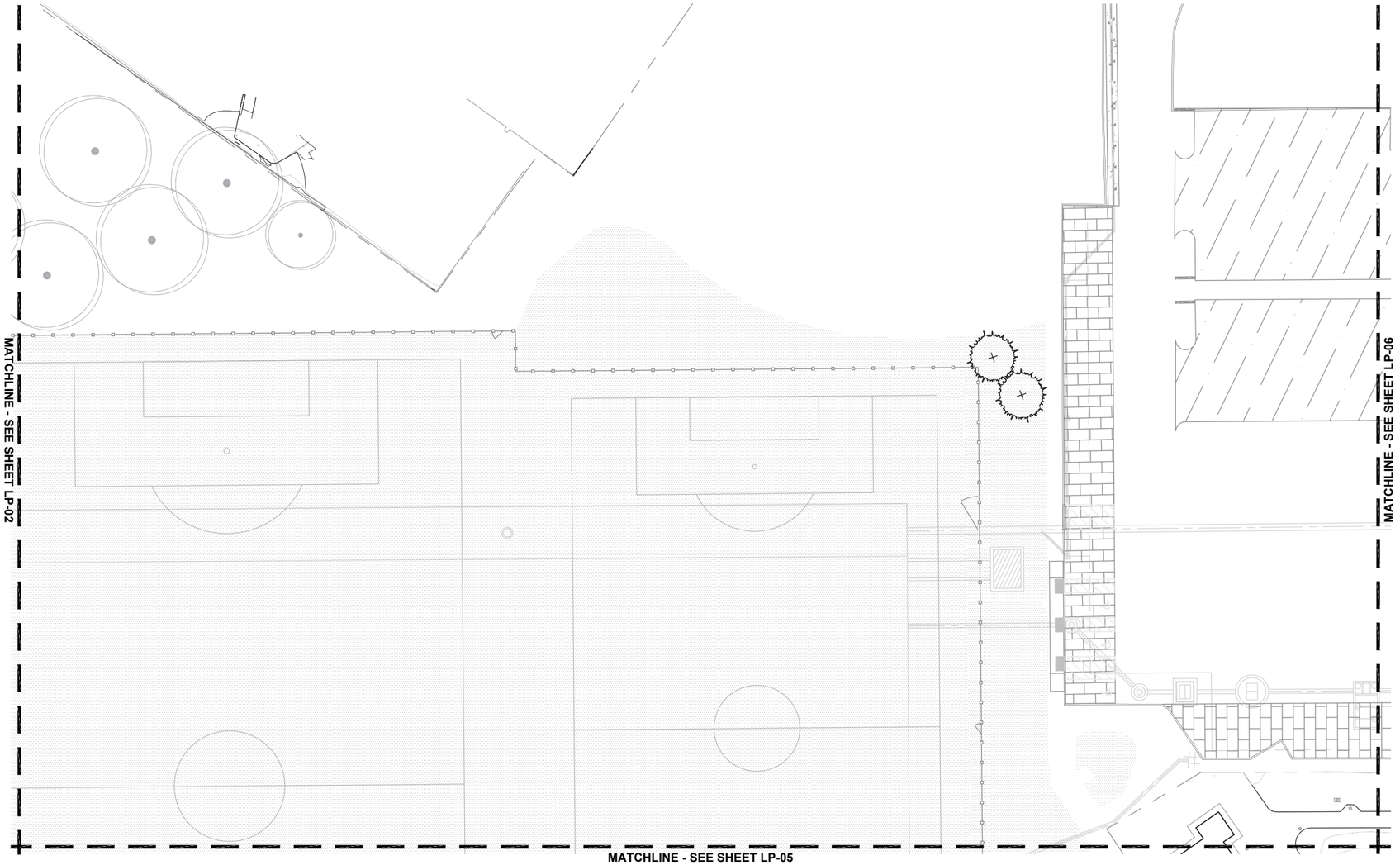
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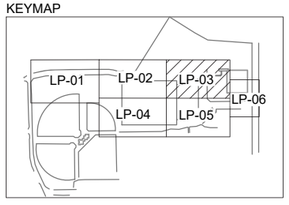


PLANT SCHEDULE

SYMBOL	BOTANICAL / COMMON NAME	SIZE	QTY
TREES			
	CELTIS RETICULATA / NETLEAF HACKBERRY	36"	3
	PISTACIA X 'RED PUSH' / RED PUSH PISTACHE	36"	5
	PLATANUS RACEMOSA / CALIFORNIA SYCAMORE MULTI-TRUNK	36"	1
	QUERCUS AGRIFOLIA / COAST LIVE OAK	24"	3
PROTECTED TREES			
	EXISTING TREE	-	13
	EXISTING TREE	-	34
TREE REMOVAL			
	0.3' DIAMETER TREE	-	1
	1.3' DIAMETER TREE	-	2
	1.5' DAIMTERE TREE	-	1
	2.0 DIAMETER TREE	-	1
SHRUBS			
	ASCLEPIAS FASCICULARIS / NARROWLEAF MILKWEED	1 GAL.	57
	BACCHARIS PILULARIS 'PIGEON POINT' / COYOTE BRUSH	1 GAL.	49
	CAREX TUMULICOLA / FOOTHILL SEDGE	1 GAL.	434
	CEANOTHUS THYRSIFLORUS 'SKYLARK' / SKYLARK BLUEBLOSSOM	5 GAL.	17
	ERIOGONUM FASCICULATUM / CALIFORNIA BUCKWHEAT	1 GAL.	9
	ERIOGONUM FASCICULATUM `WARRINER LYTLE` / WARRINER LYTLE CALIFORNIA BUCKWHEAT	1 GAL.	7
	JUNCUS EFFUSUS 'ELFIN GREEN' / ELFIN GREEN SOFT RUSH	1 GAL.	274
	LOMANDRA LONGIFOLIA `LM300` / BREEZE™ MAT RUSH	1 GAL.	341
	LOTUS SCOPARIUS / DEERWEED	---	13
	MUHLENBERGIA CAPILLARIS / PINK MUHLY GRASS	1 GAL.	263
	MUHLENBERGIA RIGENS / DEER GRASS	1 GAL.	161
	PRUNUS ILICIFOLIA / HOLLYLEAF CHERRY	5 GAL.	1
	RHAMNUS CALIFORNICA / CALIFORNIA COFFEEBERRY	5 GAL.	20
	RIBES VIBURNIFOLIUM / EVERGREEN CURRANT	1 GAL.	3
	SALVIA CLEVELANDII / CLEVELAND SAGE	1 GAL.	52
	ZAUSCHNERIA CALIFORNICA / CALIFORNIA FUCHSIA	1 GAL.	58
GROUND COVERS			
	/ MULCH, BARK	---	3,152
	/ GRAVEL	---	4,491
	CYNODON X 'TIFTON 328' / TIFGREEN BERMUDAGRASS	FLAT	454,9

NOTES:
ALL PLANTING AREAS TO BE COMPLETELY COVERED WITH 3" THICK LAYER OF LARGE BARK MULCH.

KEYMAP



Source: Craft Water Engineering 2024

Landscaping Plans

Exhibit 4c

Lynwood Park Stormwater Capture Project IS/MND

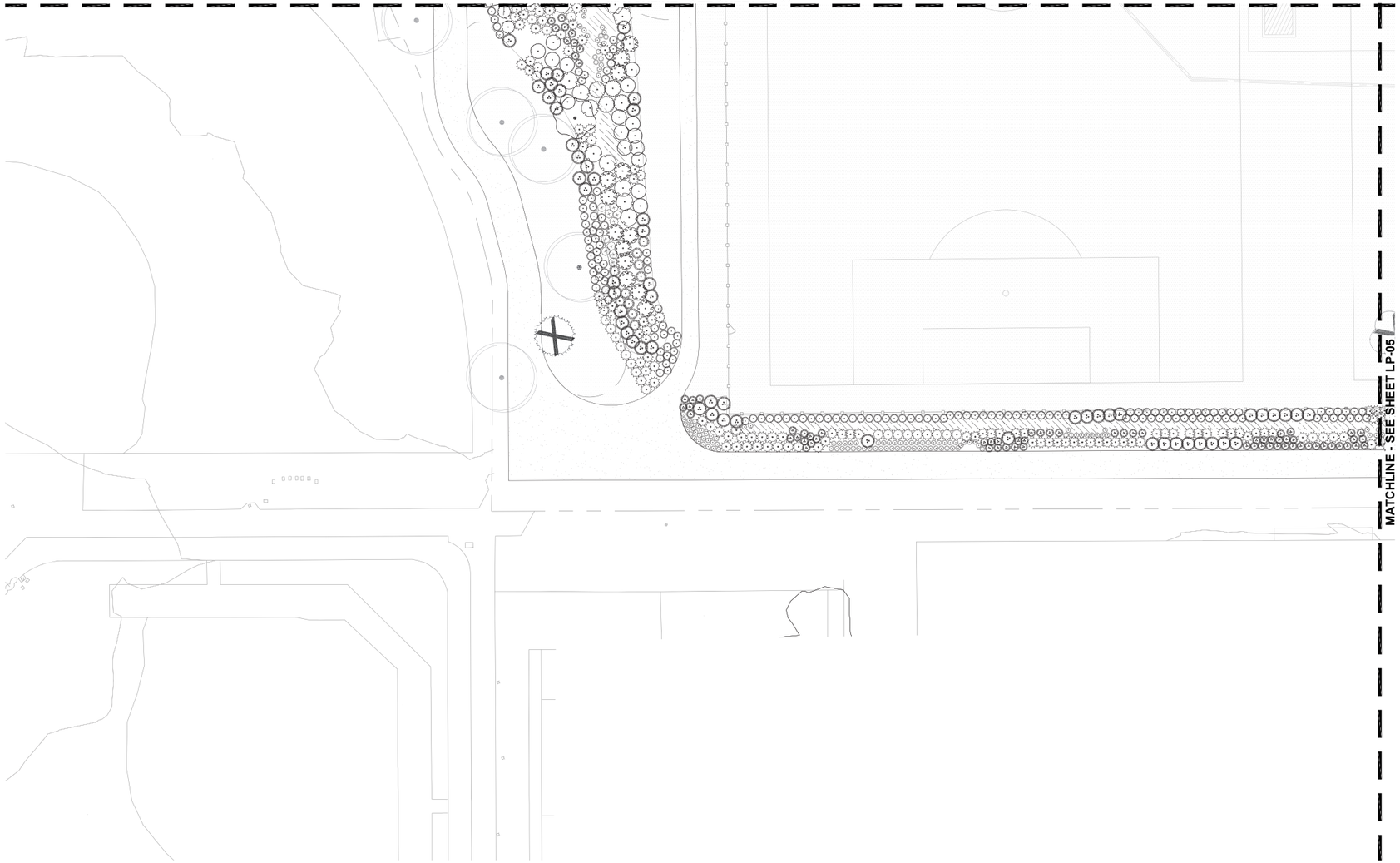
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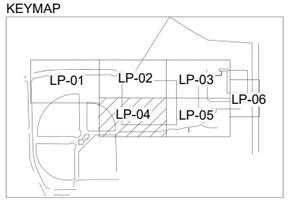


PLANT SCHEDULE

SYMBOL	BOTANICAL / COMMON NAME	SIZE	QTY
TREES			
	CELTIS RETICULATA / NETLEAF HACKBERRY	36"	3
	PISTACIA X 'RED PUSH' / RED PUSH PISTACHE	36"	5
	PLATANUS RACEMOSA / CALIFORNIA SYCAMORE MULTI-TRUNK	36"	1
	QUERCUS AGRIFOLIA / COAST LIVE OAK	24"	3
PROTECTED TREES			
	EXISTING TREE	-	13
	EXISTING TREE	-	34
TREE REMOVAL			
	0.3' DIAMETER TREE	-	1
	1.3' DIAMETER TREE	-	2
	1.5' DAIMTERE TREE	-	1
	2.0 DIAMETER TREE	-	1
SHRUBS			
	ASCLEPIAS FASCICULARIS / NARROWLEAF MILKWEED	1 GAL.	57
	BACCHARIS PILULARIS 'PIGEON POINT' / COYOTE BRUSH	1 GAL.	49
	CAREX TUMULICOLA / FOOTHILL SEDGE	1 GAL.	434
	CEANOTHUS THYRSIFLORUS 'SKYLARK' / SKYLARK BLUEBLOSSOM	5 GAL.	17
	ERIOGONUM FASCICULATUM / CALIFORNIA BUCKWHEAT	1 GAL.	9
	ERIOGONUM FASCICULATUM `WARRINER LYTLE` / WARRINER LYTLE CALIFORNIA BUCKWHEAT	1 GAL.	7
	JUNCUS EFFUSUS 'ELFIN GREEN' / ELFIN GREEN SOFT RUSH	1 GAL.	274
	LOMANDRA LONGIFOLIA `LM300` / BREEZE™ MAT RUSH	1 GAL.	341
	LOTUS SCOPARIUS / DEERWEED	---	13
	MUHLENBERGIA CAPILLARIS / PINK MUHLY GRASS	1 GAL.	263
	MUHLENBERGIA RIGENS / DEER GRASS	1 GAL.	161
	PRUNUS ILICIFOLIA / HOLLYLEAF CHERRY	5 GAL.	1
	RHAMNUS CALIFORNICA / CALIFORNIA COFFEEBERRY	5 GAL.	20
	RIBES VIBURNIFOLIUM / EVERGREEN CURRANT	1 GAL.	3
	SALVIA CLEVELANDII / CLEVELAND SAGE	1 GAL.	52
	ZAUSCHNERIA CALIFORNICA / CALIFORNIA FUCHSIA	1 GAL.	58
GROUND COVERS			
	/ MULCH, BARK	---	3,152
	/ GRAVEL	---	4,491
	CYNODON X 'TIFTON 328' / TIFGREEN BERMUDAGRASS	FLAT	454,9

NOTES:
ALL PLANTING AREAS TO BE COMPLETELY COVERED WITH 3" THICK LAYER OF LARGE BARK MULCH.

KEYMAP



Source: Craft Water Engineering 2024

Landscaping Plans

Exhibit 4d

Lynwood Park Stormwater Capture Project IS/MND

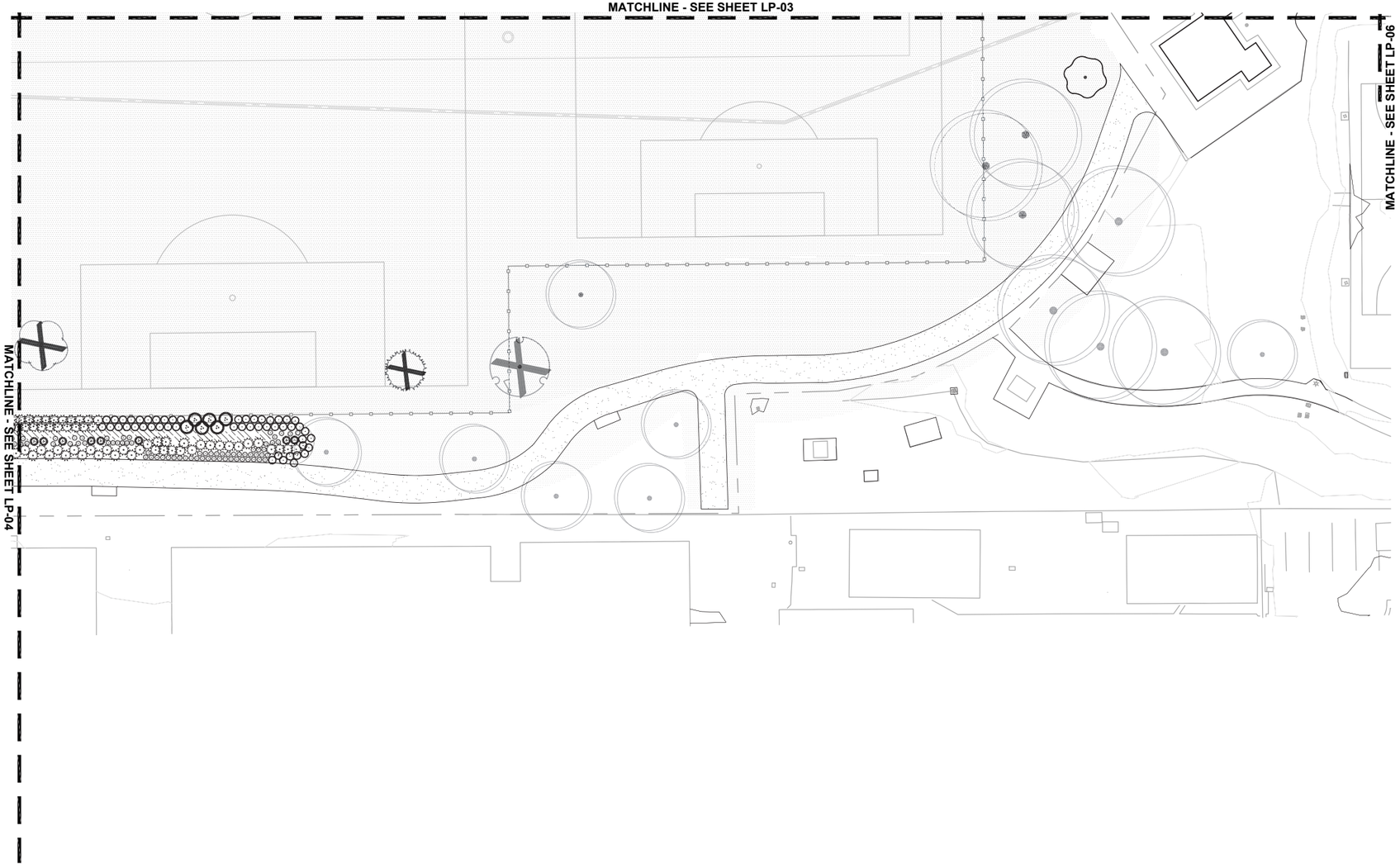
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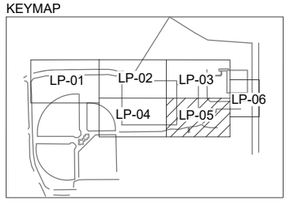


PLANT SCHEDULE

SYMBOL	BOTANICAL / COMMON NAME	SIZE	QTY
TREES			
	CELTIS RETICULATA / NETLEAF HACKBERRY	36"	3
	PISTACIA X 'RED PUSH' / RED PUSH PISTACHE	36"	5
	PLATANUS RACEMOSA / CALIFORNIA SYCAMORE MULTI-TRUNK	36"	1
	QUERCUS AGRIFOLIA / COAST LIVE OAK	24"	3
PROTECTED TREES			
	EXISTING TREE	-	13
	EXISTING TREE	-	34
TREE REMOVAL			
	0.3' DIAMETER TREE	-	1
	1.3' DIAMETER TREE	-	2
	1.5' DAIMTERE TREE	-	1
	2.0 DIAMETER TREE	-	1
SHRUBS			
	ASCLEPIAS FASCICULARIS / NARROWLEAF MILKWEED	1 GAL.	57
	BACCHARIS PILULARIS 'PIGEON POINT' / COYOTE BRUSH	1 GAL.	49
	CAREX TUMULICOLA / FOOTHILL SEDGE	1 GAL.	434
	CEANOTHUS THYRSIFLORUS 'SKYLARK' / SKYLARK BLUEBLOSSOM	5 GAL.	17
	ERIOGONUM FASCICULATUM / CALIFORNIA BUCKWHEAT	1 GAL.	9
	ERIOGONUM FASCICULATUM `WARRINER LYTLE` / WARRINER LYTLE CALIFORNIA BUCKWHEAT	1 GAL.	7
	JUNCUS EFFUSUS 'ELFIN GREEN' / ELFIN GREEN SOFT RUSH	1 GAL.	274
	LOMANDRA LONGIFOLIA `LM300` / BREEZE™ MAT RUSH	1 GAL.	341
	LOTUS SCOPARIUS / DEERWEED	---	13
	MUHLENBERGIA CAPILLARIS / PINK MUHLY GRASS	1 GAL.	263
	MUHLENBERGIA RIGENS / DEER GRASS	1 GAL.	161
	PRUNUS ILICIFOLIA / HOLLYLEAF CHERRY	5 GAL.	1
	RHAMNUS CALIFORNICA / CALIFORNIA COFFEEBERRY	5 GAL.	20
	RIBES VIBURNIFOLIUM / EVERGREEN CURRANT	1 GAL.	3
	SALVIA CLEVELANDII / CLEVELAND SAGE	1 GAL.	52
	ZAUSCHNERIA CALIFORNICA / CALIFORNIA FUCHSIA	1 GAL.	58
GROUND COVERS			
	/ MULCH, BARK	---	3,152
	/ GRAVEL	---	4,491
	CYNODON X 'TIFTON 328' / TIFGREEN BERMUDAGRASS	FLAT	454,9

NOTES:
ALL PLANTING AREAS TO BE COMPLETELY COVERED WITH 3" THICK LAYER OF LARGE BARK MULCH.

KEYMAP



Source: Craft Water Engineering 2024

Landscaping Plans

Exhibit 4e

Lynwood Park Stormwater Capture Project IS/MND

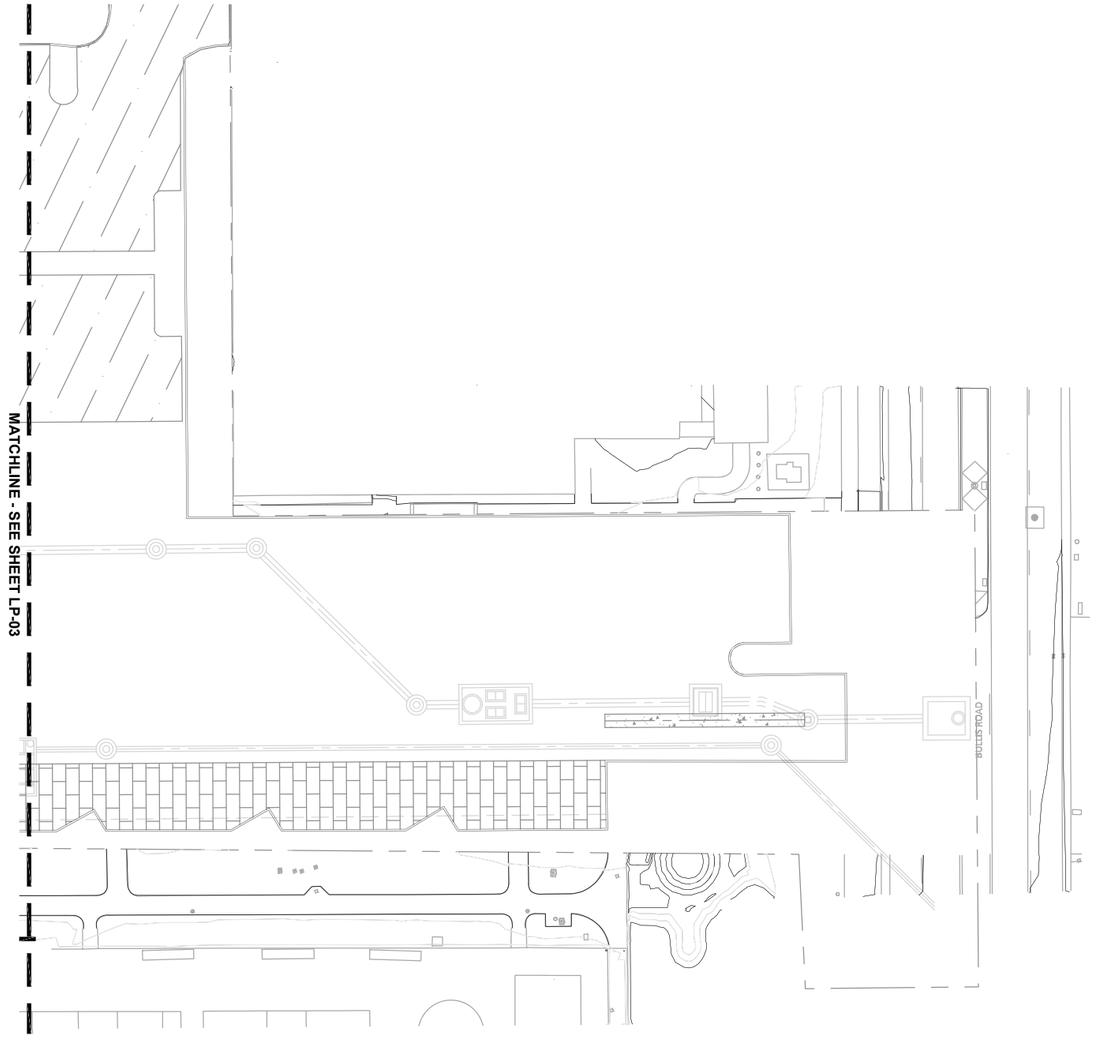
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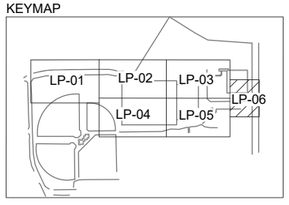


PLANT SCHEDULE

SYMBOL	BOTANICAL / COMMON NAME	SIZE	QTY
TREES			
	CELTIS RETICULATA / NETLEAF HACKBERRY	36"	3
	PISTACIA X 'RED PUSH' / RED PUSH PISTACHE	36"	5
	PLATANUS RACEMOSA / CALIFORNIA SYCAMORE MULTI-TRUNK	36"	1
	QUERCUS AGRIFOLIA / COAST LIVE OAK	24"	3
PROTECTED TREES			
	EXISTING TREE	-	13
	EXISTING TREE	-	34
TREE REMOVAL			
	0.3' DIAMETER TREE	-	1
	1.3' DIAMETER TREE	-	2
	1.5' DAIMTERE TREE	-	1
	2.0 DIAMETER TREE	-	1
SHRUBS			
	ASCLEPIAS FASCICULARIS / NARROWLEAF MILKWEED	1 GAL.	57
	BACCHARIS PILULARIS 'PIGEON POINT' / COYOTE BRUSH	1 GAL.	49
	CAREX TUMULICOLA / FOOTHILL SEDGE	1 GAL.	434
	CEANOTHUS THYRSIFLORUS 'SKYLARK' / SKYLARK BLUEBLOSSOM	5 GAL.	17
	ERIOGONUM FASCICULATUM / CALIFORNIA BUCKWHEAT	1 GAL.	9
	ERIOGONUM FASCICULATUM `WARRINER LYTLE` / WARRINER LYTLE CALIFORNIA BUCKWHEAT	1 GAL.	7
	JUNCUS EFFUSUS 'ELFIN GREEN' / ELFIN GREEN SOFT RUSH	1 GAL.	274
	LOMANDRA LONGIFOLIA `LM300` / BREEZE™ MAT RUSH	1 GAL.	341
	LOTUS SCOPARIUS / DEERWEED	---	13
	MUHLENBERGIA CAPILLARIS / PINK MUHLY GRASS	1 GAL.	263
	MUHLENBERGIA RIGENS / DEER GRASS	1 GAL.	161
	PRUNUS ILICIFOLIA / HOLLYLEAF CHERRY	5 GAL.	1
	RHAMNUS CALIFORNICA / CALIFORNIA COFFEEBERRY	5 GAL.	20
	RIBES VIBURNIFOLIUM / EVERGREEN CURRANT	1 GAL.	3
	SALVIA CLEVELANDII / CLEVELAND SAGE	1 GAL.	52
	ZAUSCHNERIA CALIFORNICA / CALIFORNIA FUCHSIA	1 GAL.	58
GROUND COVERS			
	/ MULCH, BARK	---	3,152
	/ GRAVEL	---	4,491
	CYNODON X 'TIFTON 328' / TIFGREEN BERMUDAGRASS	FLAT	454,9

NOTES:
ALL PLANTING AREAS TO BE COMPLETELY COVERED WITH 3" THICK LAYER OF LARGE BARK MULCH.

KEYMAP



Source: Craft Water Engineering 2024

Landscaping Plans

Exhibit 4f

Lynwood Park Stormwater Capture Project IS/MND

N E S W

Map not to scale

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of Buildings and Projects, of the Lynwood Municipal Code, which establishes restrictions related to construction activities. These restrictions include limiting the hours of construction to 7:00 AM and 10:00 PM. There will be no construction activity on weekends, federal holidays that occur on weekdays, or at nighttime. Construction equipment would vary by phase and include, but not be limited to, dozer(s), grader(s), backhoe and skid steer loader(s), trencher, crane, and vibratory roller. Equipment and material staging, and parking for construction workers would be within the Project site and located at the eastern parking lot.

The existing water line will be relocated just south of the proposed infiltration basin. The installation of the new 12-inch water line would occur first, to ensure that the existing water line would remain in service for most of the construction period. Upon installation of the new water line, the existing water line will be shut off for a period of one week or less. Demolition activities are estimated to result in approximately 5,000 cubic yards (cy) of mixed demolition debris and greenwaste, which would be exported over an approximate 8- to 9-week period. This would result in approximately 312 one-way truck trips per day. In addition, an estimated total of 20,800 cy of sediment would be excavated over approximately 26 weeks, primarily associated with the installation and excavation of the underground storage facility, which would result in approximately 1,300 one-way, truck trips. Construction and demolition debris including asphalt, concrete, soil, gravel, rocks, and metal would likely be transported to Construction & Demolition Recycling, Inc. recycling facility, located 1.95 miles to the northeast of the Project site in the City of South Gate, while green waste would likely be transported to the Greencycle Recycling facility located approximately 8 miles east of the Project site in the City of Santa Fe Springs. Haul trucks would access these facilities using locally designated truck routes, including Martin Luther King Jr. Boulevard, Imperial Highway, and Firestone Boulevard (City of South Gate) to access I-710. Any materials generated during the Project's construction that could not be recycled would be transferred to the Frank R. Bowerman landfill in the City of Irvine or to the Olinda Alpha Sanitary landfill located in the City of Brea.

2.4.3 PROJECT OPERATION

The Project is expected to be operational in 2028. Public access to and use of the recreation facilities on the site with Project will remain the same as in the existing condition. Despite the new and improved on-site facilities, the City does not anticipate a long-term increase in park visitation, as Lynwood Park has been extensively used by the community.

Long-term maintenance of the proposed stormwater capture system is vital to its continued operation. The responsible party for operation and maintenance (O&M) of the Project is the City of Lynwood. It is anticipated that quarterly maintenance visits will be required during the dry season and monthly maintenance visits will be required during the rainy season. It is anticipated that maintenance activities would result in up to two trips (round trip) by the maintenance personnel. Similar to the existing condition, maintenance of the new recreation facilities would also be the responsibility of the City.

2.5 DISCRETIONARY APPROVALS

This IS/MND is intended to serve as the primary environmental document pursuant to CEQA for actions associated with the Lynwood Park Stormwater Capture Project, including discretionary approvals required to implement the Project. In addition, this IS/MND is the primary reference document for the formulation and implementation of a mitigation monitoring and reporting program for the Project, in accordance with Section 15097 of the State CEQA Guidelines.

The City of Lynwood, as the Lead Agency, may adopt the IS/MND if it finds, based on the whole Project record, that there is no substantial evidence that the Project would have a significant effect on the environment. Discretionary actions subject to City review and approval include, but are not limited to:

- Adoption of the IS/MND;
- Approval of the Lynwood Park Stormwater Capture Project;
- Award of contract for construction of the Lynwood Park Stormwater Capture Project; and
- Other discretionary and ministerial permits and approvals that may be deemed necessary, including but not limited to, grading permit, foundation permit, and building permit.

3.0 ENVIRONMENTAL CHECKLIST FORM

This section includes the completed CEQA environmental checklist form, as provided in Appendix G of the State CEQA Guidelines, as well as substantiation and clarification for each checklist response.

1. Project Title:	Lynwood Park Stormwater Capture
2. Lead Agency Name and Address:	City of Lynwood 11330 Bullis Road Lynwood, California 90262
3. Contact Person: and Phone Number:	Ahmad R. Ansari, PE, Acting City Engineer (310) 603-0220 aansari@Lynwoodca.gov
4. Project Location:	The Project is in the northeast portion of Lynwood Park at 11301 Bullis Road, City of Lynwood, Los Angeles County
5. Project Sponsor's Name and Address:	City of Lynwood 11330 Bullis Road Lynwood, California 9026 2
6. General Plan Designation:	Open Space
7. Zoning:	Open Space (OS)

8. **Description of Project:** The Project would construct a regional stormwater runoff capture facility within Lynwood Park to provide multiple benefits including improved flood control, water quality, and water supply (through infiltration to groundwater). The stormwater facility would involve two stormwater diversion structures which would divert water from LACFCD East Compton Creek storm drains located along Bullis Road and Birch Street into an underground capture, treatment, and infiltration facility situated beneath the existing soccer fields. The Project would also include in-kind replacement of existing facilities within the site that require demolition to implement the regional stormwater capture facility with new recreation facilities and features; a butterfly garden and ephemeral stream; native landscaping; and a concrete walking path as a new passive recreation opportunity in the park. The proposed Project would be constructed in one phase lasting approximately 18 months, beginning in Spring 2027.
9. **Surrounding land uses and setting:** The Project site is situated in a densely developed, urban area with commercial, public, and residential, primarily single- and multiple-family, land uses located nearby. Public facilities near the Project site include Hosier Middle School, located immediately to the south of the site, and Lynwood City Hall and Library, immediately to the east across Bullis Road. Commercial uses, including the St. Francis Medical Center, are located north of the Project site across E. Ceaser Chavez Lane and Martin Luther King Jr. Boulevard, as well as northeast across Bullis Road. Multi-family residential uses are immediately to the west of the Project site across Birch Street and townhomes are located to the south of the Project site across Spruce Street.

10. Other public agencies whose approval may be required:

- California Department of Fish and Wildlife
- Los Angeles County / Safe, Clean Water Program
- Los Angeles County Flood Control District
- Los Angeles County Department of Public Health
- Los Angeles Regional Water Quality Control Board
- State Water Resources Control Board
- U.S. Army Corps of Engineers

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resource Code Section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

Consultation pursuant to Section 21080.3.1 of the *Public Resources Code* and Assembly Bill (AB) 52 was initiated with the California Native American tribe(s) affiliated with the Project area, who have requested consultation. Consultation is on-going and continuing has not been completed. Refer to Section 2.18, Tribal Cultural Resources, of this IS/MND for a complete discussion of the Native American consultation process for the Project.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact", as indicated on the following pages.

- ☐ Aesthetics
- ☐ Air Quality
- ☒ Cultural Resources
- ☒ Geology and Soils
- ☐ Hazards and Hazardous Materials
- ☐ Land Use and Planning
- ☒ Noise
- ☐ Public Services
- ☐ Transportation
- ☐ Utilities and Service Systems
- ☒ Mandatory Findings of Significance
- ☐ Agriculture and Forestry Resources
- ☒ Biological Resources
- ☐ Energy
- ☐ Greenhouse Gas Emissions
- ☐ Hydrology and Water Quality
- ☐ Mineral Resources
- ☐ Population and Housing
- ☐ Recreation
- ☐ Tribal Cultural Resources (on-going)
- ☐ Wildfire

DETERMINATION:

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



5-29-25

Signature of Lead Agency Representative — Date

Ahmad R. Ansari, PE — Printed Name

City of Lynwood — Agency

3.1 AESTHETICS

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

a) Would the Project have a substantial adverse effect on a scenic vista?

No Impact. Scenic vistas are generally defined as natural landscapes that form views of unique flora, geological, or other natural features that are generally free from urban intrusions. Typical scenic vistas include views of mountains, hills, uninterrupted open spaces, and waterbodies. The City's General Plan Community Design and Open Space and Conservation Elements does not show any officially designated scenic vistas in the City (City of Lynwood 2003). Views of the Puente Hills, located approximately 10 miles northeast of the site, and of the San Gabriel Mountains, located approximately 19 miles north of the site, are obstructed by the existing development and streetscape. In addition, even with a clear line-of-sight of the aforementioned physical features, the Project's implementation would not obstruct views of Puente Hills or San Gabriel Mountains as the Project consists of various stormwater infrastructure (bioswales, permeable pavement, and subterranean infiltration chambers) and park improvements (butterfly garden, ephemeral stream) with no structures. These Project components would either be subterranean or would be situated at ground level and would blend with the existing topography and park features. As such, the operation of the Project would cause no changes in views from or around the Project site. Lastly, there are no ocean views, unusual terrain, or unique features that create or contribute to a scenic vista on or near the site. Neither short-term construction nor long-term operation of the Project would reduce or otherwise alter distant mountain and foothill views. As a result, there would be no impact related to scenic vistas, and no mitigation is required.

b) Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. Based on the California Department of Transportation (Caltrans) California State Scenic Highway System Map, there are no designated State scenic highways within the Project vicinity. The closest officially designated State scenic highways to the Project site include Angeles Crest Highway (SR-2), located approximately 21 miles northwest of the Project site and the Riverside Freeway (SR-91), located approximately 22 miles east of the Project site (Caltrans 2024). Other officially designated scenic highways (or byways) include the federally designated Arroyo Seco Historic Parkway (SR-110), located 9.5 miles to the northwest of the Project site. As there are no designated State scenic highways within proximity of the Project site, construction and operation of the proposed Project would not substantially damage scenic resources within a State scenic highway. There would be no impact, and no mitigation is required.

c) In non-urbanized areas, would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?

No Impact. The Project site is in an urbanized area featuring a mix of uses including residential, commercial, and institutional. The Project's implementation would minimally alter the existing visual character of the Project site; however, this change would not be considered a degradation of the Project site or its surroundings since the Project would improve the existing on-site conditions by introducing new park features and amenities.

In addition, the Project would not conflict with applicable regulations governing scenic quality. The Community Design Element of the City of Lynwood General Plan is an optional element that was adopted to address the following aesthetic issues and maintain scenic quality throughout the City (City of Lynwood 2003):

- *Goal No. 1 - Encourage physical development that enhances the positive image of the City as a balanced residential community indicative of its All-American City status.*

The Project will provide new stormwater infrastructure and park improvements, including lighting; landscaping; a butterfly garden; and an ephemeral stream, which would enhance the Park's ambience and appearance, especially from along Cesar E Chavez Lane. As such, the proposed Project would comply with General Plan Goal No. 1. In addition, the Project would not require any change in existing land uses or require a zone change on the Project site. Therefore, implementation of the Project would not conflict with zoning. As a result, impacts would be less than significant, and no mitigation is required.

d) Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less Than Significant Impact. Exterior lighting that is not properly controlled will often produce unwanted excess light that propagates into adjacent properties. This nuisance lighting is referred to as light trespass. Existing sources of light include pole lighting associated with recreational facilities. The Project's construction would require the use of lighting to illuminate the Project site during evening construction or under conditions of deficient daylight. The use of lighting during construction would be temporary and would be angled downward to minimize light spillover beyond the intended area. During operations, the Project would not implement any new lighting, and no impacts would occur.

Additionally, glare is a common daytime phenomenon and is due mainly to the occurrence of a high number of days per year with direct sunlight and the presence of large reflective surfaces. Excessive glare not only restricts visibility but also increases the ambient heat reflectivity in a given area. Glare is caused by light reflections from vehicles and building materials such as reflective glass and polished surfaces. During daylight hours, the amount of glare depends on intensity and direction of sunlight and can create hazards to motorists and nuisances for pedestrians and other viewers. Public access to and use of the recreation facilities on the site with Project implementation would be the same as in the existing condition. Although there would be new and improved on-site facilities, since Lynwood Park is already intensively used by the community, the City does not expect a long-term increase in park visitation, as Lynwood Park has been extensively used by the community. Therefore, the Project would not change the number or timing of vehicles coming into and out of the existing park. As there would be no added vehicular traffic, there would be no additional sources of glare due to reflected sunlight from car windshields during the day and headlights in the evening. There would be a less than significant impact, and no mitigation is required.

3.2 AGRICULTURE AND FORESTRY RESOURCES

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of forestry and Fire Protection regarding the State's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220[g]), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104[g])?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

a) Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. Based on review of the California Important Farmland Finder Map, prepared by the California Department of Conservation, Farmland Mapping and Monitoring Program (FMMP), there are no lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance on or near the Project site (FMMP 2024). The Project site is classified as "Urban and Built-Up Land" meaning the land is occupied by structures with a building density of at least 1 unit to 1.4 acres, or approximately 6 structures to a 10-acre parcel, and does not include farmland. Therefore, no impact would occur, and no mitigation is required.

b) Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The Project site is currently zoned as OS. The Project site is currently situated within Lynwood Park, and there are no agricultural uses that would be affected by the Project's implementation. As a result, no loss of land zoned for/or containing agricultural uses would occur, and no mitigation is required.

In addition, based on review of the California Department of Conservation Division of Land Resource Protection's (DLRP) California Williamson Act Enrollment Finder Map, the Project site is not subject to a Williamson Act Contract (DLRP 2024). As a result, no impacts on land zoned for agricultural uses or to existing Williamson Act Contracts would result from the proposed Project's implementation, and no mitigation is required.

c) Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code, Section 12220[g]), timberland (as defined by Public Resources Code, Section 4526), or timberland zoned Timberland Production (as defined by Government Code, Section 51104[g])?

No Impact. Public Resources Code Section 12220(g) defines "forest land" as "land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." Meanwhile, Government Code Section 51104(g) defines timberland as "privately owned land, or land acquired for State forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre."

The Project site is in an urbanized area featuring a mix of uses, including residential, commercial, and institutional. Furthermore, the Project site is zoned OS. The Project site and surrounding areas are devoid of natural forest land, timberland, and timberland resources. In addition, the OS zone does not preserve forest land, timberland, or timberland resources. As a result, no impact would occur, and no mitigation is required.

d) Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. No forest lands are located within, or in the vicinity of, the Project site. The applicable zoning designation (OS) does not preserve forest land. In addition, the Project would be restricted to the site and would not affect the San Bernardino National Forest located north of the City. As a result, no loss or conversion of forest lands to urban uses would result from the proposed Project's implementation. No impacts would occur, and no mitigation is required.

e) Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

No Impact. As discussed above related to thresholds 4.2(a) and (b), the Project is not zoned for or currently used for agricultural purposes. As discussed, related to thresholds 4.2(c) and (d), the Project would not impact land zoned for forest land, timberland, or timber production. Therefore, the Project would not result in the loss of farmland and forest land or the conversion of farmland and forest land to non-agricultural or non-forest uses. No impact would result related to this threshold, and no mitigation is required.

3.3 AIR QUALITY

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Regulatory Setting

The Project site is in the City of Lynwood within the Los Angeles County portion of the South Coast Air Basin (SoCAB). For air quality regulation and permitting, the Project site and City are under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). Both the U.S. Environmental Protection Agency (USEPA) and the State of California (State) have established health-based Ambient Air Quality Standards (AAQS) for air pollutants, which are known as "criteria pollutants". The AAQS are designed to protect the health and welfare of the populace within a reasonable margin of safety. The federal and State AAQS are shown in Table 2, California and National Ambient Air Quality Standards, on the following page.

TABLE 2
CALIFORNIA AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	Federal Standards	
			Primary[a]	Secondary[b]
O_3	1 Hour	0.09 ppm (180 µg/m³)	–	–
	8 Hour	0.070 ppm (137 µg/m³)	0.070 ppm (137 µg/m³)	Same as Primary
PM10	24 Hour	50 µg/m³	150 µg/m³	Same as Primary
	AAM	20 µg/m³	–	Same as Primary
PM2.5	24 Hour	–	35 µg/m³	Same as Primary
	AAM	12 µg/m³	9.0 µg/m³	15.0 µg/m³
CO	1 Hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	–
	8 Hour	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	–
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)	–	–
NO_2	AAM	0.030 ppm (57 µg/m³)	0.053 ppm (100 µg/m³)	Same as Primary
	1 Hour	0.18 ppm (339 µg/m³)	0.100 ppm (188 µg/m³)	–
SO_2	24 Hour	0.04 ppm (105 µg/m³)	0.14 ppm (for certain areas)[c]	–
	3 Hour	–	–	0.5 ppm (1,300 µg/m³)
	1 Hour	0.25 ppm (655 µg/m³)	0.075 ppm (196 µg/m³)	–
Lead	30-day Avg.	1.5 µg/m³	–	–
	Calendar Quarter	–	1.5 µg/m³	Same as Primary
	Rolling 3-month Avg.	–	0.15 µg/m³	
Visibility Reducing Particles	8 hour	Extinction coefficient of 0.23 per km – visibility ≥ 10 miles (0.07 per km – ≥30 miles for Lake Tahoe)	**No Federal Standards**	
Sulfates	24 Hour	25 µg/m³		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m³)		

O_3: ozone; µg/m³: micrograms per cubic meter; PM10: large particulate matter; AAM: Annual Arithmetic Mean; PM2.5: fine particulate matter; CO: carbon monoxide; mg/m³: milligrams per cubic meter; NO_2: nitrogen dioxide; SO_2: sulfur dioxide; ppm: parts per million; km: kilometer; –: No Standard.

[a] *National Primary Standards:* The levels of air quality necessary, within an adequate margin of safety, to protect the public health.

[b] *National Secondary Standards:* The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[c] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note: More detailed information in the data presented in this table can be found at the CARB website (www.arb.ca.gov).

Source: CARB 2016.

Regional air quality is defined by whether the area has attained State and federal air quality standards, as determined by air quality data from various monitoring stations. Areas that are considered in "nonattainment" are required to prepare plans and implement measures that will bring the region into "attainment". When an area has been reclassified from nonattainment to attainment for a federal standard, the status is identified as "maintenance", and there must be a plan and measures established that will keep the region in attainment for the next ten years.

For the California Air Resources Board (CARB), an "unclassified" designation indicates that the air quality data for the area are incomplete and there are no standards to support a designation of attainment or nonattainment. Table 3, Attainment Status of Criteria Pollutants in the SoCAB, summarizes the attainment status of the SoCAB for the criteria pollutants.

TABLE 3
ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SOUTH COAST AIR BASIN

Pollutant	State	Federal
O_3 (1-hour)	Nonattainment	Nonattainment
O_3 (8-hour)		
PM10	Nonattainment	Attainment/Maintenance
PM2.5	Nonattainment	Nonattainment
CO	Attainment	Attainment/Maintenance
NO_2	Attainment	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead	Attainment	Attainment/Nonattainment*
All others	Attainment/Unclassified	No Standards

O_3: ozone; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; CO: carbon monoxide; NO_2: nitrogen dioxide; SO_2: sulfur dioxide.

* Los Angeles County is classified nonattainment for lead; the remainder of the SoCAB is in attainment of the State and federal standards.

Sources: SCAQMD 2016, USEPA 2019.

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

No Impact. Pursuant to the SCAQMD's CEQA Air Quality Handbook, a project would be inconsistent with the Air Quality Management Plan (AQMP) if it would (SCAQMD 1993):

- Create an increase in the frequency or severity of air quality violations; cause or contribute to new violations; delay attainment of air quality standards; or
- Exceed the assumptions of the AQMP.

The main purpose of an AQMP is to bring an area into compliance with the requirements of federal and State air quality standards. For a project to be consistent with the AQMP, the pollutants emitted from the project should not (1) exceed the SCAQMD CEQA air quality significance thresholds or (2) conflict with or exceed the assumptions used for preparing growth forecasts in the AQMP. As shown in Threshold 3.3.b below, criteria pollutant emissions generated during the Project's construction would be less than the SCAQMD thresholds and would not result in a significant impact. No mitigation is required.

With respect to the second criterion, the Project would not change the open space zoning designation for Lynwood Park since the Project involves the installation of subterranean and above ground stormwater capture infrastructure. This water infrastructure would not result in additional air pollutant emissions beyond what is required during the construction phase and minimal energy requirements for the operations phase. In addition, the proposed Project would not directly result in population growth or development of new land uses that have not been anticipated in the AQMP. By incorporating water capture infrastructure, development of the proposed Project would be consistent with the State of California's AB32 Scoping Plan measures to increase water supplies. In addition, use of locally sourced water would decrease energy as well as air pollution and GHGs related to transport of water from outside the watershed. Because the Project would support the development of water capture infrastructure, the proposed Project would not conflict with the 2022 AQMP. As a result, no impacts are anticipated to occur, and no mitigation is required.

b) Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard?

Less than Significant Impact. The SoCAB is a federal or State nonattainment area for PM10, PM2.5, and ozone (O_3), as discussed above. The SCAQMD's approach for assessing cumulative impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and State Clean Air Acts.

A project may have a significant impact where project-related emissions would exceed federal, State, or regional standards or thresholds, or where project-related emissions would substantially contribute to an existing or projected air quality violation. The SCAQMD has developed construction and operations thresholds to determine whether projects would potentially result in contributing toward a violation of ambient air quality standards. Table 4,

SCAQMD Regional Emissions Significance Thresholds (lbs/day), summarizes the SCAQMD's mass emissions thresholds for both short-term construction and long-term operational emissions. A project with emissions below these thresholds is considered to have a less than significant effect on air quality.

TABLE 4
SCAQMD REGIONAL EMISSIONS
SIGNIFICANCE THRESHOLDS (LBS/DAY)

Criteria Pollutant	Construction	Operation
Volatile Organic Compounds (VOC)	75	55
Oxides of Nitrogen (NO_x)	100	55
Carbon Monoxide (CO)	550	550
Oxides of Sulfur (SO_x)	150	150
Particulate Matter (PM10)	150	150
Particulate Matter (PM2.5)	55	55
lbs/day: pounds per day Source: SCAQMD 2023.		

Regional Air Quality Emissions

A project with daily emission rates below the SCAQMD's established air quality significance thresholds (shown in Table 4) would have a less than significant effect on regional air quality. Project emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2022.1.1.20 computer program (CAPCOA 2022). CalEEMod is designed to model construction and operational emissions for land development projects and allows for the input of project- and County-specific information. For purposes of modeling regional construction emissions, the analysis assumes the proposed Project would be constructed over approximately 18 months beginning in March of 2027. Construction activities would involve site mobilization, clearing and grubbing of grass and other vegetation, demolition and excavation as well as construction of water infrastructure, and recirculating ephemeral stream, and landscaping. Approximately 25,800 cubic yards of material (demolition debris, greenwaste, and earth) would be removed from the site: 5,000 cubic yards of material would be removed during the demolition phase; and 20,800 cubic yards of earth would be removed during the grading/excavation phase. Emissions were calculated using the California Emissions Estimator Model (CalEEMod version 2022.1.1.20). CalEEMod is a computer program accepted by the SCAQMD to estimate anticipated emissions associated with land development projects in California. The CalEEMod modeling assumes dust control by watering, consistent with the requirements of SCAQMD Rule 403. For purposes of estimating emissions in CalEEMod, the Project features were input as construction data. The CalEEMod output data may be found in Appendix A of this IS/MND.

The CalEEMod input for construction emissions was based on the Project's construction assumptions and default assumptions derived from CalEEMod, as summarized below:

- Demolition of the existing park improvements is anticipated to take two months. Demolition activities would generate an average of 30 worker trips per day and 14 one-way trips per day for export of approximately 5,000 cubic yards of demolition material. Equipment used during this phase would include an excavator, skid steer loaders, mulchers, and a bulldozer.
- Site preparation would occur for approximately two months and would occur simultaneously with the demolition phase. Site preparation activities would generate an average of 20 worker trips per day. Equipment used during this phase would include a grade leveler, skid steer loaders, and a bulldozer.
- Grading/excavation would occur for approximately six months and would occur upon completion of the demolition and site preparation phases. Grading/excavation activities would generate an average of 25 worker trips per day and 20 one-way trips per day for export of approximately 20,800 cubic yards of earth. Equipment used during this phase would include excavators, graders, and a skid steer loader.
- Construction of the stormwater infrastructure and Park improvements would take approximately 12 months to complete. Equipment used during this phase would include excavators, cranes, skid steer loaders, and a forklift.
- Paving would take approximately 43 days and would generate an average of 15 worker trips per day and no hauling trips. Equipment used during this phase would include excavators, cranes, skid steer loaders, and a forklift.

Construction activities would occur within the Project site boundaries. Construction staging would be located on-site.

The SCAQMD regional emissions thresholds (see Table 4) are based on the rate of emissions (i.e., pounds of pollutants emitted per day). Therefore, the quantity, duration, and the intensity of construction activities are important in assuring analysis of worst case (i.e., maximum daily emissions) scenarios. Table 5, Estimated Maximum Daily Construction Emissions (lbs/day), summarizes the worst-case daily regional emissions. As shown, all Project-related emissions would be below the regional significance thresholds.

TABLE 5
ESTIMATED MAXIMUM DAILY CONSTRUCTION EMISSIONS (LBS/DAY)

Year	VOC	NO_x	CO	SO_x	PM10	PM2.5
2027	3	26	29	<1	5	3
2028	1	9	11	<1	<1	<1
2029	<1	2	4	<1	<1	<1
Maximum	**3**	**26**	**29**	**<1**	**5**	**3**
SCAQMD Daily Construction Thresholds	***75***	***100***	***550***	***150***	***150***	***55***
Exceeds SCAQMD Thresholds?	**No**	**No**	**No**	**No**	**No**	**No**

lbs/day: pounds per day; VOC: volatile organic compound(s); NO_x: nitrogen oxides; CO: carbon monoxide; SO_x: sulfur oxides; PM10: inhalable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; SCAQMD: South Coast Air Quality Management District.

Note: The higher of Winter or Summer output data was used for this analysis.

Source (thresholds): SCAQMD 2023. CalEEMod output data is in Appendix A.

As shown, the regional emissions of PM10, PM2.5, and O3 precursors VOCs and NOx calculated for the Project (see Table 5) would be substantively less than the applicable SCAQMD regional emissions significance thresholds (see Table 4) that are designed to assist the region in attaining the applicable State and national AAQS (see Table 3). The SCAQMD does not consider any individual project with regional emissions that are below the SCAQMD significance thresholds to be cumulatively considerable and consequently would not result in a significant impact to cumulative regional emissions (SCAQMD 2003). The Project would result in nominal long-term operational emissions associated with energy demand associated with the Project's pumps and quarterly maintenance truck trips.

As discussed in Threshold 3.3(a), the Project would be consistent with the 2022 AQMP, which is intended to bring the SoCAB into attainment for all criteria pollutants. There would be a less than significant impact from construction and operation of the Project related to regional emissions of criteria air pollutants, and no mitigation is required.

Localized Air Quality Emissions

In addition to the mass daily emissions thresholds established by the SCAQMD, short-term local impacts to nearby sensitive receptors from on-site emissions of NO_2, CO, PM10, and PM2.5 are examined based on SCAQMD localized significance threshold (LST) methodology. To assess local air quality impacts for development projects without complex dispersion modeling, the SCAQMD developed screening (lookup) tables to assist lead agencies in evaluating impacts. The LST method was developed to provide a conservative estimate of the level of project-generated air pollutants that have the potential to exceed the National Ambient Air Quality Standards (NAAQS) or California Ambient Air Quality Standards (CAAQS), which could consequently result in adverse health impacts. Exceedance of the LST does not describe the prevalence or magnitude of health effects, but rather assesses the

potential for a project-related health effect to occur. The LST method cannot provide an estimate of health effects related to ozone. Reactive organic gases (ROGs) and NO_x are pollutants that contribute to the formation of ozone, otherwise known as ozone precursors. It would be too speculative to determine how an individual project could affect the formation of ozone, and how it could affect the health for a specific receptor: ozone does not fully form within the proximity of a project site, and the formation of ozone is affected by solar irradiance, meteorological conditions, presence of ozone precursors from other sources, and other factors. As such, modeling of ozone concentrations is conducted on the "macro" scale of an air basin for all pollutant sources within the basin, and not for an individual project. Consequently, the LST analysis focuses on a project-level analysis of the four criteria pollutants of greatest concern (CO, NO_x, PM_{10}, and $PM_{2.5}$).

The LST method is recommended to be limited to projects that are five acres or less. For the purposes of an LST analysis, SCAQMD considers receptors where it is possible that an individual could remain for 1 hour for NO_2 and CO exposure and 24 hours for PM10 and PM2.5 exposure. The emissions limits in the lookup tables are based on the SCAQMD's Ambient Air Quality Standards (SCAQMD 2016). The closest receptors to the Project site include Saint Francis Medical Center, located 59 feet from the Project construction activities. The emissions thresholds are for receptors within 25 meters (82 feet)[1] of the Project site; the thresholds for receptors farther away would be higher, and the Project emissions would be a smaller fraction of the thresholds.

Table 6 shows the maximum daily on-site emissions for construction activities compared with the SCAQMD LSTs with receptors within 25 meters. The maximum area of disturbance for the Project is 1 acre. Therefore, as per the SCAQMD, the thresholds shown are from the lookup tables for a site that is 1 acre. The Project's maximum daily on-site emissions would occur during the demolition phase (for NOx and CO) and during the site preparation phase (for PM10, and PM2.5). As shown in Table 6, the local emissions from the Project would be less than the localized significance thresholds with adherence to SCAQMD Rule 403, and no significant impacts would result. Therefore, no mitigation is required.

TABLE 6
CONSTRUCTION PHASE
LOCALIZED SIGNIFICANCE THRESHOLD EMISSIONS

Emissions and Thresholds	Emissions (lbs/day)			
	NOx	**CO**	**PM10**	**PM2.5**
Project maximum daily on-site emissions	22	24	4	2
Localized Significance Threshold	**46**	**231**	**4**	**3**
Exceed threshold?	**No**	**No**	**No**	**No**

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter.
Note: Data is for SCAQMD Source Receptor Area 12, South Central LA County
Source: SCAQMD 2009 (thresholds); see Attachment A for CalEEMod model outputs.

[1] The SCAQMD recommends that, when sensitive receptors are located less than 25 meters (82 feet) from the Project site, the minimum 25 meter/82 foot distance threshold should be used.

Also, as discussed previously, the Project would not exceed the SCAQMD air quality significance thresholds, therefore, impacts would be less than significant, and no mitigation is required.

c) Would the Project expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. A significant impact may occur when a project generates pollutant concentrations to a degree that would significantly affect sensitive receptors, which include populations that are more susceptible to the effects of air pollution than the population at large. Exposure of sensitive receptors is addressed for the following situations: CO hotspots; criteria pollutants and toxic air contaminants (TACs, specifically diesel particulate matter [DPM]) from on-site construction; exposure to off-site TAC emissions; and asbestos and lead-based paint during demolition. Operational, long-term TACs may be generated by some industrial land uses; commercial land uses (e.g., gas stations and dry cleaners); and diesel trucks on freeways. Infrastructure projects do not generate substantial quantities of TACs and are therefore not addressed in this report.

Carbon Monoxide Hotspot

In an urban setting, vehicle exhaust is the primary source of CO. Consequently, the highest CO concentrations generally are found close to congested intersections. Under typical meteorological conditions, CO concentrations tend to decrease as the distance from the emissions source (e.g., congested intersection) increases. Therefore, for purposes of providing a conservative worst-case impact analysis, CO concentrations typically are analyzed at congested intersection locations. If impacts are less than significant close to congested intersections, impacts also would be less than significant at more distant sensitive-receptor and other locations. An initial screening procedure is provided in the *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol) to determine whether a project poses the potential to generate a CO hotspot (UCD ITS 1997). The key criterion is whether the Project would worsen traffic congestion at signalized intersections operating at level of service (LOS) E or F. If a project poses potential for a CO hotspot, quantitative screening is required.

The Project would not increase or lead to a nominal increase in daily traffic in the Project area, as further discussed in Section 5.17, Transportation. Since the Project would not increase congestion at major signalized intersections, there would be less than significant impacts related to the formation of Project-related CO hotspots, and no mitigation is required.

Criteria Pollutants from On-Site Construction

Exposure of persons to NO_2, CO, PM10, and PM2.5 emissions is discussed in the LST analysis under Response (3.3.b) above. As discussed, there would be a less than significant impact, and no mitigation is required.

Toxic Air Contaminant (Diesel PM) Emissions from On-Site Construction

The greatest potential for TAC emissions during Project activities would be related to DPM emissions associated with heavy equipment operations (CARB identified DPM as a TAC in 1998). Project construction activities would be temporary (15 months for the entirety of the Project). The assessment of cancer risk is typically based on a 30-year exposure period. Because exposure to diesel exhaust would be relatively short in comparison to the full exposure period, the relatively small number of construction equipment used, and the dispersion conditions associated with a relatively large area for which construction activities would occur, Project construction activities would not result in an elevated cancer risk to exposed persons due to the brevity of air pollutant exposure at any one specific location. As such, Project-related toxic emission impacts during Project activities would be less than significant, and no mitigation is required.

Exposure to Off-Site Toxic Air Contaminant Emissions

The CARB *Air Quality and Land Use Handbook: A Community Health Perspective* provides guidance concerning land use compatibility with TAC sources (CARB 2005). While not a law or adopted policy, the handbook offers advisory recommendations for siting sensitive receptors near uses associated with TACs (such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, and industrial facilities) to help keep children and other sensitive populations out of harm's way.

Projects of concern for mobile sources of TACs are typically those located within 500 feet of the following types of facilities that emit significant quantities of DPM: urban roads with more than 100,000 vehicles per day; freeways or roads with a high heavy truck concentration; and/or near rail yards, ports, and/or distribution centers. The Project site is more than 500 feet from any freeway or major urban road. With respect to proximity to emissions from railroad sources, CARB recommends avoiding siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard (CARB 2005); the Project site is not located within 1,000 feet of this type of facility. CARB recommends not placing sensitive receptors within the same building as a dry cleaner and avoiding siting residences within 300 feet of a large gas station or within 500 feet of dry-cleaning operations with 2 machines using perchloroethylene. There are no gas stations within 300 feet or dry cleaners within 500 feet of the Project site. As such, the health risks associated with locating sensitive receptors proximate to a dry cleaner would be less than significant since there are no dry cleaners located within 500 feet of the site. It is important to note that the CARB recommendation was published in 2005; however, subsequent to CARB's recommendation in 2007, the CARB established a phase-out of perchloroethylene usage at dry cleaners by 2023. As such, no off-site sensitive uses would be exposed to significant levels of TACs. Impacts would be less than significant, and no mitigation is required.

d) Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less than Significant Impact. The Project would not result in other emissions that would affect a substantial number of people. The Project would not treat sewage, generate chemical emissions, or involve other processes that would result in other emissions, or produce objectionable odors, nor does the Project put a substantial number of persons in an area of objectionable odors. According to the SCAQMD's *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding (SCAQMD 1993). Potential odors from Project activities would be limited to short-term diesel exhaust emissions, which would be comparable to odors emitted by typical landscaping or construction activities. There may be situations where construction odors would be noticeable by persons nearby, but these odors would not be of a magnitude to constitute a public nuisance because any odors would be temporary and would dissipate rapidly from the source with an increase in distance and would not be expected to be objectionable to a substantial number of people. Furthermore, the Project construction activities are also regulated from nuisance odors or other objectionable emissions by South Coast AQMD Rule 402. Rule 402 prohibits the discharge from any source of air contaminants or other material, which would cause injury, detriment, nuisance, or annoyance to people or the public. Therefore, the impacts would be less than significant during construction and operation, and no mitigation is required.

3.4 BIOLOGICAL RESOURCES

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

a) Would the Project have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No Impact. The Project site is located within an urbanized portion of the City, and is developed as an existing park, which lacks potentially suitable habitat to support listed candidate, sensitive, or special status plant or wildlife species for the area. Vegetation on-site is non-native and disturbed, and the Project site and surrounding area is anticipated to be utilized primarily by wildlife species common to urban areas, such as western fence lizards (*Sceloporus occidentalis*), eastern fox squirrel (*Sciurus niger*), coyote (C*anis latrans*), house finch (*Haemorhous mexicanus*), California scrub jay (*Aphelocoma californica*), and red-tailed hawk (*Buteo jamaicensis*). Typically, significant wildlife habitats do not occur within the

urbanized portions of a City. Therefore, there would be no impacts on special status plant or wildlife species, and no mitigation is required.

b) Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

No Impact. As described above, no native or otherwise special status vegetation types occur on the Project site. No riparian habitats or sensitive natural communities identified in regional plans, policies, regulations, or by agencies would be impacted by construction and operation of the Project. There would be no impact, and no mitigation is required.

c) Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. The Project site does not contain wetland habitat on-site, and therefore the Project would not have a substantial adverse effect on State or federally protected wetlands. There would be no impact, and no mitigation is required.

d) Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less than Significant with Mitigation. The Project site is surrounded by urban development, and the area is not an established migratory wildlife corridor. The ability of the Project site specifically to support regional wildlife movement has been compromised by surrounding development, including commercial, public, and residential, primarily single- and multiple-family, land uses located nearby. As a result, the Project site supports the movement of almost exclusively local wildlife, that also readily use surrounding areas. As such, the Project site has very little potential to support critical regional wildlife movement. Urban-adapted wildlife species could use the site, an existing park, for foraging or movement. Additionally, the long-term activity on the Project site would be the same as the existing activity at Lynwood Park. Wildlife species common to urban areas are not anticipated to be adversely affected by construction activities. These common urban wildlife species are accustomed to a high level of human activity and disturbances similar to construction and are able to relocate easily. Construction activities would create very minimal dust and noise within and adjacent to the work areas. During active construction, wildlife movements may be deterred by noise and human activity; however, most wildlife movements would occur at night while construction activities would occur during the day.

The Project site would remove five existing trees within the Project site, in compliance with City requirements. The federal Migratory Bird Treaty Act of 1918 (MBTA) protects the nests of all native bird species, including common species such as mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), and house finch. Nesting birds and raptors

have the potential to occur in natural and non-natural features (such as buildings) within and adjacent to the Project site. In addition to the MBTA, Sections 3503 and 3503.5 of the *California Fish and Game Code* protect nesting migratory birds and raptors. Impacts to nesting birds, both on and adjacent to the Project site, would be considered a significant impact prior to mitigation. Therefore, if Project construction is initiated during the typical breeding season for nesting birds (i.e., March 1–September 15) and nesting raptors (i.e., January 1–July 31), MM BIO-1 requires a pre-construction nesting bird/raptor survey to ensure compliance with the MBTA and describes the process for protecting any active nests identified while construction is ongoing. If construction activities are initiated during the non-breeding season, implementation of MM BIO-1 would not be required, and there would be no potential impact to nesting birds and raptors. With implementation of MM BIO-1, potential impacts to nesting migratory birds and raptors during their breeding seasons due to Project construction would be reduced to a less than significant impact.

e) Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less Than Significant Impact. Chapter 13-2 of the Lynwood Municipal Code addresses protection of trees within the City of Lynwood under separate categories including public trees, which are those located in a place or area under ownership or control of the City including streets, parkways, open space, and parkland areas; street trees, which are a subset of public trees whose trunks are located primarily within any parkway, street median, traffic island, or other right-of-way under the ownership of the City; native trees, include coast live oak (*Quercus agrifolia*), canyon oak (*Quercus chrysolepis*), Engelmann oak (*Quercus engelmannii*), California walnut (Juglans californica), and Brisbane box (*Tristania conferta*) with a trunk more than 8 inches in diameter at standard height (dsh); Specimen trees, which include any tree meeting the criteria established by the City council to be an outstanding specimen of a desirable species; and landmark trees, which include any tree designated as a landmark under subsection 13-2.10 as a tree of historic or cultural significance and of importance to the community.

Based on the Tree Survey Report, prepared by Psomas, dated September 6, 2024, and included as Appendix B, there are a total of 127 documented within the Project area, with 83 on-site trees and 44 off-site trees with roots and/or canopies immediately adjacent to the boundary and may be subject to impacts including trimming, pruning, root disturbance, or removal during construction activities. The various on-site trees are all located either in Lynwood Park or along adjacent streets (within the public right-of-way). Therefore, all trees documented as a part of the Tree Survey Report, are regulated as either Public or Street trees by the City. No trees are present in the survey area that meet the City's definition of Native, Specimen, or Landmark trees. A summary of all trees included in the Tree Survey Report is included in Appendix B.

Construction activities are expected to require the removal of five trees, consisting of three tipu trees and two London plane trees. These trees are mature individuals that are poor candidates for relocation due to their size, except for one of the London plane trees, which is a sapling. Though this tree is smaller, it exhibits a significant canopy fungal infection which

also makes it a poor candidate for relocation and is better replaced by appropriately sized nursery stock. Although the Project would remove and replace five trees, none of the trees are identified as Native, Specimen or Landmark Trees per the City Municipal Code. In addition, the Tree Survey Report provide recommended measures to implement during construction activities and tree replacement activities as necessary, such as provision of protective fencing at the tree dripline, avoiding heavy equipment and materials within the tree dripline, and avoiding pruning or fertilizing trees until construction is completed. The Project would also comply with all provisions of the Lynwood Municipal Code (LMC) during tree removals and replacements. Therefore, impacts related to conflict with local policies or ordinances, such as tree preservation policy, protecting biological resources would be less than significant, and no mitigation would be is required.

f) Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. There are no adopted Habitat Conservation Plan or Natural Community Conservation Plan (NCCP/HCP) within the City. Therefore, the Project would not conflict with any regional or State plans protecting biological resources. There would be no impact, and no mitigation is required.

Mitigation Measures

MM BIO-1 The Project shall be conducted in compliance with the conditions set forth in the Migratory Bird Treaty Act (MBTA) and *California Fish and Game Code* with methods approved by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) to protect active bird/raptor nests. As the Project requires that work be initiated during the breeding season for nesting birds (i.e., March 1–September 15) and nesting raptors (i.e., January 1–July 31), the City of Pasadena shall perform, or direct the performance of, a pre-construction survey for nesting birds and/or raptors shall be conducted by a qualified Biologist within three days prior to any construction activities on the Project site and in the immediately surrounding area (i.e., perform survey within 300 ft for nesting birds and within 500 ft for nesting raptors). A qualified Biologist shall be knowledgeable and experienced in conducting nesting bird surveys within Southern California and in determining appropriate buffer size to prevent bird nesting failure. If the Biologist does not find any active nests in or immediately adjacent to the Project site, the construction work shall be allowed to proceed, and no further mitigation is required.

If the Biologist finds an active nest in or immediately adjacent to the Project site and determines that the nest may be impacted or breeding activities substantially disrupted due to planned construction activities, the Biologist shall delineate an appropriate buffer zone around the nest depending on the sensitivity of the species and the nature of the construction activity. Any nest found during survey efforts shall be mapped on the construction plans. The

active nest shall be protected until nesting activity has ended. To protect any nest site, the following restrictions to construction activities shall be required until nests are no longer active, as determined by a qualified Biologist: (1) construction limits shall be established within a buffer around any occupied nest (the buffer shall be 25–100 ft for nesting birds and 300–500 ft for nesting raptors), unless otherwise determined by a qualified Biologist and (2) access and surveying shall be restricted within the buffer of any occupied nest, unless otherwise determined by a qualified Biologist. Encroachment into the buffer area around a known nest shall only be allowed if the Biologist determines that the proposed activity would not disturb the nest occupants. Construction in a buffer area can proceed when the qualified Biologist has determined that fledglings have left the nest or the nest has failed. These requirements shall be monitored by the City of Lynwood.

3.5 CULTURAL RESOURCES

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Regulatory Setting

California Environmental Quality Act and California Register of Historical Resources

CEQA requires a lead agency to determine whether a Project would have a significant effect on one or more historical resources. According to Section 15064.5(a) of the State CEQA Guidelines, a "historical resource" is defined as a resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR) (Public Resources Code [PRC] Section 21084.1); a resource included in a local register of historical resources (14 *California Code of Regulations* [CCR], Section 15064.5[a][2]); or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (14 CCR Section 15064.5[a][3]).

Section 5024.1 of the PRC, Section 15064.5 of the State CEQA Guidelines, and Sections 21083.2 and 21084.1 of the CEQA Statutes were used as the basic guidelines for this cultural resource analysis. Section 5024.1 of the PRC requires the evaluation of historical resources

to determine their eligibility for listing in the CRHR. The purposes of the CRHR are to maintain listings of the State's historical resources and to indicate which properties are to be protected from substantial adverse change. The criteria for listing resources in the CRHR, which were expressly developed to be in accordance with previously established criteria for listing in the National Register of Historic Places (NRHP) (per the criteria listed at 36 Code of Federal Regulations [CFR] Section 60.4) are stated below.

The quality of significance in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California is present in any object, building, structure, site, area, place, record, or manuscript that possesses integrity of location, design, setting, materials, workmanship, feeling and association and that:

a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; or

b) Is associated with the lives of persons important in our past; or

c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

d) Has yielded, or may be likely to yield, information important in prehistory or history.

California Health and Safety Code

Sections 7050.5, 7051 and 7054 of the *California Health and Safety Code* collectively address the illegality of interference with human burial remains (except as allowed under applicable sections of the *California Public Resources Code*). These sections also address the disposition of Native American burials in archaeological sites and protect such remains from disturbance, vandalism, or inadvertent destruction. Procedures to be implemented are established for (1) the discovery of Native American skeletal remains during construction of a Project; (2) the treatment of the remains prior to, during, and after evaluation; and (3) reburial.

Section 7050.5 of the *California Health and Safety Code* specifically provides for the disposition of accidentally discovered human remains. Section 7050.5 states that, if human remains are found, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined the appropriate treatment and disposition of the human remains.

California Public Resources Code

Section 5097.98 of the *California Public Resources Code* states that if remains are determined by the Coroner to be of Native American origin, the Coroner must notify the Native American Heritage Commission (NAHC) within 24 hours. When the NAHC receives notification of a discovery of Native American human remains from a County Coroner, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her

authorized representative, inspect the site of the discovery of the Native American human remains and may recommend to the owner or the person responsible for the excavation work means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. The descendants shall complete their inspection and make recommendations or preferences for treatment within 48 hours of being granted access to the site. This regulation also requires that, upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations and all reasonable options regarding the descendants' preferences for treatment. This section of the *California Public Resources Code* has been incorporated into Section 15064.5(e) of the State CEQA Guidelines.

Methods

The Project's impacts were assessed by utilizing the data collected from a cultural resource literature and archival record search from the South-Central Coastal Information Center (SCCIC) and a Sacred Lands File (SLF) search through the NAHC. The results of the study are presented below, and supporting documentation is provided in Appendix C of this IS/MND (except for confidential information).

Archaeological Resources Records and Archival Search

The SCCIC, located on the campus of California State University, Fullerton, houses the literature and records of the California Historical Resources Information System (CHRIS) for Los Angeles, Ventura, and San Bernardino Counties. The records search included a ½-mile search radius around the Project site and was conducted by Psomas on April 17, 2024. The purpose of the literature review and records search was to identify past cultural resource studies and archaeological sites and/or historic buildings and structures previously recorded within and around the Project site.

Sacred Lands File Search

An inquiry was made of the NAHC on April 4, 2024, to request a review of the SLF database regarding the possibility of Native American cultural resources and/or sacred places in the Project vicinity that are not documented on other databases. The NAHC completed its SLF search on May 13, 2024.

Existing Conditions

Archaeological and Historical Studies

A total of six cultural resource studies have been conducted either including or within ½-mile radius of the Project site. These are summarized in Table 7, Cultural Resource Studies Near the Project Site. The archaeological and historic studies consist of cultural resource

assessments, evaluations of cultural resources, archaeological records searches, and Section 106 consultations and historical and archaeological evaluations.

TABLE 7
CULTURAL RESOURCES STUDIES NEAR THE PROJECT SITE

Report No	Year	Author(s)	Title	Location
LA-00078	1975	Rosen, Martin D.	Evaluation of the Archaeological Resources and Potential Impact of the Proposed Construction of Route 105 Freeway from El Segundo to Norwalk	Within
LA-07049	2002	Marvin, Judith and Curt Duke	Cultural Resource Assessment AT&T Wireless Services Facility No. 04090a-04 Los Angeles, California	Outside
LA-07050	2002	Marvin, Judith and Curt Duke	Cultural Resource Assessment AT&T Wireless Services Facility No. 04090a-04 Los Angeles, California	Outside
LA-07060	2002	Padon, Beth	Results from the Archaeological Records Search for South Gate Sewer Rehabilitation Project, Los Angeles	Outside
LA-07663	2006	Billat, Lornia	FCC Form 621 (Section 106) Submittal Earthtouch Inc. (Consultants on Behalf of Royal Street Communications, LLC DBA Metro PCS) Sanborn Water Tank/LA-0329a Lynwood, Los Angeles County, California	Outside
LA-11014	2006	Hatoff, Brian	Collocation Submission Packet Form 621-11240 California Avenue, Lynwood	Outside
Source: SCCIC 2024. Appendix C.				

Of these six studies, one study (LA-0078), was prepared in 1975 by Martin D. Rosen and included a portion of the Project site as part of its study area. The 1975 study did not identify cultural resources within the Project site.

Archaeological and Historical Resources

A total of 10 cultural resources were identified within ½-mile radius of the Project site. These resources are summarized below in Table 8, Cultural Resources Near the Project Site. Of these 10 resources, all were identified as historic buildings, and each has been assigned an Office of Historic Preservation (OHP) Property Number. None of the historic buildings are located within the Project site. No precontact or historical-era archaeological resources were identified within the Project site or within the ½-mile search radius surrounding the Project site.

TABLE 8
CULTURAL RESOURCES NEAR THE PROJECT SITE

Primary	Resource Name/ Description	Type	Age	Year (Recorders)	Location
P-19-177470	OHP Property Number – 028149: Lynwood Pacific Electric RR Depot	Building	Historic	1974 (R.A. Swan, City of Lynwood, Department of Public Works)	Outside
P-19-187066	OHP Property Number – 132202: California Water Tank	Building	Historic	2002 (J. Marvin, J. Michalsky, LSA)	Outside
P-19-187068	OHP Property Number – 100240: Storage Building	Building	Historic	2002 (B. Hatoff, URS)	Outside
P-19-187721	OHP Property Number – 132185: Walnut Water Tower	Building	Historic	2002 (J. Marvin, J. Michalsky, LSA)	Outside
P-19-187855	OHP Property Number – 148285: Herman H. Bradley Residence	Building	Historic	2004 (K. Crawford)	Outside
P-19-187856	OHP Property Number – 148276: Richard & Vera Robins Residence	Building	Historic	2004 (K. Crawford)	Outside
P-19-187857	OHP Property Number – 148279: Gustave & Katherine Blun Residence	Building	Historic	2004 (K. Crawford)	Outside
P-19-187858	OHP Property Number – 148288: Robert Ferguson Residence	Building	Historic	2004 (K. Crawford)	Outside
P-19-187859	OHP Property Number – 148273: Sylvan & Beulah Krsnak Residence	Building	Historic	2004 (K. Crawford)	Outside
P-19-187860	OHP Property Number – 148251: Erich & Rosemarie Rolko Residence	Building	Historic	2004 (K. Crawford)	Outside
Source: SCCIC 2024. Appendix C.					

Sacred Lands File Search

The NAHC SLF results for sacred lands in the vicinity of the Project are negative. However, the NAHC notes that Lead Agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive, and a negative result of these searches do not preclude the existence of a tribal cultural resource (TCR). Additionally, a tribal representative may be the only source of information regarding the existence of a TCR. Therefore, the NAHC provided a list of contacts for tribal representatives and governments with ancestral ties to the Project site to assist with scoping and consultation. The City performed Native American

consultation, as required by AB 52. For additional information on AB 52 consultation, please reference Section 3.18, Tribal Cultural Resources, of this IS/MND.

a) Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

Less than Significant Impact. A significant impact could occur if the Project were to disturb historic resources that presently exist within the Project Site. Section 15064.5 of the CEQA Guidelines generally defines a historic resource as a resource that is (1) listed in or determined to be eligible for listing in the CRHR; (2) included in a local register of historical resources (pursuant to Section 5020.1(k) of the Public Resources Code); or (3) identified as significant in an historical resources survey (meeting the criteria in Section 5024.1(g) of the Public Resources Code). Additionally, any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be a historic resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR. The CRHR automatically includes all properties listed in the NRHP and those formally determined to be eligible for listing in the NRHP.

As stated above, the cultural resources records search identified 10 historic buildings within a ½-mile radius of the Project site. None of the historic buildings is located within the Project site and would not be physically impacted or altered the implementation of the Project. Therefore, there would be a less than significant historic resources impact, and no mitigation is required. No other historic resources were identified within ½-mile radius of the Project Site.

b) Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less than Significant with Mitigation. The records search and literature review did not identify any previously recorded precontact or historic archaeological sites on the Project site or within a ½-mile radius of the Project site. However, the absence of known archaeological resources in the Project site does not preclude the possible presence of undiscovered intact archaeological resources that may lie below the ground surface, especially since the NAHC identified a sacred land and/or tribal cultural resource important to the local Native American community. The exposure of historic and archaeological resources during ground-disturbing activities is addressed by adherence to Section 21083.2(g) of the *California Public Resources Code* (MM CUL-1). With the implementation of MM CUL-1, there would be less than significant impacts related to the discovery of unanticipated archaeological resources during construction activities. Operation of the Project would not impact archaeological resources, because there would be no long-term excavation or other earthmoving activities.

c) Would the Project disturb any human remains, including those interred outside of formal cemeteries?

Less than Significant Impact. Based on the records search, literature review, and field survey discussed above, there are no known human remains on the site. The Project site is not part of a formal cemetery and is not known to have been used for burial of historic or prehistoric human remains. Thus, the Project is not expected to impact known human remains or cemeteries. As the result of the SLF check conducted through the NAHC was positive, if human remains are encountered during Project construction, those remains would require proper treatment, in accordance with applicable laws. Sections 7050.5 through 7055 of the *California Health and Safety Code* describe the general provisions for human remains. Specifically, Section 7050.5 of the *California Health and Safety Code* describes the protocols to be followed if human remains are accidentally discovered during excavation of a site. In addition, the requirements and procedures set forth in Section 5097.98 of the PRC would be implemented. If human remains are found during excavation, construction activities must stop in the vicinity of the find and in any area that is reasonably suspected to overlie remains until the County Coroner has been notified; the remains have been investigated; and appropriate recommendations have been made for the treatment and disposition of the remains. Following compliance with State regulations, which detail the appropriate actions necessary in the event human remains are encountered, potential impacts would be less than significant, and no mitigation is required.

Mitigation Measures

MM CUL-1 Prior to the initiation of any earthmoving activity in which native soil is disturbed, the City shall be responsible for retaining a qualified Archaeologist to observe grading activities and to salvage and catalogue archaeological resources, as necessary. The Archaeologist shall be present at the pre-grade conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the City or its designee, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of any discovered artifacts as appropriate. If archaeological resources are found to be significant pursuant to Section 15064.5 of the State CEQA Guidelines, the Archaeologist shall determine appropriate actions, in cooperation with the City or its designee, for exploration and/or recovery. The Archaeologist shall also prepare a report of findings. The report shall include the period of inspection, an analysis of any artifacts found, and the present repository of the artifacts. The Archaeologist shall prepare excavated material to the point of identification and curation. The City or its designee shall pay curatorial fees associated with the cost of curation.

3.6 ENERGY

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

3.6.1 REGULATORY SETTING

Federal

Energy Independence and Security Act of 2007

The Energy Independence and Security Act (EISA) of 2007 (Public Law 110–140) seeks to provide the nation with greater energy independence and security by increasing the production of clean renewable fuels; improving vehicle fuel economy; and increasing the efficiency of products, buildings, and vehicles. It also seeks to improve the energy performance of the federal government. The EISA sets increased Corporate Average Fuel Economy Standards; the Renewable Fuel Standard; appliance energy efficiency standards; building energy efficiency standards; and accelerated research and development tasks on renewable energy sources (e.g., solar energy, geothermal energy, and marine and hydrokinetic renewable energy technologies), carbon capture, and sequestration.

State

CEQA

California Public Resources Code Section 21100(b)(3) and Appendix F to the State CEQA Guidelines require a discussion of potential energy impacts of proposed projects.

Appendix F states:

> The goal of conserving energy implies the wise and efficient use of energy. The means of achieving this goal include:
>
> 1. Decreasing overall per capita energy consumption,
> 2. Decreasing reliance on fossil fuels such as coal, natural gas, and oil, and
> 3. Increasing reliance on renewable energy sources.

Appendix F of the State CEQA Guidelines also requires that "EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy".

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates utility companies and ensures the provision of safe, reliable utility service and infrastructure related to electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. CPUC General Order 112E, which is based on the Federal Department of Transportation Guidelines contained in Part 192 of the Code of Federal Regulations, specifies a variety of design, construction, inspection, and notification requirements. The CPUC conducts annual audits of pipeline operations to ensure compliance with these safety standards. In addition, Southern California Gas Company (SCGC) has a safety program which has reduced the risk of gas distribution fires by improving welds on the larger diameter (24- to 30-inch) pipelines and by replacing old distribution pipes with flexible plastic pipes.

Renewables Portfolio Standard

The California Renewables Portfolio Standard (RPS) was established in 2002 under Senate Bill (SB) 1078 and was amended in 2006 and 2011. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase the use of eligible renewable energy resources to 33 percent of total procurement by 2020. The CPUC is required to provide quarterly progress reports regarding the State's progress toward RPS goals.

Senate Bill 350

SB 350, signed on October 7, 2015, is the Clean Energy and Pollution Reduction Act of 2015. SB 350 implements some of the goals of Executive Order (EO) B-30-15. Based on California Legislative Information 2015, the objectives of SB 350 are:

1. To increase from 33 percent to 50 percent, the procurement of California's electricity from renewable sources; and
2. To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

The text of SB 350 sets a December 31, 2030 target for 50 percent of electricity to be generated from renewable sources. The RPS requires the public utilities within California to achieve 100 percent electricity generation from renewable energy sources by 2045.

California Energy Commission

In 1974, the California Energy Commission (CEC) was created to be the State's principal energy planning organization and to meet the energy challenges facing the State in response to the 1973 oil embargo. The CEC is charged with seven basic responsibilities when designing State energy policy:

- Advancing State Energy Policy;
- Achieving Energy Efficiency;
- Certifying Thermal Power Plants;
- Investing in Energy Innovation;
- Transforming Transportation;
- Developing Renewable Energy; and
- Preparing for Energy Emergencies.

State Alternative Fuels Plan

AB 118 requires the CEC to prepare a plan to increase the use of alternative fuels in California. The State Alternative Fuels Plan was prepared by the CEC with the CARB and in consultation with other federal, State, and local agencies to reduce petroleum consumption, to increase use of alternative fuels (e.g., ethanol, natural gas, liquefied petroleum gas, electricity, and hydrogen), to reduce greenhouse gas (GHG) emissions, and to increase in-state production of biofuels. The State Alternative Fuels Plan recommends a strategy that combines private capital investment, financial incentives, and advanced technology that will increase the use of alternative fuels, result in significant improvements in the energy efficiency of vehicles and reduce trips and vehicle miles traveled through changes in travel habits and land management policies.

Appliance Efficiency Regulations

California's Appliance Efficiency Regulations (CCR, Title 20, Parts 1600–1608) contain energy performance, energy design, water performance, and water design standards for appliances (including refrigerators, wine chillers, ice makers, vending machines, freezers, water heaters, fans, boilers, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings) that are sold or offered for sale in California. These standards are updated regularly to allow consideration of new energy efficiency technologies and methods.

Title 24, Part 6 – Building Energy Efficiency Standards

The 2022 Building Energy Efficiency Standards contains mandatory requirements for appliances; lighting controls; insulation; solar readiness; space-conditioning equipment (heating and cooling); water heating; windows and doors; electrical power distribution systems; and the prohibition of pilot lights, among others. The requirements of the energy

efficiency standards will result in the reduction of natural gas and electricity consumption (CBSC 2022a).

Title 24, Part 11 – California Green Building Standards Code (CALGreen Code)

The CALGreen Code provides standards for energy efficiency (energy-efficient appliances); electric vehicle charging; renewable energy; lighting; insulation; and the planting of trees for shade. The inclusion of CALGreen Code measures reduces energy consumption through the use of energy efficient appliances, lighting, and building design features (insulation). In addition, the planting of trees for shade would reduce energy consumption related to air conditioning, while the inclusion of insulation would reduce energy consumption related to heating (CBSC 2022b).

Local

City of Lynwood General Plan

Energy Conservation is discussed in the Open Space and Conservation Element of the City of Lynwood General Plan. The City described the development of renewable and alternative energy sources in conjunction with energy conservation measures as a key component of helping the City address local energy demands (City of Lynwood 2003). The Open Space and Conservation Element of the General Plan contains the following goals and policies:

- **Goal EC-1 –** Promote the conservation of energy resources in new and existing developments**.**
- **Policy EC-1.1 – Energy Conservation Measures.** The City shall ensure that energy conservation measures are implemented in all development projects.

In addition, Water Resources is also discussed in the Open Space and Conservation Element of the City's General Plan. The Project would be consistent with the following goals and policies:

- **Goal WR-1** – Protect surface and subsurface water resources in the water basin that are impacted by actions within the City.
- **Policy WR-1 – Ensure Clean Water**. The City shall ensure that development and redevelopment projects do not degrade surface waters and groundwater basins.
- **Goal WR-2** – Require sound water conservation measures to ensure water availability to all persons living, working, and visiting the City.
- **Policy WR-2.1 – Water Conservation**. The City shall ensure that water conservation measures are implemented in all development projects.

a) Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less than Significant Impact. The following analysis evaluates the Project's potential to increase the demand for energy through construction and operation of the Project, day-to-day operations, and fuel consumption associated with Project construction.

Energy Consumption During Construction

Construction activities would require energy for activities such as the manufacturing and transportation of building materials, demolition and grading activities, infrastructure construction, and paving. Construction of the Project would require electricity to power construction-related equipment but would not involve the consumption of natural gas. The construction-related equipment, including forklifts, would not be powered by natural gas, and no natural gas demand is anticipated during construction.

Transportation represents the largest energy use during construction and would occur from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction worker vehicles that would use petroleum fuels (e.g., diesel fuel and/or gasoline). Therefore, the analysis of energy use during construction focuses on fuel consumption. It is anticipated that construction trucks and vendor trucks hauling materials to and from the Project site would use diesel fuel, whereas construction workers traveling to and from the Project site would use gasoline-powered vehicles. Fuel consumption from transportation uses are not anticipated to be different than current conditions because the Project was determined to result in comparable levels of vehicle trips to existing uses.

Construction emissions are estimated for the Project using the CalEEMod model, as detailed in Section 3.3, Air Quality, of this IS/MND. Estimates of fuel consumption (diesel fuel and gasoline) from construction equipment, construction trucks, and construction worker vehicles are based on default construction equipment assumptions and trip estimates from CalEEMod and fuel efficiencies from the EMissions FACtor 2021 model (EMFAC 2021). Fuel consumption estimates are presented in Table 9, Project Energy Consumption Estimates During Construction. CalEEMod output sheets and detailed energy calculations are included in Appendix D.

TABLE 9
PROJECT ENERGY CONSUMPTION ESTIMATES DURING CONSTRUCTION

Energy Type	Total Energy Consumption (gallons)
Diesel	18,986
Gasoline	2,458
Source: CalEEMod, EMFAC2021	

As detailed in Table 9, above, the Project would consume approximately 18,986 gallons of diesel fuel and approximately 2,458 gallons of gasoline during construction. Construction of the Project would have a negligible effect on local and regional energy supplies. Furthermore, impacts related to energy use during construction would be temporary and relatively minimal in comparison to the State's available energy resources. No unusual Project characteristics would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in the region or the State. In addition, construction activities are not anticipated to result in inefficient use of energy as gasoline and diesel fuel would be supplied by construction contractors who would conserve the use of their supplies to minimize their costs on the Project. The Project would not cause or result in the need for additional energy facilities or an additional or expanded delivery system. As such, fuel consumption during construction would not be inefficient, wasteful, or unnecessary.

Energy Use During Operations

The proposed Project would not involve substantial use of energy during the operations phase. There will be periodic maintenance and inspection trips to the site as well as electricity needed to run the recirculation pumps. The development of water capture systems would assist in recharging the local groundwater aquifer and enlarging the amount of water that could be pumped for the City and the region. Extraction of local water supplies is less energy intensive as extraction and conveyance of water from outside the region. The Project would not create a new significant impact pertaining to energy that was not previously analyzed, and no new mitigation measures are required.

b) Would the Project conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

No Impact. The Project is consistent with the energy and water conservation goals and policies of the City of Lynwood General Plan. As discussed previously, the City has adopted Goal WR-2 – Water Conservation which establishes conservation methods. The Project uses water conservation technologies and practices to take stormwater runoff from Compton Creek into a subsurface infiltration gallery, where it would replenish the underlying groundwater basin. The Project also includes an ephemeral stream, native landscaping, permeable pavement in the parking areas, and bioswales. The Project would result in local extraction of water resources as opposed to using more energy intensive imported water. Conservation of energy resources related to the Project can help reduce energy demand in the City. As such, the Project would not obstruct the City's policies related to energy use. There would be no impact, and no mitigation is required.

3.7 GEOLOGY AND SOILS

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Information in this section is derived primarily from the *Geotechnical Evaluation, Lynwood City Park Stormwater Capture Project, 11301 Bullis Road, Lynwood, California* (Geotechnical Evaluation) prepared for the Project by Ninyo & Moore, dated March 17, 2023 and included as Appendix E (Ninyo & Moore 2023).

a) Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

iv) Landslides?

No Impact. The Project site is not located within a State of California Earthquake Fault Zone (EFZ) (formerly known as an Alquist-Priolo Special Studies Zone), and the nearest mapped active fault to the site is the Newport Inglewood fault located approximately 3.7 miles southwest of the site. Therefore, the risk of surface rupture at the Project site is considered relatively low. According to the Geotechnical Report, the Project site is not located within a landslide risk zone (Ninyo & Moore 2023). Therefore, the Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault or landslides. There would be no impacts, and no mitigation is required.

a) Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

ii) Strong seismic ground shaking?

iii) Seismic-related ground failure, including liquefaction?

Less than Significant Impact. There are no active or potentially active faults traversing the Project site. However, the site is in a seismically active area, as is the majority of southern California, and the potential for strong ground motion in the area may occur during the design life of the Project. Based on the Geotechnical Report, the Project site is a Class D Site, and the site-specific design considerations were developed in accordance with the site-specific response acceleration parameters for the Class D Site (Ninyo & Moore 2023). Site classification refers to a classification assigned to a site based on the types of soils present and their engineering properties as defined in Section 1613.2.2 of the California Building Code (CBC). Class D sites are sites where the soil properties are not known in sufficient detail to determine the site class. Considering the proximity of the site to active faults capable of producing a maximum movement magnitude of 6.0 or more, the Project site has a high potential for experiencing strong ground motion (Ninyo & Moore 2023). While the proposed facilities could potentially be subject to moderate or severe seismic ground shaking, they would be designed and constructed in conformance with applicable seismic safety requirements of the CBC. Modern engineering practices and compliance with the CBC, incorporated by reference into the LMC, for the construction of all built structures and replacement of in-kind facilities (i.e., the recreation facilities and related amenities) would minimize adverse safety effects to the maximum extent feasible. Also, the Project would not involve construction of habitable structures or structures whose height, mass, or materials would pose a hazard in the event of an earthquake.

Liquefaction is the phenomenon in which loosely deposited granular soils with silt and clay contents of less than approximately 35 percent and non-plastic silts located below the water table undergo rapid loss of shear strength when subjected to strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to a rapid rise in pore water pressure and causes the soil to behave as a fluid for a brief period of time. Liquefaction is known generally to occur in saturated or near saturated cohesionless soils at depths shallower than 50 feet. Factors known to influence liquefaction potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking.

The State of California Hazard Zones map indicates that the subject site is in an area mapped as being potentially susceptible to liquefaction (Ninyo & Moore 2023). Accordingly, an evaluation of the liquefaction potential of the subsurface soils at the site was performed by Ninyo & Moore as part of the Geotechnical Evaluation. The liquefaction analysis was based on the National Center for Earthquake Engineering Research procedure using the computer program LiquefyPro. The analysis indicates that the underlying soils are susceptible to liquefaction during the design seismic event (Ninyo & Moore 2023). As a result, the Project Applicant would be required to adhere to the recommendations contained within the Geotechnical Report. In addition, earthquake-resistant design and materials used in new construction must meet the current seismic engineering standards. Additionally, Project plans would be reviewed and approved by the City prior to construction to ensure all Project improvements are geotechnically sound based on locations relative to any adjacent slopes and construction methods. Therefore, impacts related to strong seismic ground shaking and liquefaction would be less than significant, and no mitigation is required.

b) Would the Project result in substantial soil erosion or the loss of topsoil?

Less than Significant Impact. The largest source of erosion and topsoil loss, particularly in a developed environment, is uncontrolled drainage during construction activities. The Project may temporarily expose soils on the Project site to wind and/or water erosion from grading and construction activities. Because the Project site would disturb more than one acre of land–the construction footprint is approximately 9.7 acres–the Project would require compliance with State Water Resources Control Board's (SWRCB's) NPDES General Permit for Storm Water Discharges Associated with the Construction and Land Disturbance Activities. This would require preparation of a project-specific Storm Water Pollution Prevention Plan (SWPPP), which describes practices to reduce pollutants in stormwater discharges from the construction site by implementing BMPs, such as sandbags and detention basins. As such, there would not be substantial pollutants introduced into storm water runoff, including sediment, during construction of the Project. The Project would also comply with the SCAQMD Rule 403 for fugitive dust control, which requires regular watering of active grading areas and unpaved roads, limiting vehicle speeds on unpaved surfaces, stabilizing stockpiled earth, and curtailing grading operations during high wind conditions (SCAQMD 2005). Construction and operation of the Project would not result in substantial soil erosion or loss of topsoil. There would be a less than significant impact, and no mitigation is required.

c) Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less than Significant Impact. Liquefaction and landslides are addressed under Thresholds 3.7(a)(iii) and 3.7(a)(iv) above, and there would be no significant impacts associated with these conditions with adherence to the recommendations presented in the Geotechnical Report.

Lateral spreading is a liquefaction-related phenomenon that is characterized by the horizontal, or lateral, movement of the ground. Lateral spreads are distinctive because they usually occur on very gentle slopes or flat terrain. Lateral spreading is induced by liquefaction, the process whereby saturated, loose, cohesionless sediments (usually sands and silts) are transformed from a solid into a liquefied state. Failure is usually triggered by rapid ground motion, such as that experienced during an earthquake, but can also be artificially induced. The impacts would be less than significant with adherence to the recommendations presented in the Geotechnical Report.

Subsidence occurs when a large portion of land sinks, usually through the extraction of groundwater, oil, or natural gas, though other methods such as earthquakes, soil compaction, erosion, sinkhole formation, and the saturation of soils with water can trigger subsidence (NOAA 2024). No large-scale extraction of groundwater, gas, oil, or geothermal energy is planned at the site or in the general site vicinity, and therefore no significant impacts related to subsidence would occur.

As noted previously, the Project will not involve construction of any habitable structures or structures whose height, mass, or materials would pose a hazard in the event of an earthquake and result in secondary seismic hazards. Modern engineering practices and compliance with the CBC, incorporated by reference into the LMC, for replacement of in-kind facilities (i.e., the recreation facilities and related amenities) would minimize adverse safety effects associated with unstable geologic units or soils to the maximum extent practicable. Moreover, the Project would not exacerbate the risk or potential hazards of landslides, lateral spreading, subsidence, liquefaction, or collapse. As stated previously, the Project includes improvement and stabilization of existing features, which would ultimately reduce the likelihood of adverse effects related to secondary seismic hazards. There would be a less than significant impact, and no mitigation is required.

d) Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Less than Significant Impact. Expansive soils are soils that swell when they absorb water and shrink as they dry due to the presence of clay. Materials encountered through subsurface exploration conducted by Ninyo & Moore generally consisted of undocumented fill underlain by young alluvium. The undocumented fill generally consists of brown, moist, medium dense, silty gravel with sand and silty sand with few gravels (Ninyo & Moore 2023). The Project site

is generally underlain by up to approximately one foot of undocumented fill. The fill is underlain by young alluvial deposits consisting of interbedded moist, loose to very dense, poorly graded sand with silt, silty sand, and silt with variable amounts of sand, and stiff to very stiff, silt and sandy lean clay (Ninyo & Moore 2023). The Geotechnical Report contains various recommendations, Including removal of the existing undocumented fill and upper loose alluvial deposits and recompacting from beneath the footprints of the proposed buried and at-grade structures or removal and replacement of unsuitable material (including undocumented fill) in the event that unsuitable material is encountered during excavation, with loosely packed clean sand or gravel, such as drainage rock, and design features outlined in the Geotechnical Report that would reduce potential impacts to less than significant level. (Ninyo & Moore 2023).

e) Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The Project does not include the construction of any septic systems or alternative wastewater disposal systems. The construction crew will be served by portable toilets that will be brought to the site during construction activities and removed at the end of construction activities. There would be no impact, and no mitigation is required.

f) Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less than Significant with Mitigation. A paleontological records search was requested from the Natural History Museum of Los Angeles County (LACM), Vertebrate Paleontology Department and results were received on April 28, 2024. The results indicate that there are no fossil localities that lie directly within the Project site; however, there are fossil localities nearby from the same sedimentary deposits that occur in the Project area, either at the surface or at depth. Therefore, implementation of the Project would not impact known paleontological resources. However, surface sediments at and surrounding the Project site consist of unknown Pleistocene formations made up of calcareous and siltstone. Deep excavation that involves disturbance of native soils could result in the disturbance and/or destruction of paleontological resources that may be present in deeper Pleistocene deposits that underlie the Project site. With implementation of MM GEO-1, there would be less than significant impacts related to discovery of unanticipated paleontological resources during construction activities. Operation of the Project would not impact paleontological resources, because there would be no long-term changes to the regular inspection and maintenance operations that have occurred historically.

Mitigation Measures

MM GEO-1 In the event that paleontological resources are inadvertently unearthed during excavation activities, the contractor shall immediately cease all earth-disturbing activities within a 100-foot radius of the area of discovery and the contractor shall contact the City's Community Development Director immediately. The City shall retain a qualified professional paleontologist to

evaluate the significance of the find, and in consultation with the City, determine an appropriate course of action. If the paleontological resources are found to be significant, the paleontologist, in consultation with the City, shall determine appropriate actions for exploration and salvage. After the find has been appropriately avoided or otherwise mitigated, work in that area may resume.

3.8 GREENHOUSE GAS EMISSIONS

Regulatory Setting

Global climate change is currently an important environmental, economic, and political issue. Increasing GHG emissions has led to an anthropogenic[2] warming trend of the earth's average temperature, which is causing changes in the earth's climate. Scientific research indicates with very high confidence (i.e., at least 90 percent) that the rate and magnitude of current global temperature changes are anthropogenic, and that global warming will lead to adverse climate change effects around the globe. GHG emissions are primarily associated with (1) the burning of fossil fuels during motorized transport, electricity generation, natural gas consumption, industrial activity, manufacturing, and other activities; (2) deforestation; (3) agricultural activity; and (4) solid waste decomposition.

On September 27, 2006, AB 32, the California Global Warming Solutions Act of 2006, was enacted by the State of California. The legislature stated that "global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California". AB 32 caps California's GHG emissions at 1990 levels by 2020. This bill represents the first enforceable Statewide program in the United States to cap all GHG emissions from major industries and include penalties for noncompliance. While acknowledging that national and international actions will be necessary to fully address the issue of global warming, AB 32 lays out a program to inventory and reduce GHG emissions in California and from power generation facilities located outside the State that serve California residents and businesses.

At the direction of the State Legislature in SB 97, the California Natural Resources Agency recently adopted amendments to the CEQA Guidelines that require GHG emissions analysis in CEQA documents.[3]

Neither the County of Los Angeles or City of Lynwood, nor any other entity with jurisdiction over the City, have adopted GHG emissions significance thresholds to assist lead agencies in determining whether impacts are significant with respect to GHG emissions. Beginning in April 2008, the SCAQMD convened a working group to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. The Working Group met approximately once per month. On December 5, 2008, the SCAQMD

[2] Anthropogenic effects, processes, objects, or materials are those that are derived from human activities, as opposed to those occurring in natural environments without human influence.

[3] The CEQA Guidelines revisions were adopted December 30, 2009. The Adopted Amendments became effective March 18, 2010.

Governing Board adopted its staff proposal for an interim CEQA GHG significance threshold for industrial projects where the SCAQMD is the lead agency (SCAQMD 2008). The interim screening threshold for industrial projects is 10,000 metric tons of carbon dioxide equivalent units per year ($MTCO_2e$/yr). In September 2010, the Working Group presented a tiered approach to determining GHG significance. At Tier 1, a GHG emissions impact would be less than significant if the project qualifies under a categorical or statutory CEQA exemption. At Tier 2, a GHG emissions impact would be less than significant if the project is consistent with a previously adopted GHG reduction plan that meets specific requirements.[4] Tier 3 for industrial projects proposes extending the 10,000 $MTCO_2e$/yr screening threshold applicable to SCAQMD lead agency projects to other lead agency industrial projects. Tier 3 proposes the following screening values for residential and commercial projects: either a single 3,000 $MTCO_2e$/yr threshold for all land use types or separate thresholds of 3,500 $MTCO_2e$/yr for residential projects; 1,400 $MTCO_2e$/yr for commercial projects; and 3,000 $MTCO_2e$/yr for mixed-use projects. A project with emissions less than the applicable screening value would have less than significant GHG emissions.

No thresholds have been adopted that directly relate to this Project because it is not a typical land use development project (e.g., residential, commercial, industrial, transportation). To provide a conservative significance threshold, the 3,000 $MTCO_2e$/yr threshold was selected for determining the significance of the Project's GHG emissions.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

a) Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than Significant Impact. The GHG emissions resulting from implementation of the Project were calculated using CalEEMod with the same model inputs as described for the calculation of criteria pollutants in Section 3.3, Air Quality, of this IS/MND. As with the

[4] The plan must (1) quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area; (2) establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable; (3) identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area; (4) specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level; (5) establish a mechanism to monitor the plan's progress toward achieving the level and to require an amendment if the plan is not achieving specified levels; and (6) be adopted in a public process following environmental review (CEQA Guidelines Section 15183.5).

analysis in Section 3.3, the worst-case annual GHG emissions were calculated using CalEEMod Version 2022.1.1.20 from vehicle engine exhaust hauling construction equipment, on-road hauling trucks, vendor trips, and worker commuting trips. The results are provided in metric tons of CO_2 equivalent ($MTCO_2e$), and the CalEEMod data is provided in Appendix A. Table 10, Estimated Greenhouse Gas Emissions from Construction, summarizes the results of the GHG emissions modeling for the Project.

TABLE 10
ESTIMATED GREENHOUSE GAS EMISSIONS FROM CONSTRUCTION

Year	Annual GHG Emissions ($MTCO_2e$)
2027	317
2028	276
2029	0
Total	**593**
Amortized Emissions	20
Threshold	**3,000**
Exceeds Threshold?	**No**
GHG: greenhouse gas; $MTCO_2e$: metric tons of carbon dioxide equivalent CalEEMod output data are in Appendix A.	

As shown in Table 10, estimated total GHG emissions for Project construction are 593 $MTCO_2e$. Because impacts from a project's construction activities occur over a relatively short period of time, they contribute a relatively small portion of a project's lifetime GHG emissions. In addition, GHG emission reduction measures for construction equipment are relatively limited. The SCAQMD recommends that construction emissions be amortized over a 30-year project lifetime so that GHG reduction measures address construction GHG emissions as part of operational GHG reduction strategies (SCAQMD 2008). The amortized emissions from the Project would be 20 $MTCO_2e$. The amortized construction emissions would be less than the SCAQMD screening level of 3,000 $MTCO_2e$/year. The Project would result in nominal operational GHG emissions associated with energy demand to run the small recirculation pumps and maintenance truck trips. Therefore, GHG emissions would be less than significant, and no mitigation is required.

b) Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less than Significant Impact. The SCAQMD and City of Lynwood have not adopted standards for the purpose of reducing GHG emissions. As discussed previously, the principal State plan and policy adopted for the purpose of reducing GHG emissions is AB 32. Other applicable plans and policies that are applicable to the proposed Project are Executive Order S-3-05, the California Global Warming Solutions Act of 2006, and SB-32. The quantitative goal of these regulations is to reduce GHG emissions to 1990 levels by 2020 to 80 percent below 1990 levels by 2050, and for SB 32, to 40 percent below 1990 levels by 2030. Statewide plans and regulations (such as GHG emissions standards for vehicles, the

Low Carbon Fuel Standard, Cap-and-Trade, and renewable energy) are being implemented at the statewide level, and compliance at a project level is not addressed. Therefore, the proposed Project would not conflict with these plans and regulations.

The proposed Project would be built to meet the current applicable Title 24 Energy Efficiency Standards for Nonresidential Buildings (CCR, Title 24, Part 6) and the applicable California Green Building Standards (24 CCR 11). The proposed Project would be developed in compliance with the requirements of these regulations. The Project consists of various stormwater infrastructure improvements designed to promote the infiltration of stormwater runoff and the recharge of underlying groundwater aquifers.

The Project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment and would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. The impact would be less than significant, and no mitigation is required.

3.9 HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter-mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	☒

a) Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than Significant Impact. Demolition and construction activities for the proposed Project would involve the use of chemical substances such as solvents, paints, fuel for equipment, and other potentially hazardous materials. Hazards to the environment or the public would typically occur with the transport, use, storage, or disposal of hazardous materials. Demolition and construction activities would be relatively short-term and the transport, use, and disposal of hazardous materials as part of these activities would occur in small quantities and on a temporary basis. To prevent public safety hazards, the contractor would be required to comply with existing regulations for the transport, use, storage and disposal of hazardous materials to, which include the Hazardous Materials Transportation Act, Resource Conservation and Recovery Act, California Hazardous Waste Control Act, and California Accidental Release Prevention Program, among others.

With Project implementation, the Project would continue operations as a community park, which does not use or store large quantities or unusually hazardous substances. Long-term maintenance activities may involve use of materials such as paints, cleaning agents, and materials used for landscape equipment operation such as fuels, oils, and solvents, in small volumes and for brief periods. There would be no change in the type, amount, or frequency of hazardous materials' use at Lynwood Park as a result of the Project. These materials would be handled in compliance with existing federal, State, and local regulations. As such, the operation of the Project would not involve the routine transport, use, or disposal of hazardous materials that would create a significant hazard to the public or the environment. There would be a less than significant impact, and no mitigation is required.

b) Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less than Significant Impact. Construction of the Project would involve the use of common hazardous substances such as petroleum-based fuels and hydraulic fluid. However, the level of risk associated with the accidental release of hazardous substances during construction is considered low due to the small volume of hazardous materials that would be used during construction. Hazardous substances required for construction would be handled, transported, and/or disposed of in accordance with all federal, State, and local laws. Upon required compliance with these existing regulations, upset and accident conditions involving the use of such substances are not reasonably foreseeable.

As discussed above, operation of the Project site would be essentially the same as under existing conditions and park maintenance activities may involve use of materials such as paints, cleaning agents, and materials used for landscape equipment operation such as fuels, oils, and solvents. The risk level for accidental release of hazardous substances would be low due to the small volume of materials that would be used at any given time and because there would be no change in the type, amount, or frequency of hazardous materials' use at Lynwood Park compared to the existing condition.

As such, construction and operation of the Project would not involve the release of hazardous materials into the environment that would create significant hazard to the public or the environment. There would be a less than significant impact, and no mitigation is required.

c) Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter-mile of an existing or proposed school?

Less than Significant Impact. Hosler Middle School is located within one-quarter mile of the Project site (the school abuts Lynwood Park to the south) at 11300 Spruce Street. As discussed above, Project construction and operation would require limited transport and use of hazardous materials. However, these activities would be conducted in compliance with existing federal, State, and local regulations, and the types and volumes of materials would not represent a significant risk to the public or the environment.

As discussed in Section 3.3, Air Quality, local and regional emissions of criteria air pollutants would be below all SCAQMD thresholds, and TAC emissions–namely diesel particulate matter from on-site construction equipment and the haul trucks–would not result in health risks to any sensitive receptors near the Project site. As such, construction of the Project would not involve emissions in quantities that could be considered hazardous in the vicinity of any school. Additionally, the operation of the Project would not impact nearby schools due to hazardous emissions, because there would be no long-term changes to the regular inspection and maintenance operations that have occurred historically. There would be a less than significant impact, and no mitigation is required.

d) Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. There are no sites within or near the Project site identified on the Hazardous Waste and Substances List (also called the Cortese List) compiled by the California Environmental Protection Agency (CalEPA) pursuant to Section 65962.5 of the *California Government Code* (CalEPA 2023). There would be no impact related to identification of the site on the Cortese List such that a significant hazard to the public or the environment would occur during construction or operation of the Project. There would be no impact, and no mitigation is required.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact. The Project site is not located within two miles of a public airport or public use airport or within an airport safety zone area. The closest public use airport, Compton/Woodley Airport, is located approximately 3.1 miles southwest of the Project site. The Project's implementation would not result in a safety hazard by introducing incompatible development (development that penetrates an airport's slope [a structure that

would interfere with the approach and takeoff of aircraft utilizing the aforementioned airport]) within a Runway Protection Zone (RPZ), nor would the Project expose Park visitors or maintenance workers to excessive noise associated with the Compton/Woodley Airport. Thus, no impact would occur, and no mitigation is required.

f) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less than Significant Impact. The City of Lynwood prepared the 2020 Local Hazard Mitigation Plan in order to fulfill the necessary conditions in order to be eligible for, and possibly obtain, federal hazard mitigation grant funding under the Disaster Mitigation Act of 2000. The plan complies with the Federal Disaster Mitigation Act (2000) and Federal Register 44 CFR Parts 201 and 206 (City of Lynwood 2020).

As shown in Figure 4.6-2 of the Infrastructure/Public Services Element of the City's General Plan, Martin Luther King Jr. Boulevard and Imperial Highway are both evacuation routes (City of Lynwood 2003). During construction activities, all construction staging areas would occur on-site and would be prohibited from occurring on the street or within the public right-of-way. Construction equipment would be stored within the northern portion of the eastern parking lot, while parking for construction workers and vehicles would be located within the southern portion of the eastern parking lot. Access for construction workers, equipment, and vehicles would be located along the west side of Bullis Road and the south side of Martin Luther King Jr. Boulevard. In addition, Project contractors would be required to adhere to the guidelines outlined in the Work Area Traffic Control Handbook (WATCH) should the Project's construction require temporary road, lane, or shoulder closures and detours. Any temporary lane closures along Birch Street, Cesar E. Chavez Lane, and/or Bullis Road would be done in accordance with the WATCH and all applicable City regulations governing construction traffic. As a result, any temporary lane closures would not result in a significant interference of emergency evacuation routes.

Public access to and use of the recreation facilities on the site with Project implementation would be the same as in the existing condition. Operationally, the Project would not affect emergency response or emergency evacuation of adjacent land uses, similar to the existing condition. Therefore, the Project would have less than significant impacts regarding interference with emergency response or evacuation plans during construction and operation, and no mitigation is required.

g) Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

No Impact. The Project site is in a highly urbanized area of the City and there are no areas of native vegetation found within the vicinity of the Project site. In addition, the site and the surrounding areas are not located in designated Very High Fire Hazard Severity Zones (VHFHSZ), as identified by the California Department of Forestry and Fire Prevention (CAL FIRE 2024). The Project would also be required to adhere to construction provisions as provided in the Municipal Code, the CBC, and California Fire Code. Implementation of the Project would not expose people or structures directly or indirectly to a significant risk of

loss or death associated with wildland fires. As a result, no impact would occur, and no mitigation is required.

3.10 HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) Result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of pollutant runoff?	☐	☐	☐	☒
iv) Impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

Information in this section is derived primarily from the *Lynwood Park Stormwater Capture Study Technical Memorandum* (Stormwater Memo), prepared for the Project by Craftwater Engineering, Inc, dated June 9, 2023 and included as Appendix F (Craftwater 2023).

a) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Less than Significant Impact. The Project is intended to intercept the dry-weather flow and a portion of the wet-weather flows from a 72-inch reinforced concrete pipeline located along

Birch Street and an 81-inch reinforced concrete pipeline located along Bullis Road, both managed by the LACFCD. Subsurface and surface BMPs are proposed throughout Lynwood Park to capture stormwater from the diverted storm drains (Craftwater 2023).

The Project site is located within the Lower Los Angeles River Watershed and is under the jurisdiction of the LARWQCB. The Project could result in short-term, construction-related impacts to surface water quality from minimal grading and other construction activities (e.g., erosion, spills, and leaks from construction equipment). Because the Project site would disturb more than one acre of land– the construction footprint is approximately 9.7 acres– the Project would be required to comply with SWRCB's NPDES General Permit for Storm Water Discharges Associated with the Construction and Land Disturbance Activities. This would require preparation of a Project-specific SWPPP, which describes practices to reduce pollutants in stormwater discharges from the construction site by implementing BMPs, such as sandbags and detention basins. The Project would also comply with the SCAQMD Rule 403 for fugitive dust control, which includes regular watering of active grading areas and unpaved roads, limiting vehicle speeds on unpaved surfaces, stabilizing stockpiled earth, and curtailing grading operations during high wind conditions (SCAQMD 2005). As such, there would not be substantial pollutants introduced into storm water runoff, including sediment, during construction of the Project.

The operation of the Project would not violate any water quality standards, as the Project itself includes construction of a regional stormwater BMP that includes treatment components. The Project would provide multiple benefits including improved flood control, water quality, and water supply (through infiltration to groundwater). The Project represents an opportunity to implement regional-scale pollutant load reductions from a sizeable drainage area in the Lower Los Angeles River Watershed as well as increase infiltration to the underlying groundwater aquifer. In addition, the Project would include in-kind replacement of existing recreational facilities, which would operate the same as the existing conditions and would not violate any water quality standards. As such, construction and operation of the Project would not have the potential to degrade surface or water quality. There would be less than significant impacts, and no mitigation is required.

b) Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less than Significant Impact. The grading and trenching that would be undertaken to accommodate the Project would not extend to depths that would encounter groundwater. Groundwater was encountered in one of the exploratory borings drilled on-site as part of the Geotechnical Investigation at depths of approximately 43.3, 43.4, and 55.5 feet. Excavation activities for underground infiltration facility would occur at depths no greater than 25 feet. Therefore, no direct construction related impacts to groundwater supplies, or groundwater recharge activities would occur.

Implementation of the Project includes installation of the 10.7-acre-foot infiltration chambers, to be located within the park, in which stormwater would be captured, pre-treated, and infiltrated. The overall purpose of the Project is to increase infiltration to the

underlying groundwater aquifer, and as such implementation of the Project would be beneficial to groundwater supplies and support sustainable groundwater management of the Basin. Impacts would be less than significant, and no mitigation is required.

c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:

i) Result in substantial erosion or siltation on- or off-site?

Less than Significant Impact. Construction activities would be restricted to the designated Project area and the implementation of the proposed Project would not alter the course of the Los Angeles River. Project contractors would be required to implement the construction BMPs recommended in the mandatory SWPPP. The implementation of these BMPs, as well as SCAQMD's Rule 403 would minimize soil erosion and water discharge. Furthermore, the adjacent streets are paved, and any runoff discharged off-site would not result in erosion or siltation.

Project implementation would alter the existing drainage pattern at the site through installation of various stormwater BMPs that would intercept the dry-weather flow and a portion of the wet-weather flows from a 72-inch reinforced concrete pipeline located along Birch Street and an 81-inch reinforced concrete pipeline located along Bullis Road. Captured stormwater runoff would be conveyed through a system of stormwater appurtenances that would ultimately filter and remove any contaminants of concern from captured runoff. This runoff would then percolate into the ground through the infiltration chambers. Therefore, the diversion and infiltration of stormwater runoff would not result in erosion or siltation, on- or -off-site. Thus, the Project's implementation will not substantially increase the rate or amount of surface runoff; create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems; or provide additional sources of polluted runoff. As a result, the potential impacts would be less than significant, and no mitigation is required.

c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:

ii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of pollutant runoff?

iii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

No Impact. The Project would not materially increase the amount of impervious area over the existing conditions, as the stormwater BMP would be located almost entirely underground, and the in-kind recreational facilities would be in essentially the same locations as under existing conditions. As such, the Project would not result in increased

stormwater runoff volumes that would exceed the capacity of stormwater drainage system; provide additional sources of pollutant runoff; or result in on- or off-site flooding. There would be no impact, and no mitigation is required.

c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:

iv) Impede or redirect flood flows?

No Impact. According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the Project site is not located within a 100-year flood hazard area. The Project site is located within "Other Flood Areas – Zone X," which includes areas potentially subject to 500-year floods and areas of 100-year floods with average depths of less than one foot, and areas protected by levees. (Ninyo & Moore 2023).

In the event of flooding, the Project stormwater infiltration chambers have been designed to capture the 85th percentile storm event as the storage volume of the infiltration chambers totals 10.7 acre-feet and the infiltration chambers are considered to be wet-weather BMPs. As such, the Project would be an improvement upon existing conditions and would not substantially alter drainage in a manner than would impede or redirect flood flows. There would be no impact, and no mitigation is required.

d) In a flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?

Less Than Significant Impact. As discussed under Threshold 3.10(c)(iv), the Project site is not located in a 100-year Flood Hazard Area (Ninyo & Moore 2022). As discussed above, the Project site is located within the National Flood Insurance Program's Zone X, which includes areas potentially subject to 500-year floods. Additionally, the Project site is situated outside of a dam inundation zone (DWR DSOD 2024) and is approximately 11 miles inland from the Pacific Ocean; as such, it would not be susceptible to tsunami hazards. A seiche is referred to as a standing wave oscillating in an enclosed or semi-enclosed body of water (NOAA 2024b). There are no open bodies of water proximate to the site that would be susceptible to seiche in the event of an earthquake. The lack of water in Los Angeles restricts the occurrence of seiches. Since the Project site is located outside of any flood zone, tsunami risk zone, or seiche zone, the proposed Project is unlikely to be inundated, and the potential impacts would be less than significant. No mitigation is required.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Impact. The Sustainable Groundwater Management Act (SGMA) was signed into law on September 16, 2014, which is comprised of three bills: AB 1739, SB 1168, and SB 1319. The SGMA requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their

sustainability plans (SWRCB 2024a). The City of Lynwood is not located within a high or medium priority basin (SWRCB 2024b). Therefore, the City is not subject to a groundwater management plan. No impact would occur, and no mitigation is required.

3.11 LAND USE AND PLANNING

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

a) Would the Project physically divide an established community?

No Impact. One of the primary factors in considering division of an established community is whether the project would create any physical barriers that change the connectivity between areas of a community. There are no residential uses or established communities located on the Project site, as it is an existing park. The Project would not physically divide an existing community, as the Project consists of the regional stormwater runoff capture facility and in-kind recreation facility improvements within the existing limits of the Lynwood Park. There would be no impact, and no mitigation is required.

b) Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The Project site is located in an area that is zoned Open Space, which allows for parks; maintenance buildings and storage facilities; restrooms; playground equipment; picnic tables and benches; recreation centers; public pools; lakes; and other related facilities (City of Lynwood 2003). The Project would involve construction of new stormwater infrastructure and Park improvements such as a new butterfly garden and ephemeral stream feature. As the Project will continue to provide park and recreational facilities at the existing Lynwood Park, the Project would not conflict with the land use designation. The Project would not conflict with any applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. Impacts would be less than significant, and no mitigation is required.

3.12 MINERAL RESOURCES

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

a) Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. The Surface Mining and Reclamation Act of 1975 (SMARA, PRC, Sections 2710-2796) provides a comprehensive surface mining and reclamation policy with the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. SMARA also encourages the production, conservation, and protection of the State's mineral resources (DMR 2024). Under SMARA, the California Geological Survey designates Mineral Resources Zones (MRZs) according to the presence of or potential for underlying mineral resources. MRZ-1 is an area with no significant mineral deposits; MRZ-2 is an area with significant mineral deposits; and MRZ-3 is an area containing known mineral resources of undetermined significance. The Project site is designated by the Division of Mines and Geology as MRZ-1 (DMG 1981). Therefore, the Project's implementation would not result in a loss of availability of a known mineral resource. In addition, the site is situated within Lynwood Park, and there is no active mining occurring on-site (DMR 2016).

Additionally, a review of the California Division of Oil, Gas, and Geothermal Resources well finder indicates that there are no oil wells located within the Project site (CalGEM 2024). As a result, no impacts to mineral resources would occur, and no mitigation is required.

b) Would the Project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. As indicated previously, there are no mineral, oil, or energy extraction and/or generation activities located within the Project site. The City of Lynwood is located within the San Gabriel Production-Consumption Region for Portland Cement Concrete–grade aggregate resources, as mapped by the Division of Mines and Geology, renamed the California Geological Survey in 2006 (Department of Conservation 2010). The Project site is mapped within Mineral Resource Zone 1 for aggregate resources. Mineral Resource Zone 1 is a designation given to areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their

presence (Division of Mines and Geology 1982). Although some excavated sediment would be removed from the site as part of the Project, this sediment is not of value as a mineral resource. Currently, the Project site is used for both active and passive recreation as a City park facility. In addition, the City's General Plan does not indicate the presence of mineral resources on the Project site or in the City (City of Lynwood 2003). No mining operations are present on-site or within the Project vicinity. Therefore, no impact would result from the implementation of the proposed Project, and no mitigation is required.

3.13 NOISE

Noise and Vibration Basics and Terminology

Noise

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. "Noise" is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance; interference with speech communication; sleep disturbance; and, in the extreme, hearing impairment (Caltrans 2013).

Sound pressure levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale. A doubling of the energy of a noise source (such as doubling of traffic volume) would increase the noise level by 3 dB. The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale was devised; the A-weighted decibel scale (dBA) approximates the frequency response of the average healthy ear when listening to most ordinary everyday sounds and is used in this analysis.

Human perception of noise has no simple correlation with acoustic energy. Due to subjective thresholds of tolerance, the annoyance of a given noise source is perceived very differently from person to person. The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at 3 feet is approximately 60 dBA, while loud jet engine noises at 1,000 feet equate to 100 dBA, which can cause serious discomfort. Table 11, Noise Levels for Common Events, shows the relationship of various noise levels in dBA to commonly experienced noise events.

TABLE 11
NOISE LEVELS FOR COMMON EVENTS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet fly-over at 300 m (1,000 ft)	100	
Gas lawn mower at 1 m (3 ft)	90	
Diesel truck at 15 m (50 ft) at 80 km/hr (50 mph)	80	Food blender at 1 m (3 ft); garbage disposal at 1 m (3 ft)
Noisy urban area, daytime gas lawn mower at 30 m (100 ft)	70	Vacuum cleaner at 3 m (10 ft)
Commercial area, heavy traffic at 90 m (300 ft)	60	Normal speech at 1 m (3 ft)
Quiet urban daytime	50	Large business office, dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	30	Library
Quiet rural nighttime	20	Bedroom at night, concert hall (background)
	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing
dBA: A-weighted decibels; m: meter; ft: feet; km/hr: kilometers per hour; mph: miles per hour Source: Caltrans 2013.		

Two noise sources do not "sound twice as loud" as one source. As stated above, a doubling of noise sources results in a noise level increase of 3 dBA. It is widely accepted that (1) the average healthy ear can barely perceive changes of a 3 dBA increase or decrease, (2) a change of 5 dBA is readily perceptible, and (3) an increase (decrease) of 10 dBA sounds twice (half) as loud (Caltrans 2013).

From the source to the receiver, noise changes both in the level and frequency spectrum. The most obvious change is the decrease in noise level as the distance from the source increases. Sound from a small, localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern. For point sources, such as heating, ventilation, and air conditioning (HVAC) units or construction equipment, the sound level attenuates (or drops off) at a rate of 6 dBA for each doubling of distance (i.e., if the noise level is 70 dBA at 25 feet, it is 64 dBA at 50 feet). Vehicle movement on a road makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. The sound level attenuates or drops off at a rate of 3 dBA per doubling of distance for line sources.

A large object in the path between a noise source and a receiver can significantly attenuate noise levels at that receiver location. The amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. Natural terrain or landform features as well as man-made features (e.g., buildings and walls) can significantly alter noise exposure levels. For a noise barrier to work, it must be high enough and long enough to block the view from the receiver to a road or to the noise source. Effective noise barriers can reduce outdoor noise levels at the receptor by up to 15 dBA.

Several rating scales (or noise "metrics") exist to analyze effects of noise on a community. These scales include the equivalent noise level (L_{eq}), L_{max}, and L_{min}, which are respectively the average, highest, and lowest A-weighted sound levels that occur during a noise event, and the Community Noise Equivalent Level (CNEL). Average noise levels over a period of minutes or hours are usually expressed as dBA L_{eq}, which is the equivalent noise level for that period of time. The period of time averaging may be specified; for example, L_{eq}(3-hour) would be a three-hour average. The noise of short duration (i.e., substantially less than the averaging period) is averaged into ambient noise during the period of interest. Thus, a loud noise lasting a few seconds may have a minimal effect on the measured sound level averaged over a one-hour period.

To evaluate community noise impacts, CNEL was developed to account for human sensitivity to nighttime noise. CNEL represents the 24-hour average sound level with a penalty for noise occurring at night. The CNEL computation divides a 24-hour day into three periods: daytime (7:00 AM to 7:00 PM), evening (7:00 PM to 10:00 PM), and nighttime (10:00 PM to 7:00 AM). The evening sound levels are assigned an approximately 5-dBA penalty, and the nighttime sound levels are assigned a 10-dBA penalty prior to averaging with daytime hourly sound levels.

Vibration

Vibration is an oscillatory motion through a solid medium in which the amplitude of the motion can be described in terms of displacement, velocity, or acceleration. Vibration displacement is the distance that a point on a surface, moves away from its original static position. The instantaneous speed that a point on a surface, moves is described as the velocity, and the rate of change of the speed is described as the acceleration. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction of a project, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure. Analysis of this type of vibration is best measured in velocity and acceleration.

The three main wave types of concern in the propagation of groundborne vibrations are surface or Rayleigh waves, compression or P-waves, and shear or S-waves.

- Surface or Rayleigh waves travel along the ground surface. They carry most of their energy along an expanding cylindrical wave front, similar to the ripples produced by

throwing a rock into a lake. The particle motion is more or less perpendicular to the direction of propagation (known as retrograde elliptical).

- Compression or P-waves are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal, in a push-pull motion. P-waves are analogous to airborne sound waves.
- Shear or S-waves are also body waves, carrying their energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse, or perpendicular to the direction of propagation.

The peak particle velocity (PPV) or the root mean square (rms) velocity is usually used to describe vibration amplitudes. The PPV is defined as the maximum instantaneous peak of the vibration signal and the rms is defined as the square root of the average of the squared amplitude of the signal. The PPV is more appropriate for evaluating potential building damage and also used for evaluating human response.

The units for PPV are normally inches per second (in/sec). Often, vibration is presented and discussed in VdB units to compress the range of numbers required to describe the vibration. In this study, all PPV levels are in in/sec and all vibration levels are in VdB relative to one microinch per second. The threshold of human perception is approximately 0.3 in/sec PPV. Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Even the more persistent Rayleigh waves decrease relatively quickly as they move away from the source of the vibration. Manmade vibration problems are, therefore, usually confined to short distances (500 feet or less) from the source.

Construction generally includes a wide range of activities that can generate groundborne vibration. In general, blasting and demolition of structures generate the highest vibrations. Heavy trucks can also generate groundborne vibrations, which vary depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, differential settlement of pavement, and other anomalies all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration of normal traffic on streets and freeways with smooth pavement conditions.

Regulatory Setting

Federal

Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by the federal Urban Mass Transit Administration (UMTA), while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). Although the Project is not under the jurisdiction of the FTA, the FTA is the only agency that has defined what constitutes significant construction source noise impacts from implementing a project. The FTA standards are based on extensive studies by the FTA and other governmental agencies on

the human effects and reaction to noise from construction sources. The FTA recommends developing construction noise criteria on a project-specific basis that utilizes local noise ordinances, if possible. However, local noise ordinances usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the noise impacts of construction activities. Project construction noise criteria should take into account the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land uses.

The FTA's Transit Noise and Vibration Impact Assessment Manual (FTA 2018) has developed construction impact guidelines shown in Table 12.

TABLE 12
FTA CONSTRUCTION NOISE CRITERIA

Land Use	Day	Night
1-Hour Criteria (Leq)		
Residential	90	80
Commercial	100	100
Industrial	100	100
8-Hour Criteria (Leq)		
Residential	80	70
Commercial	85	85
Industrial	90	90
Source: FTA 2018.		

Residential land uses are considered to be the most noise-sensitive areas; therefore, for purposes of project construction noise analysis, FTA noise criteria for residential uses are applied in this document.

State

Noise

There are no specific State regulations related to noise that apply to the proposed Project. However, the State Office of Noise Control in the State Department of Health Services has established guidelines to provide a community with a noise environment that it deems to be generally acceptable. City of Lynwood has established noise control policies in the City's General Plan that are consistent with State guidelines.

Vibration

There are no applicable City standards for vibration-induced annoyance or structural damage from vibration from construction activity and the City defers to other authoritative sources for evaluating these impacts. Groundborne vibration levels resulting from

construction activities at the Project site were estimated using the Caltrans vibration damage potential guideline thresholds; shown in Table 13, Vibration Damage Threshold Criteria. Based on the guidance in Table 13, the vibration level of 0.3 in/sec PPV for older residential structures exposed to continuous/frequent intermittent sources is considered the most applicable threshold for a potentially significant vibration damage impact from the Project.

TABLE 13
VIBRATION DAMAGE THRESHOLD CRITERIA

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

ppv: peak particle velocity; in/sec: inch(es) per second

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. Construction of the Project would involve continuous/frequent intermittent sources.

Source: Caltrans 2020.

The Caltrans vibration annoyance potential guideline thresholds are shown in Table 14, Vibration Annoyance Criteria. Based on the guidance in Table 19, the "distinctly perceptible" vibration level of 0.04 ppv in/sec is considered the most applicable threshold for a potentially significant vibration annoyance impact for the Project.

TABLE 14
VIBRATION ANNOYANCE CRITERA

Average Human Response	PPV (in/sec)
Severe	0.4
Strongly perceptible	0.10
Distinctly perceptible	0.04
Barely perceptible	0.01

PPV: peak particle velocity; in/sec: inch(es) per second
Source: Caltrans 2020.

City of Lynwood

City of Lynwood General Plan

Noise is discussed in the Noise Element of the City of Lynwood General Plan. As stated in the Noise Element, the City consists of relatively low and medium density urban development on a relatively flat landscape, surrounded by other urbanized areas. The City has industrial uses to the east and west, the Long Beach Freeway to the east, and is bisected by the Century Freeway (I-105). In such settings, ambient noise levels tend to be higher (55 to 65 dBA) in most areas. Within this setting, the primary noise generating factors within the community include the transportation facilities such as I-105 Century Freeway and the Long Beach I-710 Freeway. Arterial roadways are also considered significant noise generators. Other sources of noise in the City include aircraft flyovers and other industrial operations (City of Lynwood 2003). The City's Noise Element contains the following policies that would be applicable to the Project:

- **Policy NOI-1.1 - Sensitive Receptors:** Prohibit the development of new commercial, industrial, or other noise-generating land uses adjacent to existing residential uses and sensitive noise receptors such as schools, health care facilities, libraries, and churches if noise levels are to exceed 65 dBA CNEL.
- **Policy NOI-1.2 – Sleep Interference:** Ensure that excessive noise levels do not interfere with sleep through the implementation of land use requirements.
- **Policy NOI-1.3 – Protect Residential Areas:** Ensure that exterior noise levels for dwellings in residential areas do not exceed exterior noise levels of 65 dBA CNEL and interior noise levels of 45 dBA CNEL.
- **Policy NOI-1.5 –Construction Noise:** Provide guidelines to contractors for reducing potential noise impacts on surrounding land uses.

City of Lynwood Municipal Code

The City's Noise Ordinance is contained in Chapter 3 – Public Safety Regulations, Section 3.12 – Noise of the City's Municipal Code. As stated in the Municipal Code, "it is hereby declared to be the policy of the City to prohibit unnecessary, excessive, and annoying noises from all sources subject to its police power. At certain levels noise is detrimental to the health and welfare of the citizenry and in the public interests shall be systematically proscribed" (City of Lynwood 2022).

The following sections of the Noise Ordinance are applicable to the proposed Project:

3-12.5 Ambient Base Noise Level:

Sound level A, decibels:

a. It is unlawful for any person within the City to make, cause, or allow to be produced noise which is received on property occupied by another person within the

designated zone in excess of the following levels, except as expressly provided otherwise in this section:

Standards			
Zone	**Day (7:00 A.M. to 7:00 P.M.)**	**Evening (7:00 P.M. to 10:00 P.M.)**	**Night (10:00 P.M. to 7:00 A.M.)**
R-1 and R-2	60	60	60
R-3	60	60	55
Commercial	65	65	60
Manufacturing	75	75	75

b. At the boundary line between two (2) different zones, the noise level of the quieter zone shall be used.

3-12.10 Creating Noise Near Schools, Hospitals, Libraries, Convalescent Homes and Churches:

It shall be unlawful for any person to create any noise on any city street, sidewalk, or public place adjacent to any school, institution of learning, library or church while the same is in use or adjacent to any hospital or convalescent home, which noise unreasonably interferes with the workings of such institution or which disturbs or unduly annoys patients in such medical facilities, provided conspicuous signs are displayed in such streets, sidewalk or public place indicating the presence of these facilities.

3-12.12 Machinery, Equipment, Fans and Air Conditioning:

It shall be unlawful for any person to operate any machinery, equipment, pump, fan, air conditioning apparatus, or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property line of any property to exceed the ambient base noise level by more than five (5) decibels.

3-12.13 Construction of Buildings and Projects:

It shall be unlawful for any person within a residential zone, or within a radius of five hundred feet (500') therefrom, to operate equipment or perform any outside construction or repair work on buildings, structures, or projects or to operate any pile driver, power shovel, pneumatic hammer, derrick, power hoist, or any other construction type device between the hours of ten o'clock (10:00) P.M. of one day and seven o'clock (7:00) A.M. of the next day in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance unless beforehand a permit therefor has been duly obtained from the director of development services or his or her designee. No permit shall be required to perform "emergency work" as defined in subsection 3-12.2 of this section of the City's Municipal Code.

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Results in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Result in generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

a) Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less than Significant Impact with Mitigation. Implementation of the Project would result in noise and vibration related to on-site construction equipment and haul truck traffic.

Existing Noise Conditions

Psomas conducted an ambient noise survey at the site on August 15, 2024. Noise measurements were taken at locations representative of the noise-sensitive receptors near the Project site to determine the existing noise conditions at such receptors. The noise monitoring locations were selected to quantify existing daytime ambient noise levels experienced by nearby sensitive receptors. The measurement locations are shown in Exhibit 5, Noise Measurement Locations, and included the following:

- Site 1: West of the Project site, along the east side of Birch Street;
- Site 2: North of the Project site, south of the City parking lot;
- Site 3: South of the Project site, north of the tennis courts and northwest of Hosler Middle School; and,
- Site 4: East of the Project site, west side of Bullis Road.

Two sets of short-term (approximately 20 minutes each) noise level measurements were taken using a Lason Davis Laboratories SoundTrack LxT1 sound level meter (SLM). The measurement microphone was placed approximately five feet above the ground and equipped with a windscreen. The SLM was set to "A"-weighted and a time-weighting of "slow."



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Noise Measurement Locations

Exhibit 5

Lynwood Park Stormwater Capture Project IS/MND

N E S W

0 100 200 Feet

PSOMAS

(Rev: 9-24-2024 PLO) R:\Projects\CRA\3CRA120300\Graphics\ISMND\ex_Noise_Measurement.pdf

The meteorological conditions were documented at the time of the noise monitoring. Overall, the sky was clear and sunny at the time of the noise monitoring, temperatures ranged from 86 to 88 degrees Fahrenheit (^{0}F), with relative humidity ranging from 49 to 53 percent. There was a light breeze with wind speeds varying from 8 to 10 miles per hour. Table 15, Existing Measured Noise Levels at the Project Site, summarizes the results of the noise monitoring.

TABLE 15
EXISTING MEASURED NOISE LEVELS AT THE PROJECT SITE

Noise Monitoring Location Description	Primary Noise Sources	Measurement Start/End Time	Measured Noise Levels (dBA)		
			L_{eq}	L_{min}	L_{max}
West side of the Project site at 11301 Birch Street (east side of Birch Street) for the first set of measurements. Second set of measurements were collected at 11400 Birch Street.	Traffic, aircraft, pedestrians speaking	Start: 11:31 AM End: 11:51 AM	56.5	47.9	74.0
		Start: 12:01 PM End: 12:21 PM	55.9	48.4	70.4
Hosler Middle School: South side of the site north of the tennis courts and northwest of Hosler Middle School	Aircraft, people/children talking, distant construction, distant rail, distant freeway, distant traffic	Start: 12:39 PM End: 12:59 PM	57.4	52.5	75.7
		Start: 1:00 PM End: 1:20 PM	56.1	53.5	65.2
North side of Project site north of the soccer fields and south of the City parking lot, southeast of Cesar Chavez Lane, and southwest of the Municipal Natatorium	Traffic, aircraft, industrial, distant aircraft, distant traffic, distant industrial, birds, distant sirens	Start: 1:30 PM End: 1:50 PM	58.2	56.8	65.7
		Start: 1:51 PM End: 2:11 PM	58.3	57.0	65.2

TABLE 15
EXISTING MEASURED NOISE LEVELS AT THE PROJECT SITE

Noise Monitoring Location Description	Primary Noise Sources	Measurement Start/End Time	Measured Noise Levels (dBA)		
			L_{eq}	L_{min}	L_{max}
East side of Project site at 11301 Bullis Road (west side of Bullis Road adjacent to the skatepark)	Traffic along Bullis Road, people speaking, skatepark	Start: 2:37 PM End: 2:57 PM	63.8	51.4	77.9
		Start: 2:58 PM End: 3:18 PM	65.5	54.9	80.7

dBA: A-weighted decibels
L_{eq}: average measured noise level
L_{min}: minimum measured noise level
L_{max}: maximum measured noise level
Source: Psomas; noise data in Appendix E.

As shown in Table 15, existing average noise levels (L_{eq}) ranged from 55.9 to 65.5 dBA, with the highest noise levels recorded east of the site adjacent to the skate park and along the west side of Bullis Road. The noise measurements taken proximate to the Project site are generally characterized by park activity; vehicular traffic along Birch Street, Cesar Chavez Lane, and Bullis Road; and aircraft flying overhead, among other sources. Park activities occurring within the skatepark, tennis courts, and basketball courts influenced the ambient noise environment. Vehicular traffic was most prominent along Bullis Road and Birch Street. Access to the Park is provided by a driveway along the west side of Bullis Road. Park access is also available along the site's western and southern boundaries and is provided by driveway connections along the east side of Birch Street and the Spruce Street terminus. Heavy trucks originating from nearby construction sites travelled along Birch Street, while various municipal trucks, including a waste collection truck, travelled along Bullis Road.

On-Site Construction Equipment Noise

The development of the proposed Project would entail construction activities which include noise generated from the demolition of the existing on-site structures and pavement, grading/excavation, and the installation of the various stormwater infrastructure. The construction of the Project is anticipated to occur in the Spring of 2027 and take approximately 18 months. The analysis of construction noise involved the modeling of typical and highest construction noise levels using the FHWA's Roadway Construction Noise Model (RCNM) Version 1.1, which allows for quantification of noise levels emanating from individual machinery. Typical noise levels represent the noise levels that would typically occur during construction and were calculated using the distance between the closest noise sensitive uses/receptors and the center of the Project site. The degree to which noise-sensitive receptors are affected by noise from construction activities depends heavily on

their proximity. Estimated noise levels attributable to construction of the proposed Project are shown in Table 16, Construction Noise Levels at Noise-Sensitive Uses, and calculations are included in Appendix G, Noise Calculations.

TABLE 16
CONSTRUCTION NOISE LEVELS AT NOISE-SENSITIVE USES

	North – St Francis Medical Center		South – Hosler Middle School		East – Lynwood Library		West – Residential	
Construction Phase	**Project L_{eq}* (dBA)**	**Exceeds Daytime L_{eq} Limit of 80 dBA?**	**Project L_{eq}* (dBA)**	**Exceeds Daytime L_{eq} Limit of 80 dBA?**	**Project L_{eq}* (dBA)**	**Exceeds Daytime L_{eq} Limit of 80 dBA?**	**Project L_{eq}* (dBA)**	**Exceeds Daytime L_{eq} Limit of 80 dBA?**
Demolition	65	No	70	No	70	No	57	No
Site Preparation	67	No	71	No	61	No	58	No
Grading/Excavation	69	No	72	No	62	No	59	No
Construction	77	No	81	Yes	71	No	68	No
Paving	57	No	63	No	63	No	50	No

L_{eq} dBA: average noise energy level in A-weighted decibels

*: Based on calculated Leq at distances from center of Project construction phase.

Note: Noise levels from construction activities do not consider attenuation provided by intervening structures.

Source (construction equipment noise levels): RCNM. Noise data in Appendix G.

Typical average noise levels (L_{eq}) from Project-related construction activities would be 50 to 81 dBA at the nearest off-site receptors. It should be noted that the construction noise calculations conservatively assume simultaneous operation of all equipment during each construction phase. Relative to existing ambient noise levels in the Project area, the Project construction would result in increases of 1 to 12 dBA in average noise levels at areas west of the Project site, increases of 1 to 8 dBA in average noise levels east of the Project site, increases of 8 to 25 dBA in average noise levels south of the Project site, and increases of 3 to 20 dBA in average noise levels north of the Project site. Therefore, average Project construction noise level increases would be clearly noticeable at noise-sensitive areas north, west, and south of the Project site (medical center, residential uses located west of Birch Street, and middle school). However, activities at land uses in these areas are primarily indoors with substantial noise attenuation provided by their buildings. Noise level increases above existing levels due to Project construction would be barely noticeable in areas to the east, except during pile driving. As shown in Table 16, construction noise levels are anticipated to exceed the FTA's daytime construction noise limit of 80 dBA L_{eq} during the installation/construction phase. As a result, mitigation measure (MM NOI-4) has been proposed in order to reduce impacts resulting from the use of pile drivers during the construction phase.

Highest construction noise levels (L_{max}) represent the highest possible noise levels that would occur during the Project construction and were calculated using the distance between

the closest noise sensitive use/receptor and the closest point of the Project Site. Highest noise levels would occur only intermittently because construction equipment would move around the Project Site and would be located at the Project Site's boundaries for short periods of time. As depicted in the modeling, the highest noise levels from construction activities are anticipated to range from 51 to 85 dBA.

Construction of the Project would be required to comply with Section 3-12.13 - Construction of Buildings and Projects of the Municipal Code, which establishes restrictions related to construction activities. These restrictions include limiting the hours of construction to 7:00 AM and 10:00 PM. Although the Project construction noise levels are expected to comply with the adopted FTA daytime noise limit, the following noise mitigation measures are recommended in order to minimize increases in noise levels above existing levels in the Project area:

NOI-1 Construction Timing. Avoid construction during evening and nighttime hours (7:00 p.m. to 7:00 a.m.) and on weekends and holidays.

NOI-2 Equipment Noise Abatement Maintenance. Ensure that all construction equipment has the manufacturers' recommended noise abatement measures, such as mufflers and engine enclosures, and is intact, in good condition, and operational.

NOI-3 Equipment Idling. Turn off idling equipment that isn't imminently needed. With the incorporation of the above construction noise avoidance measures, the Project construction would result in less than significant noise impacts.

NOI-4 Prior to the issuance of a grading permit, the Project Applicant or designee shall produce evidence acceptable to the City of Lynwood Community Development Director demonstrating that any pile driving done during Project construction must be done using drilled piles, a sonic/vibratory pile driver, or a push pile driver.

Off-site Construction Vehicles Noise

Demolition activities are estimated to result in approximately 5,000 cy of mixed demolition (concrete, asphalt, metal) debris and green waste, which would be exported over an approximate 8 to 9-week period. This would result in approximately 312 one-way truck trips (or trip end) per day, assuming a haul truck capacity of 16 cubic yards. In addition, an estimated total of 20,800 cy of sediment would be excavated during grading and excavation activities over approximately 26 weeks, primarily associated with the installation and excavation of the underground storage modules. This would equate to approximately 1,300 one-way truck trips if all sediment were to be exported for disposal. Construction and demolition debris including asphalt, concrete, soil, gravel, rocks, and metal would likely be transported to Construction & Demolition Recycling, Inc., located 1.95 miles to the northeast of the Project site at 9309 Rayo Avenue, in the City of South Gate, while green waste would likely be transported to the Greencycle Recycling facility located approximately eight miles east of the Project site in the City of Santa Fe Springs. Haul trucks would access these facilities

using locally designated truck routes, including Martin Luther King Jr. Boulevard, Imperial Highway, and Firestone Boulevard (City of South Gate) to access I-710 to deposit any construction/demolition debris to the designated construction/demolition debris recycling facilities. These are conservative assumptions as some of the excavated sediment would be returned as backfill. The number of trips would be lower if larger (18 cy) trucks were used.

A total of up to 1,300 Project-related haul truck trips distributed over an 8-hour workday would be approximately 162 to 163 truck trips per hour. Large trucks generate substantially more noise than passenger vehicles. Project-related increases in roadway noise were quantified using the FHWA's RD-77-108 roadway noise prediction model. These calculations are provided in Appendix E. Project-related haul truck traffic is anticipated to result in increases in average hourly roadway noise levels of 1.2 dBA L_{eq} along Martin Luther King Jr Boulevard and 0.9 dBA L_{eq} along Imperial Highway, respectively. Noise level increases of 3 dBA are perceptible in outdoor environments. A 3-dBA increase is thus used as the threshold of significance here for off-site vehicular noise impacts. Off-site traffic noise increases due to the Project construction would be below 3 dB and thus less than significant, and no mitigation is required.

Operational Noise

Stationary Noise Sources

Operation of the stormwater capture is generally passive and would only require the use of centrifugal, vertical, submersible pumps powered by an electric motor. Noise in centrifugal pumps and systems can be generated by mechanical motion of pump components and by liquid motion of the pumps and system. This noise would be reduced since the centrifugal pump would be submerged in water. Furthermore, the pump for the wet well, actuated valves, and stream pump, would all be located in underground pump stations (centrifugal and stream pumps) and vaults (actuated valves). In addition, the equipment must comply with the noise limits established in Section 3-12.12 Machinery, Equipment, Fans and Air Conditioning of the Municipal Code. As such, due to the location of the centrifugal pump submerged in water, the noise attenuation from the station enclosure and underground location, as well as adherence to Section 3-12.12 of the Municipal Code, noise impacts from the operation of the stormwater infrastructure are expected to be less than significant.

The Project would also include an ephemeral stream and butterfly garden after the development of the stormwater capture infrastructure. The noise generated by visitors to the butterfly garden is expected to be comparable to existing use of the park and would likewise be subject to the noise limits established by the City's Municipal Code. Impacts related to operational noise would be less than significant, and no mitigation is needed.

Vehicular Noise

Operation and maintenance of the Project would generate a small number of vehicle trips annually. Project operational trip generation would be negligible compared to existing traffic volumes on local streets. The operation of the ephemeral stream and butterfly garden is not

anticipated to generate a noticeable increase in vehicle trips. As a result, roadway noise is not expected to increase with the operation of the ephemeral stream and butterfly garden. No significant impact would occur, and no mitigation is required.

b) Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant with Mitigation.

Construction Vibration

Table 17, Estimated Project Construction Vibration Levels at Nearby Buildings, shows the PPV relative to building damage to sensitive uses from vibration activities. The assessment of vibration induced damage was performed by assuming that equipment would be operating at the property lines closest to the nearest buildings. For analyses of construction vibration induced damage, Project-generated vibration is measured from the source to the closest structure, unlike analyses of noise impacts, which are conducted at the property lines of affected properties. As shown in Table 17, all PPV levels would be below the building damage threshold at adjacent off-site structures. As such, vibration generated by the construction of the Project would not result in significant impacts related vibration induced building damage.

TABLE 17
ESTIMATED PROJECT CONSTRUCTION VIBRATION LEVELS
AT NEARBY BUILDINGS

Equipment	Vibration Levels (PPV, in/sec)			
	North – St. Francis Medical Center	West – Beechwood Avenue MFR	South – Holser Middle School	East – Lynwood Library
	(@ 95 ft)	(@ 118 ft)	(@175 ft)	(@105 ft)
Vibratory roller	0.028	0.020	0.011	0.024
Large bulldozer	0.012	0.009	0.005	0.010
Small bulldozer	0.000	0.000	0.000	0.000
Jackhammer	0.005	0.003	0.002	0.004
Loaded trucks	0.010	0.007	0.004	0.009
Building Damage Criterion	**0.300**	**0.300**	**0.300**	**0.300**
Exceeds Criteria?	**No**	**No**	**No**	**No**

PPV: peak particle velocity; in/sec: inches per second; ft: feet
Source: FTA 2018 (Calculations can be found in Appendix G).

Table 18, Project Construction Vibration Annoyance at Sensitive Uses, shows the potential for vibration annoyance from construction-generated vibration proposed at the Project site.

TABLE 18
PROJECT CONSTRUCTION VIBRATION ANNOYANCE AT SENSITIVE USES

Equipment	Vibration Levels (PPV, in/sec)			
	North – St. Francis Medical Center	West – Beechwood Avenue MFR	South – Holser Middle School	East – Lynwood Library
	(@ 95 ft)	(@ 118 ft)	(@175 ft)	(@105 ft)
Vibratory roller	0.028	0.020	0.011	0.024
Large bulldozer	0.012	0.009	0.005	0.010
Small bulldozer	0.0004	0.0003	0.0002	0.0003
Jackhammer	0.005	0.003	0.002	0.004
Loaded trucks	0.010	0.007	0.004	0.009
Annoyance Criterion	**0.04**	**0.04**	**0.04**	**0.04**
Exceeds Criteria?	**No**	**No**	**No**	**No**

PPV: peak particle velocity; in/sec: inches per second; avg: average; ft: feet
Source: FTA 2018 (Calculations can be found in Appendix G).

As shown in Table 18, Project construction vibration levels would not exceed the barely perceptible threshold when construction activities occur under the worst-case (i.e., closest to the receptor) exposure conditions. Construction-related vibration would be substantially less under typical conditions when construction activities are located farther away. Because vibration levels would be below the significance thresholds, vibration generated by Project construction equipment would not be expected to generate distinctly perceptible levels of vibration at the nearest uses. Therefore, impacts related to vibration annoyance would be less than significant without mitigation.

Vibration from Piling Driving

According to the City, pilings may be required should shoring be necessary to accommodate the infiltration chambers. Pile driving is among the most vibration intensive activities in construction. As a result, pile driving was modeled from the area where the infiltration chambers would be installed to the nearest affected structures in all four cardinal directions. Table 19, Vibration Levels from Pile Driving at Nearby Buildings, shows the PPV from pile driving relative to building damage to sensitive uses from pile driving activities.

TABLE 19
VIBRATION LEVELS FROM PILE DRIVING AT NEARBY BUILDINGS

Equipment	Vibration Levels (PPV, in/sec)			
	North – Lynwood Natatorium	**West – Beechwood Avenue MFR**	**South – Holser Middle School**	**East – Lynwood Community Center**
	(@ 71 ft)	**(@ 825 ft)**	**(@175 ft)**	**(@ 245 ft)**
Pile Driver (impact) - Upper Range	0.317	0.008	0.082	0.049
Pile Driver (impact) - Typical	0.135	0.003	0.035	0.021
Pile Driver (sonic) - Upper Range	0.153	0.004	0.040	0.024
Pile Driver (sonic) - Typical	0.036	0.001	0.009	0.006
Criteria	**0.300**	**0.300**	**0.300**	**0.300**
Exceeds Criteria?	**Yes**	**No**	**No**	**No**

PPV: peak particle velocity; in/sec: inches per second; avg: average; ft: feet
Source: FTA 2018 (Calculations can be found in Appendix G).

Table 20, Pile Driving Vibration Annoyance at Sensitive Uses, shows the potential for vibration annoyance from potential pile driving-generated vibration proposed at the Project site.

TABLE 20
PILE DRIVING VIBRATION ANNOYANCE AT SENSITIVE USES

	Vibration Levels (PPV, in/sec)			
	North – Natatorium	**West – Beechwood Avenue MFR**	**South – Holser Middle School**	**East – Lynwood Library**
Equipment	**(@ 71 ft)**	**(@ 825 ft)**	**(@175 ft)**	**(@245 ft)**
Pile Driver (impact) - Upper Range	0.317	0.008	0.082	0.049
Pile Driver (impact) - Typical	0.135	0.003	0.035	0.021
Pile Driver (sonic) - Upper Range	0.153	0.004	0.040	0.024
Pile Driver (sonic) - Typical	0.036	0.001	0.009	0.006
Annoyance Criterion	**0.04**	**0.04**	**0.04**	**0.04**
Exceeds Criteria?	**Yes**	**No**	**Yes**	**Yes**

PPV: peak particle velocity; in/sec: inches per second; avg: average; ft: feet

Source: FTA 2018 (Calculations can be found in Appendix G).

As shown in Tables 19 and 20, levels of vibration generated by impact pile drivers would exceed the building damage criteria at the upper range as modeled at the Lynwood Natatorium, while impact pile driver vibration levels would exceed the human annoyance threshold for all receptors with the exception of the residences located to the west of the Project site. Therefore, MM NOI-4 mandates the use of alternative non-impact pile driving methods. As a result, with implementation of MM NOI-4, vibration impacts at the closest receptors would be reduced to levels that are less than significant.

Vibration from Haul Truck Traffic

Large trucks (haul trucks) generate lower levels of vibration at 25 feet (0.076 in/sec PPV) than vibratory rollers and bulldozers. Vibration generated by vehicles and trucks is influenced by a number of factors, including pavement condition; vehicle speed; vehicle weight; type of suspension; and tire condition (under-inflated or over-inflated) [FTA 2018]. Vibration generated by haul trucks during Project construction would be minimal due to several factors, namely:

- Condition of adjacent roadways: The pavement on Cesar E. Chavez Lane and Martin Luther King Jr. Boulevard is smooth. Smooth pavement, as opposed to worn pavement riddled with potholes and cracks, mitigates the intensity of vibration generated by trucks, since pavement that contains cracks and potholes increases the force of tires striking the pavement (Transportation Association of Canada 2006).
- Vehicle speed: Haul trucks travelling along the adjacent roadways would be travelling at speeds no greater than 35 miles per hour. According to the FTA, truck speed would

need to double to result in a vibration level increase of approximately 4 to 6 VdB (FTA 2018).

Therefore, due to the Project-specific conditions outlined above, vibration generated by haul trucks would not affect nearby sensitive receptors. As a result, potential impacts resulting from haul truck vibration would be less than significant and no mitigation measures are required.

Project Operation Vibration

The operation of the proposed Project would not include the operation of any new sources of vibration that could be felt beyond the immediate vicinity of the Project site. The stormwater infrastructure that would be installed is not anticipated to generate levels of vibration that would be detectable offsite, as infiltration chambers and bioswales lack mechanical parts which could cause vibration generated through friction or impact as parts make contact with each other. The pumps that would be utilized to help convey excess runoff would not result in vibration impacts as these pumps would be located at sufficient distance from the closest sensitive receptors. As a result, no operational vibration impacts would occur, and no mitigation is required.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the project area to excessive noise levels?

No Impact. The Project site is not located within two miles of a public or public use airport. The closest airport to the Project site is Compton/Woodley Airport, located approximately three miles southwest of the Project site. The Project site is located outside of the existing and projected 65-dBA CNEL noise contour for Compton/Woodley Airport. In addition, the Project site is not located within the vicinity of a private airstrip. Aircraft overflights do not significantly contribute to the noise environment at the Project site, and the Project would not expose park patrons or maintenance workers to excessive noise levels. As a result, no impact is anticipated to occur.

Mitigation Measures

MM NOI-1 Construction Timing: Avoid construction during evening and nighttime hours (7:00 p.m. to 7:00 a.m.) and on weekends and holidays.

MM NOI-2 Equipment Noise Abatement Maintenance: Ensure that all construction equipment has the manufacturers' recommended noise abatement measures, such as mufflers and engine enclosures, and is intact, in good condition, and operational.

MM NOI-3 Equipment Idling: Turn off idling equipment that isn't imminently needed during construction activities.

MM NOI-4 Prior to the issuance of a grading permit, the project Applicant or designee must produce evidence acceptable to the City of Lynwood Community Development Director demonstrating that any pile driving done during the Project must be done using drilled piles, a sonic/vibratory pile driver, or a push pile driver.

3.14 POPULATION AND HOUSING

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through the extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a) Would the Project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through the extension of roads or other infrastructure)?

No Impact. Growth-inducing impacts are generally associated with the provision of urban services to undeveloped or rural area. Growth-inducing impacts include the following:

- *New development in an area presently undeveloped and economic factors which may influence development*. The Project would involve the installation of stormwater infrastructure and various park improvements within Lynwood Park. Lynwood Park is situated in an urban area; thus, the Project would not constitute development in an undeveloped or rural area.
- *Extension of roadways and other transportation facilities*. The Project consists of various stormwater infrastructure and park improvements. The Project's implementation would not require the extension of roadways and/or other transportation facilities as the Project's implementation would not result in substantial population or employment growth that would necessitate an extension of any roadways or transportation facilities. In addition, maintenance workers as well as visitors to the butterfly garden and ephemeral stream would continue to utilize the existing roadways, driveways, and sidewalks.
- *Extension of infrastructure and other improvements.* The Project involves the installation of various stormwater infrastructure. The Project seeks to improve water quality discharged to the Lower Los Angeles River and facilitate groundwater recharge through infiltration from the subsurface reservoir. The replenishment of

groundwater aquifers would occur gradually. The site is presently served by existing infrastructure.

- *Major off-site public projects (treatment plants, etc.*). The Project's negligible increase in demand for utility services can be accommodated without the construction or expansion of landfills, water treatment plants, or wastewater treatment plants.
- *The removal of housing requiring replacement housing elsewhere*. The Project site is located within the existing Lynwood Park. There are no housing units located within the Park, and the Project's implementation would not require the removal of nearby housing as the Project would be confined within the Park.
- *Additional population growth leading to increased demand for goods and services*. The Project's operation would involve quarterly maintenance visits with a one- to two-person crew; this would not necessitate additional hiring to provide long-term maintenance services.
- *Short-term growth-inducing impacts related to the Project's construction*. The Project would bring in City staff, contractors, and other authorized personnel to the Project site for the duration of the construction period. It is anticipated that the local or regional pool of construction workers would provide skilled workers to satisfy the construction-related positions. Accordingly, it is unlikely that workers would relocate to the area for construction of this Project.

The proposed Project would provide a regional stormwater runoff capture facility within Lynwood Park and new park features such as the butterfly garden and ephemeral stream. Although there will be new and improved on-site facilities because Lynwood Park is already intensively used by all segments of the community, the City does not anticipate a long-term increase in use of the existing park due to the proposed improvements. Development of the Project would not require extending or improving infrastructure in a manner that would facilitate growth in the City. The Project would not generate population or directly induce unplanned population growth. Additionally, the Project would not indirectly induce growth, such as through provision of employment or extension of infrastructure. As a result, no impacts would occur.

There would be no direct or indirect impact related to population growth, and no mitigation is required.

b) Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The Project site is currently occupied by Lynwood Park and does not contain any existing housing or persons currently residing at the site. Therefore, the Project would not displace any people or housing that would require construction of replacement housing elsewhere. There would be no impact, and no mitigation is required.

3.15 PUBLIC SERVICES

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

- **Fire protection?**

No Impact. As discussed above in Section 3.14, Population and Housing, the Project would not directly or indirectly induce population growth that would generate demand for additional fire protection services. Implementation of the Project would not involve construction of facilities that would generate greater fire risk than the existing condition. Construction or operation of the Project would not generate demand for fire protection services such that new or expanded physical facilities would be required whose construction could result in an environmental impact. There would be no impact, and no mitigation is required.

- **Police protection?**

No Impact. As discussed above in Section 3.14, Population and Housing, the Project would not directly or indirectly induce population growth that would generate demand for additional police protection services. Temporary Project-related activities, such as the presence of construction equipment on the Project site, may provide increased opportunities

for theft. However, the construction areas would be fenced, and the Project Contractor would be required to secure building materials and construction equipment to prevent theft and vandalism from occurring at the Project site during construction activities. Construction or operation of the Project would not generate demand for police protection services such that new or expanded physical facilities would be required whose construction could result in an environmental impact. There would be no impact, and no mitigation is required.

- **Schools?**

No Impact. As discussed above in Section 3.14, Population and Housing, the Project would not directly or indirectly induce population growth that would generate demand for additional school services. Therefore, construction and operation of the Project would not generate demand for schools such that new or expanded physical facilities would be required whose construction could result in an environmental impact. There would be no impact, and no mitigation is required.

- **Parks?**

No Impact. As discussed in Section 3.14, Population and Housing, the Project would not result in direct or indirect population growth. The proposed Project includes construction of various stormwater appurtenances and park features, such as a butterfly garden and ephemeral stream within the existing Lynwood Park. Public access to and use of the replacement recreation facilities on the site with Project implementation would be essentially the same as in the existing condition. Although there would be new and improved on-site facilities because Lynwood Park is already intensively used by all segments of the community, the City does not anticipate a long-term increase in park visitation due to the Project. Therefore, construction or operation of the Project would not generate demand for parks such that new or expanded physical facilities would be required whose construction could result in an environmental impact. There would be impact, and no mitigation is required.

- **Other public facilities?**

No Impact. As discussed above in Section 3.14, Population and Housing, the Project would not directly or indirectly induce population growth that would generate demand for additional public facilities not addressed above, such as libraries. Therefore, construction or operation of the Project would not generate demand for other public facilities such that new or expanded physical facilities would be required whose construction could result in an environmental impact. There would be no impact, and no mitigation is required.

3.16 RECREATION

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☒	☐	☐

a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less Than Significant Impact. The Project would include construction and improvements, although not expansion, of recreation facilities. During construction activities, the northern, central, and eastern portions of Lynwood Park, including the parking lot located along the west side of Bullis Road, would be closed for an estimated 18 months. As the Project site experiences high community use, it is assumed construction of the Project would necessitate the use of alternate facilities in the area. Other nearby parks in the City would serve community residents' recreation needs while the Project site is closed. These parks and their features include, but are not limited to, Ricardo Lara Linear Park, which is located 0.36 mile southeast of Lynwood Park and features playground equipment; Carnation Park, located 0.66 mile to the northwest; Rose Park, located 0.70 mile to the southwest; Los Amigos East Park, which is located 0.76 mile southwest of the Project site and features a mini playground, two mini picnic areas, and a half basketball court; Adolfo Medina Memorial Park, located 0.83 mile to the southwest with a basketball court, playground, and two picnic shelters; and Yvonne Burke-John D. Ham Park, located 1.09 miles to the southeast of the Project site with exercise stations, a baseball field, basketball court, and playground. Because there are a variety of alternative facilities (including but not limited to those above) in the area and because the construction period is 18 months, it is not anticipated that the use of other recreation facilities in the area during construction would lead to substantial physical deterioration of any individual facility.

It is important to note that the closure of a heavily-used recreation facility for any length of time would have an adverse effect on the community; however, because the closure is temporary and there are alternative facilities to use, the closure of large portions of Lynwood Park would be considered a less than significant impact. Therefore, the Project would not cause an increase in the use of existing neighborhood and regional parks that would lead to substantial deterioration of existing facilities. Impacts would be less than significant, and no mitigation is required.

b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Less Than Significant with Mitigation Incorporated. The Project would include construction and improvement, although not expansion, of recreation facilities. Construction of these facilities may have an adverse physical effect on the environment, accordingly the potential for impacts due to Project implementation is evaluated through preparation of this IS/MND. There would be less than significant impacts with implementation of the identified mitigation measures for biological resources (refer to Section 3.4), cultural resources (refer to Section 3.5), geology and soils (refer to Section 3.7), noise (refer to Section 3.13) and tribal cultural resources (refer to Section 3.18). As such, impacts would be reduced to a less than significant level with implementation of applicable mitigation measures.

3.17 TRANSPORTATION

	Potentially Significant Impact	Less Than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Conflict with program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	☐	☐	☐	☒
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☒	☐

a) Would the Project conflict with program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less than Significant Impact. The Circulation Element of the City's General Plan represents the City's overall transportation plan. The Project would not conflict with the City's policies to encourage walking, biking, and using public transit. The Project would not obstruct the implementation of any of these policies and, in some cases, would support their implementation, in particular, Policy CIR-2.3, which calls for the provision of sidewalks or pathways in residential and commercial areas to provide a safe environment for pedestrians. For example, the Project would include a 10-foot-wide walking path and access road along the perimeter of the soccer fields as a new passive recreation opportunity in the park. Additionally, the Project is not anticipated to directly increase use of Lynwood Park, as it is an existing high-use facility. The proposed Project would provide improved physical facilities to existing users of Lynwood Park. The amounts of parking in the immediate area,

similar circulation and access, and the same types and extent of facilities would be provided. As such, trip generation from operation of the Project would be essentially the same as the existing condition. The Project would not conflict with the City's policies to encourage walking, biking, and transit. There would be a less than significant impact, and no mitigation is required.

b) Would the Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

No Impact. Section 15064.3(b) of the State CEQA Guidelines provides the criteria for analyzing transportation (not traffic/circulation) impacts based on vehicle miles traveled (VMT) metric consistent with SB 743. The Project would not create new land uses that would result in additional VMT, such as a residential, mixed use, or transportation. As such, the VMT metric is not applicable to public infrastructure projects. Further, operation of the Project would remain essentially the same as under the existing condition and would not result in increased operational trips, as discussed above. The Project would not conflict with or be inconsistent with Section 15064.3(b)(1) of the State CEQA Guidelines or the City's transportation plans and policies. There would be no impact, and no mitigation is required.

c) Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. The Project would not involve any permanent change to the roadway configurations and circulation in the Project area that would create hazards due to a geometric design feature. Additionally, the Project involves improvements to the existing use and does not change land use, such that would represent an incompatible use. Therefore, construction and operation of the Project would not increase traffic hazards or be an incompatible use. There would be no impact, and no mitigation is required.

d) Would the Project result in inadequate emergency access?

Less than Significant Impact. Construction activities for the Project, including staging and worker parking, would occur on site. Private construction worker vehicles/pickup trucks, delivery vehicles, and haul trucks would access the Project site via driveways located along the west side of Bullis Road and the south side of Martin Luther King Jr. Boulevard. Should the Project require temporary road, lane or shoulder closures, the Project would comply with all conditions set forth in the required Project specific Traffic Control Plan (TCP), which would be reviewed and approved by the City's Public Works department, engineering division prior to initiation of construction activities. Therefore, with implementation of the required TCP, the potential closure of a few lanes along Birch Street and Bullis Road would not result in a significant interference of emergency access during construction.

Haul trucks would access the Project site via Martin Luther King Jr. Boulevard and Imperial Highway. Construction and demolition debris including asphalt, concrete, soil, gravel, rocks, and metal would likely be transported to Construction & Demolition Recycling, Inc., located 1.95 miles to the northeast at 9309 Rayo Avenue, in the City of South Gate, while greenwaste

would likely be transported to the Greencycle Recycling facility located approximately 8 miles east of the Project site in the City of Santa Fe Springs. Haul trucks would access these facilities using locally designated truck routes, including Martin Luther King Jr. Boulevard, Imperial Highway, and Firestone Boulevard (City of South Gate) to access I-710 to deposit any construction/demolition debris to the designated construction/demolition debris recycling facilities.

During the long-term operation of the proposed Project, public access to and use of the recreation facilities on the site would be the same as in existing condition. Although there would be new and improved on-site facilities because Lynwood Park is already intensively used by all segments of the community, the City does not anticipate a long-term increase in park visitation due to the Project. As such, the operation of the Project would not impact emergency access. There would be a less than significant impact, and no mitigation is required

3.18 TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	☐	☐	☐	☒
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐

Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or

No Impact. This section evaluates the Project 's potential for any adverse effects on TCRs. A TCR, as defined in Section 21074 of the Public Resources Code, is a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to California Native American tribe. A resource would be considered a TCR if it is, at minimum, eligible to be listed on a national, State, or local register of historic resources.

As presented above in Section 3.5, Cultural Resources, the ½-mile SCCIC records search surrounding the Project site footprint was negative for cultural resources, including precontact archaeological sites. Nevertheless, it should be noted that the SCCIC may not have documentation regarding TCRs near the Project reaches. Additionally, the NAHC SLF search on May 13, 2024 did not identify the presence of Native American traditional sites/places within the immediate vicinity surrounding the site. Therefore, as discussed further in Section 3.5, there are no cultural resources on the Project site that are currently listed on the CRHR or a local register. Thus, the Project would not affect a documented TCR that is listed or eligible for listing on the CRHR or a local register. There would be no impact, and no mitigation is required.

Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less than Significant Impact. Because Native American tribes have knowledge concerning important undocumented cultural resources, the lead agency (the City) submitted Project notification letters to initiate tribal consultation, consistent with the requirements of AB 52. AB 52 requires the City to notify any groups (who have requested notification) who are traditionally or culturally affiliated with the geographic area of a project for which a negative declaration, an MND, or an Environmental Impact Report (EIR) is required pursuant to

CEQA. The Tribes are provided 30 days to request consultation after the lead agency notifies the tribe of a project. Consultation was initiated by the City on September 23, 2024. The City mailed notification letters to each tribal representative on the approved contact list for tribal representatives, notifying the representatives of the Project and inviting them to participate via consultation. These following tribe was notified of the Project as part of the AB 52 process, including the Gabrieleno Band of Mission Indians – Kizh Nation. Tribal consultation is still ongoing, and mitigation measures are to be determined upon completion of the consultation process.

Mitigation Measures

MM TCR-1 To be included if a mitigation measure is determined to be necessary

3.19 UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, State, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

a) Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less than Significant Impact.

Water

Municipal water services are currently provided by the City and Liberty Utilities. The City provides water service to 90 percent of residents and businesses, and Liberty Utilities provides water service to the remaining 10 percent located in the City's southeastern portion. The Project includes the relocation of an existing water line just south of the proposed infiltration basin, and the installation of a new 12-inch water line, which would occur prior to the commencement of the relocation of the water line, to ensure that the existing water line would remain in service for the majority of the construction period. Once the proposed water line can be tied into the existing line at the connection point located just west of the proposed infiltration basin, the existing water line would be shut off for a period of approximately one week or less. The installation and relocation of the new and existing water lines would serve the Project only, as such it would not result in significant impacts to surrounding uses.

Construction of the Project would minimally increase demand for water for dust suppression. However, this demand would not result in the need for new or expanded water supply infrastructure. Therefore, impacts related to water facilities would be less than significant, and no mitigation is required.

Wastewater Treatment

Wastewater collection service is provided to the site by the City of Lynwood Public Works Department. Sewage generated onsite is conveyed through City owned sewer lines to Los Angeles County trunk lines, which then transport effluent to the Joint Water Pollution Control Plant (JWPCP) in the City of Carson (City of Lynwood 2003). A sewer line connection located along the south side of Martin Luther King Jr. Boulevard provides the Park, Natatorium, and Community Center access to the sanitary sewer lines that extend along Bullis Road. Project implementation would not affect this sewer line connection. In addition, the Project's operation would not result in a significant increase in wastewater generation over the existing conditions. As the Project would not require the relocation of, or the construction of new or expanded wastewater treatment facilities, no impacts would occur, and no mitigation is required.

Storm Drainage

The Project proposes construction of new stormwater infrastructure, whose environmental impacts are addressed throughout this IS/MND. Construction of the new storm drain improvements would be subject to compliance with all applicable local, State, and Federal

laws, ordinances, and regulations, as such Project's impacts associated with the proposed storm drain improvements would be less than significant.

As indicated previously, the Project proposes two stormwater diversion structures from two branches of the LACFCD East Compton Creek storm drains, which would divert 25 cfs from Bullis Road and 20 cfs from Birch Street. The diverted and captured water on both Bullis Road and Birch Street would be filtered by a hydrodynamic separator known as a baffle box which provides primary treatment through physically separating out trash and sediment, then runoff would be directed to the subsurface storage and infiltration reservoir located below the northern portion of the site. The stormwater would be infiltrated in a 10.7 AF underground storage reservoir. The infiltration chambers would require the construction of two access hatches, to be situated along the eastern and western edges. Except for the access hatches and stream inlet and outlet, all proposed engineering infrastructure would be located underground. The stream infrastructure would be minimally visible at the surface, as the goal is to provide a naturalized surface condition.

A portion of the stormwater would also be diverted to the sediment basin for storage, located at the northern portion of the per minute (GPM infiltration facility, which would then be pumped up to the surface at the 150 GPM pump station, and continue towards the stream feature and bioswale. Through this interconnected system, the stream feature would recirculate pre-treated runoff. The proposed bioswale would include native shrubs.

Additionally, a portion of the captured runoff from the infiltration gallery would be pumped back via a wet well and pump towards a proposed outlet line located on the eastern portion of the site and through a 7.84 cfs secondary treatment media filter. The pretreated stormwater would then be returned to the existing storm drain connection located in Bullis Road. No additional impacts beyond those identified in this IS/MND would result from the Project's construction and operation. As a result, less than significant impacts are anticipated to occur, and no mitigation is required.

Dry Utilities

Natural gas, electricity, and telecommunication services are provided to the Project site by the Southern California Gas Company, Southern California Edison, AT&T, respectively. The Project's projected natural gas and electricity usage is not expected to change over the existing conditions as the Project consists of stormwater infrastructure and Park improvements. In addition, the Project's construction would not require the relocation and construction of new, or expansion of existing lines as these dry utility lines would remain unaffected during Project construction. As a result, impacts would be less than significant, and no mitigation is required.

b) Would the Project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

No Impact. As discussed under Threshold 3.19(a) above, the Project would minimally increase demand for water during construction for dust suppression. However, this demand

would not result in insufficient water supplies such that the City would be unable to meet the Project's demands and existing and foreseeable demands for potable water. According to the City's 2020 Urban Water Management Plan (UWMP), a normal, single dry year, or multiple dry years (five consecutive year drought period) will not compromise the City's ability to provide a reliable supply of water to its customers (City of Lynwood 2021). Based on the nominal water use expected during construction, the Project's demands would be met with existing supplies. As a result, no impacts are anticipated, and no mitigation is required.

c) Would the Project result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact. The use of the recreation facilities on the site with Project implementation would be the same as in the existing condition. As discussed under Threshold 3.19(a) above, the Project would not generate additional wastewater beyond existing conditions. The construction crew would be served by portable toilets that would be brought to the site during construction activities and removed at the end of construction activities. Therefore, the Project would not result in inadequate wastewater treatment capacities. There would be no impact, and no mitigation is required.

d) Would the generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less than Significant Impact. As discussed in Section 2.0, the Project's demolition phase would result in the removal of approximately 5,000 cy of mixed demolition (concrete, asphalt, metal) debris and green waste, which would be exported over an approximate 8- to 9-week period. An estimated total of 20,800 cy of sediment would be excavated during the grading/excavation phase over approximately 26 weeks. An additional 37,000 cy of excavated earth would be stockpiled onsite for backfill purposes.

Construction and demolition debris including asphalt, concrete, soil, gravel, rocks, and metal would likely be transported to Construction & Demolition Recycling, Inc., located 1.95 miles to the northeast of the Project site at 9309 Rayo Avenue, in the City of South Gate, while green waste would likely be transported to the Greencycle Recycling facility located approximately 8 miles east of the Project site in the City of Santa Fe Springs. Haul trucks would access these facilities using locally designated truck routes, including Martin Luther King Jr. Boulevard, Imperial Highway, and Firestone Boulevard (City of South Gate) to access I-710 to deposit any construction/demolition debris to the designated construction/demolition debris recycling facilities. Any materials generated during the Project's construction that could not be recycled at any of the abovementioned facilities would be transferred to either the Frank R. Bowerman landfill (11002 Bee Canyon Road in the City of Irvine), which is permitted to receive a daily maximum of 11,500 tons, or to the Olinda Alpha Sanitary landfill located in the City of Brea, which is permitted to receive a daily maximum of 8,000 tons. As of 2024, the remaining capacity at the Frank R. Bowerman landfill is 205 million cubic yards and 17.5 million cubic yards at the Olinda Alpha Sanitary landfill (CalRecycle 2024). As such, the

Project's finite construction waste stream represents a nominal portion of the two landfills' remaining capacity.

Furthermore, all construction activities would be subject to conformance with relevant federal, State, and local requirements related to solid waste disposal. Specifically, the Project would be required to demonstrate compliance with the California Integrated Waste Management Act of 1989 (AB 939), which requires all California cities to "reduce, recycle, and re-use solid waste generated in the State to the maximum extent feasible." AB 939 requires that at least 50 percent of waste produced is recycled, reduced, or composted. The Project would also be required to demonstrate compliance with the 2022 Green Building Code, which includes design and construction measures that act to reduce construction-related waste through material conservation and other construction-related efficiency measures. Compliance with these regulations would ensure the Project's construction-related solid waste impacts would be less than significant, and no mitigation is required.

Operation of the Project would be the same as in the existing condition and would not generate additional solid waste. As such, the Project is not anticipated to generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. Impacts would be less than significant, and no mitigation is required.

e) Would the Project comply with federal, State, and local management and reduction statutes and regulations related to solid waste?

Less than Significant Impact. As stated above, the proposed Project would comply with all federal, State, and local statutes and regulations related to solid waste, including the California Integrated Waste Management Act and City recycling programs. Specifically, the Project would be subject to AB 939, which requires that at least 50 percent of waste produced is recycled, reduced, or composted, and would be required to comply with Section 4.408 of the 2022 California Green Building Code Standards, which requires that at least 65 percent of nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse. Therefore, the Project would comply with all federal, State, and local management and reduction statutes and regulations related to solid waste. Impacts would be less than significant, and no mitigation is required.

3.20 WILDFIRE

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

a) If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. The site and the surrounding areas are not located in designated VHFHSZ, as identified by the California Department of Forestry and Fire Prevention (CAL FIRE) (CAL FIRE 2024). The Project site is in a highly urbanized area of the City, and there are no areas of native vegetation found within the vicinity of the Project site. The lack of chaparral limits the area's ability to provide fuel to ignite a wild land fire, as chaparral constitutes the most flammable type of vegetation found in the United States (NPS 2018). In addition, the Project site is located outside of any wildfire risk designation area. As a result, no risk from wildfire is anticipated with the approval and implementation of the proposed Project, and no impacts would occur.

During construction activities, all construction staging areas would occur on-site and would be prohibited from occurring on the street or within the public right-of-way. Construction equipment would be stored within the northern portion of the eastern parking lot, while parking for construction workers and vehicles would be located within the southern portion of the eastern parking lot. Access for construction workers, equipment, and vehicles would be located along the west side of Bullis Road and the south side of Martin Luther King Jr. Boulevard. In addition, Project contractors would be required to adhere to the guidelines outlined in the WATCH should the Project's construction require temporary road, lane, or shoulder closures and detours.

Any temporary lane closures along Birch Street, Cesar E Chavez Lane, Bullis Road, and/or Martin Luther King Jr. Boulevard would be done in accordance with the WATCH and all applicable City regulations governing construction traffic. As a result, the temporary closure of any lanes along the adjacent roadways would not result in a significant interference of emergency access during construction. Additionally, because Checklist Response thresholds 4.20a through 4.20d apply only to those projects that are "located in or near state responsibility areas or lands classified as very high fire hazard severity zones", no impacts related to these thresholds would occur, and no mitigation is required.

b) Due to slope, prevailing winds, and other factors, would the Project exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

No Impact. The Project site is not located in VHFHSZ and is within a highly urbanized area of the City. Additionally, there are no large, undeveloped areas and/or steep slopes on or near the site that would exacerbate fire risks such that would expose the Project and its occupants to wildfire-related hazards. No impacts related to slope, prevailing winds, and other factors would occur, and no mitigation is required.

c) Would the Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

No Impact. As previously described, the proposed Project is not within a designated VHFHSZ as defined by CAL FIRE and is located in a highly urbanized area of the City. The proposed Project would include the installation of subterranean stormwater infrastructure. Other features include a butterfly garden and ephemeral stream. The installation of stormwater infrastructure would not exacerbate fire risk such that would result in a significant temporary or ongoing impact as these appurtenances would be installed below ground surface. As such, no impact would occur, and no mitigation is required.

d) Would the Project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No Impact. As previously described, the proposed Project is not within a designated VHFHSZ as defined by CAL FIRE. The Project is in a highly urbanized area that is in a generally flat topographical area away from downslope or landslide areas. Specifically, implementation of the Project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. As such, no impact would occur, and no mitigation is required.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project:				
a. Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b. Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

a) Does the Project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Less than Significant Impact with Mitigation. As discussed in Section 3.4, Biological Resources, there are no sensitive biological resources on or near the Project site. However, there is potential for nesting birds and raptors to be present on and near the Project site; therefore, mitigation has been provided to reduce potential impacts to nesting migratory birds and raptors to less than significant levels (MM BIO-1).The Project would not degrade the quality of the environment; would not substantially reduce the habitat of fish or wildlife species; would not cause a fish or wildlife population to drop below self-sustaining levels; would not threaten to eliminate a plant or animal community; and would not reduce the number of or restrict the range of a Rare or Endangered plant or animal.

As discussed in Section 3.5, Cultural Resources and 3.7, Geology and Soils, no impacts would occur to known historic, archaeological, tribal cultural, and/or paleontological resources. Potential impacts to unknown archaeological resources and human remains from implementation of the Project would be less than significant through compliance with MM CUL-1. Potential impacts to unknown paleontological resources would be reduced to a less

than significant level through implementation of MM GEO-1. Therefore, the Project does not have the potential to eliminate important examples of the major periods of California history or prehistory with mitigation incorporated.

b) Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Less than Significant Impact. As shown in the analysis in Sections 2.1 through 2.20 above, all construction-related impacts would be either less than significant or mitigated to a less than significant level. As demonstrated by the analysis in this IS/MND, there would be no long-term significant operational impacts. As such, there is no potential contribution to long-term cumulative impacts from the operation of the Project. The City is currently in the process of replacing the existing playground located on the northwest corner of Lynwood Park. However, this is expected to be completed June 2025, and would not overlap with the Project's construction start date, slated for Spring 2027. As such, this would not contribute to cumulative impacts. Beyond the park replacement, there are no known projects within approximately one mile of the Project site. Based on the small scale of the Project and limited impacts, only projects ongoing within this relatively close distance could potentially result in cumulatively considerable impacts. Therefore, the Project would not result in impacts that are individually limited but cumulatively considerable. There would be a less than significant impact, and no mitigation is required.

c) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less than Significant Impact with Mitigation. As shown in the analysis in Sections 3.1 through 3.20 above, the Project would not have environmental effects that could cause substantial adverse effects on human beings, either directly or indirectly. Potential adverse noise impacts during construction activities that may have a direct impact on humans would be reduced to a less than significant level with implementation of MM NOI-1 through NOI-4. The Project would not displace any homes or divide an established community and would result in greater long-term water conservation. As such, the Project would not result in substantial adverse effects on human beings either directly or indirectly with mitigation incorporated.

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APPENDIX A

CALEEMOD DATA FOR AIR QUALITY AND GREENHOUSE GAS EMISSIONS

Lynwood Park Stormwater Improvements v3 Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Lynwood Park Stormwater Improvements v3
Construction Start Date	3/1/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.20
Precipitation (days)	17.8
Location	33.9279433512161, -118.20263464703461
County	Los Angeles-South Coast
City	Lynwood
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	4293
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.28

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
City Park	29.0	Acre	29.0	0.00	0.00	0.00	—	—
Parking Lot	74.0	1000sqft	1.70	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Water	W-5	Design Water-Efficient Landscapes

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Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.68	25.8	29.2	0.05	1.06	4.01	5.07	0.98	1.58	2.56	5,984
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.68	25.9	29.0	0.05	1.06	4.01	5.07	0.98	1.58	2.56	5,966
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.78	7.27	9.18	0.02	0.29	0.75	1.05	0.27	0.24	0.51	1,914
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.14	1.33	1.68	< 0.005	0.05	0.14	0.19	0.05	0.04	0.09	317

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
2027	2.68	25.8	29.2	0.05	1.06	4.01	5.07	0.98	1.58	2.56	5,984
2028	0.97	9.04	11.4	0.02	0.32	0.00	0.32	0.29	0.00	0.29	2,669

Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
2027	2.68	25.9	29.0	0.05	1.06	4.01	5.07	0.98	1.58	2.56	5,966
2028	0.97	9.04	11.4	0.02	0.32	0.10	0.32	0.29	0.02	0.29	2,669
2029	0.40	2.46	3.59	< 0.005	0.10	0.10	0.20	0.09	0.02	0.11	586
Average Daily	—	—	—	—	—	—	—	—	—	—	—
2027	0.78	7.27	9.18	0.02	0.29	0.75	1.05	0.27	0.24	0.51	1,914
2028	0.63	5.71	7.27	0.02	0.20	0.01	0.21	0.19	< 0.005	0.19	1,667
2029	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.15
Annual	—	—	—	—	—	—	—	—	—	—	—
2027	0.14	1.33	1.68	< 0.005	0.05	0.14	0.19	0.05	0.04	0.09	317
2028	0.12	1.04	1.33	< 0.005	0.04	< 0.005	0.04	0.03	< 0.005	0.03	276
2029	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.19

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
2027	2.68	25.8	29.2	0.05	1.06	4.01	5.07	0.98	1.58	2.56	5,984
2028	0.97	9.04	11.4	0.02	0.32	0.00	0.32	0.29	0.00	0.29	2,669
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
2027	2.68	25.9	29.0	0.05	1.06	4.01	5.07	0.98	1.58	2.56	5,966
2028	0.97	9.04	11.4	0.02	0.32	0.10	0.32	0.29	0.02	0.29	2,669
2029	0.40	2.46	3.59	< 0.005	0.10	0.10	0.20	0.09	0.02	0.11	586
Average Daily	—	—	—	—	—	—	—	—	—	—	—
2027	0.78	7.27	9.18	0.02	0.29	0.75	1.05	0.27	0.24	0.51	1,914

2028	0.63	5.71	7.27	0.02	0.20	0.01	0.21	0.19	< 0.005	0.19	1,667
2029	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.15
Annual	—	—	—	—	—	—	—	—	—	—	—
2027	0.14	1.33	1.68	< 0.005	0.05	0.14	0.19	0.05	0.04	0.09	317
2028	0.12	1.04	1.33	< 0.005	0.04	< 0.005	0.04	0.03	< 0.005	0.03	276
2029	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.19

3. Construction Emissions Details

3.1. Demolition (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.41	13.5	15.1	0.02	0.58	—	0.58	0.53	—	0.53	2,660
Dust From Material Movement	—	—	—	—	—	2.56	2.56	—	1.31	1.31	—
Demolition	—	—	—	—	—	0.92	0.92	—	0.14	0.14	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.41	13.5	15.1	0.02	0.58	—	0.58	0.53	—	0.53	2,660
Dust From Material Movement	—	—	—	—	—	2.56	2.56	—	1.31	1.31	—
Demolition	—	—	—	—	—	0.92	0.92	—	0.14	0.14	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	1.66	1.87	< 0.005	0.07	—	0.07	0.07	—	0.07	328
Dust From Material Movement	—	—	—	—	—	0.32	0.32	—	0.16	0.16	—
Demolition	—	—	—	—	—	0.11	0.11	—	0.02	0.02	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.30	0.34	< 0.005	0.01	—	0.01	0.01	—	0.01	54.3
Dust From Material Movement	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—
Demolition	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.90	0.00	0.00	0.20	0.20	0.00	0.05	0.05	202
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	1.13	0.55	0.01	0.01	0.20	0.21	0.01	0.05	0.06	790
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.76	0.00	0.00	0.20	0.20	0.00	0.05	0.05	191
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	1.18	0.56	0.01	0.01	0.20	0.21	0.01	0.05	0.06	790
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.02	0.02	0.00	0.01	0.01	23.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.15	0.07	< 0.005	< 0.005	0.02	0.03	< 0.005	0.01	0.01	97.4

Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	3.96
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	16.1

3.2. Demolition (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.41	13.5	15.1	0.02	0.58	—	0.58	0.53	—	0.53	2,660
Dust From Material Movement	—	—	—	—	—	2.56	2.56	—	1.31	1.31	—
Demolition	—	—	—	—	—	0.92	0.92	—	0.14	0.14	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.41	13.5	15.1	0.02	0.58	—	0.58	0.53	—	0.53	2,660
Dust From Material Movement	—	—	—	—	—	2.56	2.56	—	1.31	1.31	—
Demolition	—	—	—	—	—	0.92	0.92	—	0.14	0.14	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	1.66	1.87	< 0.005	0.07	—	0.07	0.07	—	0.07	328

Dust From Material Movement	—	—	—	—	—	0.32	0.32	—	0.16	0.16	—
Demolition	—	—	—	—	—	0.11	0.11	—	0.02	0.02	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.30	0.34	< 0.005	0.01	—	0.01	0.01	—	0.01	54.3
Dust From Material Movement	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—
Demolition	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.90	0.00	0.00	0.20	0.20	0.00	0.05	0.05	202
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	1.13	0.55	0.01	0.01	0.20	0.21	0.01	0.05	0.06	790
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.76	0.00	0.00	0.20	0.20	0.00	0.05	0.05	191
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	1.18	0.56	0.01	0.01	0.20	0.21	0.01	0.05	0.06	790
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.02	0.02	0.00	0.01	0.01	23.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.15	0.07	< 0.005	< 0.005	0.02	0.03	< 0.005	0.01	0.01	97.4
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	3.96
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	16.1

3.3. Site Preparation (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.16	11.1	12.0	0.02	0.47	—	0.47	0.44	—	0.44	2,197
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.16	11.1	12.0	0.02	0.47	—	0.47	0.44	—	0.44	2,197
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	1.37	1.48	< 0.005	0.06	—	0.06	0.05	—	0.05	271
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.25	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	44.8
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.60	0.00	0.00	0.13	0.13	0.00	0.03	0.03	135
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.51	0.00	0.00	0.13	0.13	0.00	0.03	0.03	127
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	16.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.64
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.4. Site Preparation (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.16	11.1	12.0	0.02	0.47	—	0.47	0.44	—	0.44	2,197
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.16	11.1	12.0	0.02	0.47	—	0.47	0.44	—	0.44	2,197
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.14	1.37	1.48	< 0.005	0.06	—	0.06	0.05	—	0.05	271
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.25	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	44.8
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.60	0.00	0.00	0.13	0.13	0.00	0.03	0.03	135
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.51	0.00	0.00	0.13	0.13	0.00	0.03	0.03	127
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	16.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	2.64
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.87	7.33	10.8	0.02	0.34	—	0.34	0.31	—	0.31	1,671
Dust From Material Movement	—	—	—	—	—	0.42	0.42	—	0.05	0.05	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.87	7.33	10.8	0.02	0.34	—	0.34	0.31	—	0.31	1,671
Dust From Material Movement	—	—	—	—	—	0.42	0.42	—	0.05	0.05	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	2.63	3.89	0.01	0.12	—	0.12	0.11	—	0.11	600
Dust From Material Movement	—	—	—	—	—	0.15	0.15	—	0.02	0.02	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.48	0.71	< 0.005	0.02	—	0.02	0.02	—	0.02	99.3
Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.75	0.00	0.00	0.16	0.16	0.00	0.04	0.04	169
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.79	0.38	< 0.005	0.01	0.15	0.15	0.01	0.04	0.05	578
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.64	0.00	0.00	0.16	0.16	0.00	0.04	0.04	159
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	0.83	0.38	< 0.005	0.01	0.15	0.15	0.01	0.04	0.05	577
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.24	0.00	0.00	0.06	0.06	0.00	0.01	0.01	58.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	0.30	0.14	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	207
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	9.62
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	34.3

3.6. Grading (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.87	7.33	10.8	0.02	0.34	—	0.34	0.31	—	0.31	1,671
Dust From Material Movement	—	—	—	—	—	0.42	0.42	—	0.05	0.05	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.87	7.33	10.8	0.02	0.34	—	0.34	0.31	—	0.31	1,671
Dust From Material Movement	—	—	—	—	—	0.42	0.42	—	0.05	0.05	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	2.63	3.89	0.01	0.12	—	0.12	0.11	—	0.11	600
Dust From Material Movement	—	—	—	—	—	0.15	0.15	—	0.02	0.02	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.48	0.71	< 0.005	0.02	—	0.02	0.02	—	0.02	99.3
Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.75	0.00	0.00	0.16	0.16	0.00	0.04	0.04	169
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.79	0.38	< 0.005	0.01	0.15	0.15	0.01	0.04	0.05	578
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.64	0.00	0.00	0.16	0.16	0.00	0.04	0.04	159
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.01	0.83	0.38	< 0.005	0.01	0.15	0.15	0.01	0.04	0.05	577
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.24	0.00	0.00	0.06	0.06	0.00	0.01	0.01	58.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	0.30	0.14	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	207
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	9.62
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	34.3

3.7. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.01	9.61	11.4	0.02	0.35	—	0.35	0.32	—	0.32	2,668
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	1.13	1.34	< 0.005	0.04	—	0.04	0.04	—	0.04	313
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.21	0.24	< 0.005	0.01	—	0.01	0.01	—	0.01	51.9
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.8. Building Construction (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.01	9.61	11.4	0.02	0.35	—	0.35	0.32	—	0.32	2,668
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	1.13	1.34	< 0.005	0.04	—	0.04	0.04	—	0.04	313

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.21	0.24	< 0.005	0.01	—	0.01	0.01	—	0.01	51.9
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.97	9.04	11.4	0.02	0.32	—	0.32	0.29	—	0.29	2,669

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.97	9.04	11.4	0.02	0.32	—	0.32	0.29	—	0.29	2,669
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.42	6.84	0.01	0.19	—	0.19	0.18	—	0.18	1,598
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.99	1.25	< 0.005	0.03	—	0.03	0.03	—	0.03	265
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.10. Building Construction (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.97	9.04	11.4	0.02	0.32	—	0.32	0.29	—	0.29	2,669
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.97	9.04	11.4	0.02	0.32	—	0.32	0.29	—	0.29	2,669
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.42	6.84	0.01	0.19	—	0.19	0.18	—	0.18	1,598
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.99	1.25	< 0.005	0.03	—	0.03	0.03	—	0.03	265
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Paving (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.28	2.50	3.26	< 0.005	0.10	—	0.10	0.10	—	0.10	493
Paving	0.10	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.29	0.38	< 0.005	0.01	—	0.01	0.01	—	0.01	57.9
Paving	0.01	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	9.59
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.36	0.00	0.00	0.10	0.10	0.00	0.02	0.02	93.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	11.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.85
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.12. Paving (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.28	2.50	3.26	< 0.005	0.10	—	0.10	0.10	—	0.10	493
Paving	0.10	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.29	0.38	< 0.005	0.01	—	0.01	0.01	—	0.01	57.9
Paving	0.01	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	9.59
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.36	0.00	0.00	0.10	0.10	0.00	0.02	0.02	93.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	11.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	1.85
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Paving (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.28	2.44	3.26	< 0.005	0.10	—	0.10	0.09	—	0.09	493
Paving	0.10	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.97
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.16
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.33	0.00	0.00	0.10	0.10	0.00	0.02	0.02	92.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.18
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.03
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.14. Paving (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.28	2.44	3.26	< 0.005	0.10	—	0.10	0.09	—	0.09	493
Paving	0.10	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.97
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.16

Paving	< 0.005	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.33	0.00	0.00	0.10	0.10	0.00	0.02	0.02	92.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.18
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.03
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—

—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	3/1/2027	5/1/2027	5.00	45.0	—
Site Preparation	Site Preparation	3/1/2027	5/1/2027	5.00	45.0	—
Grading	Grading	5/2/2027	11/1/2027	5.00	131	—
Building Construction	Building Construction	11/2/2027	11/1/2028	5.00	262	—
Paving	Paving	11/2/2028	1/1/2029	5.00	43.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Demolition	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37
Demolition	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Demolition	Other Construction Equipment	Diesel	Average	2.00	8.00	82.0	0.42
Site Preparation	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37
Site Preparation	Other Construction Equipment	Diesel	Average	1.00	8.00	82.0	0.42
Site Preparation	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Skid Steer Loaders	Diesel	Average	1.00	8.00	71.0	0.37
Grading	Graders	Diesel	Average	2.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Building Construction	Cranes	Diesel	Average	2.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Building Construction	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Building Construction	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	1.00	8.00	36.0	0.38
Paving	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Demolition	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37
Demolition	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Demolition	Other Construction Equipment	Diesel	Average	2.00	8.00	82.0	0.42
Site Preparation	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37

Site Preparation	Other Construction Equipment	Diesel	Average	1.00	8.00	82.0	0.42
Site Preparation	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Skid Steer Loaders	Diesel	Average	1.00	8.00	71.0	0.37
Grading	Graders	Diesel	Average	2.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Building Construction	Cranes	Diesel	Average	2.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Building Construction	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Building Construction	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	1.00	8.00	36.0	0.38
Paving	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	30.8	7.00	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	10.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	0.00	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—

Grading	Worker	12.5	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	19.8	8.00	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	0.00	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	0.00	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	7.50	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	0.00	HHDT
Paving	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	30.8	7.00	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	10.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	0.00	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—

Grading	Worker	12.5	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	19.8	8.00	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	0.00	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	0.00	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	7.50	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	0.00	HHDT
Paving	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)

Demolition	—	5,000	22.5	3,037	—
Grading	—	20,800	131	0.00	—
Paving	0.00	0.00	0.00	0.00	1.70

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
City Park	0.00	0%
Parking Lot	1.70	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00	346	0.03	< 0.005
2028	0.00	346	0.03	< 0.005
2029	0.00	346	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	6.58	annual days of extreme heat
Extreme Precipitation	4.40	annual days with precipitation above 20 mm

Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2

Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	37.6
AQ-PM	80.4
AQ-DPM	83.1
Drinking Water	60.6
Lead Risk Housing	98.2
Pesticides	0.00
Toxic Releases	96.5
Traffic	87.7
Effect Indicators	—

CleanUp Sites	60.1
Groundwater	32.4
Haz Waste Facilities/Generators	58.8
Impaired Water Bodies	66.7
Solid Waste	0.00
Sensitive Population	—
Asthma	77.1
Cardio-vascular	83.7
Low Birth Weights	91.4
Socioeconomic Factor Indicators	—
Education	91.9
Housing	96.0
Linguistic	82.3
Poverty	91.1
Unemployment	77.1

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	6.711151033
Employed	14.35904016
Median HI	15.14179392
Education	—
Bachelor's or higher	5.504940331
High school enrollment	9.29038881
Preschool enrollment	39.95893751
Transportation	—

Auto Access	21.12151931
Active commuting	80.23867573
Social	—
2-parent households	27.81983832
Voting	28.39727961
Neighborhood	—
Alcohol availability	26.78044399
Park access	52.50866162
Retail density	71.85936096
Supermarket access	81.26523803
Tree canopy	41.26780444
Housing	—
Homeownership	11.86962659
Housing habitability	3.875272681
Low-inc homeowner severe housing cost burden	17.73386372
Low-inc renter severe housing cost burden	22.69985885
Uncrowded housing	2.284101116
Health Outcomes	—
Insured adults	5.235467727
Arthritis	70.7
Asthma ER Admissions	35.2
High Blood Pressure	65.9
Cancer (excluding skin)	93.3
Asthma	23.6
Coronary Heart Disease	47.4
Chronic Obstructive Pulmonary Disease	37.6
Diagnosed Diabetes	14.5
Life Expectancy at Birth	74.9

Cognitively Disabled	56.3
Physically Disabled	65.4
Heart Attack ER Admissions	18.4
Mental Health Not Good	11.0
Chronic Kidney Disease	27.1
Obesity	8.0
Pedestrian Injuries	68.5
Physical Health Not Good	10.9
Stroke	34.3
Health Risk Behaviors	—
Binge Drinking	58.7
Current Smoker	15.5
No Leisure Time for Physical Activity	12.5
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	27.6
Elderly	93.3
English Speaking	10.7
Foreign-born	77.4
Outdoor Workers	33.4
Climate Change Adaptive Capacity	—
Impervious Surface Cover	17.4
Traffic Density	94.0
Traffic Access	66.6
Other Indices	—
Hardship	96.2
Other Decision Support	—

2016 Voting	17.2

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	98.0
Healthy Places Index Score for Project Location (b)	9.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Construction schedule provided by the Applicant.
Construction: Off-Road Equipment	Number and type of construction equipment provided by the Applicant.
Construction: Dust From Material Movement	Information regarding quantities for hauling provided by Applicant.
Operations: Off-Road Equipment	Pump assumed to operate 24 hours per day, 365 days per year.

Construction: Trips and VMT	Construction and demolition debris including asphalt, concrete, soil, gravel, rocks, and metal would likely be transported to Construction & Demolition Recycling, Inc., located 1.95 miles to the northeast of the Project site at 9309 Rayo Avenue, in the City of South Gate, while green waste would likely be transported to the Greencycle Recycling facility located approximately eight miles east of the Project site in the City of Santa Fe Springs. To be conservative, an 8 mile one way haul trip was input for trip length in this screen.

APPENDIX B

TREE SURVEY REPORT

PSOMAS

Balancing the Natural and Built Environment

September 6, 2024

Mir Fattahi, MsCE, PE
Acting City Engineer
City of Lynwood
11330 Bullis Road
Lynwood, California 90262

VIA EMAIL
mfattahil@lynwoodca.gov

Subject: Tree Survey Report for the Lynwood City Park Stormwater Capture Project in the City of Lynwood, California

Dear: Mir Fattahi

This Letter Report documents the results of a tree survey in support of the Lynwood City Park Stormwater Capture Project (Project) in the City of Lynwood (City), County of Los Angeles, California. The survey area for this assessment was defined by the Project Boundary plus an additional 20-foot buffer area to document all trees that may be affected by the Project (Exhibit 1).

PROJECT LOCATION

The Project is located within the northeastern portion of Lynwood Park, at 11301 Bullis Road within the City of Lynwood. Within a regional context, the Project site is located approximately 0.4 miles north of Interstate 105, 1.5 miles west of Interstate 710, 4.4 miles east of Interstate 110, and 1.7 miles south of State Route 42.

More specifically, the Project site is located in a portion of Lynwood Park and is bound on the north by Cesar E. Chavez Lane and Martin Luther King Jr. Boulevard, on the east by Bullis Road and the Lynwood City Hall, on the south and southeast by Hosier Middle School and Spruce Street, and on the west by Birch Street and multi-family residential properties, as shown on Exhibit 1. Primary vehicular access to the Project site is provided at multiple ingress points, including Bullis Road located east of the site, Martin Luther King Jr. Boulevard located northeast of the site, and Spruce Street, located south of the site.

METHODS

Psomas Certified Arborist Trevor Bristle (International Society of Arboriculture WE-10233A) visited the Project site on June 3, 2024, to document the type, quantity, and condition of trees present within the survey area. Each tree was individually numbered and assigned a metal tag, and the trunk, branches, and foliage were carefully examined. During the survey, the following data were recorded: tree species, number of trunks, trunk diameter at standard height (dsh), tree height, canopy diameter, and

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qualitative assessment ratings of aesthetics and health. Tree locations were recorded on an aerial photograph that was uploaded onto a hand-held tablet device.

REGULATORY AUTHORITY

Chapter 13-2 of the Lynwood Municipal Code addresses protection of trees within the City of Lynwood and defines the following regulated tree categories:

- **Public trees** are those located in a place or area under ownership or control of the city including streets, parkways, open space, and parkland areas.
    - **Street trees** are a subset of public trees whose trunks are located primarily within any parkway, street median, traffic island, or other right-of-way under the ownership of the City.
- **Native trees** include coast live oak (*Quercus agrifolia*), canyon oak (*Quercus chrysolepis*), Engelmann oak (*Quercus engelmannii*), California walnut (*Juglans californica*), and Brisbane box (*Tristania conferta*) with a trunk more than 8 inches in dsh.
- **Specimen trees** include any tree meeting the criteria established by the City council to be an outstanding specimen of a desirable species.
- **Landmark trees** include any tree designated as a landmark under subsection 13-2.10 as a tree of historic or cultural significance and of importance to the community.

RESULTS

A total of 127 trees were documented in the Project survey area. Tree locations are numbered from 101 to 221 with one location containing seven giant bird of paradise (*Strelitzia nicolai*) within a single concrete planter. This includes 83 on-site trees (i.e., within the boundaries of the Project area) and an additional 44 off-site trees. Off-site trees were documented because their roots and/or canopies are immediately adjacent to the boundary and may be subject to impacts including trimming, pruning, root disturbance, or removal during construction activities.

The various on-site trees are all located either in Lynwood park or along adjacent streets (within the public right-of-way). Therefore, all trees documented during this survey are regulated as either Public or Street trees by the City. No trees are present in the survey area that meet the City's definition of Native, Specimen, or Landmark trees.

A summary of trees included in the survey and their regulated status is provided in Table 1. Locations are shown on Exhibit 2.

TABLE 1
SUMMARY OF TREE SPECIES IN THE SURVEY AREA

Tree Species		Total	Regulation Status				
Common Name	Scientific Name		Public	Street*	Native	Specimen	Landmark
Trees Within Project Boundaries							
eastern redbud	*Cercis canadensis*	6	6	-	-	-	-
red ironbark	*Eucalyptus sideroxylon*	2	2	-	-	-	-
Shamel ash	*Fraxinus uhdei*	3	3	-	-	-	-
jacaranda	*Jacaranda mimosifolia*	12	12	-	-	-	-
American sweetgum	*Liquidambar styraciflua*	1	1	-	-	-	-
southern magnolia	*Magnolia grandiflora*	2	2	-	-	-	-
olive	*Olea europaea*	1	1	-	-	-	-
Canary Island pine	*Pinus canariensis*	3	3	-	-	-	-
Aleppo pine	*Pinus halepensis*	3	3	-	-	-	-
western sycamore	*Platanus racemosa*	1	1	-	-	-	-
London plane tree	*Platanus x hispanica*	26	26	-	-	-	-
holly oak	*Quercus ilex*	2	2	-	-	-	-
queen palm	*Syagrus romanzoffiana*	3	3	2	-	-	-
tipu tree	*Tipuana tipu*	13	13	-	-	-	-
Chinese elm	*Ulmus parvifolia*	5	5	-	-	-	-
	Subtotal	*83*	*83*	*2*	*0*	*0*	*0*
Trees Adjacent to the Project Boundaries							
king palm	*Archontophoenix cunninghamiana*	1	1	-	-	-	-
Shamel ash	*Fraxinus uhdei*	1	1	-	-	-	-
Arizona cypress	*Hesperocyparis arizonica*	1	1	-	-	-	-
jacaranda	*Jacaranda mimosifolia*	4	4	-	-	-	-
American sweetgum	*Liquidambar styraciflua*	1	1	-	-	-	-
southern magnolia	*Magnolia grandiflora*	1	1	-	-	-	-
avocado	*Persea americana*	1	1	-	-	-	-
pygmy date palm	*Phoenix roebelenii*	1	1	-	-	-	-
Canary Island pine	*Pinus canariensis*	1	1	-	-	-	-
Aleppo pine	*Pinus halepensis*	1	1	-	-	-	-
western sycamore	*Platanus racemosa*	2	2	-	-	-	-
London plane tree	*Platanus x hispanica*	8	8	-	-	-	-
guava	*Psidium guajava*	1	1	-	-	-	-
evergreen pear	*Pyrus kawakamii*	1	1	-	-	-	-

TABLE 1
SUMMARY OF TREE SPECIES IN THE SURVEY AREA

Tree Species			Regulation Status				
Common Name	Scientific Name	Total	Public	Street*	Native	Specimen	Landmark
giant bird of paradise	*Strelitzia nicolai*	7	7	-	-	-	-
queen palm	*Syagrus romanzoffiana*	9	9	2	-	-	-
tipu tree	*Tipuana tipu*	2	2	-	-	-	-
Chinese elm	*Ulmus parvifolia*	1	1	-	-	-	-
	Subtotal	*44*	*44*	*2*	*0*	*0*	*0*
	Total	***127***	***127***	***4***	***0***	***0***	***0***

* Street trees are a subset of public trees so that the total of public and street trees are not to be added together.

DISCUSSION

Trees within the survey area are generally mature individuals that have been planted in a landscaped park setting along sidewalks, parking lots, and recreation areas. Additional documented trees are in hardscape areas along Birch Street to the west and Bullis Road to the east.

The majority of the trees are in good to fair health with minor signs of stress or decay, such as cavities, wounding on the trunk or branches, canopy dieback, anthracnose, or general lack of vigor. Trees with good to fair health are expected to improve or maintain their health for the foreseeable future. Several exceptions are present where trees are in poor health. These include three London plane trees (No. 107, 129, and 196) with moderate canopy dieback and anthracnose observed on the leaves; one tipu tree (No. 120) with poor structure and branch attachments, and one eastern redbud (No. 201) with rot down the main trunk. The conditions of these trees are expected to continue their health decline without additional care and/or maintenance.

Construction activities are expected to require the removal of five trees, consisting of three tipu trees and two London plane trees. These trees are mature individuals that are poor candidates for relocation due to their size, except for one of the London plane trees which is a sapling, likely planted within the last several years. Though this tree is smaller, it exhibits significant canopy dieback and anthracnose which also makes it a poor candidate for relocation and it is better replaced by appropriately sized nursery stock. A summary of trees to be removed for Project implementation is provided in Table 2.

TABLE 2
SUMMARY OF TREES TO BE REMOVED FOR PROJECT IMPLEMENTATION

Tree No.	Tree Species		Trunk DSH (in)	Height (ft)	Canopy Diameter (ft)	Health	Aesthetics
	Common Name	Botanical Name					
114	tipu tree	*Tipuana tipu*	27.0	60	40	3	4
116	London plane tree	*Platanus x hispanica*	15.1	55	35	3	4
118	tipu tree	*Tipuana tipu*	21.0	55	45	4	4
120	tipu tree	*Tipuana tipu*	15.7	25	25	2	2
154	London plane tree	*Platanus x hispanica*	2.5	15	6	3	3

DSH: diameter at standard height; in: inches; ft: feet
Aesthetics/Health Rating: 1=Very Poor, 2=Poor, 3=Fair, 4=Good, and 5=Excellent

RECOMMENDATIONS

- Trees planted within the Project site occur in landscaped areas of the park or in areas with hardscape which limit root growth or canopy potential. The following measures are recommended for tree protection and maintenance during construction: Tree impacts (pruning, removal, dripline encroachment, etc.) should be identified as early in the design process as possible to allow for design updates, if necessary.
- Protective fencing should be placed at the dripline of the trees to be preserved within or adjacent to the construction area to minimize their disturbance during construction or grading activities.
- Any approved development, including grading or excavation, that encroaches within the dripline of trees to be preserved should be reviewed prior to implementation by a Certified Arborist.
- Place a four to six-inch layer of chip mulch over the soil surface within the dripline of trees to be protected to reduce compaction, improve aeration, enhance moisture retention, and reduce temperature extremes.
- Provide ongoing watering of trees to be protected during construction, either through hand watering or irrigation systems.
- Avoid heavy equipment, materials placement, spoils piles, or foot traffic within the tree dripline to prevent soil compaction.
- Avoid pruning or fertilizing trees until construction is completed as this may negatively affect a trees' ability to respond to any incidental impacts.
- Any tree(s) with impacts due to Project related activities should be evaluated on a case-by-case basis by a Certified Arborist. Further recommendations may be provided at that time.

The following measures are recommended for tree establishment at the conclusion of Project activities:

- A Certified Arborist should be responsible for monitoring the health and establishment of replacement trees that may be required as part of the Project.
- The largest possible planting basin that the Project site can accommodate should be provided for new trees. Larger planting basins are correlated with longer-lived trees, greater tree stability, and less hardscape damage.
- Once the new planting basins are constructed, soil samples should be collected from all planting locations and sent to a qualified soil laboratory for analysis. From each sampling location, one sample should be collected that represents the top 12 inches of the soil, along with a second sample that represents the soil from 12 to 24 inches deep. Any recommended soil amendments or treatments from the laboratory report should be implemented.
- Once planted, a one- to two-inch layer of mulch should be placed within the planting basin of each new tree. Mulch should not be allowed to be placed in contact with the trunk of the tree as this can lead to rot.

Psomas appreciates the opportunity to assist with this Project. If you have any questions, please contact Trevor Bristle at 626.204.6538 or Trevor.Bristle@Psomas.com.

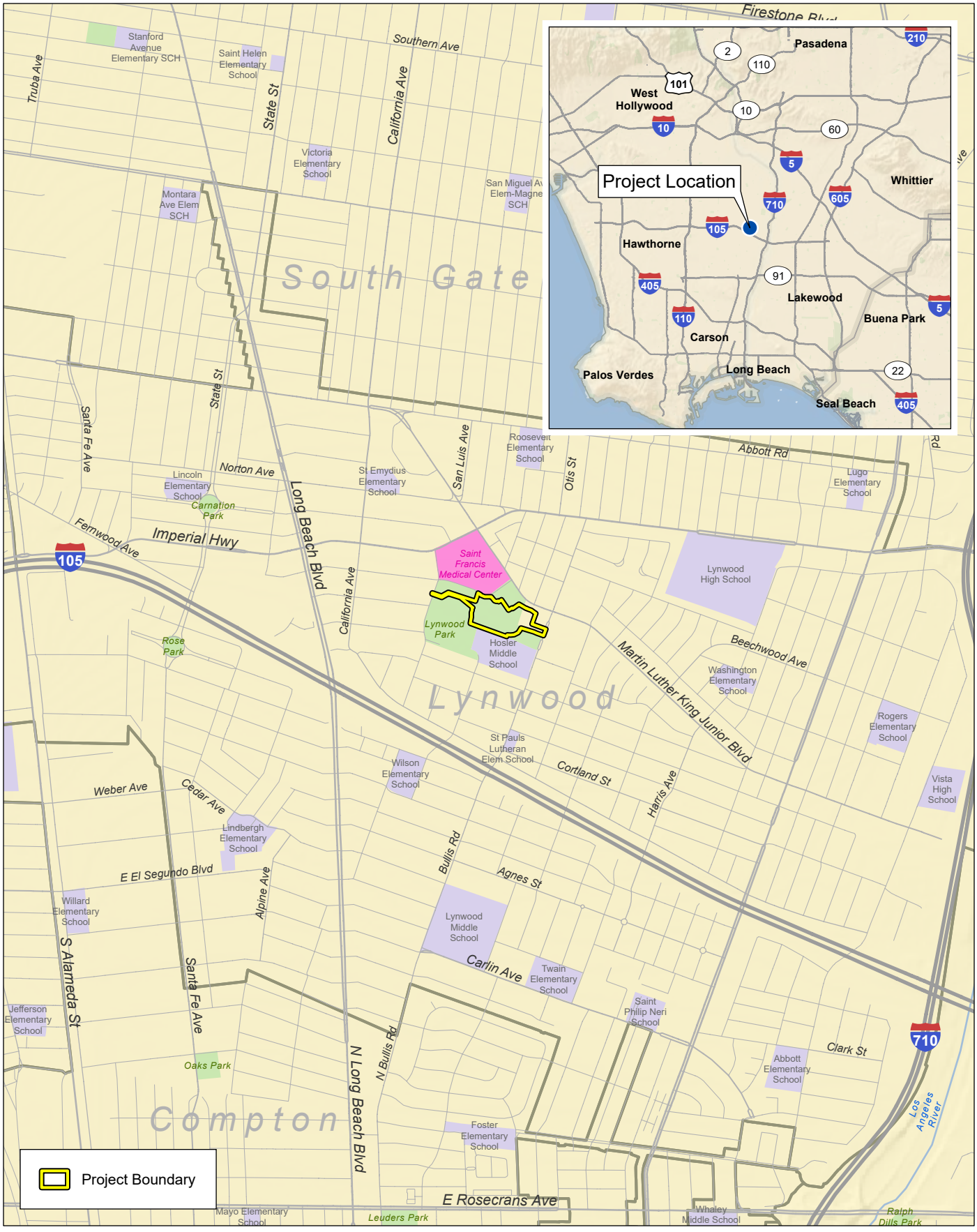
Sincerely,
PSOMAS

Jessica Hitchcock
Project Manager

Trevor Bristle
Certified Arborist WE-10233A
Registered Consulting Arborist #746

TREVOR BRISTLE
ASCA
AMERICAN SOCIETY of CONSULTING ARBORISTS
Registered Consulting Arborist #746

Attachments: Exhibit 1
Exhibit 2



D:\Projects\3CRA\Lynwood\PRO\Lynwood.aprx\ex_Project_Location

Project Location

Exhibit 1

Tree Inventory - Lynwood City Park Stormwater Capture Project

N W E S

0 1,000 2,000 Feet

PSOMAS

(Rev: 8-21-2024 PLO) R:\Projects\CRA\3CRA120300\Graphics\Trees\ex_Project_Location.pdf

Project Boundary
Survey Area - 20-ft Buffer
Tree Canopies
Tree Removal Plan

Tree Species

- king palm *(Archontophoenix cunninghamiana)*
- eastern redbud *(Cercis canadensis)*
- red ironbark *(Eucalyptus sideroxylon)*
- Shamel ash *(Fraxinus uhdei)*
- Arizona cypress *(Hesperocyparis arizonica)*
- jacaranda *(Jacaranda mimosifolia)*
- American sweetgum *(Liquidambar styraciflua)*
- southern magnolia *(Magnolia grandiflora)*
- olive *(Olea europaea)*
- avocado *(Persea americana)*
- pygmy date palm *(Phoenix roebelenii)*
- Canary island pine *(Pinus canariensis)*
- aleppo pine *(Pinus halepensis)*
- western sycamore *(Platanus racemosa)*
- London plane tree *(Platanus x hispanica)*
- guava *(Psidium guajava)*
- evergreen pear *(Pyrus kawakamii)*
- holly oak *(Quercus ilex)*
- giant bird of paradise *(Strelitzia nicolai)*
- queen palm *(Syagrus romanzoffiana)*
- tipu tree *(Tipuana tipu)*
- Chinese elm *(Ulmus parvifolia)*

Aerial Source: Nearmap 2024

D:\Projects\3CRA\Lynwood\PRO\Lynwood.aprx\ex_Tree_Locations

Tree Locations

Exhibit 2

Tree Inventory - Lynwood City Park Stormwater Capture Project

0 60 120 Feet

PSOMAS

(Rev: 8-29-2024 PLO) R:\Projects\CRA\3CRA120300\Graphics\Trees\ex_Tree_Locations.pdf

APPENDIX C

CULTURAL RESOURCES RECORD SEARCH RESULTS

Native American Heritage Commission
Native American Contact List
Los Angeles County
5/13/2024

Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Gabrieleno Band of Mission Indians - Kizh Nation	N	Christina Swindall Martinez, Secretary	P.O. Box 393 Covina, CA, 91723	(844) 390-0787		admin@gabrielenoindians.org	Gabrieleno	Los Angeles,Orange,Riverside,San Bernardino,Santa Barbara,Ventura	8/18/2023
Gabrieleno Band of Mission Indians - Kizh Nation	N	Andrew Salas, Chairperson	P.O. Box 393 Covina, CA, 91723	(844) 390-0787		admin@gabrielenoindians.org	Gabrieleno	Los Angeles,Orange,Riverside,San Bernardino,Santa Barbara,Ventura	8/18/2023
Gabrieleno/Tongva San Gabriel Band of Mission Indians	N	Anthony Morales, Chairperson	P.O. Box 693 San Gabriel, CA, 91778	(626) 483-3564	(626) 286-1262	GTTribalcouncil@aol.com	Gabrieleno	Los Angeles,Orange,Riverside,San Bernardino,Santa Barbara,Ventura	12/4/2023
Gabrielino Tongva Indians of California Tribal Council	N	Christina Conley, Cultural Resource Administrator	P.O. Box 941078 Simi Valley, CA, 93094	(626) 407-8761		christina.marsden@alumni.usc.edu	Gabrielino	Los Angeles,Orange,Riverside,San Bernardino,Santa Barbara,Ventura	3/16/2023
Gabrielino Tongva Indians of California Tribal Council	N	Robert Dorame, Chairperson	P.O. Box 490 Bellflower, CA, 90707	(562) 761-6417	(562) 761-6417	gtongva@gmail.com	Gabrielino	Los Angeles,Orange,Riverside,San Bernardino,Santa Barbara,Ventura	3/16/2023
Gabrielino/Tongva Nation	N	Sandonne Goad, Chairperson	106 1/2 Judge John Aiso St., #231 Los Angeles, CA, 90012	(951) 807-0479		sgoad@gabrielino-tongva.com	Gabrielino	Los Angeles,Orange,Riverside,San Bernardino,Santa Barbara,Ventura	3/28/2023
Gabrielino-Tongva Tribe	N	Charles Alvarez, Chairperson	23454 Vanowen Street West Hills, CA, 91307	(310) 403-6048		Chavez1956metro@gmail.com	Gabrielino	Los Angeles,Orange,Riverside,San Bernardino,Santa Barbara,Ventura	5/30/2023
Gabrielino-Tongva Tribe	N	Sam Dunlap, Cultural Resource Director	P.O. Box 3919 Seal Beach, CA, 90740	(909) 262-9351		tongvatcr@gmail.com	Gabrielino	Los Angeles,Orange,Riverside,San Bernardino,Santa Barbara,Ventura	5/30/2023
Santa Rosa Band of Cahuilla Indians	F	Steven Estrada, Tribal Chairman	P.O. Box 391820 Anza, CA, 92539	(951) 659-2700	(951) 659-2228	sestrada@santarosa-nsn.gov	Cahuilla	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	4/8/2024
Santa Rosa Band of Cahuilla Indians	F	Vanessa Minott, Tribal Administrator	P.O. Box 391820 Anza, CA, 92539	(951) 659-2700	(951) 659-2228	vminott@santarosa-nsn.gov	Cahuilla	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	4/8/2024
Soboba Band of Luiseno Indians	F	Jessica Valdez, Cultural Resource Specialist	P.O. Box 487 San Jacinto, CA, 92581	(951) 663-6261	(951) 654-4198	jvaldez@soboba-nsn.gov	Cahuilla Luiseno	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	7/14/2023
Soboba Band of Luiseno Indians	F	Joseph Ontiveros, Tribal Historic Preservation Officer	P.O. Box 487 San Jacinto, CA, 92581	(951) 663-5279	(951) 654-4198	jontiveros@soboba-nsn.gov	Cahuilla Luiseno	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	7/14/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed 3CRA120300 Project, Los Angeles County.

Record: PROJ-2024-002525
Report Type: AB52 GIS
Counties: Los Angeles
NAHC Group: All

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
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Miwok, Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov

May 13, 2024

Charles Cisneros
Psomas

Via Email to: charles.cisneros@psomas.com

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, 3CRA120300 Project, Los Angeles County

To Whom It May Concern:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

    - Any report that may contain site forms, site significance, and suggested mitigation measures.

      All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: paleorecords@nhm.org

April 28, 2024

Psomas
Attn: Charles Cisneros

re: Paleontological resources for Project 3CRA120300

Dear Charles:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the 3CRA120300 project area as outlined on the portion of the South Gate USGS topographic quadrangle map that you sent to me via e-mail on April 24, 2024. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that may occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

Locality Number	Location	Formation	Taxa	Depth
LACM IP 7	near Compton (more precise locality not available)	Unknown formation (Pleistocene)	Oysters on a fragment of pecten	735 feet bgs (collected from well excavations)
LACM VP 3365	Athens on the Hill, Los Angeles (more precise information not available)	Unnamed formation (Pleistocene)	Mammoth (*Mammuthus*)	Unknown
LACM VP 1225	354 W 99th St., Los Angeles	Unknown formation (Pleistocene)	Mammoth (*Mammuthus*)	15-20 feet bgs
LACM VP 3266	W Athens Blvd & Menlo Ave	Unnamed formation (Pleistocene, calcareous siltstone)	Uncatalogued vertebrates	15-18 feet bgs
LACM VP 1295, 1344, 4206	Harbor Freeway excavations between 112 St & 113 St.*	Unknown formation (Pleistocene)	Horse (*Equus*), Bison (*Bison*), canine (*Canis*), birds (*Mancalla, Parapavo*, Aves), rabbit (*Sylvilagus,* Leporidae), mammoth (*Mammuthus*), rodent (*Thomomys, Microtus,* Sciuridae, Rodentia), ground	Unknown

Locality Number	Location	Formation	Taxa	Depth
			sloth (*Paramylodon*), antelope (*Breameryx*), artiodactyl (Pecora), turtle (*Clemmys*)	

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface
**see Miller 1971; Bulletin of the Los Angeles County Museum of Natural History, science: no. 10.*

This records search covers only the records of the NHMLA. It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Federal (43 Code of Federal Regulations Part 49.110) or Society of Vertebrate Paleontology standards.

Sincerely,



Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice

Report List

3CRA120300

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-00078		1975	Rosen, Martin D.	Evaluation of the Archaeological Resources and Potential Impact of the Proposed Construction of Route 105 Freeway From El Segundo to Norwalk	University of California, Los Angeles Archaeological Survey	
LA-07049		2002	Marvin, Judith and Curt Duke	Cultural Resource Assessment At&t Wireless Services Facility No. 04419a-04 Los Angeles County, California	LSA Associates, Inc.	
LA-07050		2002	Marvin, Judith and Curt Duke	Cultural Resource Assessment At&t Wireless Services Facility No. 04090a-04 Los Angeles, California	LSA Associates, Inc.	
LA-07060		2002	Padon, Beth	Results From the Archaeological Records Search for South Gate Sewer Rehabilitation Project, Los Angeles County	Discovery Works, Inc.	
LA-07663		2006	Billat, Lorna	Fcc Form 621 (section 106) Submittal Earthtouch Inc. (consultants on Behalf of Royal Street Communications, Llc Dba Metro Pcs) Sanborn Water Tank/la-0329a Lynwood, Los Angeles County, California	EarthTouch Inc.	19-177470
LA-11014		2006	Hatoff, Brian	Collocation Submission Packet Form 621 - 11240 California Ave., Lynwood	URS	19-187066

Resource List

3CRA120300

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-177470		OHP Property Number - 028148; Resource Name - Lynwood Pacific Electric RR Depot; Other - Passenger Station	Building	Historic	HP17	1974 (R. A. Swan, City of Lynwood, Department of Public Works)	LA-07663
P-19-187066		OHP Property Number - 132202; Resource Name - California Water Tank	Building	Historic	HP11	2002 (J. Marvin & J. Michalsky, LSA); 2002 (B. Hatoff, URS)	LA-11014, LA-12917
P-19-187068		OHP Property Number - 100240; Resource Name - Storage Bldg	Building	Historic	HP14	1995 (C. McAvoy, HRG)	
P-19-187721		OHP Property Number - 132185; Resource Name - Walnut Water Tower; Voided - 19-187067	Structure	Historic	HP11	2002 (J. Marvin & J. Michalsky, LSA)	LA-11349
P-19-187855		OHP Property Number - 148285; Resource Name - Herman H Bradley Residence; Other - Vesenia Vedal Residence; Other - Sprint telecommunications Facility LA60XC332A	Building	Historic	HP02	2004 (K. Crawford)	
P-19-187856		OHP Property Number - 148276; Resource Name - Richard & Vera Robins Residence; Other - Harold and Leeather Wesley Residence	Building	Historic	HP02	2004 (K. Crawford)	
P-19-187857		OHP Property Number - 148279; Resource Name - Gustave & Katherine Blun Residence; Other - Benito & Maria Preciado Residence; Other - Sprint Telecommunications Facility LA60XC332A	Building	Historic	HP02	2004 (K. Crawford)	
P-19-187858		OHP Property Number - 148288; Resource Name - Robert Ferguson Residence; Other - Senavio & Gladys Palomero Residence; Other - Sprint Telecommunications Facility LA60XC332A	Building	Historic	HP02	2004 (K. Crawford)	

Resource List

3CRA120300

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-187859		OHP Property Number - 148273; Resource Name - Sylvan & Beulah Krsnak Residence; Other - Diana L Harris Residence; Other - Sprint Telecommunications Facility LA60XC332A	Building	Historic	HP02	2004 (K. Crawford)	
P-19-187860		OHP Property Number - 148251; Resource Name - Erich & Rosemarie Rolko Residence; Other - Alfred & Harriett Coleman Residence; Other - Sprint Telecommunications Facility LA60XC332A	Building	Historic	HP02	2004 (K. Crawford)	

APPENDIX D

ENERGY CALCULATIONS

Energy Use Summary

Construction Phase (gallons/construction period	Gasoline	Diesel
Construction Vehicles	46	14,390
Worker Trips	2,407	6
Vendor Trips	0	0
Haul Trucks	5	4,589
Total	**2,458**	**18,986**

Operations Phase (gallons/year)		Gasoline	Diesel	Natural Gas (kBTU/yr)	Electricity (kWh/yr)
City Park		0	0	0	0
Parking Lot		0	0	0	42,048
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
All Land Uses		**0**	**0**	**0**	**42,048**

Operations Offroad Equipment

	Number	Hours/Day	Days/Year	Horse Pow	Load Factc	Fuel Type	Fuel consumption (gal/hr)	
Pumps	1	24	365	11	0.74	Diesel	2.380239	15,430

Offroad Construction Equipment Energy Use

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per	Hours Per Da	Horsepower	Load Factor	Horsepower Category	Num Days	Year	Fuel Consumption Rate (gal/hour)	Fuel Type	Total Fuel Consumption (gal/construction period)
Demolition	Excavators	Diesel	Average	1	8	36	0.38	50	45	2024	0.8	Diesel	108
Demolition	Skid Steer Loaders	Diesel	Average	2	8	71	0.37	75	45	2024	1.3	Diesel	359
Demolition	Rubber Tired Dozers	Diesel	Average	1	8	367	0.4	300	45	2024	4.6	Diesel	667
Demolition	Other Construction Equipment	Diesel	Average	2	8	82	0.42	75	45	2024	1.6	Diesel	471
Site Preparation	Skid Steer Loaders	Diesel	Average	2	8	71	0.37	75	45	2024	1.3	Diesel	359
Site Preparation	Other Construction Equipment	Diesel	Average	1	8	82	0.42	75	45	2024	1.6	Diesel	236
Site Preparation	Rubber Tired Dozers	Diesel	Average	1	8	367	0.4	300	45	2024	4.6	Diesel	667
Grading	Skid Steer Loaders	Diesel	Average	1	8	71	0.37	75	131	2024	1.3	Diesel	522
Grading	Graders	Diesel	Average	2	8	148	0.41	175	131	2024	3.2	Diesel	2,716
Grading	Excavators	Diesel	Average	2	8	36	0.38	50	131	2024	0.8	Diesel	627
Building Construction	Cranes	Diesel	Average	2	7	367	0.29	300	262	2024	3.3	Diesel	3,479
Building Construction	Forklifts	Diesel	Average	1	8	82	0.2	75	262	2024	1.2	Diesel	517
Building Construction	Excavators	Diesel	Average	2	8	36	0.38	50	262	2024	0.8	Diesel	1,253
Building Construction	Skid Steer Loaders	Diesel	Average	2	8	71	0.37	75	262	2024	1.3	Diesel	2,089
Paving	Pavers	Diesel	Average	1	8	81	0.42	75	43	2024	1.5	Diesel	220
Paving	Rollers	Diesel	Average	1	8	36	0.38	50	43	2024	0.8	Diesel	101
Paving	Plate Compactors	Diesel	Average	1	8	8	0.43	25	43	2024	0.3	Gasoline	46
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
								#N/A	#N/A	2024	#N/A	#N/A	#N/A
											Total	**Gasoline**	**46**
											Total	**Diesel**	**14,390**
													14,437

Onroad Construction Energy Use

Year 2024

Vehicle Types	MPG by Fuel Type					Population by Fuel Type					
	Gasoline	Diesel	Electricity	Natural Gas	Plug-in Hybrid	Gasoline	Diesel	Electricity	Natural Gas	Plug-in Hybrid	Total
LDA	29.3	41.2	0.4	0.000	28.2	5,451,205	15,009	284,963	0	152,679	5,903,856
LDT1	24.4	23.4	0.4	0.000	28.0	505,255	186	1,243	0	739	507,423
LDT2	23.9	31.9	0.4	0.000	27.9	2,551,917	8,409	16,572	0	21,729	2,598,626
LHDT1	13.6	20.5	0.6	0.000	0.0	205,772	107,344	793	0	0	313,909
LHDT2	11.9	17.3	0.6	0.000	0.0	32,210	47,494	205	0	0	79,909
MCY	41.5	0.0	0.0	0.000	0.0	248,270	0	0	0	0	248,270
MDV	19.5	23.7	0.4	0.000	27.6	1,622,854	20,420	18,088	0	13,081	1,674,443
MH	4.9	10.1	0.0	0.000	0.0	30,227	12,282	0	0	0	42,510
MHDT	5.2	8.9	1.0	8.3	0.0	25,496	117,140	365	1,526	0	144,526
HHDT	4.0	6.1	1.8	6.0	0.0	66	101,735	317	10,386	0	112,504
OBUS	5.1	7.0	1.1	8.8	0.0	5,427	3,049	12	487	0	8,975
SBUS	8.9	7.3	1.2	4.2	0.0	2,859	3,436	23	3,247	0	9,564
UBUS	7.0	6.6	2.1	3.2	0.0	894	14	132	5,035	0	6,076
						10,682,454	436,518	322,712	20,681	188,228	11,650,593

Daily Trips							Gasoline Consumption			Diesel Consumption		
Phase Name	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker	Vendor	Haul	Worker	Vendor	Haul
Demolition	15	0	31	18.5	10.2	7						
Site Preparation	10	0	0	18.5	10.2	0						
Grading	13	0	20	18.5	10.2	8						
Building Construction	0	0	0	18.5	10.2	0						
Paving	8	0	0	18.5	10.2	0						
	0	0	0	0	0	0						
	0	0	0	0	0	0						
	0	0	0	0	0	0						
	0	0	0	0	0	0						
	0	0	0	0	0	0						
	0	0	0	0	0	0						
	0	0	0	0	0	0						
Total Trips												
Demolition	675	0	1395	18.5	10.2	7	512	0	1	1	0	1,459
Site Preparation	450	0	0	18.5	10.2	0	341	0	0	1	0	0
Grading	1703	0	2620	18.5	10.2	8	1,292	0	3	3	0	3,131
Building Construction	0	0	0	18.5	10.2	0	0	0	0	0	0	0
Paving	344	0	0	18.5	10.2	0	261	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
Total							**2,407**	**0**	**5**	**6**	**0**	**4,589**

APPENDIX E

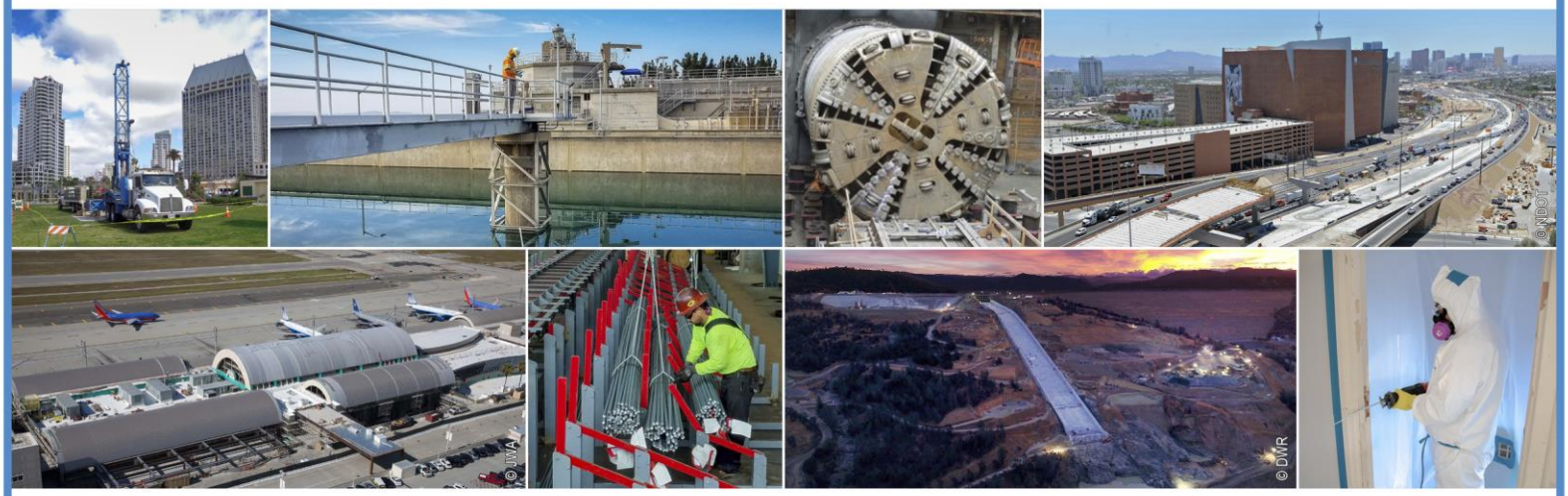
GEOTECHNICAL EVALUATION

Geotechnical Evaluation
Lynwood City Park Stormwater Capture Project
11301 Bullis Road
Lynwood, California

Craftwater Engineering, Inc.

45 South Arroyo Parkway, B6 | Pasadena, California 91105

March 17, 2023 | Project No. 212102001



Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

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35+ YEARS

Geotechnical Evaluation
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1 INTRODUCTION

In accordance with your request and authorization, we have performed a geotechnical evaluation for the Lynwood City Park Stormwater Capture Project located at 11301 Bullis Road in Lynwood, California (Figure 1). We understand that the project will generally consist of the installation of a regional stormwater capture and infiltration facility within Lynwood City Park that will provide improved flood control, water treatment, infiltration of groundwater, and improved flood management for water from a 955-acre drainage area. The purpose of our study was to evaluate the subsurface soil and geologic conditions at the park, including the infiltration rates of the on-site soils, in order to provide geotechnical recommendations for the design and construction of the proposed improvements. Our evaluation was performed in general accordance with our referenced proposal dated July 11, 2022. This report presents our findings, conclusions, and geotechnical recommendations for the project.

2 SCOPE OF SERVICES

Our scope of services included the following:

- Project coordination and planning with subcontractors and personnel from Craftwater Engineering, Inc. and the City of Lynwood.
- Review of readily available background materials, including published topographic maps, geologic maps, fault and seismic hazard maps, groundwater data, stereoscopic aerial photographs, in-house geotechnical information, and other reports provided by the client.
- Acquisition of a Los Angeles County Environmental Health Department (LACEHD) permit for drilling deeper than 10 feet below the ground surface.
- Field reconnaissance to observe and document the site conditions, mark-out proposed hollow-stem-auger (HSA) boring and cone penetration test (CPT) sounding locations for underground utility clearance by Underground Service Alert.
- Subsurface exploration consisting of the drilling, sampling, and logging of seven HSA borings, ranging in depths from approximately 6½ feet to 101½ feet, and two CPTs ranging in depths from approximately 60 feet to 100 feet.
- Field percolation testing in four of the HSA borings in general accordance with the 2021 County of Los Angeles Department of Public Work's (CLADPW) Guidelines for Geotechnical Investigation and Reporting Low Impact Development Stormwater Infiltration.
- Geotechnical laboratory testing of representative soil samples to evaluate in-situ moisture content and dry density, percentage of particles finer than the No. 200 sieve, Atterberg limits, consolidation, direct shear strength, and soil corrosivity.
- Data compilation and engineering analysis of the information obtained from our background review, subsurface evaluation, percolation testing, and laboratory testing.
- Preparation of this geotechnical report presenting our findings, conclusions, and recommendations pertaining to the design and construction of the proposed improvements.

3 SITE DESCRIPTION

Lynwood City Park is situated in a mixed residential and commercial neighborhood in the City of Lynwood, approximately ½ mile northeast of Interstate 105 (I-105) and approximately 1½ miles west of I-710 (Figure 1). The park consists of a rectangular-shaped lot situated on the west side of the Lynwood Community Center. The park is bounded by Cesar Chavez Lane and Martin Luther King Boulevard on the north, Birch Street on the west, Spruce Street and administration buildings on the south, and the community center and Bullis Road on the east (Figures 2 and 3). The park is a relatively flat area ranging from approximately 85 to 90 feet above mean sea level with a gentle slope toward the south (United States Geological Survey, 2018). The park generally consists of various grass-covered fields, including four baseball fields on the west approximate half of the park and three soccer fields on the east approximate half of the park. Other park improvements include a snack shack/restroom structure between the baseball fields, tennis courts and an asphalt-concrete (AC) paved parking lot on the south, a playground area and greenbelt area on the north, and Portland cement concrete (PCC) walkways. The east side of the park includes the community center building, basketball courts, skate park, maintenance and restroom building, and AC-paved parking lots adjacent to the buildings (Figures 2 and 3). According to Craftwood (2020), two storm drains associated with East Compton Creek are located within Bullis Road and Birch Street.

4 PROJECT DESCRIPTION AND PROPOSED CONSTRUCTION

Based on our review of the City of Lynwood request for proposal, dated June 23, 2022, we understand that the project generally consists of the installation of regional stormwater capture, infiltration, and treatment facility (Best Management Practice [BMP]) within the Lynwood City Park to improve the water quality within the Lower Los Angeles River Watershed. The facility will provide improved flood control, water treatment and groundwater replenishment by diverting wet-weather flow from the two storm drains located in Bullis Road and Birch Street to the park. Two new diversion structures, one in Bullis Road (20 cubic feet per second [20cfs]) and one in Birch Street (40cfs), will be constructed to divert water to the park through new pipelines to a new pre-cast concrete infiltration gallery. The gallery will have a storage capacity of approximately 11.2-acre-feet (3.6 million gallons) and has a conceptual footprint of approximately 120 feet by 440 feet (Craft Water, 2020). It is anticipated that the gallery structure will have an invert depth of approximately 20 feet below the existing ground surface. New actuated valves and pretreatment hydrodynamic separators will be installed in-line prior to the structure. A second pipeline and valve will be installed to allow the treated water to return the storm drain within Bullis Road. Other site BMPs and park improvements include the installation of an ephemeral stream to the butterfly garden along the north side of the park. We understand that previously proposed permeable

pavements and bioswales in the community center parking lot have been removed from the project.

5 PREVIOUS SITE EVALUATION

As part of our evaluation, we reviewed a preliminary infiltration study report for the subject project prepared by Albus-Keefe & Associates (Albus-Keefe, 2017). Their study was performed to evaluate the feasibility of using dry wells at the site for on-site stormwater infiltration. Their study included three exploratory borings (B-1, B-2, and B-3) to depths of approximately 51½, 12, and 12 feet, respectively, and percolation testing in the two shallower borings. Their borings and percolation testing were performed near the western end of the proposed underground structure as shown on Figures 2 and 3. We used their borings and percolation test data to supplement our report. Data from their report is included in our discussions below. A copy of their report, including their boring logs, is provided in Appendix A.

6 SUBSURFACE EVALUATION AND LABORATORY TESTING

Our subsurface evaluation was conducted on January 30, January 31, and February 1, 2023, and consisted of the drilling, logging, and sampling of seven HSA borings (B-1, B-2, B-3, and P-1 through P-4) and two CPT soundings (CPT-1 and CPT-2). The borings were drilled using a truck-mounted drill rig with 8-inch diameter augers. Borings B-1, B-3, and P-1 through P-4 were drilled to proposed depths of approximately 31.5, 31.5, 6.5, 21.5, 21.5, and 21.5 feet, respectively. Boring B-2 was drilled to a depth of 101.5 as requested by the City. The borings were logged in the field by a representative of Ninyo & Moore and representative bulk and relatively undisturbed soil samples were collected from the borings at selected depths for laboratory testing. Logs of the exploratory borings are provided in Appendix B. Percolation testing was performed in borings P-1 through P-4 as further discussed in Section 8 of this report. CPT soundings CPT-1 and CPT-2 were performed using a 30-ton CPT rig to depths of approximately 60.3 and 100.2 feet, respectively. Continuous soil profiles, including cone tip resistance and sleeve friction, were recorded during the soundings. Pore water dissipation test measurements were recorded from both CPT soundings and shear wave testing was performed in CPT-2. Logs of the CPT soundings, including the results of the dissipation and shear wave tests, are provided in Appendix C. The approximate locations of the borings and CPTs are presented on Figures 2 and 3. The borings and CPTs were backfilled with cement-bentonite grout upon completion of the drilling and percolation testing in general accordance with the requirements of LACEHD.

Geotechnical laboratory testing of representative soil samples included tests to evaluate in-situ moisture content and dry density, percentage of particles finer than the No. 200 sieve Atterberg

limits, consolidation potential, direct shear strength, and soil corrosivity. Moisture and density test results are presented on the boring logs in Appendix B. The remaining test results are presented in Appendix D.

Soil cuttings from the borings and CPTs were placed in 55-gallon drums, and composite soil samples of the drummed soil were collected in 8-ounce jars for waste characterization. The samples were stored in a chilled cooler and delivered to a laboratory for analytical testing under chain-of-custody protocol. The samples were tested for total petroleum hydrocarbons (gas and diesel range) per United Stated Environmental Protection Agency (EPA) Test Method 8015B, Title 22 metals per EPA Test Methods 6010B/7470/7471, and volatile organic compounds per EPA Test Method 8260B. Based on the characterization test results, the drums were disposed at an approved landfill by a licensed transportation subcontractor as non-hazardous material. The waste characterization test results are provided in Appendix E.

7 GEOLOGIC AND SUBSURFACE CONDITIONS

The project site is located within the Los Angeles Basin of the Peninsular Ranges Geomorphic Province (Norris and Webb, 1990). The basin has been divided into four blocks, the northeastern, northwestern, southwestern, and central blocks that are separated by prominent fault systems. The project site is located within the central block, which is underlain by up to approximately 35,000 feet of Cretaceous to Pleistocene-age marine and non-marine sedimentary rock. The sedimentary rock is overlain by late Pleistocene to Holocene-age alluvial deposits associated with the ancestral Los Angeles and San Gabriel Rivers. According to Saucedo, et al. (2016), the project site is generally underlain by Holocene to late Pleistocene-age young alluvium consisting of poorly consolidated, poorly sorted, permeable floodplain deposits of soft, clay and silt, and loose to moderately dense, sand and silty sand (Figure 4). The California Department of Mines and Geology (CDMG, 1998) has also mapped the site as being underlain by young alluvium deposits consisting of loose to medium dense, very coarse- to very fine-grained sand, gravel, and silt that interfinger and grade laterally into each other. Various fills are anticipated at the site associated with past earthwork, including building construction and underground utility installation.

Materials encountered during our subsurface exploration generally consisted of undocumented fill underlain by young alluvium. Undocumented fill was encountered in our borings B-2 and P-1 to depths ranging from approximately ½ and 1 foot, respectively. The undocumented fill generally consists of brown, moist, medium dense, silty gravel with sand and silty sand with few gravel. Documentation regarding the limits of fill or the placement and compaction of the fill soils was not available for our review. Young alluvium was encountered beneath the undocumented fill in borings B-2 and P-1 and at the ground surface in the remaining borings to the total depths

explored of up to approximately 100 feet. The young alluvium generally consists of approximately 4 to 10 feet of light brown, moist, loose to medium dense, silty sand underlain be predominantly fine deposits to depths of approximately 28 to 40 feet. The fine deposits generally consist of light brown, brown, dark brown, grayish brown, olive gray, and gray, moist, loose to very dense and stiff to hard, silt with variable amounts of sand with interbeds of dark brown, moist, very stiff, clay. Below depths of approximately 28 to 40 feet, the alluvium generally consists of interbedded light brown and gray, moist to wet, medium dense to very dense, silty sand and silt with variable amounts of sand with occasion thin clay layers. Similar alluvial deposits were encountered in the previous borings by Albus-Keefe (2017). More detailed descriptions of the subsurface materials encountered during our subsurface exploration are presented on the boring logs and CPT soundings in Appendices B and C, respectively.

8 GROUNDWATER

During our subsurface exploration, groundwater was encountered in boring B-2 at a depth of approximately 44.3 feet and in our CPT-1 and CPT-2 at depths of approximately 43.4 and 55.5 feet, respectively. Albus-Keefe (2017) encountered groundwater at a depth of approximately 43 feet in their boring B-1. The historic high depth to groundwater is mapped at approximately 8 feet by CDMG, (1998). As part of our evaluation, we reviewed depth to groundwater data available on the State of California Water Resources Control Board's GeoTracker website (2023) for three sites located approximately ½ mile west, ½ mile southwest, and 1 mile east of the site. Similar depths to groundwater were recorded in numerous groundwater monitoring wells at each site. In general, the groundwater depths ranged from approximately 16 to 40 feet between approximately 1988 to 2019. Fluctuations in the level of groundwater will occur due to variations in ground surface topography, subsurface stratification, rainfall, irrigation practices, groundwater pumping, and other factors that were not evident at the time of our field evaluation.

9 FIELD PERCOLATION TESTING

Percolation testing was performed in our borings P-1 through P-4 in general accordance with the 2021 CLADPW Guidelines for Geotechnical Investigation and Reporting Low Impact Development Stormwater Infiltration. The testing was performed to evaluate the infiltration rates of the on-site soils for use in design of project BMPs. Boring P-1 was drilled to a depth of approximately 6½ feet and borings P-2, P-3, andP-4 were drilled to depths of approximately 21½ feet. The purpose of borings P-2, P-3, andP-4 was to evaluate the infiltration rate at the approximate invert depth of the proposed infiltration gallery and the purpose of boring P-1 was to evaluate the infiltration rate of shallower soils in the event that additional BMPs, such as

bioswales, permeable pavements, etc., are added to the project. The approximate locations of the percolation test borings are shown on Figures 2 and 3.

Preparation of each boring for percolation testing included the installation of a 2-inch-diameter slotted polyvinyl chloride (PVC) pipe in each boring and backfilling the bottom approximately 5 feet of annular space between the borehole wall and pipe with clean gravel. The infiltration zones were pre-soaked with water for at least one hour prior to performing percolation testing. After the borings were pre-soaked, falling-head percolation testing was performed in the borings.

The falling-head test method involved placing clean water into the PVC pipe to establish a head of water and measuring the rate at which the water level dropped in the pipe at consecutive time intervals (approximately 30 minutes). The test was repeated until three consecutive tests provided similar results and a stabilized rate was obtained. The field percolation rate was calculated by measuring the total volume of water infiltrated during the time interval and dividing by the surface area of the tested zone of the boring. The measured field percolation rates are presented in Table 1. The Albus-Keefe (2017) percolation test results, which were performed using the Well Permeameter test method USBR-7300-89, are also provided in Table 1 for informative purposes regarding materials above the tank's proposed invert depth.

The 2021 CLADPW guidelines indicate that the measured field percolation rates should be reduced to account for the long-term performance of the proposed BMPs by dividing the field rates by the "Total Reduction Factor (RF)." They define the RF as the sum of the "test-specific" reduction factor (RF_t), the "site variability" reduction factor (RF_v), and the "long-term siltation, plugging, and maintenance" reduction factor (RF_s) (i.e., $RF=RF_t+RF_v+RF_s$). The guidelines (CLADPW, 2021) indicate that the RF_t is applied to account for variations in the direction of flow during the test and the reliability of the different test methods and ranges from 1 to 3. We recommend using an RF_t value of 2 for the small dimeter boring test method used in this evaluation. The RF_v value is applied to account for site variability, number of tests, and thoroughness of the subsurface investigation and ranges from 1 to 3. Based on our explorations and relative consistency of materials encountered between borings and CPTs, we recommend using an RF_v value of 1. The long-term siltation, plugging, and maintenance value (RF_s) also ranges from 1 to 3 and will generally vary on the level of pre-treatment performed prior to infiltration and the level of future maintenance of the system. For the purposes of this evaluation, we have assumed an RFs value of 1; however, the RF_s value should be provided by the BMP designer. The RF_t, RF_v, RF_s, and resulting RF values used in our analysis are presented in Table 1. The adjusted percolation rates based on these values are also presented in Table 1.

Table 1 – Percolation Test Results

Test Boring	Test Type	Approximate Depth of Tested Zone (feet)	Field Percolation Rate (inches/hour)	Reduction Factor				Adjusted Percolation Rate (inches/hour)
				RF_t	RF_v	RF_s	RF	
P-1	Falling Head	3 – 5	2.45	2	1	1	4	0.61
P-2	Falling Head	15 – 20	0.04	2	1	1	4	0.01
P-3	Falling Head	15 – 20	1.27	2	1	1	4	0.32
P-4	Falling Head	15 – 20	1.34	2	1	1	4	0.34
P-1 (AK)	Well Permeameter	7-12	0.83	-	-	-	-	-
P-2 (AK)	Well Permeameter	7-12	1.03	-	-	-	-	-

Notes:
RF_t – Test Specific Reduction Factor
RF_v – Site Variability Reduction Factor
RF_s – Long-Term Siltation, Plugging, and Maintenance Reduction Factor (To be adjusted by the BMP designer)
RF – Total Reduction Factor

Based on our evaluation and the presence of clay layers at the proposed invert depth of the gallery, we recommend that an adjusted percolation rate of 0.01 inch per hour, following adjustments by the BMP designer for RF_s, be used for design of the infiltration gallery. A preliminary design value of 0.6 inch per hour can be used for shallower site BMPs, such as bioswales. If shallow BMPs are added to the project, additional shallow percolation tests may be warranted for the design of shallow BMPs.

In addition, we recommend that new or existing buildings be set-back from the proposed infiltration gallery a minimum of 15 feet or a distance where the bottom of the lowest foundation element of the structure is at least 10 horizontal feet outside of an imaginary 1:1 (horizontal to vertical) plane projected downward and outward from the zone of infiltration.

10 FLOOD HAZARDS

Based on our review of flood insurance rate maps for the project area (Federal Emergency Management Agency [FEMA], 2008), the project site is not located in the 100-year Flood Hazard Area. The site is located within “Other Flood Areas – Zone X,” which includes areas potentially subject to 500-year floods, areas of 100-year floods with average depths of less than one foot, and areas protected by levees.

11 FAULTING AND SEISMICITY

The site is in a seismically active area, as is the majority of southern California, and the potential for strong ground motion in the project area is considered significant during the design life of the proposed project. Figure 5 shows the approximate site location relative to the major faults in the region. The site is not located within a State of California Earthquake Fault Zone (EFZ) (formerly known as an Alquist-Priolo Special Studies Zone) (California Geological Survey [CGS], 2018).

The nearest mapped active fault to the site is the Newport Inglewood fault located approximately 3.7 miles southwest of the site (Jennings and Bryant, 2010) (Figure 5).

The principal seismic hazards evaluated at the subject site are surface fault rupture, ground motion, and liquefaction. A brief description of these principal seismic hazards is discussed in the following sections.

11.1 Surface Fault Rupture

Surface fault rupture is the offset or rupturing of the ground surface by relative displacement across a fault during an earthquake. Based on our review of referenced geologic and fault hazard data, the project site is not transected by known active faults. Therefore, the potential for surface rupture is relatively low. However, lurching or cracking of the ground surface as a result of nearby seismic events is possible.

11.2 Ground Motion

Considering the proximity of the site to active faults capable of producing a maximum moment magnitude of 6.0 or more, the project area has a high potential for experiencing strong ground motion. The 2022 California Building Code (CBC) specifies that the risk-targeted maximum considered earthquake (MCE_R) ground motion response accelerations be used to evaluate seismic loads for design of buildings and other structures. Based on the shear wave velocity measurements performed at CPT-2, we calculated that that the average shear wave velocity in the upper 100 feet (30 meters) of the subsurface profile (V_{S30}) is approximately 850 feet per second (259 meters per second). In accordance with Chapter 20 of the American Society of Civil Engineers (ASCE) Publication 7-16 (2016) for the Minimum Design Loads and Associated Criteria for Building and Other Structures, the site classification is Site Class D.

In accordance with ASCE 7-16, the mapped MCE_R ground motion response accelerations were determined using the 2023 Applied Technology Council (ATC) seismic design tool (web-based). The MCE_R ground motion response accelerations are based on the spectral response accelerations for 5 percent damping in the direction of maximum horizontal response and incorporate a target risk for structural collapse equivalent to 1 percent in 50 years with deterministic limits. Spectral response acceleration parameters, consistent with the 2022 CBC, are provided in Section 13.3 for the evaluation of seismic loads on buildings and other structures.

ASCE 7-16 specifies that the potential for liquefaction and soil strength loss be evaluated, where applicable, for the maximum considered earthquake geometric mean (MCE_G) peak ground acceleration adjusted for site effects (PGA_M). The PGA_M is based on the geometric mean peak

ground acceleration with a 2 percent probability of exceedance in 50 years. The PGA_M was calculated as 0.878g using the 2023 ATC seismic design tool.

11.3 Liquefaction

Liquefaction is the phenomenon in which loosely deposited granular soils with silt and clay contents of less than approximately 35 percent and non-plastic silts located below the water table undergo rapid loss of shear strength when subjected to strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to a rapid rise in pore water pressure and causes the soil to behave as a fluid for a brief period of time. Liquefaction is known generally to occur in saturated or near saturated cohesionless soils at depths shallower than 50 feet. Factors known to influence liquefaction potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking.

The State of California Hazard Zones map (CDMG, 1999) indicates that the subject site is located in an area mapped as being potentially susceptible to liquefaction (Figure 6). Accordingly, we evaluated the liquefaction potential of the subsurface soils at the site. Our analysis was performed using the CPT data collected from CPT-1 and CPT-2. The liquefaction analysis was based on the National Center for Earthquake Engineering Research procedure (Youd, et al., 2001) using the computer program LiquefyPro (CivilTech Corporation, 2008). A historic high depth to groundwater of 8 feet below the existing ground surface, a PGA_m of 0.878g, and a design earthquake magnitude of 7.3 were used in our analyses. Our analysis indicates that the granular soil layers occurring below the historic high groundwater level of 8 feet, in the event that the groundwater was to rise from its current depth of approximately 50 feet, are susceptible to liquefaction during the design seismic event.

11.4 Dynamic Settlement

As a result of liquefaction, the proposed improvements may be subject to liquefaction-induced settlement. In order to estimate the amount of dynamic settlement of saturated soils, the method proposed Ishihara and Yoshimine (1992) was used. Based on our analysis, post-earthquake settlements of up to approximately 4½ inches were calculated at both CPT locations. Based on the guidelines presented in CGS Special Publication 117A (2008) and assuming relatively uniform subsurface stratigraphy across the site, we estimate a differential dynamic settlement on the order of 2 inches over a horizontal distance of about 60 feet.

12 CONCLUSIONS

Based on the results of our evaluation, it is our opinion that the proposed project and associated improvements at Lynwood City Park are feasible from a geotechnical standpoint, provided the recommendations presented in this report are incorporated into the design and construction of the project. In general, the following conclusions were made:

- The subject site is generally underlain by up to approximately 1 foot of undocumented fill. The fill is underlain by young alluvial deposits consisting of interbedded moist, loose to very dense, poorly graded sand with silt, silty sand, and silt with variable amounts of sand, and stiff to very stiff, silt and sandy lean clay.

- Our percolation testing indicates that the on-site soils at the approximate invert depth of the infiltration gallery (approximately 20 feet) have an adjusted percolation rate of 0.01 inch per hour. We recommend using this value for design of the gallery; however, this rate should be adjusted as needed in accordance with the 2021 CLADPW guidelines. For planning purposes, shallow infiltration BMPs, if included with the project, can be designed using an adjusted percolation rate of ½ inch per hour.

- In general, excavations and drilling in the existing fill soil and young alluvium should be feasible with earthmoving equipment in good working condition.

- We anticipate that the on-site excavated materials should be suitable for re-use as engineered fill and trench backfill provided, they are free of trash, debris, roots, contamination, deleterious materials, and cobbles or hard lumps of material in excess of 4 inches in diameter. Processing of the materials to bring them near the laboratory optimum moisture content (i.e., drying and/or wetting) prior to use as fill should be planned by the contractor. In-situ moisture contents of collected soil samples ranged from approximately 8.6 to 36.3 percent.

- The on-site soils should be considered as Type C soils in accordance with United States Department of Labor Occupational Safety and Health Administration (OSHA) regulations. Accordingly, temporary excavations deeper than 4 feet in depth should be shored or laid back at inclinations of 1½ to 1 (horizontal to vertical) or flatter.

- Where excavations cannot be laid back, temporary shoring is anticipated. Shoring should be designed by the contractor to support the excavation sidewalls and to reduce the potential for settlement of adjacent structures, roadways and other site improvements. Shoring should be designed in accordance with OSHA regulations.

- Groundwater was encountered in one of our exploratory borings at a depth of approximately 43.3 and in our CPTs at depths of approximately 43.4 and 55.5 feet. These depths are similar to groundwater monitoring data reviewed from three other sites within approximately 1 mile of the project site. The historic high depth to groundwater is mapped as being approximately 8 feet (CDMG, 1998). Fluctuations in the level of groundwater will occur due to variations in ground surface topography, subsurface stratification, rainfall, irrigation practices, groundwater pumping, and other factors that were not evident at the time of our field evaluation.

- The site is located within a mapped Seismic Hazards Zone considered susceptible to liquefaction (CDMG, 1999). Based on our liquefaction analysis, the site is considered to be potentially liquefiable during a seismic event. A total dynamic settlement of approximately 4½ inches was calculated for the site. In addition, we estimated the differential dynamic settlement is approximately 2 inches over a horizontal span of 60 feet.

- The site is not located within an EFZ with the potential for fault rupture as defined by the Alquist-Priolo Earthquake Fault Zoning Act (CGS, 2018). The probability of surface fault rupture at the site is considered to be low.
- Based on the results of our laboratory testing, hydro-collapse of the on-site soils resulting from on-site infiltration is not considered a design issue.
- The site is not located within a designated flood inundation zone from the 100-year flood event (FEMA, 2008).
- Based on our laboratory corrosion testing, the on-site soil can be classified as corrosive per the 2021 Caltrans Corrosion Guidelines.

13 RECOMMENDATIONS

The following sections present our geotechnical recommendations for design and construction of the project. This project is in preliminary design phase and some aspects of the design will be subject to change. Ninyo & Moore should review the final plans and develop additional geotechnical recommendations as appropriate. These recommendations are based on our evaluation of the site geotechnical conditions, our understanding of the planned construction, and experience in the vicinity of the project. The work should be performed in conformance with the recommendations presented in this report, project specifications, and appropriate agency standards.

13.1 Earthwork

We anticipate that earthwork at the site will consist of cuts and fills associated with the construction of the proposed BMP gallery and associated improvements, including the diversion structures, actuated valves, hydrodynamic separators, pump station, and pre-cast concrete subsurface structure, , and trenching and backfilling of underground utilities and pipelines. Based on our understanding of the project, we anticipate that excavations for the proposed BMP gallery and associated improvements/pipelines will have an invert dept of approximately 20 feet below the ground surface. Earthwork operations should be performed in accordance with the requirements of applicable governing agencies and the recommendations presented in the following sections.

13.1.1 Pre-Construction Conference

We recommend that grading and foundation plans be submitted to Ninyo & Moore for review to check for conformance to the recommendations provided in this report. We further recommend that a pre-construction conference be held to discuss the grading recommendations presented in this report. The owner and/or their representative, the governing agencies' representatives, the civil engineer, Ninyo & Moore, and the contractor

should be in attendance to discuss the work plan, project schedule, and earthwork requirements.

13.1.2 Clearing and Site Preparation

Prior to performing excavations or other earthwork, the site should be cleared of existing site improvements and foundations, gravel, debris, vegetation, and loose or otherwise unsuitable soils. Materials generated from the clearing/demolition operations should be removed from the project site and disposed of at a legal dump site. Existing utilities to remain in-place should be located and protected from damage by construction activities. Excavations resulting from the removal of foundations, underground utilities, and/or other underground improvements, should be backfilled with compacted fill in general accordance with the fill and compaction recommendations presented below.

13.1.3 Excavation Characteristics

We anticipate that excavations in the undocumented fill and young alluvium should be feasible with earthmoving equipment in good working order. The undocumented fill and young alluvial materials generally consisted of moist, loose to very dense, poorly graded sand with silt, silty sand, and silt with variable amounts of sand, and stiff to very stiff, silt and sandy lean clay. Oversize material is not considered suitable for use as backfill. In the event that oversize material, including cobbles and/or construction debris is encountered during excavation operations, the oversized material should be disposed of off-site. Processing of the excavated materials to bring them near the laboratory optimum moisture content (i.e., drying and/or wetting) prior to use as fill should be planned by the contractor. In-situ moisture contents of on-site soils ranged from approximately 8.6 to 36.3 percent. Contractors should make their own independent evaluation of the excavatability of the on-site materials prior to submitting their bids, including allowances for processing the soils.

13.1.4 Subgrade Preparation for the Infiltration Gallery

Based on our exploratory borings and CPTs, alluvial deposits are anticipated to be encountered at the bottom of the planned infiltration gallery that should be suitable for support of the gallery and compacted fill placed to bury the gallery. The excavation bottom should be evaluated by our representative during the excavation work. In the event that unsuitable material is encountered along the bottom of the excavation, including undocumented fill, the unsuitable material should be removed and replaced with loosely packed clean sand or gravel, such as drainage rock. The actual recommendations for removal and replacement should be based on our field observations. We recommend that minimal compaction be performed on the exposed subgrade, materials used to replace unsuitable materials (if

needed), and/or rock blanket placed beneath the gallery. Compaction of the subgrade could potentially reduce the infiltration rate of the gallery. If the subgrade of the infiltration gallery is compacted, we recommend that additional percolation testing be performed. If a rock blanket is used beneath the gallery, we recommend that it consist of ¾-inch to 1½-inch diameter, open-graded gravel underlain by filter fabric consisting of Mirafi 140N or equivalent.

If foundations are to be installed along the bottom of the gallery, such as strip footings, the upper approximately 8 inches of subgrade, only beneath the foundations, should be scarified, moisture-conditioned to near optimum moisture content, and recompacted to a relative compaction of 90 percent as evaluated by ASTM International (ASTM) test method D 1557. If unsuitable materials, including undocumented fill, loose/soft, and/or wet materials, are encountered along the excavation bottom that extend beneath the proposed footings, specific recommendations for removal and replacement of these materials, if warranted, will be provided by our firm based on field observations. The excavation bottoms should be evaluated by our representative during the excavation work.

13.1.5 Treatment of Near-Surface Soils for Buried and At-Grade Structures and Site Pavements

In order to provide suitable support and reduce the potential for settlement of proposed buried structures (i.e., the diversion structures, hydro-dynamic separators, valves, etc.) and at-grade structures, if any, we recommend that the existing undocumented fill and upper loose alluvial deposits be removed and recompacted from beneath the footprints of these structures. The excavations should extend deep enough to provide 2 feet or more of newly compacted fill material beneath the proposed foundations. The overexcavation should expose relatively dense alluvial deposits. Additional overexcavation of loose, soft, and/or wet areas may be appropriate. The excavation bottoms should be evaluated by our representative during the excavation work and additional recommendations, if needed, will be based on field observations. The limits of removal should extend approximately 2 feet beyond the footprint of the foundations for the buried structures and 5 feet for the at-grade structures, or a distance equal to the depth of the overexcavations beneath the foundations, whichever is farther. If drainage rock is placed beneath the foundations for the buried structures, the rock can be considered part of the 2-foot-thick layer of compacted fill beneath the foundations. Prior to placing compacted fill and/or drainage rock, the upper approximately 8 inches of the exposed bottom should be scarified, moisture-conditioned to near optimum moisture content, and recompacted to a relative compaction of 90 percent as evaluated by ASTM D 1557.

In order to provide suitable support and reduce the potential settlements of hardscape (i.e., sidewalks, curbs and gutters, ribbon drains, etc.), we recommend that the subgrade materials beneath the proposed hardscape areas be scarified to a depth of approximately 1 foot, moisture-conditioned to near optimum moisture content, and recompacted. The limits of the scarification should extend laterally 2 feet beyond the outside edge of hardscape. The exposed subgrade should be evaluated by our representative during the excavation work. Loose, soft, and/or wet areas may need to be overexcavated, depending on our observations during construction. Prior to placing new compacted fill in areas that are overexcavated and/or in areas where the existing subgrade will be raised with new fill, the exposed bottom should be scarified, moisture-conditioned, and recompacted to a depth of approximately 8 inches.

13.1.6 Temporary Excavations

We recommend that excavations be designed and constructed in accordance with OSHA regulations. These regulations provide shoring design parameters for excavations and trenches up to 20 feet deep based on the soil types encountered. Trenches over 20 feet deep should be designed by the contractor's engineer based on site-specific geotechnical analyses. For planning purposes, we recommend that the undocumented fill and alluvial soils be considered as OSHA Type C soil.

For trench or other excavations, OSHA requirements regarding personnel safety should be met by using appropriate shoring or by laying back the slopes no steeper than 1½:1 (horizontal to vertical). Temporary excavations that encounter seepage may need shoring or may be mitigated by placing sandbags or gravel along the base of the seepage zone. Excavations encountering seepage should be evaluated on a case-by-case basis. On-site safety of personnel is the responsibility of the contractor.

Care should be taken by the contractor to avoid undermining adjacent existing foundations and improvements. New excavations should not extend within the "zone of influence" of existing foundations, which is defined as a 1:1 (horizontal to vertical) plane projecting out from the bottom outside edge of the foundations. In the event that excavations will extend within the "zone of influence" of existing foundations, our office should be notified, and appropriate recommendations provided, such as temporary underpinning of impacted foundations and/or temporary shoring.

13.1.7 Shoring

Where temporary slopes are not possible, shoring will be appropriate. The design of the shoring system should consider the excavation characteristics of the onsite soil, temporary excavation stability, and the impact of construction on existing structures.

Shoring systems will be constructed through fill and alluvial deposits. We anticipate that braced driven sheet pile shoring systems will be appropriate for the project to depths up to approximately 30 feet. Cantilevered shoring systems (if used) should be limited to heights of up to about 10 feet. Braced and cantilevered shoring systems should be designed using the lateral earth pressure values presented on Figures 7 and 8, respectively. The recommended design pressures are based on the assumptions that the shoring system is constructed without raising the ground surface elevation behind the shoring wall, that there are no surcharge loads, such as soil stockpiles and construction materials, and that no loads act above a 1:1 (horizontal to vertical) plane extending up and back from the base of the shoring system. For shoring walls subjected to the above-mentioned surcharge loads, the contractor should include the effect of these loads on the lateral pressures against the shoring system. The shoring systems planned for the project should be reviewed by our office to evaluate the design considerations and geotechnical parameters used. Ground settlement may occur behind the shoring system wall during excavation. The amount of settlement depends on the type of shoring system, the contractor's workmanship, and soil conditions. We recommend that structures/improvements in the vicinity of the planned shoring installation be reviewed with regard to foundation support and tolerance to settlement. To reduce the potential for distress to adjacent structures, we recommend that the shoring system be designed to limit the ground settlement behind the shoring system to ½ inch or less, which would equal approximately ½ inch of deflection. Potential causes of settlement that should be addressed include settlement during installation of the shoring, excavation for structure construction, construction vibrations, and removal of the support system. The vibrations from the driving of sheet piles, if used, may result in some dynamic settlement of granular soils that may affect the adjacent structures. We recommend that shoring installation be evaluated carefully by the contractor prior to construction and that ground vibration and settlement monitoring be performed during construction. Vibration and settlement monitoring should be performed during sheet pile driving, if used. If settlement is detected or peak particle velocities of approximately 0.4 inch per second (ips) or more are measured adjacent to existing improvements, the sheet pile driving should be stopped and evaluated. The evaluation may include changing the hammer vibration frequency and monitoring for settlement and vibrations. To reduce the potential for settlement associated with sheet pile removal, sheet

piles may be left in place. In the event excessive settlement or other damage occurs associated with the pile driving operations, it may be appropriate to perform grouting beneath nearby structure(s) to mitigate the pile driving effects. We recommend that shoring installation be evaluated carefully by the contractor prior to construction.

The contractor should retain a licensed, qualified and experienced engineer to design the shoring system. The shoring parameters presented in this report are minimum requirements, and the contractor should evaluate the adequacy of these parameters and make the modifications as needed for their design. We recommend that the contractor take appropriate measures to protect workers. OSHA requirements pertaining to worker safety should be observed.

13.1.8 Fill Material

In general, the on-site soils should be suitable for reuse as fill materials, provided they are free of trash, debris, oversize material, or other deleterious materials. Fill should generally be free of rocks or lumps of material in excess of 4 inches in diameter. Rocks or hard lumps larger than approximately 4 inches in diameter should be broken into smaller pieces or should be removed from the site.

Fill used as backfill against the gallery structure and other buried structures should consist of free-draining, granular, non-expansive soil that conforms with the latest edition of Greenbook for structure backfill. “Non-expansive” can be defined as soil having an expansion index (EI) of 20 or less in accordance with ASTM Test Method D 4829 (CBC, 2022).

Imported fill material should consist of clean, non-expansive, granular material which also conforms to the latest addition of Greenbook for structure backfill. The soil should also be tested for corrosive properties prior to importing. We recommend that the imported materials meet the 2021 Caltrans criteria for non-corrosive soils (i.e., soils having a chloride concentration of 500 parts per million [ppm] or less, a soluble sulfate content of approximately 0.15 percent (1,500 ppm) or less, a pH value of 5.5 or higher, or an electrical resistivity of 1,500 ohm-centimeters or more). Materials for use as fill should be evaluated by Ninyo & Moore prior to importing. The contractor should be responsible for the uniformity of import material brought to the site.

13.1.9 Fill Placement and Compaction

Fill should be placed and compacted in accordance with project specifications, the requirements of the City of Lynwood, and sound construction practices. Fill materials should

be moisture conditioned to slightly above the optimum laboratory moisture content. The lift thickness for fill soils will vary depending on the type of compaction equipment used, but should generally be placed in horizontal lifts not exceeding 8 inches in loose thickness. Fill materials should be compacted to a relative compaction of 90 percent as evaluated by ASTM D 1557. The upper 12 inches of pavement subgrade materials should be compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557. Special care should be taken to avoid pipe damage when compacting trench backfill above pipes. Fill should be tested for specified compaction level by Ninyo & Moore.

13.2 Underground Utilities

We anticipate that underground pipelines will be supported on native alluvial deposits. Based on our understanding of the project, pipeline inverts may be on the order of 20 feet in depth.

13.2.1 Pipe Bedding

We recommend that pipes be supported on 6 inches or more of granular bedding material, such as sand, with a sand equivalent (SE) value of 30 or more. Bedding material should be placed around the pipe and 12 inches or more above the top of the pipe in accordance with the current Greenbook. Special care should be taken not to allow voids beneath the pipe. Compaction of the bedding material and backfill should proceed up both sides of the pipe. Trench backfill, including bedding material, should be placed in accordance with the recommendations presented in the Earthwork section of this report.

13.2.2 Trench Backfill

Based on our subsurface evaluation, the on-site soils should generally be suitable for re-use as trench backfill provided, they are free of organic material, clay lumps, debris, and rocks more than approximately 4 inches in diameter. We recommend that trench backfilling be in general conformance with the Greenbook standard specifications for structure backfill. Fill should be moisture-conditioned to at or slightly above the laboratory optimum. Wet soils should be allowed to dry to a moisture content near the optimum prior to their placement as trench backfill. Trench backfill should be compacted to a relative compaction of 90 percent or more as evaluated by ASTM D 1557. Lift thickness for trench backfill will depend on the type of compaction equipment utilized but should generally be placed in horizontal lifts not exceeding 8 inches in loose thickness. Special care should be exercised to avoid damaging the pipelines during compaction of the backfill.

13.2.3 Modulus of Soil Reaction for Pipe Design

The modulus of soil reaction is used to characterize the stiffness of soil backfill placed along the sides of buried flexible pipelines for the purpose of evaluating deflection caused by the weight of the backfill above the pipe. We recommend that a modulus of soil reaction of 1,000 pounds per square inch be used for design, provided that granular bedding material is placed adjacent to the pipe, as recommended in the previous section.

13.3 Seismic Design Considerations

Design of the proposed improvements should be performed in accordance with the requirements of governing jurisdictions and applicable building codes. Table 2 presents the spectral response acceleration parameters in accordance with the CBC (2022) guidelines.

Table 2 – 2022 California Building Code Seismic Design Criteria

Site Coefficients and Spectral Response Acceleration Parameters	Values
Site Class	D
Mapped Spectral Response Acceleration at 0.2-second Period, S_s	1.713
Mapped Spectral Response Acceleration at 1.0-second Period, S_1	0.611
Spectral Response Acceleration at 0.2-second Period, S_{MS}	2.056
Spectral Response Acceleration at 1.0-second Period, S_{M1}	1.039
Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	1.371
Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.692
Maximum Considered Earthquake Geometric Mean (MCE_G) Peak Ground Acceleration, PGA_M	0.878g

13.4 Foundations

Our evaluation indicated a liquefaction-induced total settlement up to 4½ inches and a liquefaction-induced differential settlement of 2 inches over a horizontal span of about 60 feet are anticipated on-site during the design seismic event. Based on the differential settlement threshold provided in ASCE 7-16 Table 12.13-3 (ASCE, 2016) for a Risk Category III single-story structure such as the proposed improvements, the threshold differential settlement is 2.4 inches over a horizontal distance of 40 feet. Accordingly, it is our opinion that the proposed infiltration gallery may be supported on spread footings (i.e., strip footings) and that other underground structures (i.e., diversion structures, pre-treatment unit, etc.) may be supported on mat foundations. The following are our recommendations for project foundations:

13.4.1 Spread Footing

Spread footings for the infiltration gallery (i.e., strip footings) should be placed directly on low expansion alluvial materials and/or compacted fill in accordance with the recommendations presented in the Earthwork section of this report. Continuous and isolated footings should have a width of 24 inches or more. Continuous footings should be reinforced with two No. 4 steel reinforcing bars, one placed near the top and one placed near the bottom of the footings, and further detailed in accordance with the recommendations of the structural engineer.

Footings, as described above and bearing on dense alluvial materials or compacted fill, may be designed using a net allowable bearing capacity of 3,000 pounds per square foot (psf). Total and differential settlements for footings designed in accordance with the above recommendations are estimated to be less than approximately 1 inch and ½ inch over a horizontal span of 40 feet, respectively.

Footings bearing on dense alluvial materials or compacted fill may be designed using a coefficient of friction of 0.35, where the total frictional resistance equals the coefficient of friction times the dead load. Footings may be designed using a passive resistance value of 350 psf per foot of depth, with a maximum value of 3,500 psf. The allowable lateral resistance can be taken as the sum of the frictional resistance and passive resistance, provided the passive resistance does not exceed one-half of the total allowable resistance. The passive resistance (including the maximum value) may be increased by one-third when considering loads of short duration such as wind or seismic forces.

13.4.2 Mat Foundation

Mat foundations for other underground structures (i.e., diversion structure, hydro-dynamic separator, pump station, valves, filtration unit, etc.) may be supported on compacted fill in accordance with the recommendations presented in the Earthwork section of this report. Foundations should be designed in accordance with the structural considerations and the following recommendations. In addition, requirements of the appropriate governing jurisdictions and applicable building codes should be considered in the design of the structures.

The mat foundations may be designed using a net allowable bearing capacity of 2,500 psf. The total and differential settlement corresponding to this allowable bearing load are estimated to be less than approximately 1 inch and ½ inch over a horizontal span of 40 feet, respectively.

Mat foundations typically experience some deflection due to loads placed on the mat and the reaction of the soils directly underlying the mat. A design modulus of subgrade reaction (K) of 100 tons per cubic foot may be used for the compacted subgrade soils in evaluating such deflections.

13.5 Lateral Earth Pressures for Underground Structures

Walls for below-grade structures when constructed as recommended above may be designed for lateral earth pressures represented by the earth pressure diagram on Figure 9. To reduce the potential for pipe-to-wall differential settlement caused by dynamic loading, which could cause

pipe shearing, we recommend that a flexible pipe joint be located close to the exterior of the wall. The type of joint should be such that minor relative movement can be accommodated without distress. The pipe connections should be sufficiently flexible to withstand differential settlement of approximately 2 inches.

13.6 Exterior Flatwork

We recommend that new exterior concrete sidewalks and flatwork (hardscape) have a thickness of 4 inches. The hardscape should be underlain by 4 inches of clean sand and installed with crack-control joints at an appropriate spacing as designed by the structural engineer to reduce the potential for shrinkage cracking. Positive drainage should be established and maintained adjacent to flatwork. To reduce the potential for differential offset, joints between the new hardscape and adjacent curbs, existing hardscape, building walls, and/or other structures, and between sections of new hardscape, should be doweled.

13.7 Corrosivity

Laboratory testing was performed on two representative soil samples collected from boring B-1 at a depth of approximately 4½ to 5 feet and from boring B-2 at a depth of approximately 8 to 9½ feet to evaluate soil pH, electrical resistivity, water-soluble chloride content, and water-soluble sulfate content. The soil pH and electrical resistivity tests were performed in general accordance with CT 643. Chloride content tests were performed in general accordance with CT 422. Sulfate testing was performed in general accordance with CT 417.

The soil pH of the samples tested from borings B-1 and B-2 was measured to be 7.4 and 7.3 and the electrical resistivity was measured to be 8,745 and 580 ohm-centimeters, respectively. The chloride content of the samples was measured to be 60 and 650 ppm. The sulfate content of the samples was measured to be 0.007 and 0.018 percent by weight (i.e., 70 and 180 ppm). Based on the laboratory test results and 2021 Caltrans corrosion criteria, the soils at the project site can be classified as corrosive, which is defined as having earth materials with more than 500 ppm chlorides, more than 0.15 percent sulfates (i.e., 1,500 ppm), a pH of 5.5 or less, or an electrical resistivity of 1,500 ohm-cm or less. The corrosivity test results are presented in Appendix D.

13.8 Concrete Placement

Concrete in contact with soil or water that contains high concentrations of water-soluble sulfates can be subject to premature chemical and/or physical deterioration. Based on the CBC (2022), the potential for sulfate attack is negligible for water-soluble sulfate contents in soil ranging from 0.00 to 0.10 percent by weight, moderate for water-soluble sulfate contents ranging from 0.10 to 0.20 percent by weight, severe for water-soluble sulfate contents ranging from 0.20 to

2.00 percent by weight, and very severe for water-soluble sulfate contents over 2.00 percent by weight. The soil samples tested for this evaluation, using CT 417, indicate water-soluble sulfate contents of approximately 0.007 and 0.018 percent by weight (i.e., 70 and 180 ppm). Accordingly, the on-site soils are considered to have a negligible to moderate potential for sulfate attack. Per ACI (2019b), Type II cement is appropriate for the site improvements. However, due to the potential variability of the soils on site, consideration should be given to using Type II/V cement for the project.

To reduce the potential for shrinkage cracks in the concrete during curing, we recommend that the concrete for the proposed improvements be placed with a slump of 4 inches based on ASTM C 143. The slump should be checked periodically at the site prior to concrete placement. We further recommend that concrete cover over reinforcing steel for foundations be provided in accordance with CBC (2022). The structural engineer should be consulted for additional concrete specifications.

13.9 Stormwater Infiltration Gallery

Based on our subsurface evaluation, the park is generally underlain by undocumented fill over young alluvial deposits consisting of interbedded sandy silt, silt with sand, and clay in the upper approximately 19 to 38 feet and silty sand with interbeds of silt and clay below these depths. Since the gallery invert is located within the upper zone of finer deposits, we recommend that an infiltration rate of 0.01 inch per hour, following adjustments by the BMP designer for RF_s, be used for design at Lynwood City Park for the infiltration gallery. We recommend that the bottom of the infiltration gallery be further evaluated during construction.

Based on our evaluation, the potential for hydro-collapse settlement associated with infiltration is generally low due to the proposed depth of infiltration. However, we generally recommend a setback of 15 feet or more between settlement sensitive structures and proposed infiltration areas.

13.10 Drainage

Appropriate surface drainage is imperative for satisfactory site performance. Positive drainage should be provided and maintained to direct surface water away from existing foundations. Positive drainage is defined as a slope of 2 percent or more for a distance of 5 feet or more away from foundations and tops of slopes. Runoff should then be directed by the use of swales or pipes into a collective drainage system. Area drains for landscaped and paved areas are recommended. Surface waters should not be allowed to pond adjacent to footings. We recommend that above-ground structures, if constructed, have roof drains and downspouts installed to collect runoff.

13.11 Landscaping

Project landscaping should consist of drought tolerant plants. Landscape irrigation should be kept to a level just sufficient to maintain plant vigor. Overwatering should not be permitted.

14 CONSTRUCTION MONITORING PROGRAM

We recommend that pre-construction condition surveys be performed on structures and improvements within approximately 50 feet of the proposed excavations prior to construction. This distance should be extended to 100 feet adjacent to proposed excavations if driven and/or vibratory sheet or soldier piles are installed. This survey should include locating existing cracks and measuring widths of cracks, in combination with videotape documentation of existing conditions. In addition, interviews should be conducted with utility owners so that existing knowledge about the age, type, and maintenance history of affected utilities is available prior to construction.

14.1 Construction Vibrations

People can perceive vibrations from construction activities at significantly lower levels than might cause cosmetic damage to structures. Jones & Stokes (2004) indicate that transient vibrations, such as from pile driving or construction activities, may be noticeable, and therefore may result in complaints, at peak particle velocities as low as 0.02 to 0.06 inch per second (ips). The vibrations may be disturbing and result in complaints and/or damage claims at peak particle velocities as low as 0.2 to 0.4 ips. However, these vibration levels are well below the level considered to cause cosmetic damage to residential construction.

There is also the possibility of settlement of the soil during construction activities due to vibrations. This settlement may result in damage to structures. If the construction vibrations can be maintained below a peak particle velocity of 0.2 ips, it is anticipated the settlement can be limited to acceptable levels based on past projects in similar conditions.

For the above stated reasons, we recommend that seismographs be used in the early stages of construction to monitor the vibrations. Seismographs should be located near structures and improvements next to the construction activities. Additional seismographs should be located at various structures and improvements farther from construction activities to monitor vibrations as a function of distance from the sites. Periodic vibration monitoring is recommended during other construction activities. After review of the data obtained, the number of seismographs may be reduced at the discretion of the client and the geotechnical consultant.

14.2 Ground Surface Settlement

We recommend that arrays of ground surface settlement points be installed around the proposed excavations and trenchless pipeline sections. The contractor should submit a monitoring plan showing the proposed locations of settlement points for review and approval by the project engineer. We recommend that the contractor be responsible for maintaining total settlement at any survey point to less than ½ inch. If the settlements reach this limit, we recommend that a further review of construction methodologies be performed and appropriate changes be made.

14.3 Lateral Movement for Shoring Support System

We recommend that survey points be established behind excavations located in areas where existing structures are located above a 1:1 (horizontal to vertical) plane projected from the bottom of the proposed excavations to the ground surface. The survey points should be monitored and evaluated daily during excavation activities to provide an advanced warning system of potential problems. As discussed previously, we recommend that the shoring system be designed to limit the ground settlement behind the shoring system to ½ inch or less to reduce the potential for distress to adjacent structures and improvements. If settlement values reach ¼ inch, we recommend that a review of the contractor's methods be performed and appropriate changes be made, if needed.

15 CONSTRUCTION OBSERVATION

The recommendations provided in this report are based on our understanding of the proposed project and our evaluation of the data collected based on subsurface conditions disclosed by widely spaced exploratory borings. It is imperative that the geotechnical consultant checks the interpolated subsurface conditions during construction. We recommend that Ninyo & Moore review the project plans and specifications prior to construction. It should be noted that, upon review of these documents, some recommendations presented in this report may be revised or modified.

During construction we recommend that the duties of the geotechnical consultant include, but not be limited to:

- Observing site clearing, grubbing, and removals.
- Observing excavation bottoms, including the bottom of the proposed infiltration gallery.
- Observing preparation of pavement and foundation subgrades.
- Observing placement and compaction of fill, including trench backfill.
- Evaluating imported materials prior to their use as fill (if used).

- Performing field tests to evaluate fill compaction.
- Observing foundation excavations for bearing materials and cleaning prior to placement of reinforcing steel or concrete.
- Performing material testing services including concrete compressive strength and steel tensile strength tests and inspections.

The recommendations provided in this report assume that Ninyo & Moore will be retained as the geotechnical consultant during the construction phase of this project. If another geotechnical consultant is selected, we request that the selected consultant indicate to the owner and to our firm in writing that our recommendations are understood and that they are in full agreement with our recommendations.

16 LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analysis presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified, and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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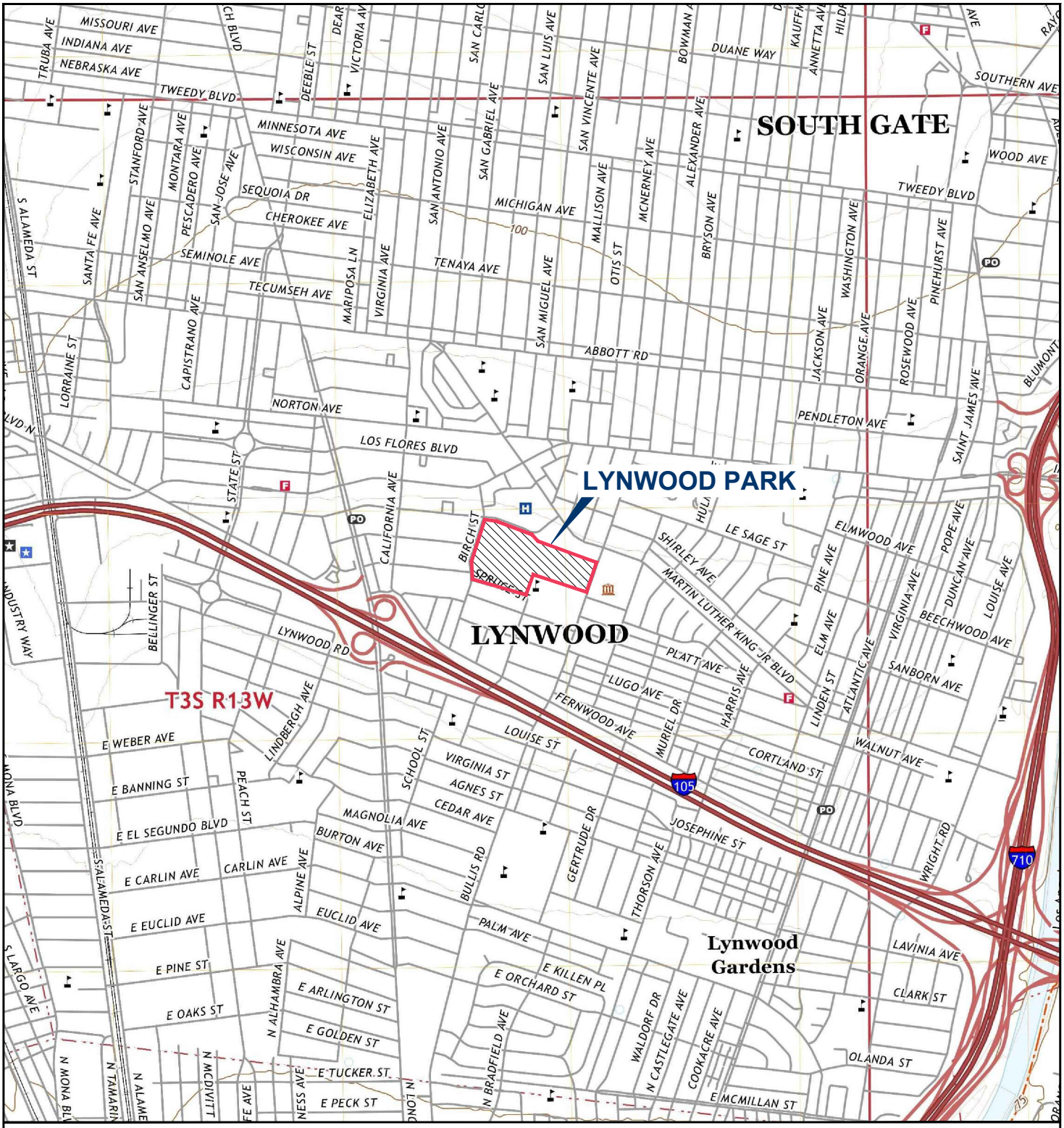
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FIGURES



NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: USGS, 2021.

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FIGURE 1

SITE LOCATION

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

212102001 I 3/23

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Parking Lot: Permeable Pavement and Bioswales



Pre-Cast Subsurface Infiltration Facility



Ephemeral Stream to butterfly

LEGEND

- B-3, TD=31.5 — BORING; TD=TOTAL DEPTH IN FEET
- P-4, TD=21.5 — PERCOLATION TEST; TD=TOTAL DEPTH IN FEET
- B-3/P-2, TD=12.0 — BORING/PERCOLATION TEST (ALBUS-KEEFE, 2017); TD=TOTAL DEPTH IN FEET
- CPT-2, TD=100.2 — CONE PENETRATION TEST; TD=TOTAL DEPTH IN FEET
- B-1, TD=51.5 — BORING (ALBUS-KEEFE, 2017); TD=TOTAL DEPTH IN FEET

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: CRAFTWATER ENGINEERING, 2020.

FIGURE 2

SITE PLAN

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

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LEGEND

- B-3 TD=31.5 — BORING; TD=TOTAL DEPTH IN FEET
- P-4 TD=21.5 — PERCOLATION TEST; TD=TOTAL DEPTH IN FEET
- B-3/P-2 TD=12.0 — BORING/PERCOLATION TEST (ALBUS-KEEFE, 2017); TD=TOTAL DEPTH IN FEET
- CPT-2 TD=100.2 — CONE PENETRATION TEST; TD=TOTAL DEPTH IN FEET
- B-1 TD=51.5 — BORING (ALBUS-KEEFE, 2017); TD=TOTAL DEPTH IN FEET

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: GOOGLE EARTH, 2023.

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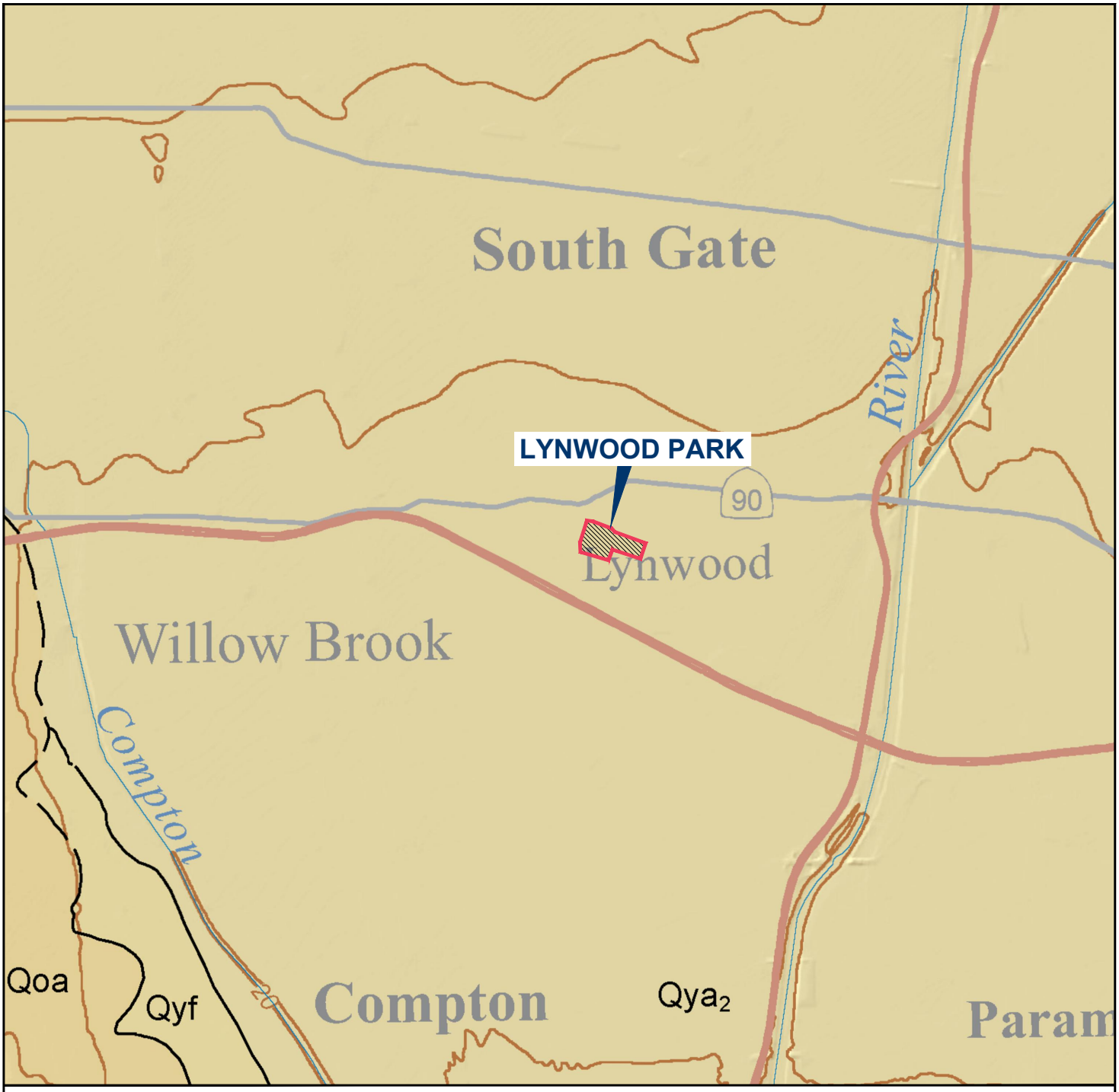
FIGURE 3

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BORING, CPT, AND PERCOLATION TEST LOCATIONS

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

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LEGEND

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Qyf	YOUNG ALLUVIAL FAN DEPOSITS		GEOLOGIC CONTACT

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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: SAUCEDO, ET AL., 2016.

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FIGURE 4

REGIONAL GEOLOGY

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

212102001 I 3/23

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LEGEND

QUATERNARY FAULTS

BASED ON TIME OF MOST RECENT SURFACE DEFORMATION

HISTORICAL (<150 YEARS)

- WELL CONSTRAINED
- MODERATELY CONSTRAINED
- INFERRED

LATEST QUATERNARY (<15,000 YEARS)

- WELL CONSTRAINED
- MODERATELY CONSTRAINED
- INFERRED

LATE QUATERNARY (<130,000 YEARS)

- WELL CONSTRAINED
- MODERATELY CONSTRAINED
- INFERRED

UNDIFFERENTIATED QUATERNARY(<1.6 MILLION YEARS)

- WELL CONSTRAINED
- MODERATELY CONSTRAINED
- INFERRED

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

SOURCE: ESRI, 2023.

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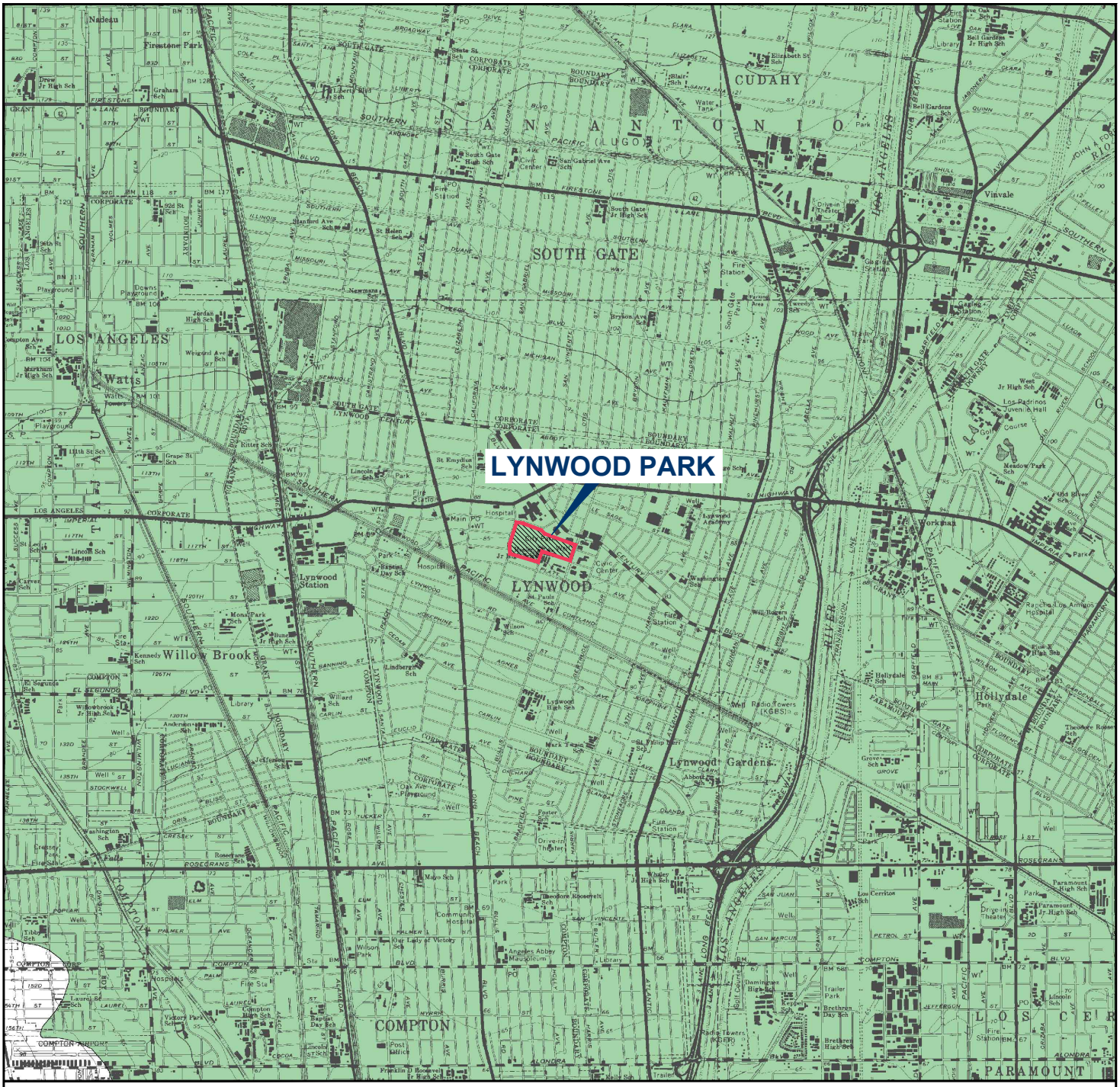
FIGURE 5

FAULT LOCATIONS

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

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LEGEND

LIQUEFACTION
Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: CDMG, 1999.

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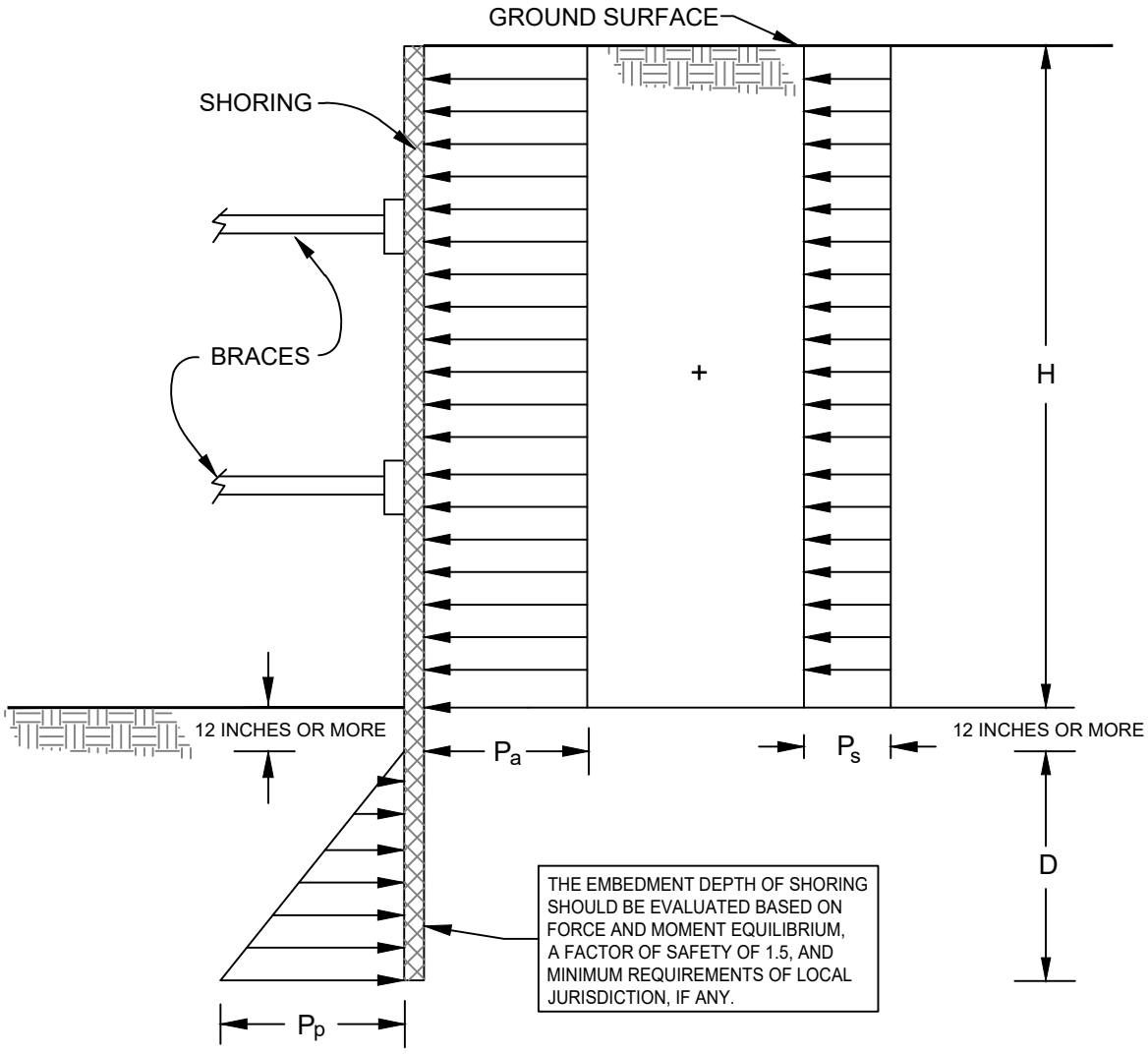
FIGURE 6

SEISMIC HAZARD ZONES

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

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NOTES:

1. APPARENT LATERAL EARTH PRESSURE, P_a
   P_a = 26H psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s
   P_s = 120 psf
3. PASSIVE LATERAL EARTH PRESSURE, P_p
   P_p = 350D psf
4. ASSUMES GROUNDWATER IS NOT PRESENT
5. SURCHARGES FROM EXCAVATED SOIL OR CONSTRUCTION MATERIALS ARE NOT INCLUDED
6. H AND D ARE IN FEET

NOT TO SCALE

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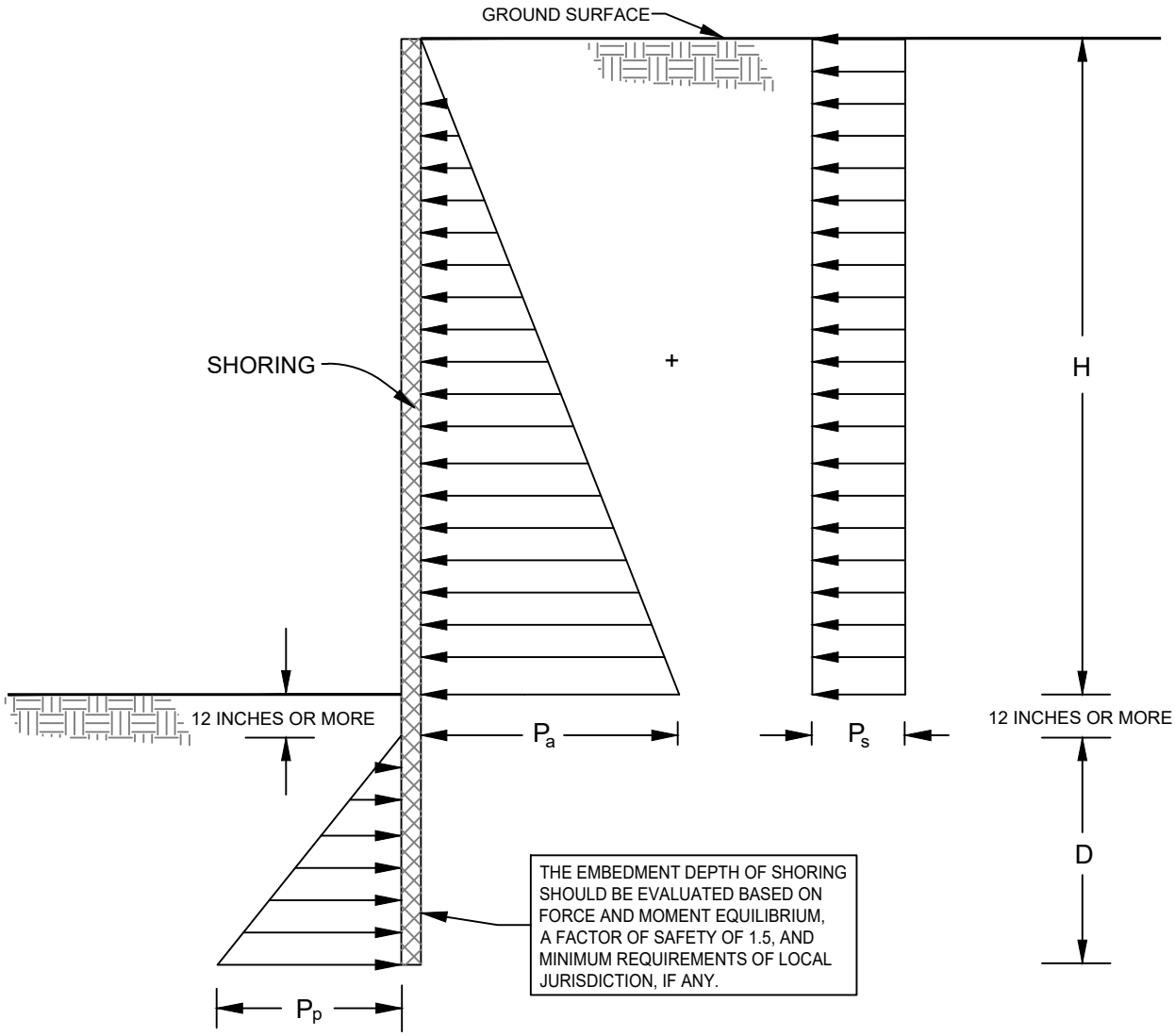
FIGURE 7

LATERAL EARTH PRESSURES FOR BRACED EXCAVATION

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

212102001 I 3/23



NOTES:

1. ACTIVE LATERAL EARTH PRESSURE, P_a
   P_a = 40H psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s
   P_s = 79 psf
3. PASSIVE LATERAL EARTH PRESSURE, P_p
   P_p = 350D psf
4. ASSUMES GROUNDWATER IS NOT PRESENT
5. H AND D ARE IN FEET

NOT TO SCALE

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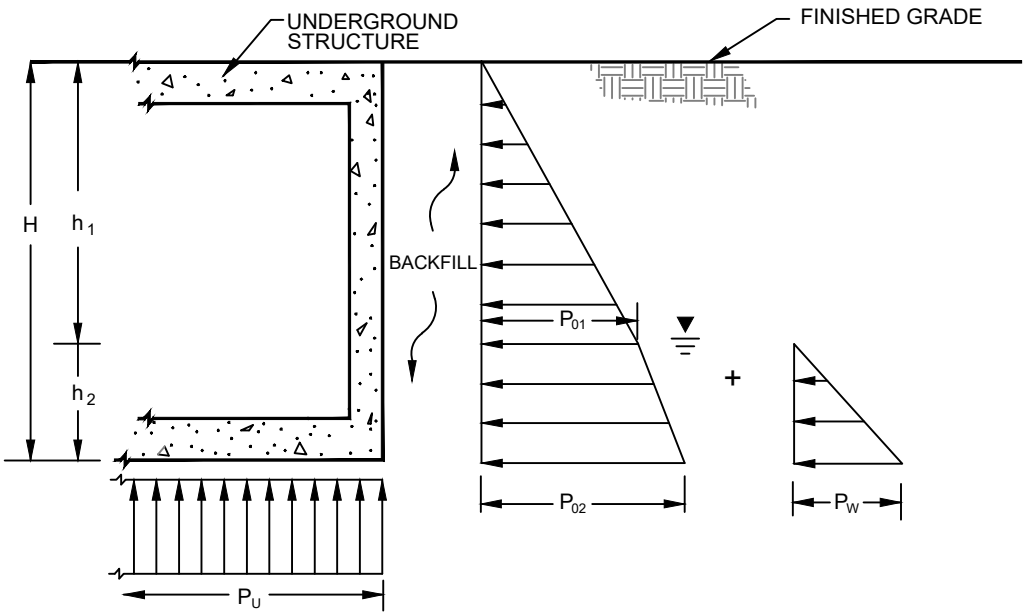
FIGURE 8

LATERAL EARTH PRESSURES FOR TEMPORARY CANTILEVERED SHORING

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

212102001 I 3/23



NOTES:

1. APPARENT LATERAL EARTH PRESSURES, P_{01} AND P_{02}
   $P_{01} = 60h_1$ psf
   $P_{02} = 60h_1 + 29h_2$ psf
2. HYDROSTATIC PRESSURE, P_w
   $P_w = 62.4h_2$ psf
3. UPLIFT PRESSURE, P_u
   $P_u = 62.4h_2$ psf
4. SURCHARGE PRESSURES CAUSED BY VEHICLES OR NEARBY STRUCTURES ARE NOT INCLUDED
5. H, h_1 AND h_2 ARE IN FEET
6. ▼ GROUNDWATER TABLE

NOT TO SCALE

FIGURE 9

LATERAL EARTH PRESSURES FOR UNDERGROUND STRUCTURES

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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APPENDIX A

Preliminary Infiltration Study Report by Albus-Keefe (2017)

ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

January 10, 2017
J.N.: 2545.00

Mr. John Hunter
John L. Hunter & Associates, Inc.
6131 Orangethorpe Avenue, Suite 350
Buena Park, CA 90620

Subject: **Preliminary Infiltration Study for Proposed Water Quality Improvements, Lynwood Park, City of Lynwood, California**

Dear Mr. Hunter,

Pursuant to your request, ***Albus-Keefe & Associates, Inc***. has completed a preliminary geotechnical investigation of the site for evaluation of the percolation characteristics of the site soils. The scope of this investigation consisted of the following:

- Exploratory drilling, soil sampling and test well installation
- Field percolation testing
- Laboratory testing of selected soil samples
- Engineering analysis of the data
- Preparation of this report

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

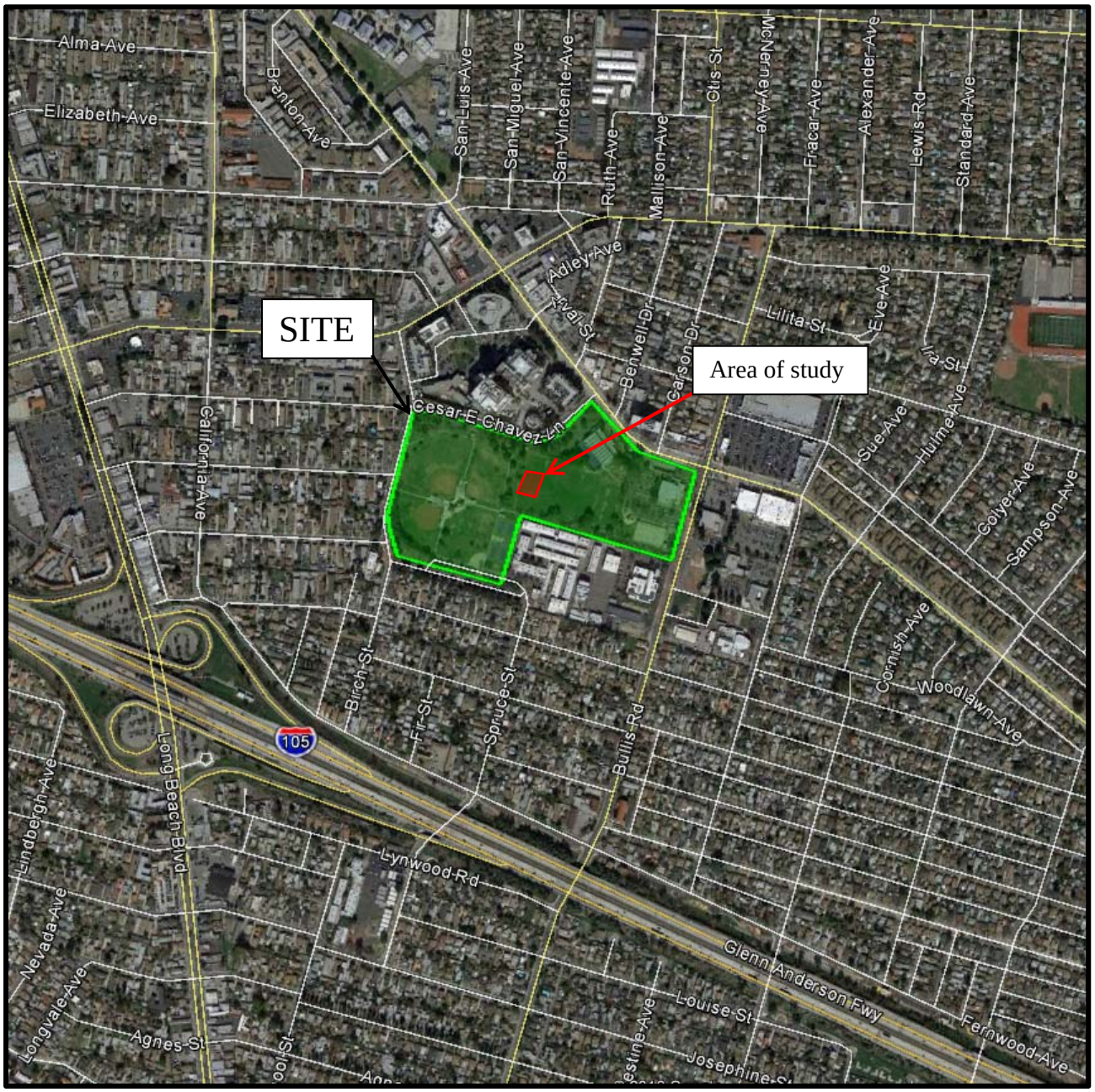
Site Location and Description

The site is located at Lynwood Park, west of the intersection of Bullis Rd. and Martin Luther King Jr. Blvd., within the city of Lynwood, California. The site is bordered by Cesar E. Chavez Ln. to the north, Martin Luther King Jr. Blvd. to the northeast, Bullis Rd. to the east, Hosler Middle School to the southeast, Spruce St. to the south, and by Birch St. to the west. The location of the site and its relationship to the surrounding areas is shown on Figure 1, Site Location Map.

The specific area of our study is located within the center portion of Lynwood Park and is currently being utilized as soccer fields. The area is covered by grass with chain-link fencing bounding the limits of the soccer fields. Based on GoogleEarth, existing surface elevations within the property measure approximately 90 feet above Mean Sea Level (MSL). Drainage is generally directed as a sheet flow from the center of the field toward the north and south.

Proposed Development

We understand the proposed site improvements will likely consist of constructing a storm water infiltration system within the existing soccer field.



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SITE LOCATION MAP

John L. Hunter and Associates, Inc.
Lynwood Park
West of Intersection of Martin Luther King Jr Blvd. and Bullis Rd.
Lynwood, California

NOT TO SCALE

FIGURE 1

SUMMARY OF FIELD AND LABORATORY WORK

Subsurface Investigation

Subsurface exploration for this investigation was conducted on October 6, 2016. Our exploration consisted of drilling three (3) exploratory borings ranging in depth from 12 feet to 51.5 feet below the existing ground surface utilizing a truck-mounted, hollow-stem-auger drill rig. Representatives of *Albus-Keefe & Associates, In*c. logged the exploratory excavation. Visual and tactile identifications were made of the materials encountered, and their descriptions are presented in the Exploration Logs in Appendix A. The locations of the borings are depicted the enclosed Geotechnical Map, Plate 1.

Bulk, relatively undisturbed and Standard Penetration Test (SPT) samples were obtained at selected depths within the exploratory borings for subsequent laboratory testing. Relatively undisturbed samples were obtained using a 3-inch O.D., 2.5-inch I.D., California split-spoon soil sampler lined with brass rings. SPT samples were obtained from the boring using a standard, unlined SPT soil sampler. During each sampling interval, the sampler was driven 12 or 18 inches with successive drops of a 140-pound automatic hammer falling 30 inches. The number of blows required to advance the sampler was recorded for each six inches of advancement. The total blow count for the lower 12 inches of advancement per soil sample is recorded on the exploration log. Samples were placed in sealed containers or plastic bags and transported to our laboratory for analyses.

Upon completion of sampling, 2-inch-diameter casings were installed in borings B-2 and B-3 (P-1 and P-2) for percolation testing. Well screens were installed from near the bottom of the borings to ground surface. The annular space of the well screen sections were filled with sand for depths covering the extent of our testing. The remaining annular space was then backfilled with native soils. Subsequent to completion of well installations, the casings were then filled with water until the minimum volume of water was achieved for presoaking the test wells as required by test method USBR 7300-89.

Percolation Testing

Percolation testing was performed on October 6, 2016, in general conformance with the constant-head test procedures outlined in the referenced Well Permeameter Method (USBR 7300-89). A water hose attached to a water source on site was connected to an inline flow meter to measure the water flow. The flow meter is capable of measuring flow rates up to 10 gallons per minute and as low as 0.1 gallons per minute. A valve was connected in line with the flow meter to control the flow rate. A filling hose was used to connect the flow meter and the test wells. Water was introduced by the filling hose near the bottom of the test wells. A water level meter with 1/100-foot divisions was used to measure the depths to water surface from the top of well casings.

Flow to the wells was terminated upon either completion of testing of all the pre-determined water levels or the flow rate exceeded the maximum capacity of the flow meter. In the case where the flow was less than the ability to measure the rate with our meter, a falling head test was performed. Falling head tests were performed in general conformance with the test procedures outlined in the referenced Naval Facilities Engineering Command (NAVFAC) P-418 Dewatering and Groundwater Control. Measurements obtained during the percolation testing are provided on Plates C-1 and C-2.

Laboratory Testing

Selected soil samples of representative earth materials were tested to assist in the formulation of conclusions and recommendations presented in this report. Tests consisted of in-situ moisture content and dry density, grain-size analysis. Laboratory testing relevant to percolation characteristics are presented in Appendix B.

ANALYSIS OF DATA

Subsurface Conditions

Soil materials encountered at the site consist of alluvial deposits to the maximum depth explored, 51.5 feet below the ground surface (bgs). The alluvial soils encountered are generally comprised of fine grained deposits in the near surface with interlayered fine- and coarse-grained deposits at depth. The fine grained deposits typically consist of silt, sandy silt, and clayey silt with occasional clay layers/lenses. These materials are range from damp to wet and medium stiff to stiff. The coarse-grained deposits generally consist of silty sands that are moist to wet and loose to medium dense. Although not encountered, artificial fill materials are anticipated beneath portions of the site in association with underground utility lines.

A more detailed description of the interpreted soil profile at each of the boring locations, based upon the borehole cuttings and soil samples, are presented in Appendix A. The stratigraphic descriptions in the logs represent the predominant materials encountered and relatively thin, often discontinuous layers of different material may occur within the major divisions.

Ground Water

Groundwater was encountered at a depth of 43 feet below the existing ground surface during this firm's exploration. A review of the CDMG Seismic Hazard Zone Report 034 indicates that historical high groundwater levels for the general site area are as shallow as 8 feet below the existing ground surface.

Additional review of the CDMG Seismic Hazard Report 034 makes mention to the fact that historic high ground water was determined from turn-of-the-century water-well logs, namely 1905 ground-water contour maps (Mendenhall, 1905, Conkling 1927), and 1952 ground-water contour maps (State Water Resources Board, 1952).

After review of historic ground water data made available by the County of Los Angeles Department of Public Works through online services, ground water depths in proximity to the site could be established from the 1920's to 2010. A graph of the data from the wells located near the site can be found below in Figure 2. Well 3S13W11K01 is located about 3500 feet southwest of the site while well 3S13W12E04 is located about 550 feet northeast of the site. The data indicates that regional groundwater has remained near a depth of approximately 90 feet since about 1990. The occurrence of groundwater at a depth of 43 feet in our boring appears to represent a localized perched condition within a more granular layer starting at a depth of about 42 feet.

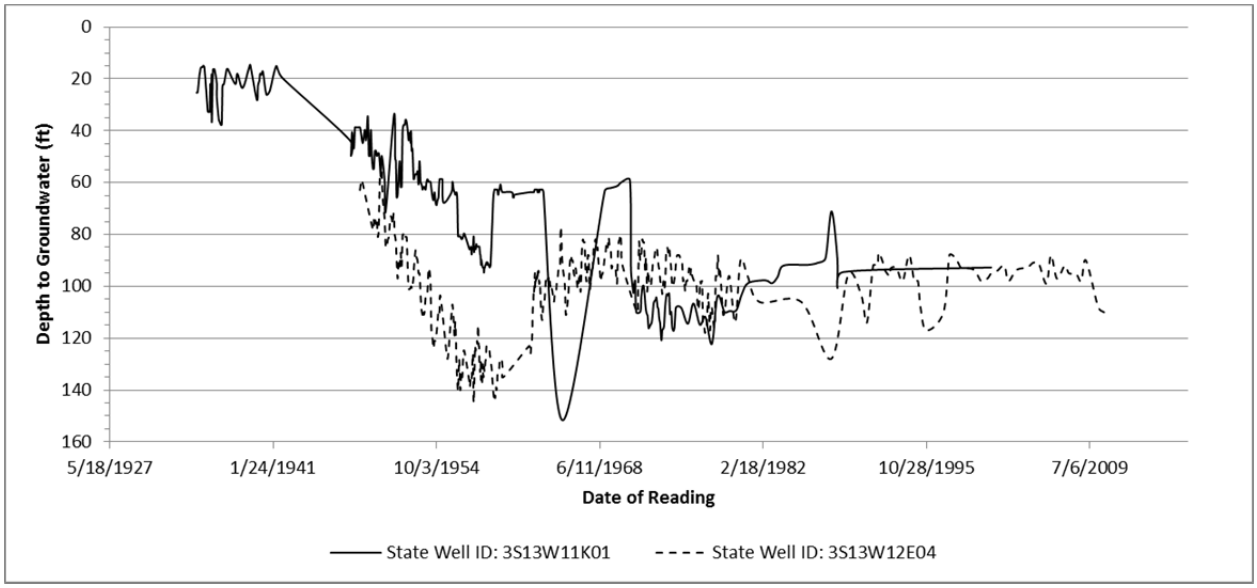


Figure 2 – Historic Ground Water

Percolation Data

Analyses were performed to evaluate permeability using the data obtained from P-1 and P-2 based on a falling-head test. The drop in water level within the initial few readings was used to calculate the volume of water infiltrated during the associated reading period. The volume of water consists of water contained in the pore space of the sand outside the pipe and water contained inside the pipe. The sand was assumed to have a void ratio of 0.4 for determination of the water volume. Taking the volume divided by the duration, we obtain a flow rate. The calculation for the volume and flow rate is summarized in Table 1.

Using the equations presented in the USBR 7300-89 method, we then obtain an estimate of the permeability. The flow rate from Table 1 was used in combination with the average height of water within the well during the readings used. The results are included on Table 1 and summaries of the analyses are provided in Appendix C, Plates C-3 and C-4. Using correlations of grain-size tests to permeability based on the Kozemy-Carmen equation (Chapuis, R.P., and Aubertin, M 2003), we obtain an estimated permeability of 1.4 in./hr. for the predominate silt material we tested. This correlation confirms the values obtained by field testing.

TABLE 1
Summary of Permeabilities from Test Wells

Location	Total Depth of Well (ft)	Initial Depth of Water (ft)	Final Depth of Water (ft)	Volume of Water Used (gal)	Duration (min)	Flow Rate (gal/min)	Estimated Permeability (in./hr.)
P-1	12	7	8.2	1.38	3	0.43	0.83
P-2	12	7	8.8	2.04	4	0.51	1.03

Design of Dry Well

Infiltration in a dry well was modeled using the software Seep/W, version 2007, by Geo-Slope International. The program allows for modeling of both partially-saturated and saturated porous medium using a finite element approach to solve Darcy's Law. The program can evaluate both steady-state and transient flow in planer and axisymmetric cases. Boundaries of the model can be identified with various conditions including fix total head, fix pressure head, fix flow rate, and head as a function of flow. Soil conductivity properties can be modeled with either Fredlund et al (1994), Green and Corey (1971), Van Genuchten (1980), or Saxton et al. (1986). The Van Genuchten parameters suggested by Saxton et al. (1986) were selected for use in our model and were based on test results of particle-size analyses and estimated in-place densities.

A Seep/W model was setup with the bottom of the dry well at a depth of 30 feet below ground surface. The upper 10 feet was assumed to have a shaft that is 6 feet in diameter and contains a settling chamber having an inside diameter of 4 feet and outside diameter of 4.5 feet. Below 10 feet, the shaft is assumed to be 4 feet in diameter. The annular space around the chamber and below the chamber is assumed to consist of gravel. A more detailed model of the dry well design can be found on Plate 2.

The model consisted of one (1) zone of material to represent the general soil profile. This zone (Soil #1) represents the infiltration zone and the saturated conductivity was based on the rates obtained during the percolation testing. A summary of the well model parameters are provided in Table 2. Groundwater was assumed to be present at a depth of 43 feet. The presence of the groundwater was modeled by placing a boundary fixed-head condition with a head set equivalent to a groundwater depth of 43 feet (elev. 57' in model). Water in the well was conservatively assumed to be held at a depth of 5 feet (elev. 95' in model) although we anticipate the well will likely be filled to the ground surface during a rain event and therefore increase the flow rate.

TABLE 2
Summary of Characteristic Curve Parameters

Zone No.	Material No.	USCS	Depth (ft)	Ks (in/hr)	Van Genuchten Parameters				
					a (1/cm)	n	m	Sat. Water Content	Residual Water Content
1	1	ML	0-50	0.8	0.015	1.25	0.20	0.44	0.01

A steady state analysis was performed to estimate the maximum inflow that the well can accommodate. Using a well as described above, we obtain a static total flow of 0.03 ft^3/sec. A plot depicting the resulting pressure head contours and flow vectors for the model is provided on Plate C-5.

To evaluate the time required to empty the well once no more water is introduced, the model was reanalyzed with a variable head condition that was dependent upon the volume of water leaving the well. As water infiltrates into the surrounding soil, the volume of water remaining in the well is

reduced as well as the resulting water head. A graph of the well head versus exit volume for a depth of 30 feet is provided in Figure 3. The function assumes a void ratio of 0.4 within the zones occupied by gravel. If some other well configuration is used, then the analyses may require updating.

The analysis was performed as a transient case over a total time of approximately 13 hours. The conditions in the model were evaluated in 90 minute increments of time over the total duration. From our analyses, the water is evacuated from the upper chamber in approximately 1.5 hours and is completely evacuated in approximately 11 hours. Plots depicting the resulting pressure head contours and flow vectors at selected times are provided in Appendix C on Plate C-6 through C-9. A plot of time versus water height in the well is shown on Figure 4.

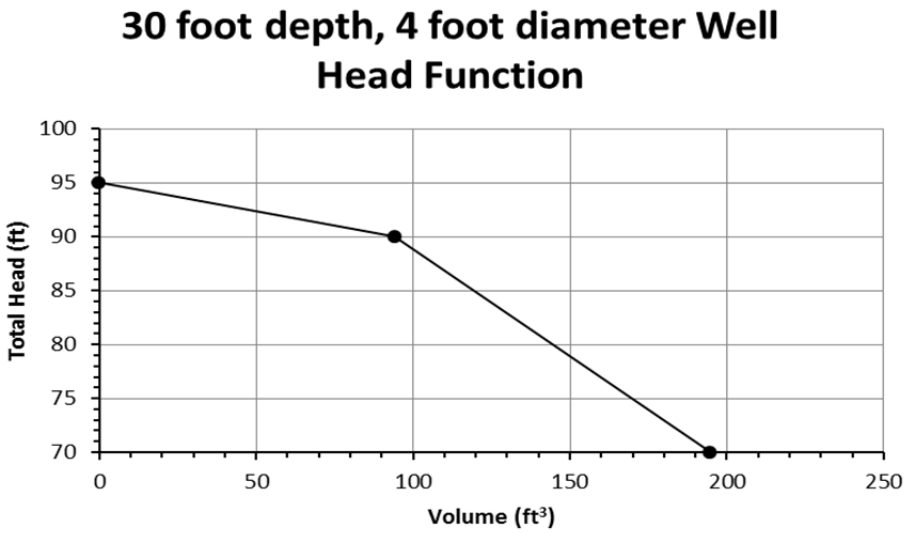


FIGURE 3

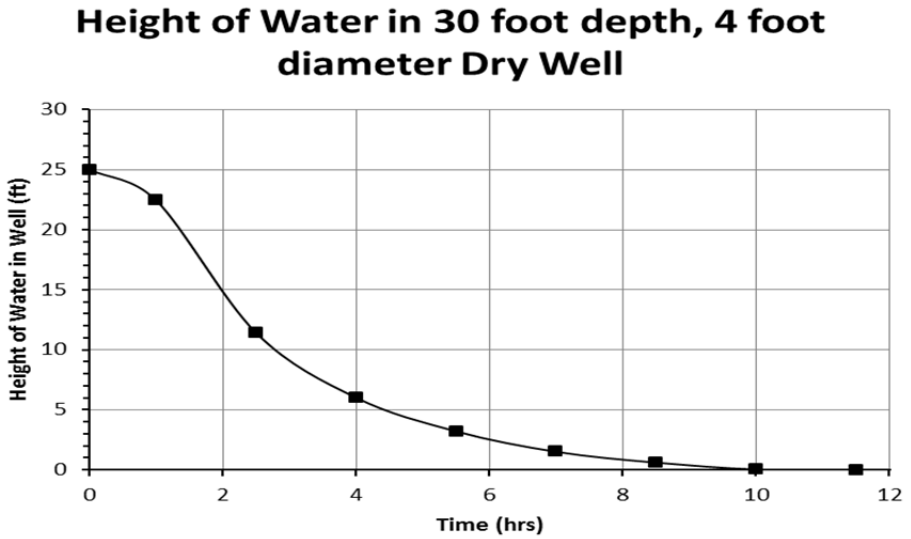


FIGURE 4

CONCLUSIONS AND RECOMMENDATIONS

Results of our work indicate a storm water disposal system consisting of dry wells is feasible at the site. The use of dry wells is not anticipated to result in worsening any adverse conditions or hazards that may be present for the proposed site development or adjacent properties including subsidence, landsliding, or liquefaction. Historical shallowest groundwater has been estimated to occur below a depth of 43 feet. Therefore, a dry well having a total depth of 30 feet will maintain the minimum clearance of 10 feet above groundwater as required by the Technical Guidance Document.

Based on results of percolation testing and analyses, the percolation rate for a well configuration as depicted on Plate 2 may utilize an unfactored peak flow rate of 0.03 ft^3/sec. An appropriate factor of safety should be applied to the flow rate as required by the appropriate governmental authority.

Should you require multiple dry wells across the site, the wells should be spaced at least 50 feet, center to center, to avoid cross influence. The wells should be located at least 10 feet horizontally from any habitable structure or property line.

The actual flow capacity of the dry well could be more or less than the estimated value. As such, provisions should be made to accommodate excess flow quantities in the event the dry well does not infiltrate the anticipated amount. The design also assumes that sediments will be removed from the inflowing water through an upper chamber or other device. Sediments that are allowed to enter the dry well will tend to degrade the flow capacity by plugging up the infiltration surfaces.

In general, the dry well may consist of a concrete inner chamber surrounded by ½-inch open graded gravel. The concrete chamber should have perforations to allow the well to drain. The holes should be sized to prevent piping of the gravel into the chamber. A general diagram of the dry well is provided on Plate 2.

In general, the dry well shaft is anticipated to be adequately stable under temporary construction conditions for uncased drilling. However, occasional layers or lenses of granular materials are likely to occur and may be prone to sloughing and caving. In the event of caving, casing will be required to install the well. Workers should not enter the shaft unless the excavation is laid back or shored in accordance with OSHA requirements. The placement and compaction of backfill materials, including the gravel, should be observed by the project geotechnical consultant.

LIMITATIONS

This report is based on the geotechnical data as described herein. The materials encountered in our boring excavations and utilized in our laboratory testing for this investigation are believed representative of the project area, and the conclusions and recommendations contained in this report are presented on that basis. However, soil and bedrock materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect the conclusions and recommendations contained herein. As such, observations by a geotechnical consultant during the construction phase of the storm water infiltration systems are essential to confirming the basis of this report.

This report has been prepared consistent with that level of care being provided by other professionals providing similar services at the same locale and time period. The contents of this report are professional opinions and as such, are not to be considered a guaranty or warranty.

This report should be reviewed and updated after a period of one year or if the site ownership or project concept changes from that described herein.

This report has been prepared for the exclusive use of **John L. Hunter & Assoc.**to assist the project consultants in the design of the proposed development. This report has not been prepared for use by parties or projects other than those named or described herein. This report may not contain sufficient information for other parties or other purposes.

This report is subject to review by the controlling governmental agency.

We appreciate this opportunity to be of service to you. If you should have any questions regarding the contents of this report, please do not hesitate to call.

Sincerely,

ALBUS-KEEFE & ASSOCIATES, INC.

Andrew J. Atry
Project Engineer
P.E. C84728



Reviewed by:

David E. Albus
Principal Engineer
G.E. 2455



Enclosures: Plate 1- Geotechnical Map
Plate 2- Dry Well Design
Appendix A - Exploratory Logs
Appendix B - Laboratory Testing
Appendix C - Percolation Testing and Analyses

REFERENCES

Publications and Reports

California Department of Conservation, Division of Mines and Geology, Seismic Hazard Report 034, "Seismic Hazard Zone Report for the Orange 7.5-Minute Quadrangle, Orange County, California", 1998.

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Saxton, K.E., W.J. Rawls, J.S. Romberger, and R.I. Papendick. 1986. Estimating generalized soil-water characteristics from texture. Soil Sci. Soc. Am. J. 50(4):1031-103



0 50 100 200

APPROXIMATE SCALE : 1" = 100'

EXPLANATION

(LOCATIONS APPROXIMATE)

B-1 - Exploratory Boring

B-3/P-2 - Exploratory Boring and Percolation Test Well

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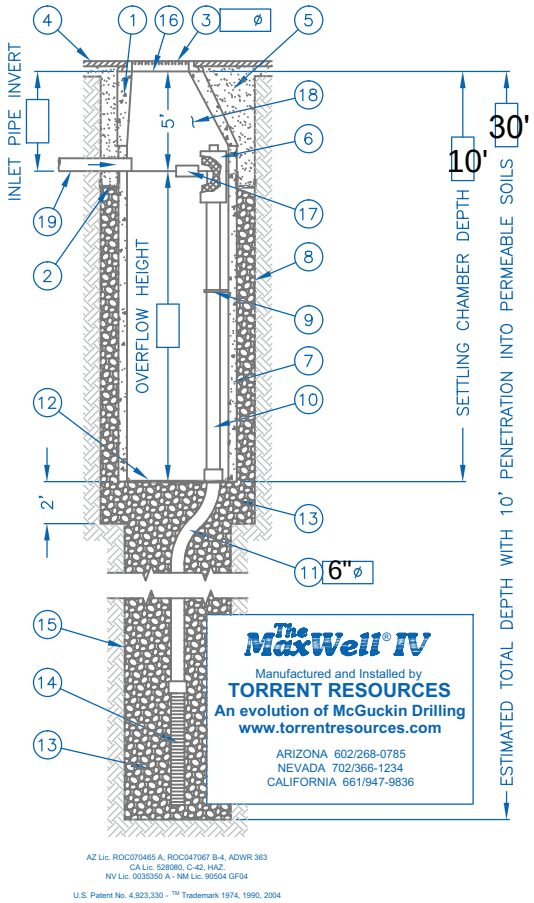
GEOTECHNICAL MAP

Job No.: 2545.00	Date: 1/10/16	Plate: 1

MAXWELL® IV DRAINAGE SYSTEM DETAIL AND SPECIFICATIONS

ITEM NUMBERS

1. **Manhole Cone** - Modified Flat Bottom.
2. **Moisture Membrane** - 6 Mil. Plastic. Applies only when native material is used for backfill. Place membrane securely against eccentric cone and hole sidewall.
3. **Bolted Ring & Grate** - Diameter as shown. Clean cast iron with wording **"Storm Water Only"** in raised letters. **Bolted in 2 locations** and secured to cone with mortar. Rim elevation ±0.02' of plans.
4. **Graded Basin or Paving** (by Others).
5. **Compacted Base Material** - 1-Sack Slurry except in landscaped installtions with no pipe connections.
6. **PureFlo® Debris Shield** - Rolled 16 ga. steel X 24" length with vented anti-siphon and Internal .265" Max. SWO flattened expanded steel screen X 12" length. **Fusion bonded epoxy coated.**
7. **Pre-cast Liner** - 4000 PSI concrete 48" ID. X 54" OD. **Center in hole** and align sections **to maximize bearing surface.**
8. **Min. 6' Ø Drilled Shaft.**
9. **Support Bracket** - Formed 12 Ga. steel. **Fusion bonded epoxy coated.**
10. **Overflow Pipe** - Sch. 40 PVC mated to drainage pipe at base seal.
11. **Drainage Pipe** - ADS highway grade with TRI-A coupler. **Suspend pipe** during backfill operations to prevent buckling or breakage. Diameter as noted.
12. **Base Seal** - Geotextile or concrete slurry.
13. **Rock** - Washed, sized between 3/8" and 1-1/2" to **best complement soil conditions.**
14. **FloFast® Drainage Screen** - Sch. 40 PVC 0.120" slotted well screen with 32 slots per row/ft.Diameter varies 120" overall length with TRI-B coupler.
15. **Min. 4' Ø Shaft** - Drilled to **maintain permeability** of drainage soils.
16. **Fabric Seal** - U.V. resistant geotextile - **to be removed by customer** at project completion.
17. **Absorbent** – Hydrophobic Petrochemical Sponge. Min. to 128 oz. capacity.
18. **Freeboard Depth** Varies with inlet pipe elevation. Increase settling chamber depth as needed to maintain all inlet pipe elevations above overflow pipe inlet.
19. **Optional Inlet Pipe** (Maximum 4", by Others). Extend moisture membrane and compacted base material or 1 sack slurry backfill below pipe invert.



AZ Lic. ROC070465 A, ROC047067 B-4, ADWR 363
CA Lic. 528080, C-42, HAZ.
NV Lic. 0035350 A - NM Lic. 90504 GF04

U.S. Patent No. 4,923,330 - ™ Trademark 1974, 1990, 2004

The referenced drawing and specifications are available on CAD either through our office or web site. This detail is copyrighted (2004) but may be used as is in construction plans without further release. For information on product application, individual project specifications or site evaluation, contact our Design Staff for no-charge assistance in any phase of your planning.

CALCULATING MAXWELL IV REQUIREMENTS

The type of property, soil permeability, rainfall intensity and local drainage ordinances determine the number and design of MaxWell Systems. For general applications draining retained stormwater, use one standard **MaxWell IV** per the instructions below for up to 3 acres of landscaped contributory area, and up to 1 acre of paved surface. For larger paved surfaces, subdivision drainage, nuisance water drainage, connecting pipes larger than 4" Ø from catch basins or underground storage, or other demanding applications, refer to our **MaxWell® Plus** System. For industrial drainage, including gasoline service stations, our **Envibro® System** may be recommended. For additional considerations, please refer to **"Design Suggestions For Retention And Drainage Systems"** or consult our Design Staff.

COMPLETING THE MAXWELL IV DRAWING

To apply the **MaxWell IV** drawing to your specific project, simply fill in the blue boxes per instructions below. For assistance, please consult our Design Staff.

ESTIMATED TOTAL DEPTH

The Estimated Total Depth is the approximate depth required to achieve 10 continuous feet of penetration into permeable soils. Torrent utilizes specialized **"crowd"** equipped drill rigs to penetrate difficult, cemented soils and to reach permeable materials at depths up to **180 feet.** Our extensive database of drilling logs and soils information is available for use as a reference. Please contact our Design Staff for site-specific information on your project.

SETTLING CHAMBER DEPTH

On MaxWell IV Systems of over 30 feet overall depth and up to 0.25cfs design rate, the **standard** Settling Chamber Depth is **18 feet .** For systems exposed to greater contributory area than noted above, extreme service conditions, or that require higher design rates, chamber depths up to 25 feet are recommended.

' OVERFLOW HEIGHT

The Overflow Height and Settling Chamber Depth determine the effectiveness of the settling process. The higher the overflow pipe, the deeper the chamber, the greater the settling capacity. For normal drainage applications, an overflow height of **13 feet** is used with the standard settling chamber depth of **18 feet**. Sites with higher design rates than noted above, heavy debris loading or unusual service conditions require greater settling capacities

"Ø DRAINAGE PIPE

This dimension also applies to the **PureFlo®** Debris Shield, the **FloFast®** Drainage Screen, and fittings. The size selected is based upon system design rates, soil conditions, and the need for adequate venting. Choices are 6", 8", or 12" diameter. Refer to "Design Suggestions for Retention and Drainage Systems" for recommendations on which size best matches your application.

"Ø BOLTED RING & GRATE

Standard models are quality cast iron and available to fit 24" Ø or 30" Ø manhole openings. All units are bolted in two locations with wording "Storm Water Only" in raised letters. For other surface treatments, please refer to "Design Suggestions for Retention and Drainage Systems."

"Ø INLET PIPE INVERT

Pipes up to 4" in diameter from catch basins, underground storage, etc. may be connected into the settling chamber. Inverts deeper than 5 feet will require additional settling chamber depth to maintain effective overflow height.

TORRENT RESOURCES INCORPORATED
1509 East Elwood Street, Phoenix Arizona 85040~1391
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Nevada 702~366~1234
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CA Lic. 528080 A, C-42, HAZ ~ NV Lic. 0035350 A ~ NM Lic. 90504 GF04

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TORRENT® RESOURCES

APPENDIX A

EXPLORATORY LOGS

EXPLORATION LOG

Project:		Location:
Address:		Elevation:
Job Number:	Client:	Date:
Drill Method:	Driving Weight:	Logged By:

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		EXPLANATION							
		Solid lines separate geologic units and/or material types.							
		Dashed lines indicate unknown depth of geologic unit change or material type change.							
5		**Solid black rectangle** in Core column represents California Split Spoon sampler (2.5in ID, 3in OD).							
		Double triangle in core column represents SPT sampler.							
10		**Solid black rectangle** in Bulk column respresents large bag sample.							
		Other Laboratory Tests:							
		Max = Maximum Dry Density/Optimum Moisture Content							
		EI = Expansion Index							
		SO4 = Soluble Sulfate Content							
15		DSR = Direct Shear, Remolded							
		DS = Direct Shear, Undisturbed							
		SA = Sieve Analysis (1" through #200 sieve)							
		Hydro = Particle Size Analysis (SA with Hydrometer)							
		200 = Percent Passing #200 Sieve							
		Consol = Consolidation							
		SE = Sand Equivalent							
20		Rval = R-Value							
		ATT = Atterberg Limits							

EXPLORATION LOG

Project: Lynwood City Park		Location: B-1
Address: Cesar E Chavez Ln, Lynwood, CA 90262		Elevation: 89.1
Job Number: 2545.00	Client: John L. Hunter & Assoc.	Date: 10/6/2016
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: MP

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		Silt (ML): brown, damp, trace mica							
		Silty Sand / Sandy Silt (SM/ML): light grayish brown, damp, fine grained sand, trace mica, rootlets							
5		Silt (ML): light bluish gray, moist, medium stiff, little fine grained sand, trace clay		9	■		15.4	81.5	
		@ 8 ', few clay nodules in cuttings							
10		@ 10 ', some orange oxidation		7	■		14.2	80.1	
15		@ 15 ', medium grayish brown, stiff, some clay lenses		7	⧗				
20		@ 20 ', trace fine grained sand		7	⧗				

EXPLORATION LOG

Project: Lynwood City Park		Location: B-1
Address: Cesar E Chavez Ln, Lynwood, CA 90262		Elevation: 89.1
Job Number: 2545.00	Client: John L. Hunter & Assoc.	Date: 10/6/2016
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: MP

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		@ 25 ', wet, very stiff, trace fine gravel, little fine grained sand		13	■				
		Silty Sand / Sandy Silt (SM/ML): light grayish brown, wet, medium dense / very stiff, fine sand							
30				21	■		33.7	85.6	
35				21	■		N.R.		
		Silty Sand (SM): gray, wet, loose, fine grained sand							
40				8	■		22.5	96.6	
		Clayey Silt (ML): gray, moist, medium stiff, trace mica, trace pockets pf silty sand/sandy silt nodules		11	■				
		@ 41.5 ', Very stiff, Some fine grained sand							
		Silty Sand (SM): gray, wet, medium dense, fine grained sand	▽						
45				14	■				

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Plate A-3

EXPLORATION LOG

Project: Lynwood City Park		Location: B-1
Address: Cesar E Chavez Ln, Lynwood, CA 90262		Elevation: 89.1
Job Number: 2545.00	Client: John L. Hunter & Assoc.	Date: 10/6/2016
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: MP

Depth (feet)	Lith-ology	Material Description	Water	Samples			Laboratory Tests		
				Blows Per Foot	Core	Bulk	Moisture Content (%)	Dry Density (pcf)	Other Lab Tests
				13					
		End of Boring at 51.5 ft. Groundwater measured at 43 ft after half an hour. Backfilled with soil cuttings.							

EXPLORATION LOG

Project: Lynwood City Park		Location: B-2
Address: Cesar E Chavez Ln, Lynwood, CA 90262		Elevation: 89.1
Job Number: 2545.00	Client: John L. Hunter & Assoc.	Date: 10/6/2016
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: MP

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		Silt (ML): tan brown, damp to moist, medium stiff, micacious							
5									
10		Clay (CL): grayish brown, moist, stiff		11	■		37.4	81.8	SA Hydro
		End of boring at 12 feet. No groundwater encountered. Boring converted in percolation test well (P-1).							

EXPLORATION LOG

Project: Lynwood City Park		Location: B-3
Address: Cesar E Chavez Ln, Lynwood, CA 90262		Elevation: 89.1
Job Number: 2545.00	Client: John L. Hunter & Assoc.	Date: 10/6/2016
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: MP

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		Silt (ML): Brown, damp to moist, medium stiff, micacious							
5									
10		@ 11 ', Light grayish brown, moist, very stiff, trace fine sand, trace clay		17	■		11.3	84.2	SA Hydro
		End of boring at 12 feet. No groundwater encountered. Boring converted in percolation test well (P-2).							

APPENDIX B

LABORATORY TESTING

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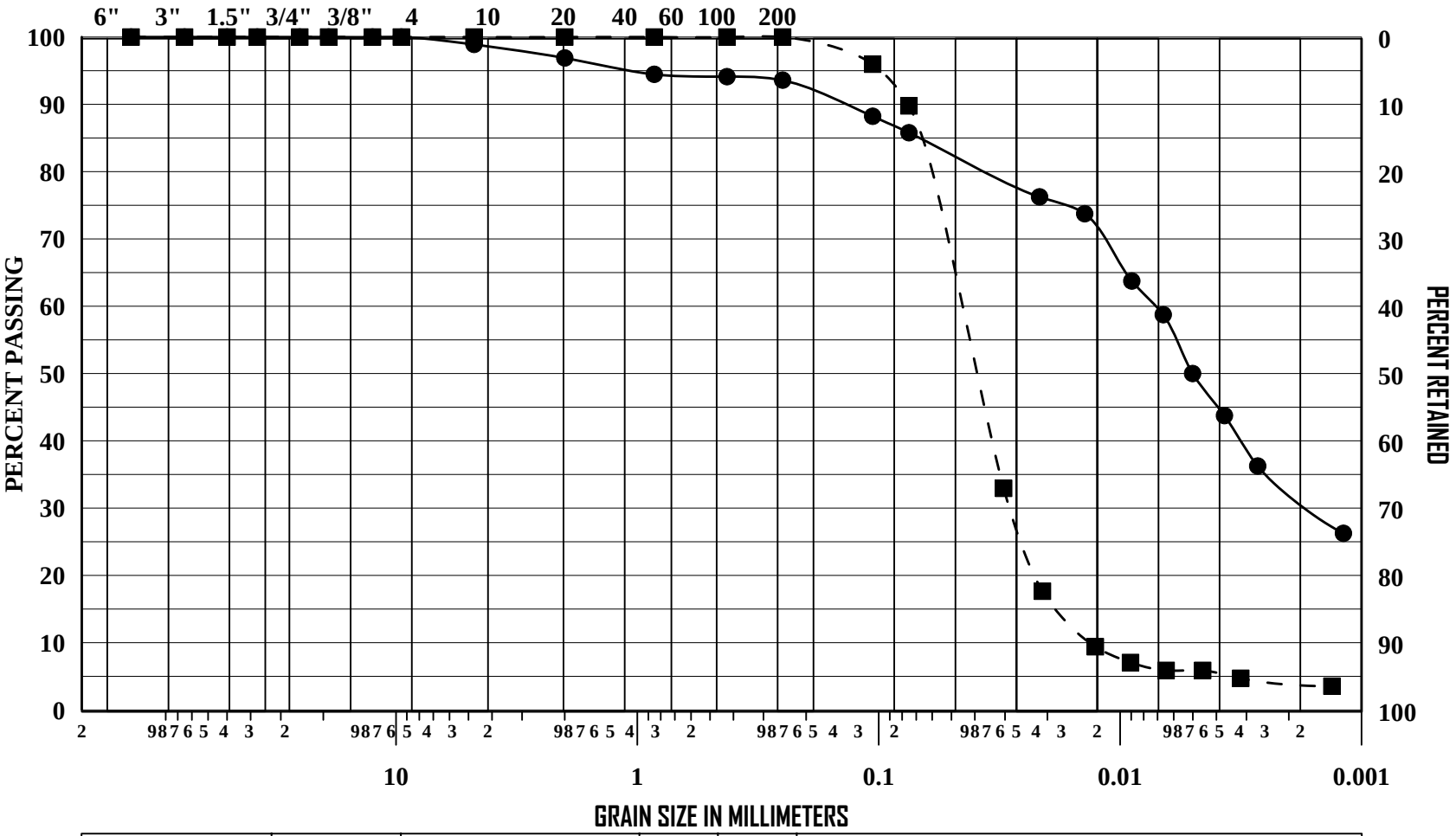
GRAIN SIZE DISTRIBUTION

Job No: 2545.00

Plate No: B-1

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



LOCATION	SAMPLE	SYMBOL	LL	PI	CLASSIFICATION
B-2	11 feet	●——●			Clay (CL)
B-3	11 feet	■- - -■			Silt (ML)

APPENDIX C

PERCOLATION TESTING AND ANALYSES

Field Percolation Testing

Client: John L. Hunter & Assoc.

Job. No.: 2545.00

Date Tested: 10/6/2016

Test by: MP

Location: Lynwood City Park

Top of Casing to Bottom of Well (ft): 12

Elev. of Ground Surface (ft): 89.1

Diam. of Test Hole (in): 8

Diam. of Casing (in): 2

Ht. to Top of Casing (ft): 0

Water Tempurature (C°): 21

Constant Head

Elapsed Time (minutes)	Time	Depth to H2O (ft)	Flow Rate (gal./min.)
0.0	12:32	7.00	2.50
1.0	12:33	7.00	2.00
2.0	12:34	7.00	1.10
3.0	12:35	7.00	0.50
4.0	12:36	7.00	<0.1

Falling Head

Elapsed Time (minutes)	Time	Depth to H2O (ft)
0.0	12:36:00	7.00
1.0	12:37:00	7.40
2.0	12:38:00	7.80
3.0	12:39:00	8.20
4.0	12:40:00	8.60
5.0	12:41:00	9.00
7.0	12:43:00	7.00
8.0	12:44:00	7.40
9.0	12:45:00	7.80
10.0	12:46:00	8.20

Field Percolation Testing

Client: John L. Hunter & Assoc.

Job. No.: 2545.00

Date Tested: 10/6/2016

Test by: MP

Location: Lynwood City Park

Top of Casing to Bottom of Well (ft): 12

Elev. of Ground Surface (ft): 89.1

Diam. of Test Hole (in): 8

Diam. of Casing (in): 2

Ht. to Top of Casing (ft): 0

Water Tempurature (C°): 21

Constant Head

Elapsed Time (minutes)	Time	Depth to H2O (ft)	Flow Rate (gal./min.)
0.0	1:04	7	4
2.0	1:06	7	2.25
3.0	1:07	7	1.5
4.0	1:08	7	<1.0
5.0	1:09	7	0.3
5.0	1:09	7	<0.1

Falling Head

Elapsed Time (minutes)	Time	Depth to H2O (ft)
0.0	1:10:00	7
1.0	1:11:00	7.6
2.0	1:12:00	8.2
3.0	1:13:00	8.65
4.0	1:14:00	9.1
5.0	1:15:00	9.55
6.0	1:16:00	10
8.0	1:18:00	7
9.0	1:19:00	7.45
10.0	1:20:00	7.9
11.0	1:21:00	8.35
12.0	1:22:00	8.8

INFILTRATION WELL DESIGN

Constant Head
USBR 7300-89 Method
J.N.: 2438
Client: HQT Homes
Well No.: P-1

Low Water Table	Condition 1	
High Water Table & Water Below Bottom of Well	Condition 2	
High water Table with Water Above the Well Bottom	Condition 3	
		Units:
Enter Condition (1, 2 or 3):	1	
Ground Surface to Bottom of Well (h_1):	12	feet
Depth to Water (h_2):	7.6	feet
Height of Water in the Well (h_1-h_2=**h**):	4.4	feet
Radius of Well (**r**):	4.0	Inches
Minimum Volume Required:	1089.7	Gal.
Discharge Rate of Water Into Well for Steady-State Condition (**q**):	0.46	Gal/min.
Temperature (**T**):	21	Celsius
(Viscosity of Water @ Temp. T) / (Viscosity of water @ 20° C) (**V**):	0.9647	ft^3/min.
Unsaturated Distance Between the Water Surface in the Well and the Water table (T_u):		Ignore T_u
Factor of Safety:	1	
Coefficient of Permeability @ 20° C (k_{20}):	1.16E-03	ft/min.
Design k_{20}:	0.83	in./hr.

The presence or absence of a water table or impervious soil layer within a distance of less than three times that of the water depth in the well (measured from the water surface) will enable the water table to be classified as **Condition I**, **Condition II**, **Condtion III**.

Low Water Table-When the distance from the water surface in the test well to the ground water table, or to an impervious soil layer which is considered for test puposes to be equivalent to a water table, is greater than three times the depth of water in the well, classify as **Condition I**.

High Water Table-When the distance from the water surface in the test well to the ground water table or to an impervious layer is less than three times the depth of water in the well, a high water table condition exists. Use **Condition II** when the water table or impervious layer is below the well bottom. Use **Condition III** when the water table or impervious layer is above the well bottom.

INFILTRATION WELL DESIGN

Constant Head
USBR 7300-89 Method
J.N.: 2438
Client: HQT Homes
Well No.: P-1

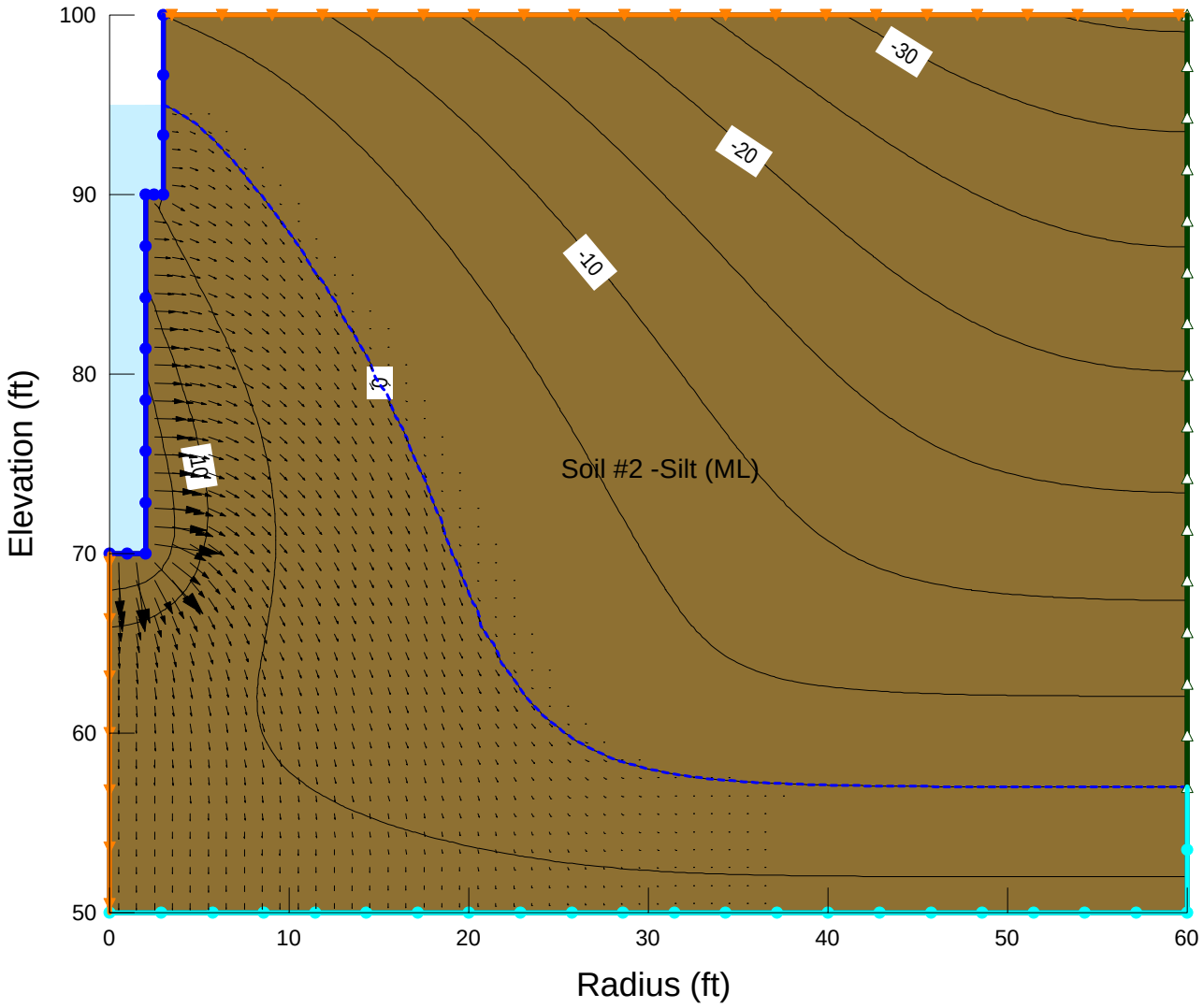
Low Water Table	Condition 1	
High Water Table & Water Below Bottom of Well	Condition 2	
High water Table with Water Above the Well Bottom	Condition 3	
		Units:
Enter Condition (1, 2 or 3):	1	
Ground Surface to Bottom of Well (**h_1**):	12	feet
Depth to Water (**h_2**):	7.9	feet
Height of Water in the Well (h_1-h_2=**h**):	4.1	feet
Radius of Well (**r**):	4.0	Inches
Minimum Volume Required:	924.2	Gal.
Discharge Rate of Water Into Well for Steady-State Condition (**q**):	0.51	Gal/min.
Temperature (**T**):	21	Celsius
(Viscosity of Water @ Temp. T) / (Viscosity of water @ 20° C) (**V**):	0.9647	ft^3/min.
Unsaturated Distance Between the Water Surface in the Well and the Water table (**T_u**):		Ignore T_u
Factor of Safety:	1	
Coefficient of Permeability @ 20° C (**k_{20}**):	1.44E-03	ft/min.
Design k_{20}:	1.03	in./hr.

The presence or absence of a water table or impervious soil layer within a distance of less than three times that of the water depth in the well (measured from the water surface) will enable the water table to be classified as **Condition I**, **Condition II**, **Condtion III**.

Low Water Table-When the distance from the water surface in the test well to the ground water table, or to an impervious soil layer which is considered for test puposes to be equivalent to a water table, is greater than three times the depth of water in the well, classify as **Condition I**.

High Water Table-When the distance from the water surface in the test well to the ground water table or to an impervious layer is less than three times the depth of water in the well, a high water table condition exists. Use **Condition II** when the water table or impervious layer is below the well bottom. Use **Condition III** when the water table or impervious layer is above the well bottom.

STEADY STATE
FLOW ANALYSIS OF 30 ft DEEP, 4 ft DIAMETER DRY WELL

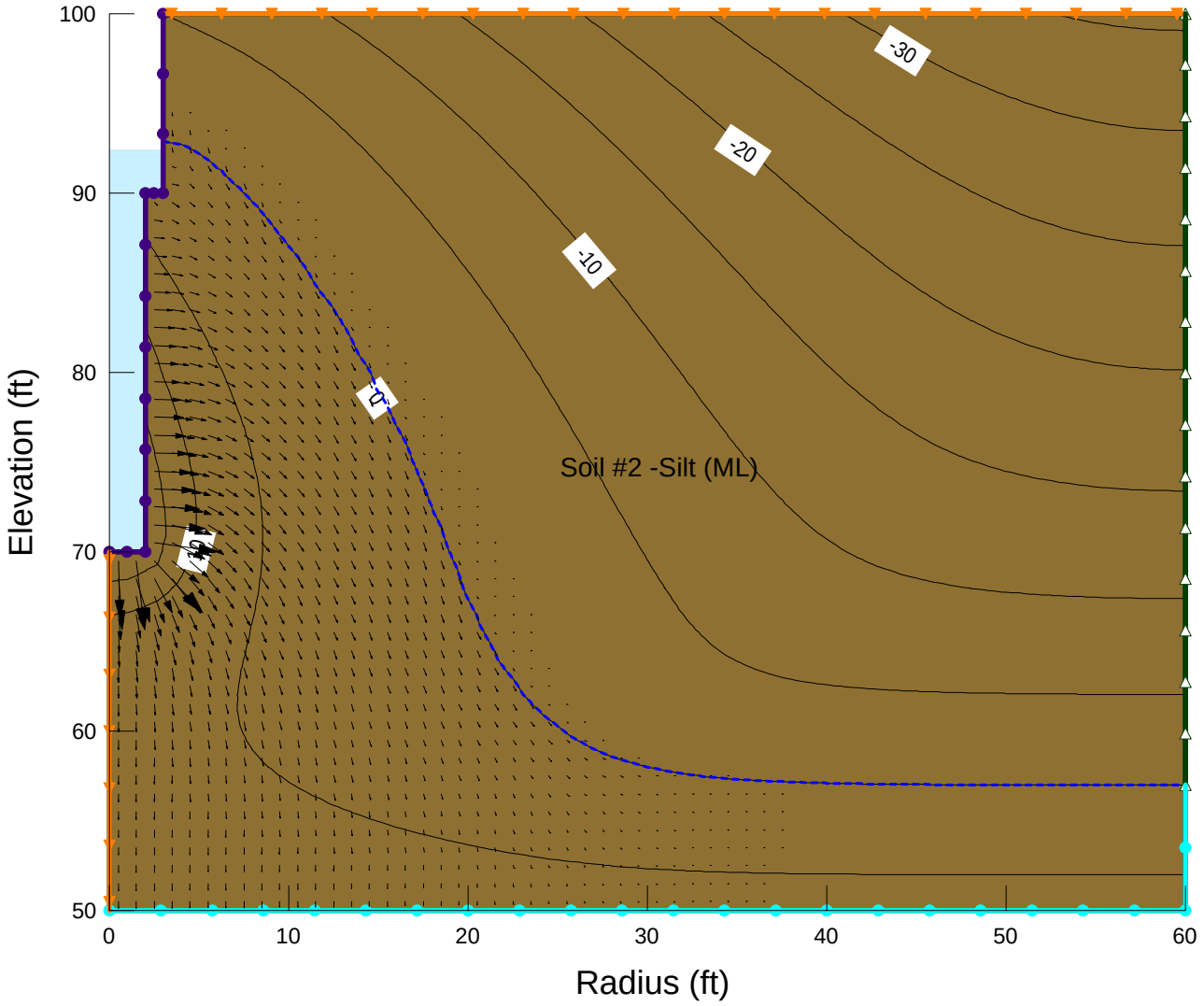


Contours are Pressure Head in Feet.
Arrows indicate direction of flow and relative magnitude of velocity.

LEGEND

- Zero Flux
- Potential Seepage Face
- Fixed Total Head = 95′
- Fixed Total Head = 57′

TRANSIENT @ 1 hours
FLOW ANALYSIS OF 30 ft DEEP, 4 ft DIAMETER DRY WELL



Contours are Pressure Head in Feet.
Arrows indicate direction of flow and relative magnitude of velocity.

LEGEND

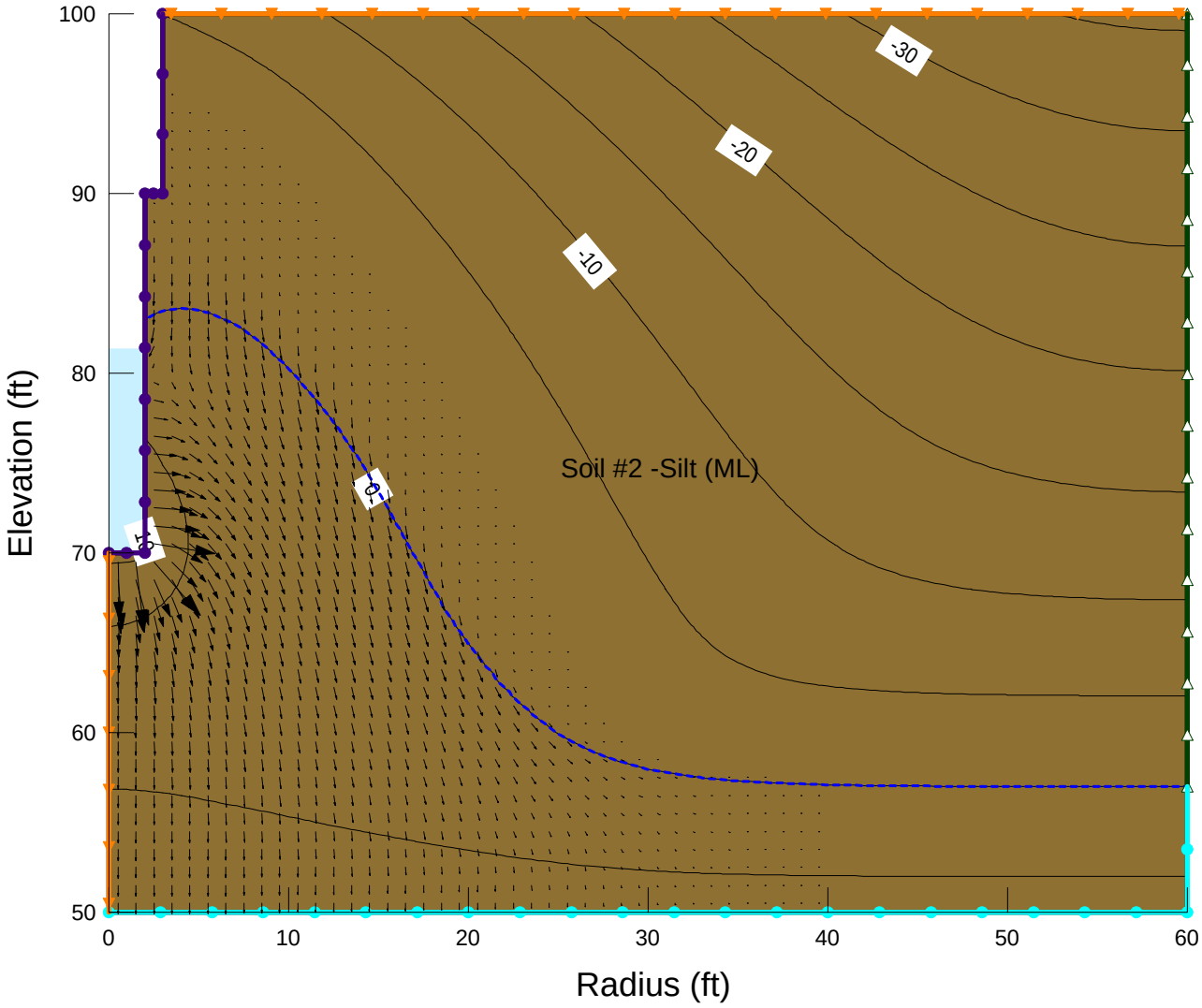
Zero Flux

Potential Seepage Face

Well Head Function

Fixed Total Head = *57′*

TRANSIENT @ 2.5 hours
FLOW ANALYSIS OF 30 ft DEEP, 4 ft DIAMETER DRY WELL



Contours are Pressure Head in Feet.
Arrows indicate direction of flow and relative magnitude of velocity.

LEGEND

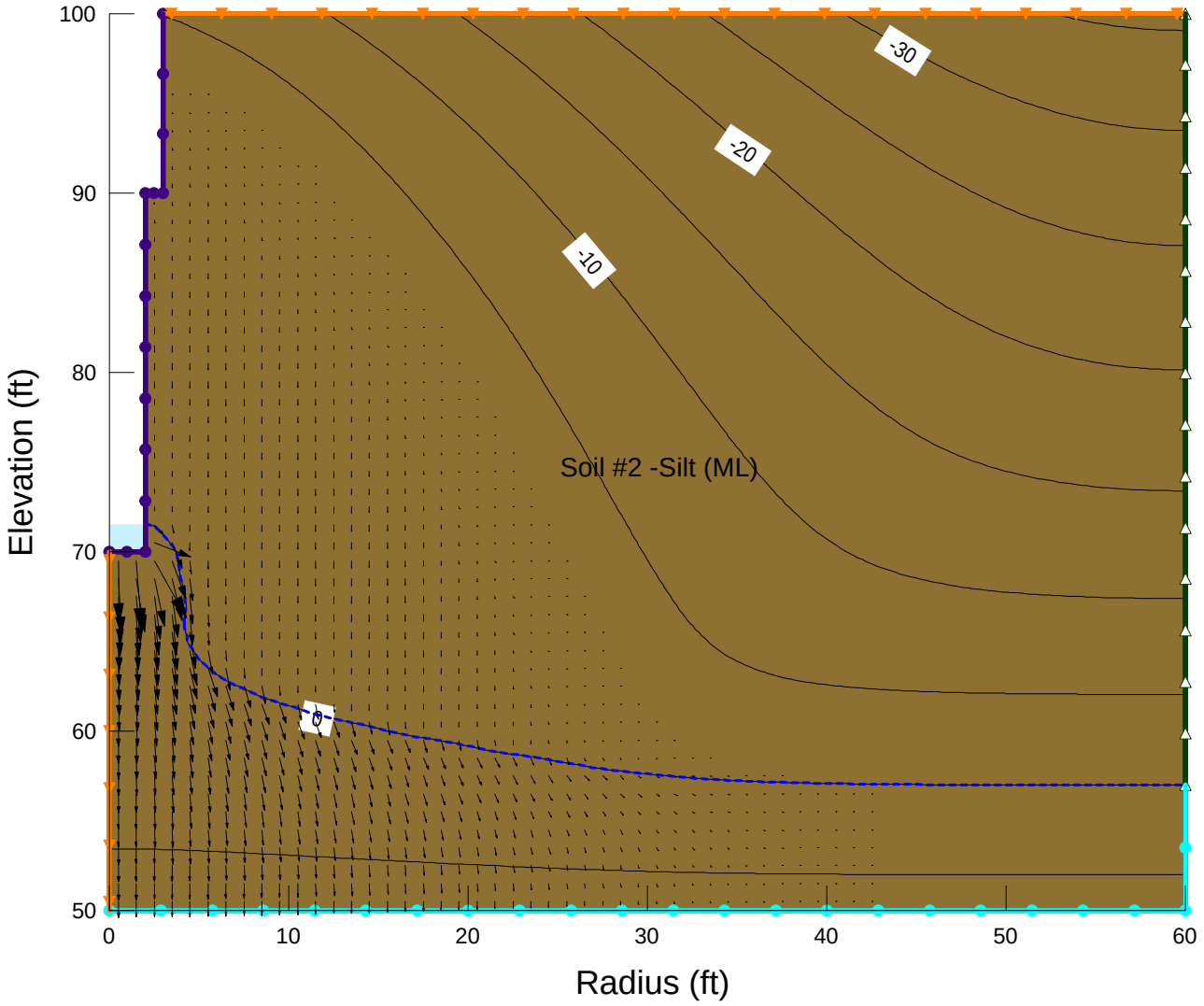
Zero Flux

Potential Seepage Face

Well Head Function

Fixed Total Head = 57′

TRANSIENT @ 7 hours
FLOW ANALYSIS OF 30 ft DEEP, 4 ft DIAMETER DRY WELL

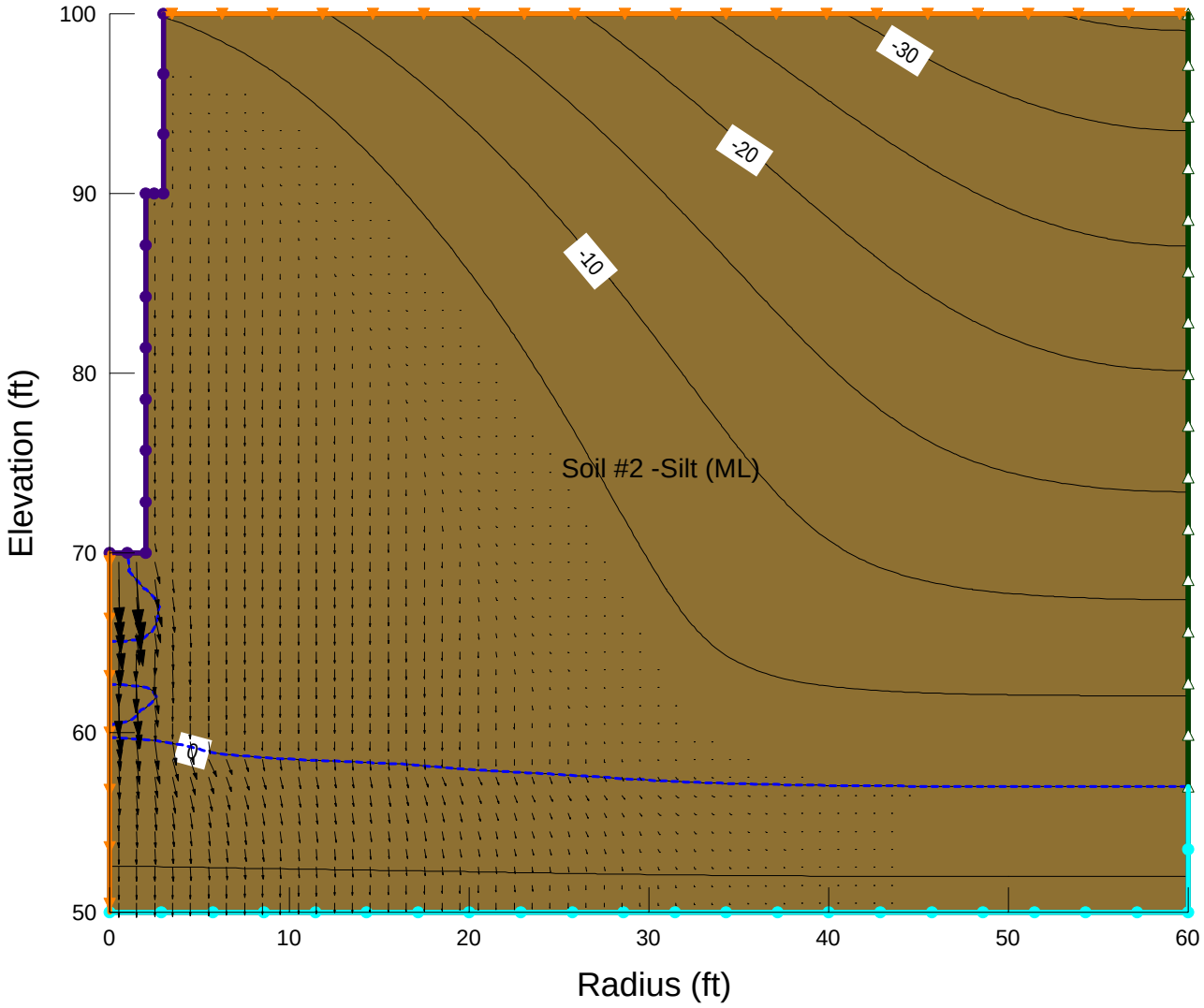


Contours are Pressure Head in Feet.
Arrows indicate direction of flow and relative magnitude of velocity.

LEGEND

- Zero Flux
- Potential Seepage Face
- Well Head Function
- Fixed Total Head = 57′

TRANSIENT @ 11.5 hours
FLOW ANALYSIS OF 30 ft DEEP, 4 ft DIAMETER DRY WELL



Contours are Pressure Head in Feet.
Arrows indicate direction of flow and relative magnitude of velocity.

LEGEND

Zero Flux

Potential Seepage Face

Well Head Function

Fixed Total Head = 57′

APPENDIX B

Boring Logs

APPENDIX B

BORING LOGS

Field Procedure for the Collection of Disturbed Samples
Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples
Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler
Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of $1^3/_8$ inches. The sampler was driven into the ground 12 to 18 inches with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples
Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler
The sampler, with an external diameter of 3 inches, was lined with 1-inch-long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

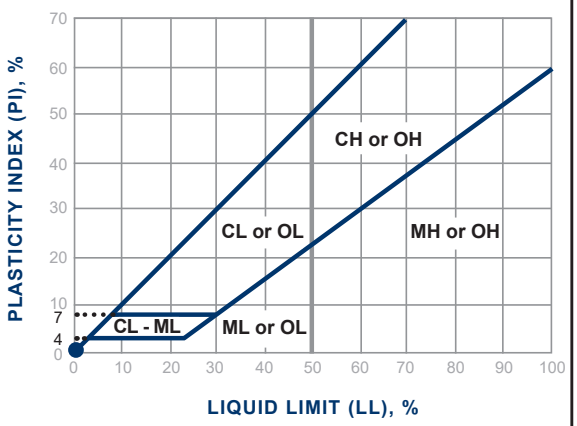
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 4 sieve	**GRAVEL** more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with clay
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	**SILT and CLAY** liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
	Highly Organic Soils		PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.079 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

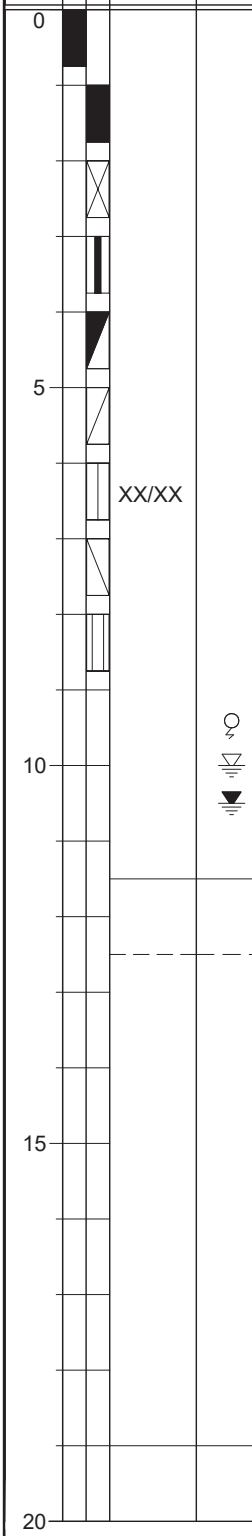
Consistency - Fine-Grained Soil

Consis-tency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

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USCS METHOD OF SOIL CLASSIFICATION

BORING LOG EXPLANATION SHEET



Bulk sample.

Modified split-barrel drive sampler.

No recovery with modified split-barrel drive sampler.

Sample retained by others.

Standard Penetration Test (SPT).

No recovery with a SPT.

Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.

No recovery with Shelby tube sampler.

Continuous Push Sample.

Seepage.

Groundwater encountered during drilling.

Groundwater measured after drilling.

SM

MAJOR MATERIAL TYPE (SOIL):

Solid line denotes unit change.

CL

Dashed line denotes material change.

Attitudes: Strike/Dip
b: Bedding
c: Contact
j: Joint
f: Fracture
F: Fault
cs: Clay Seam
s: Shear
bss: Basal Slide Surface
sf: Shear Fracture
sz: Shear Zone
sbs: Shear Bedding Surface

The total depth line is a solid line that is drawn at the bottom of the boring.

DATE DRILLED 1/31/23 BORING NO. B-1

GROUND ELEVATION 90' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (MR Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ANP LOGGED BY ANP REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ALLUVIUM: Light brown, moist, loose, silty SAND.
		11				ML	Brown, moist, loose, sandy SILT; trace wood fragments.
10		18	13.1	98.2			Medium dense.
		17					With sand.
		17	27.6	98.3		CL	Dark brown, moist, very stiff, lean CLAY; trace gravel.
		15				ML	Olive gray, moist, medium dense, sandy SILT.
30		25					Brown; oxidation staining.
						SM	Light brown, moist, medium dense, silty SAND.
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with cement-bentonite grout on 1/31/23.
40							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

FIGURE B- 1

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LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

DATE DRILLED 2/1/23 BORING NO. B-2

GROUND ELEVATION 85' ± (MSL) SHEET 1 OF 3

METHOD OF DRILLING 8" Hollow-Stem Auger (MR Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY RAF/ANP LOGGED BY ANP REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	FILL:
						SP-SM	Brown, moist, medium dense, silty GRAVEL with sand.
							ALLUVIUM:
							Light brown, moist, loose, poorly graded SAND with silt.
						ML	Brown, moist, very stiff, SILT; few sand.
		17					
10		18	15.0	87.8			
		17					Light brown.
20		17	25.6	96.3			Brown; few to little sand.
		10					Stiff.
30		18	20.4	104.1			Light brown; medium dense; sandy.
		13					Grayish brown; oxidation staining.
						SM	Gray, moist, medium dense, silty SAND.
40							

FIGURE B- 2

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LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

212102001 | 3/23

DATE DRILLED 2/1/23 BORING NO. B-2

GROUND ELEVATION 85' ± (MSL) SHEET 2 OF 3

METHOD OF DRILLING 8" Hollow-Stem Auger (MR Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY RAF/ANP LOGGED BY ANP REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40		28	18.7	103.2		SM	ALLUVIUM: (Continued) Gray, moist, medium dense, silty SAND.
						ML	Gray, moist, very dense, sandy SILT.
			▽				@ 44.3': Groundwater measured.
		35				SM	Gray, moist, very dense, silty SAND.
						ML	Gray, wet, medium dense, sandy SILT.
50		10					
						SM	Gray, wet, dense, silty SAND.
		28					
60		55					Very dense.
						ML	Gray, wet, medium dense, SILT with sand.
		20					
70		22				SM	Gray, wet, dense, silty SAND.
		29					
80							

FIGURE B- 3

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LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

DATE DRILLED 2/1/23 BORING NO. B-2

GROUND ELEVATION 85' ± (MSL) SHEET 3 OF 3

METHOD OF DRILLING 8" Hollow-Stem Auger (MR Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY RAF/ANP LOGGED BY ANP REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
80		27				SM	ALLUVIUM: (Continued) Gray, wet, dense, silty SAND; interbedded with silt beds.
		15				ML	Gray, wet, medium dense, SILT with sand.
90		11				SM	Gray, wet, medium dense, silty SAND.
		28				ML	Gray, wet, dense, sandy SILT.
100		18					Medium dense; piece of wood.
							Total Depth = 101.5 feet. Groundwater was encountered during drilling at approximately 44.3 feet. Backfilled with cement-bentonite grout on 2/1/23. Notes: Groundwater may rise to a level higher than that measured in borehole due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
110							
120							

DATE DRILLED 1/30/23 BORING NO. B-3

GROUND ELEVATION 85' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (MR Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ANP LOGGED BY ANP REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	ASPHALT CONCRETE: Approximately 3 inches thick.
						SM	AGGREGATE BASE: Brown, moist, medium dense, silty GRAVEL; approximately 6 inches thick.
							ALLUVIUM: Light brown, moist, medium dense, silty SAND.
		9	8.6	90.1		SP-SM	Brown, moist, loose, poorly graded SAND with silt.
						ML	Brown, moist, stiff, SILT; few sand; oxidation staining; pinhole porosity.
10		9	36.3	82.4			
		12	23	100.6			Dark brown.
20		9					
		11					Very stiff.
30		28					Grayish brown; hard.
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with cement-bentonite grout and capped with rapid-set concrete on 1/30/23.
40							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 1/31/23 BORING NO. P-1

GROUND ELEVATION 85' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (MR Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY RAF/ANP LOGGED BY RAF/ANP REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, moist, medium dense, silty SAND; few gravel.
						ML	ASPHALT CONCRETE: Approximately 2 inches thick; approximately 10 inches below surface. ALLUVIUM: Brown, moist, loose, sandy SILT.
		7	24.0	94.3			
10							Total Depth = 6.5 feet. Groundwater was not encountered during drilling. In-situ percolation test performed on 1/31/23. Backfilled with on-site soil on 1/31/23. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							
30							
40							

DATE DRILLED 1/30/23 BORING NO. P-2

GROUND ELEVATION 85' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (MR Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ANP LOGGED BY ANP REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						ML / SM	ALLUVIUM: Brown, moist, medium dense, sandy SILT; roots. Light brown, moist, medium dense, silty SAND.
		10				ML	Brown and dark brown, moist, loose, sandy SILT.
10		11					Light brown; few to little sand; oxidation staining.
		18	24.2	94.1			Brown; very stiff.
20		20	18.9	100.6			
							Total Depth = 21.5 feet. Groundwater was not encountered during drilling. In-situ percolation test performed on 1/31/23. Backfilled with cement-bentonite grout on 1/31/23.
30							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

DATE DRILLED 1/30/23 BORING NO. P-3

GROUND ELEVATION 85' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (MR Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ANP LOGGED BY ANP REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						ML	ALLUVIUM: Brown, moist, medium dense, sandy SILT; roots.
						SM	Light brown, moist, medium dense, silty SAND.
						ML	Brown, moist, medium dense, SILT with sand.
		15					Light brown; pinhole porosity; oxidation staining.
10		10					Brown; loose.
		13	14.1	99.8			
20		15	26.3	96.8			Dark brown; medium dense; oxidation staining.
							Total Depth = 21.5 feet. Groundwater was not encountered during drilling. In-situ percolation test performed on 1/30/23. Backfilled with cement-bentonite grout on 1/30/23.
30							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

FIGURE B- 8

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LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

DATE DRILLED 1/31/23 BORING NO. P-4

GROUND ELEVATION 85' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (MR Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ANP LOGGED BY ANP REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ALLUVIUM: Brown, moist, medium dense, silty SAND.
						ML	Brown, moist, medium dense, sandy SILT.
		10				SM	Brown, moist, loose, silty SAND.
						ML	Brown, moist, stiff, SILT; oxidation staining.
10		9					
		15	29.9	91.1			Very stiff; few to little sand.
20		18	30.1	89.3			
							Total Depth = 21.5 feet. Groundwater was not encountered during drilling. In-situ percolation test was performed on 1/31/23. Backfilled with cement-bentonite grout on 1/31/23. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
30							
40							

FIGURE B- 9

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Geotechnical & Environmental Sciences Consultants

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

APPENDIX C

CPT Soundings

APPENDIX C

CPT SOUNDINGS

Field Procedure for Cone Penetration Testing

The cone penetration testing (CPT) described in this report was conducted by Kehoe Testing and Engineering in general accordance with ASTM D 5778. The cone penetrometer assembly used for this project consisted of a conical tip and a cylindrical friction sleeve. The conical tip had an apex angle of 60 degrees and a cross-section area of approximately 15 square centimeters. The interior of the CPT probe was instrumented with strain gauges that allowed simultaneous measurement of cone tip resistance and friction sleeve resistance during penetration. The cone hydraulically pushed into the soil using the reaction mass of a specially designed 30-ton truck at a constant rate while the cone tip resistance and sleeve friction were recorded at an approximately 1-inch interval and stored in digital form. The computer-generated logs presented in the following pages include cone resistance, sleeve friction, pore pressure, and soil behavior type.

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

Lynwood Stormwater Capture
11301 Bullis Road
Lynwood, CA
January 30, 2023

Prepared for:

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Prepared by:

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Huntington Beach, CA 92649-1518
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www.kehoetesting.com

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1. **INTRODUCTION**
2. **SUMMARY OF FIELD WORK**
3. **FIELD EQUIPMENT & PROCEDURES**
4. **CONE PENETRATION TEST DATA & INTERPRETATION**

APPENDIX

- CPT Plots
- CPT Classification/Soil Behavior Chart
- Summary of Shear Wave Velocities
- Pore Pressure Dissipation Graphs
- CPT Data Files (sent via email)

SUMMARY
OF
CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the Lynwood Stormwater Capture project located at 11301 Bullis Road in Lynwood, California. The work was performed by Kehoe Testing & Engineering (KTE) on January 30, 2023. The scope of work was performed as directed by Ninyo & Moore personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at two locations to determine the soil lithology. A summary is provided in **TABLE 2.1**.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	60	
CPT-2	100	

TABLE 2.1 - Summary of CPT Soundings

3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm^2 cone with a cone net area ratio of 0.83. The following parameters were recorded at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed
- Pore Pressure Dissipation (at selected depths)

At location CPT-2, shear wave measurements were obtained at approximately 5-foot intervals. The shear wave is generated using an air-actuated hammer, which is located inside the front jack of the CPT rig. The cone has a triaxial geophone, which recorded the shear wave signal generated by the air hammer.

The above parameters were recorded and viewed in real time using a laptop computer. Data is stored at the KTE office for up to 2 years for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. These plots were generated using the CPeT-IT program. Penetration depths are referenced to ground surface. The soil behavior type on the CPT plots is derived from the attached CPT SBT plot (Robertson, "Interpretation of Cone Penetration Test…", 2009) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used along with cone resistance to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

The CPT data files have also been provided. These files can be imported in CPeT-IT (software by GeoLogismiki) and other programs to calculate various geotechnical parameters.

It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgement and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

KEHOE TESTING & ENGINEERING



Steven P. Kehoe
President

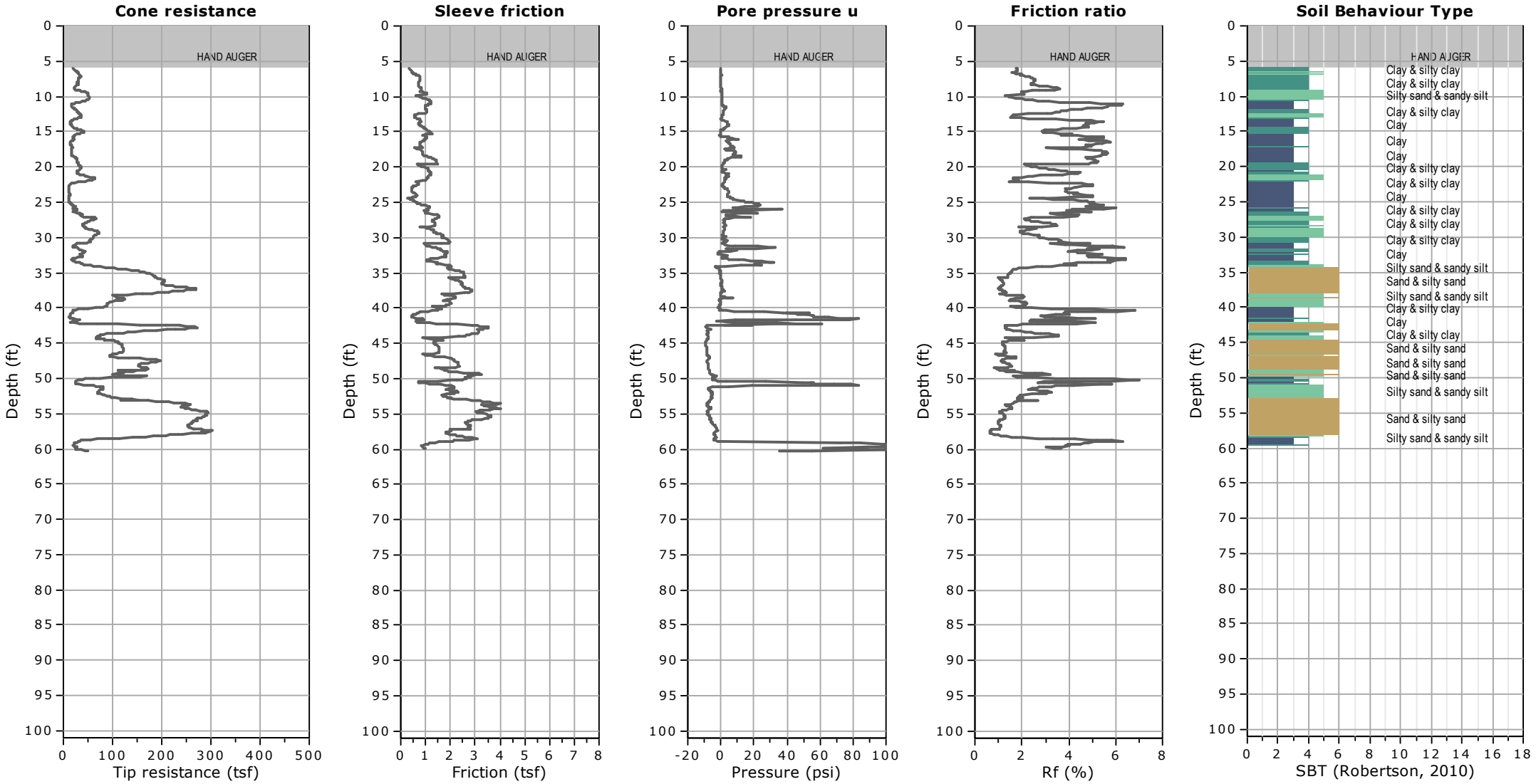
02/03/23-aga-4934

APPENDIX

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Ninyo & Moore / Lynwood Stormwater Capture**
Location: **11301 Bullis Rd, Lynwood, CA**

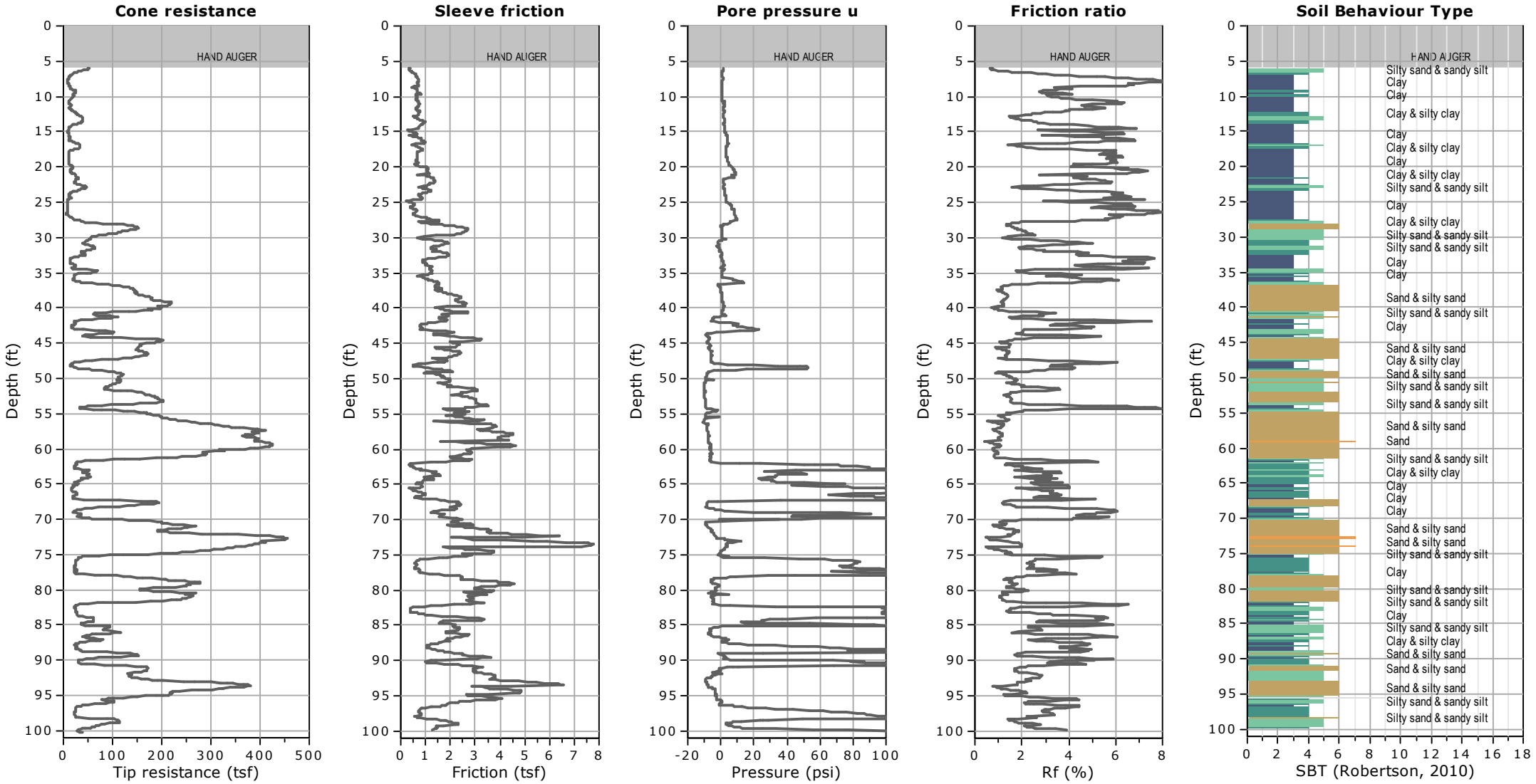
CPT-1
Total depth: 60.31 ft, Date: 1/30/2023



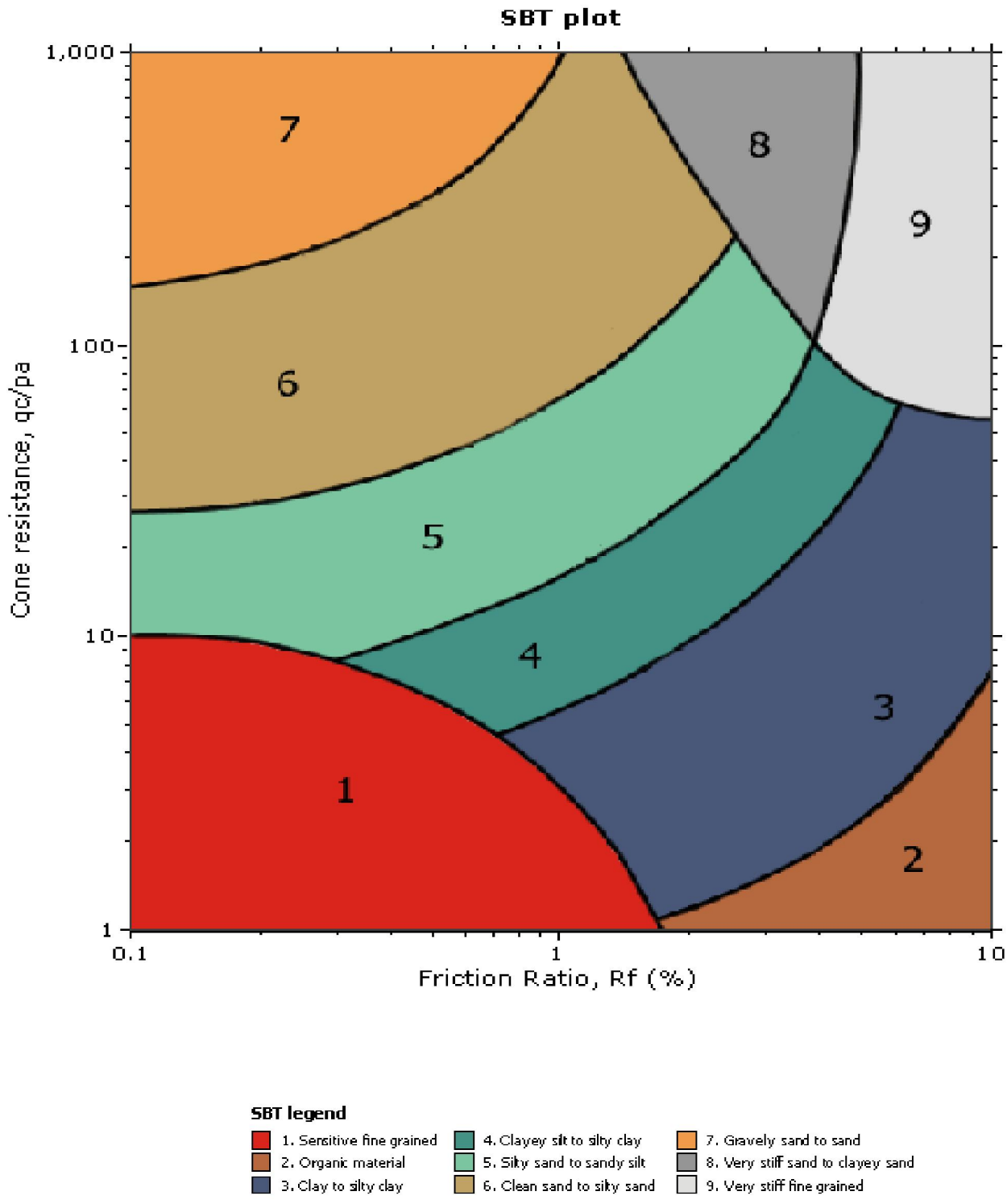
Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Ninyo & Moore / Lynwood Stormwater Capture**
Location: **11301 Bullis Rd, Lynwood, CA**

CPT-2
Total depth: 100.20 ft, Date: 1/30/2023



Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com



Ninyo & Moore
Lynwood Stormwater Capture
Lynwood, CA

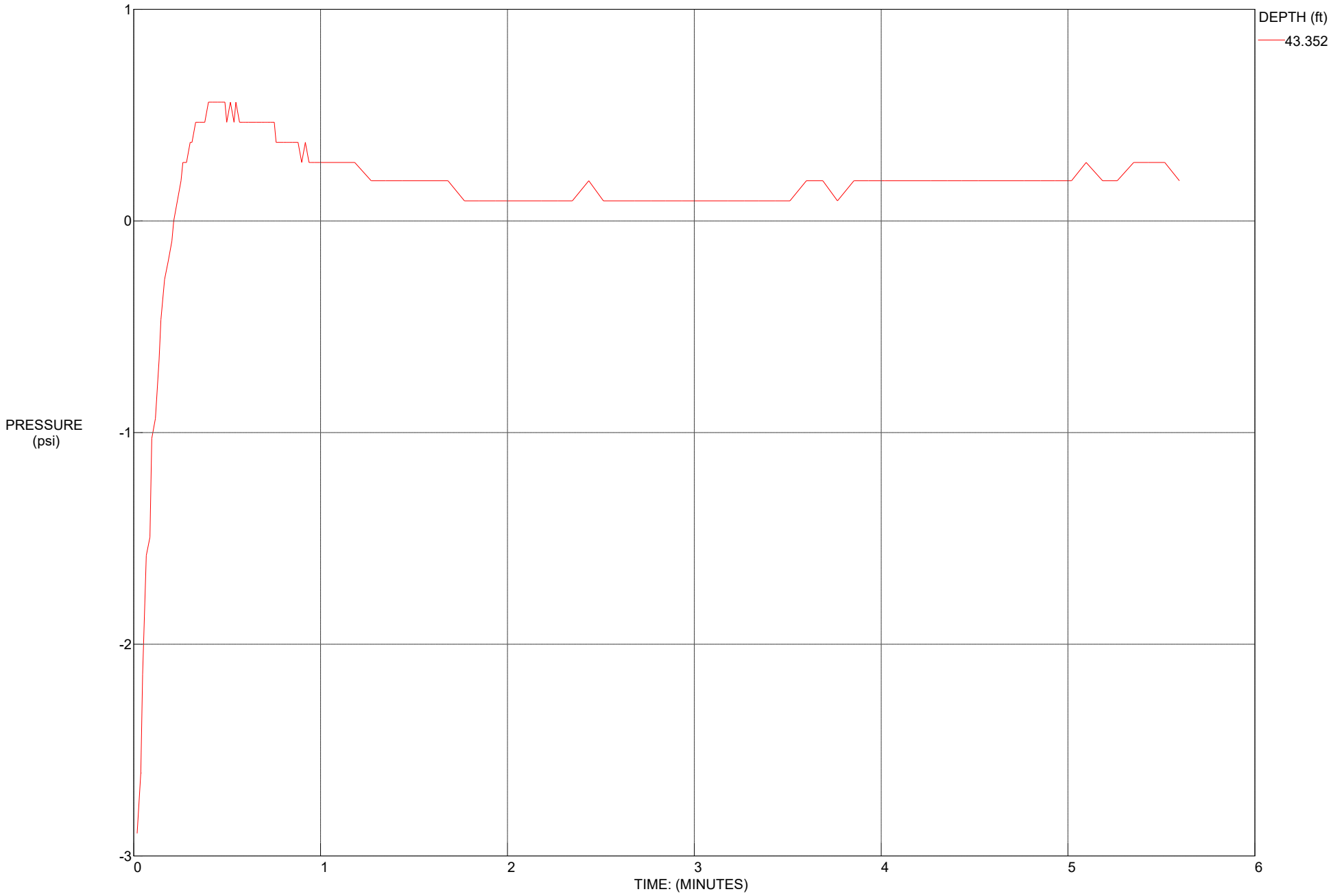
CPT Shear Wave Measurements

Location	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
CPT-2	4.99	3.99	4.46	8.76	509	
	10.04	9.04	9.26	16.28	569	638
	15.03	14.03	14.17	26.56	534	478
	20.05	19.05	19.15	34.88	549	599
	25.10	24.10	24.18	42.84	564	632
	30.15	29.15	29.22	49.24	593	787
	35.04	34.04	34.10	57.16	597	616
	40.12	39.12	39.17	62.96	622	875
	45.05	44.05	44.10	69.26	637	782
	50.10	49.10	49.14	75.26	653	841
	55.12	54.12	54.16	81.70	663	779
	60.10	59.10	59.13	86.52	683	1033
	65.12	64.12	64.15	91.74	699	961
	70.08	69.08	69.11	98.28	703	758
	75.13	74.13	74.16	103.34	718	998
	80.02	79.02	79.05	108.76	727	902
	85.04	84.04	84.06	114.76	733	836
	90.09	89.09	89.11	119.68	745	1026
	95.05	94.05	94.07	125.04	752	925
	100.16	99.16	99.18	130.40	761	953

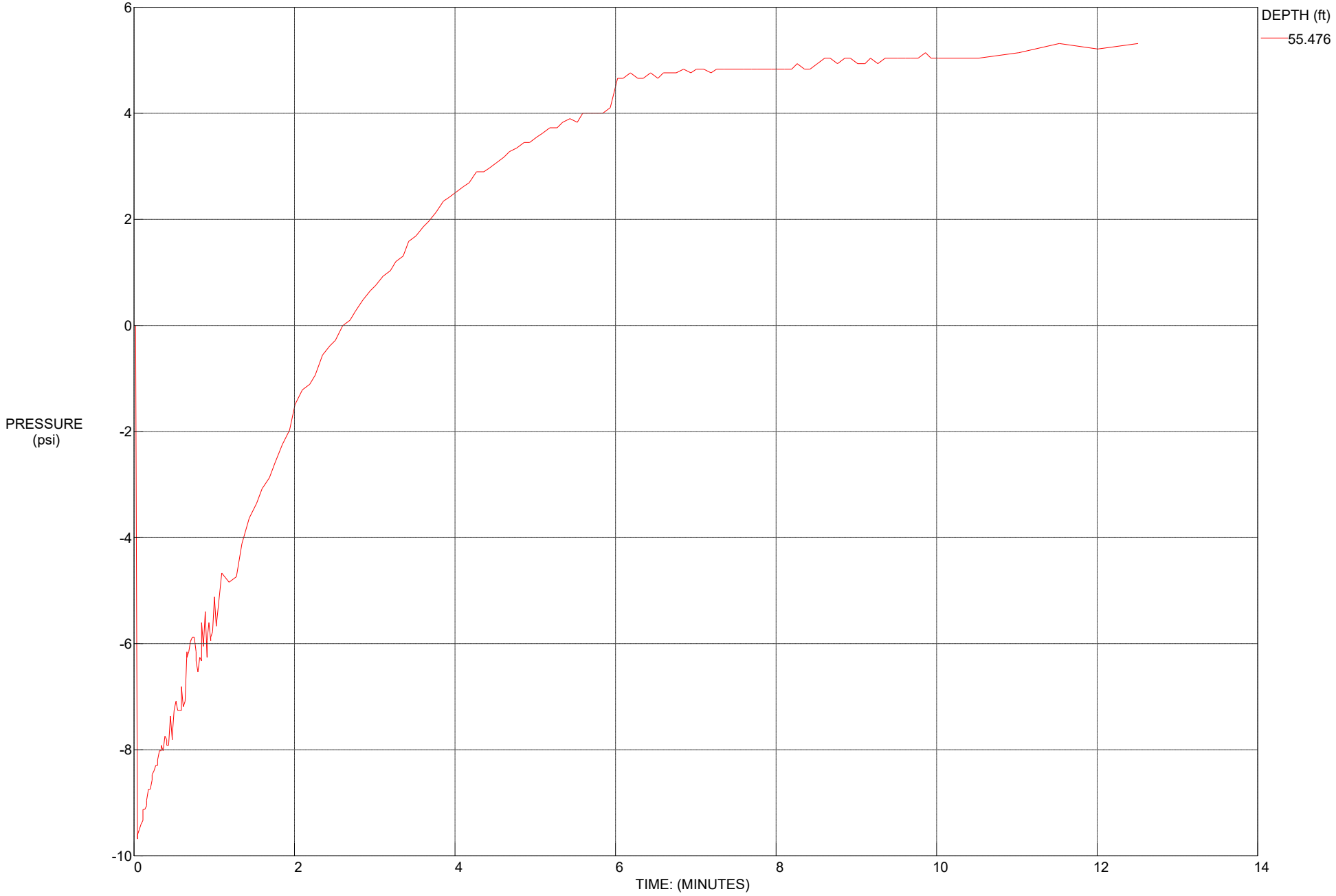
Shear Wave Source Offset - 2 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

TEST ID: CPT-1



TEST ID: CPT-2


DEPTH (ft)
55.476
PRESSURE
(psi)
6
4
2
0
-2
-4
-6
-8
-10
0
2
4
6
8
10
12
14
TIME: (MINUTES)

APPENDIX D

Laboratory Testing

APPENDIX D

LABORATORY TESTING

Classification
Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory borings in Appendix B.

In-Place Moisture and Density Tests
The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory borings in Appendix B.

200 Wash
An evaluation of the percentage of particles finer than the No. 200 sieve in selected soil samples was performed in general accordance with ASTM D 1140. The results of the tests are presented on Figures D-1 through D-3.

Atterberg Limits
Tests were performed on a selected representative fine-grained soil sample to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D 4318. These test results were utilized to evaluate the soil classification in accordance with the USCS. The test results and classification are shown on Figure D-4.

Consolidation Tests
Consolidation testing was performed on selected relatively undisturbed soil samples in general accordance with ASTM D 2435. The samples were inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The results of the tests are summarized on Figures D-5 and D-6.

Direct Shear Tests
Direct shear tests were performed on relatively undisturbed samples in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of selected materials. The samples were inundated during shearing to represent the adverse field conditions. The results are shown on Figures D-7 and D-8.

Soil Corrosivity Tests
Soil pH and resistivity tests were performed on representative samples in general accordance with CT 643. The soluble sulfate and chloride content of the selected samples were evaluated in general accordance with CT 417 and CT 422, respectively. The test results are presented on Figure D-9.

SAMPLE LOCATION	SAMPLE DEPTH (ft)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
B-1	5.0-6.5	SANDY SILT	100	63	ML
B-1	15.0-16.5	SILT WITH SAND	99	71	ML
B-1	25.0-26.5	SANDY SILT	100	58	ML
B-2	10.0-11.5	SILT	100	91	ML
B-2	20.0-21.5	SILT	100	87	ML
B-2	30.0-31.5	SANDY SILT	100	53	ML
B-2	40.0-41.5	SILTY SAND	100	15	SM
B-2	45.0-45.5	SANDY SILT	100	63	ML
B-2	50.0-51.5	SANDY SILT	100	51	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 1140

FIGURE D-1

NO. 200 SIEVE ANALYSIS TEST RESULTS

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

212102001 | 3/23

SAMPLE LOCATION	SAMPLE DEPTH (ft)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
B-2	60.0-61.5	SILTY SAND	100	16	SM
B-2	70.0-71.0	SILT WITH SAND	100	85	ML
B-2	80.0-81.5	SILTY SAND	100	35	SM
B-2	90.0-91.0	SILT WITH SAND	100	82	ML
B-3	10.0-11.5	SILT	100	92	ML
B-3	20.0-21.5	SILT	99	91	ML
P-1	0.0-1.0	SILTY SAND	92	46	SM
P-1	5.0-6.5	SANDY SILT	100	52	ML
P-2	0.5-5.0	SILTY SAND	100	41	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 1140

FIGURE D-2

NO. 200 SIEVE ANALYSIS TEST RESULTS

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

SAMPLE LOCATION	SAMPLE DEPTH (ft)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
P-2	15.0-16.5	SILT	100	87	ML
P-3	0.0-1.0	SANDY SILT	100	50	ML
P-3	20.0-21.5	SILT WITH SAND	100	84	ML
P-4	5.0-6.5	SILTY SAND	100	17	SM
P-4	15.0-16.5	SILT	100	89	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 1140

FIGURE D-3

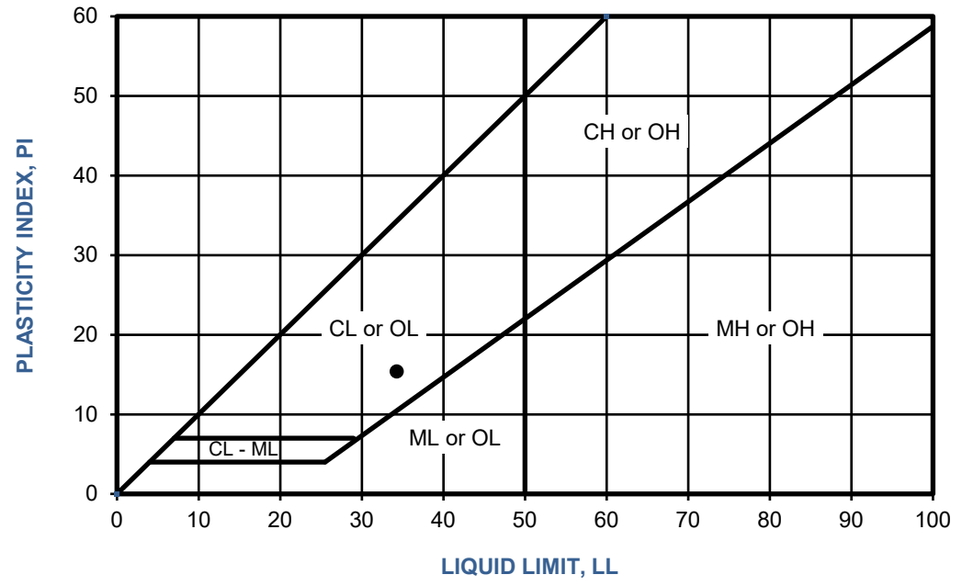
NO. 200 SIEVE ANALYSIS TEST RESULTS

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

212102001 | 3/23

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-1	20.0-21.5	34	19	15	CL	CL



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

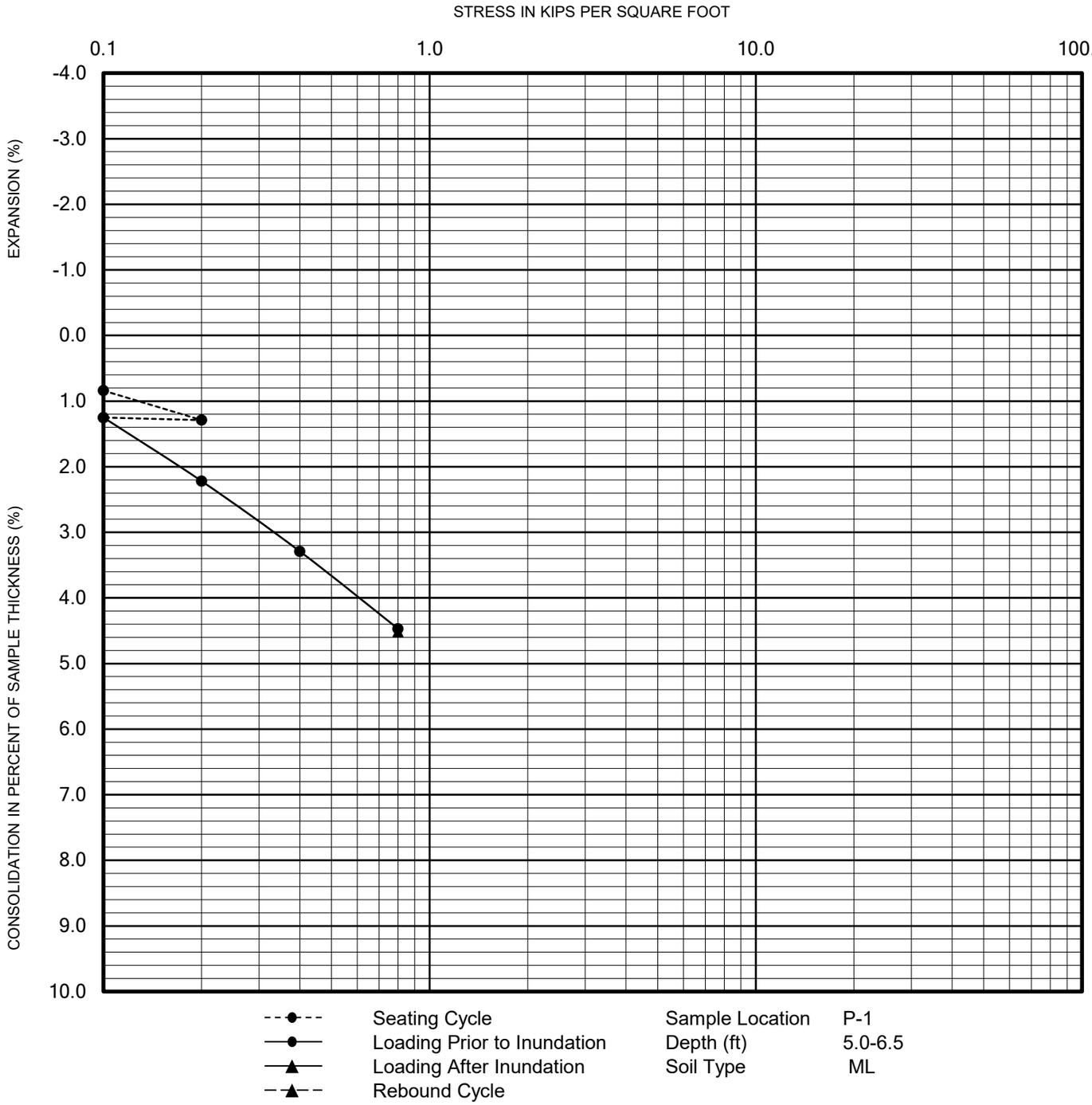
FIGURE D-4

ATTERBERG LIMITS TEST RESULTS

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

212102001 | 3/23

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PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE D-5

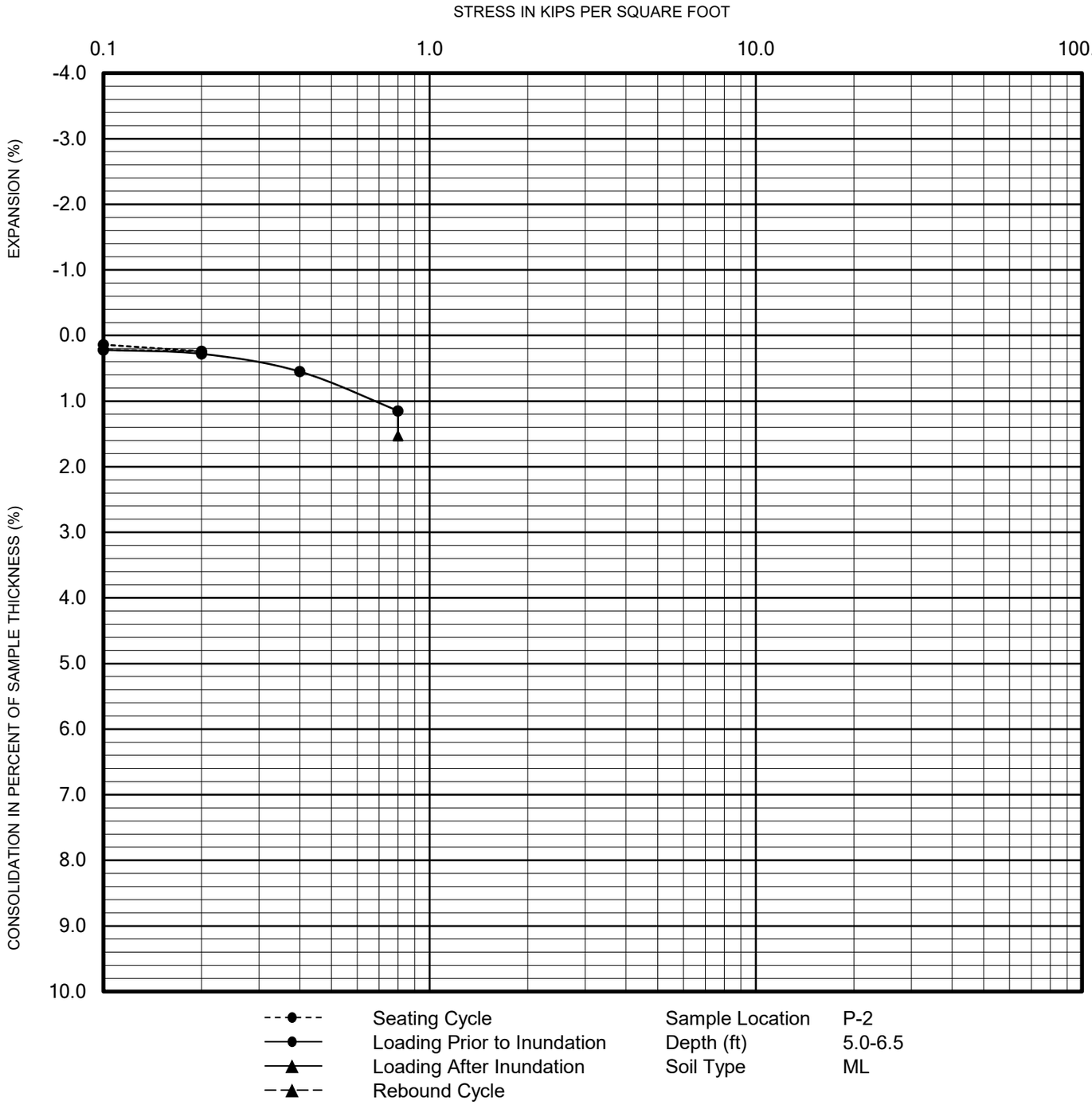
CONSOLIDATION TEST RESULTS

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

212102001 | 3/23

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

212102001 Fig D-5_CONSOLIDATION @ P-1 5.0-6.5



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE D-6

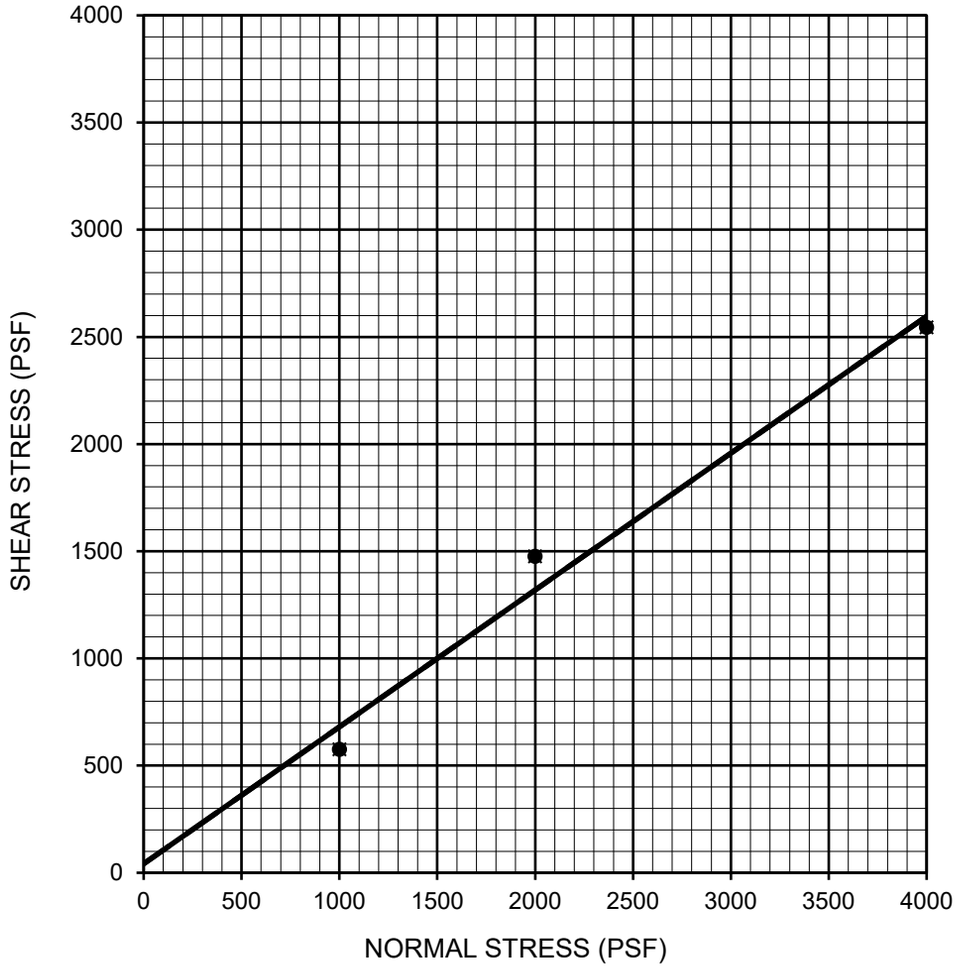
CONSOLIDATION TEST RESULTS

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

212102001 | 3/23

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

212102001 Fig D-6_CONSOLIDATION @ P-2 5.0-6.5



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
SILT	—●—	B-2	10.0-11.5	Peak	42	33	ML
SILT	– – X – –	B-2	10.0-11.5	Ultimate	42	33	ML

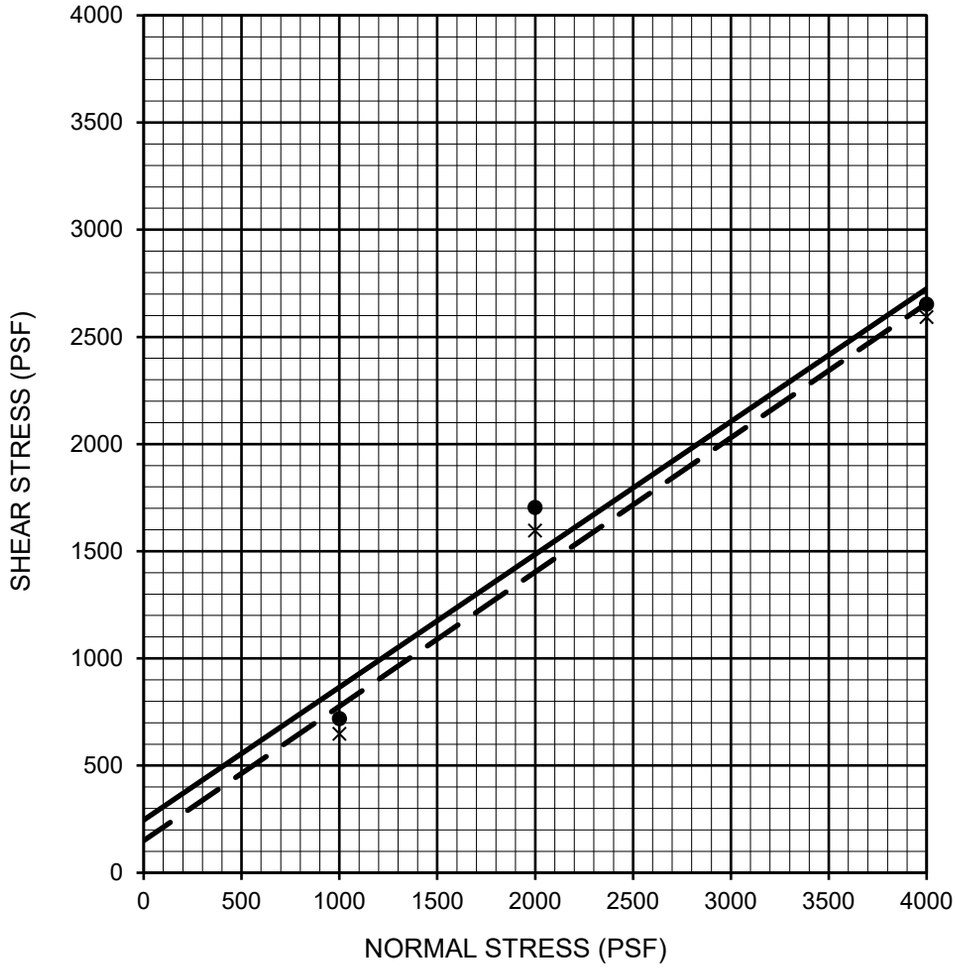
PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE D-7

DIRECT SHEAR TEST RESULTS

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
SILT	—●—	B-2	20.0-21.5	Peak	246	32	ML
SILT	– – X – –	B-2	20.0-21.5	Ultimate	150	32	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE D-8

DIRECT SHEAR TEST RESULTS

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

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SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH [1]	RESISTIVITY [1] (ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
B-1	4.5-5.0	7.4	8,745	70	0.007	60
B-2	8.0-9.5	7.3	580	180	0.018	650

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643
[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417
[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

FIGURE D-9

CORROSIVITY TEST RESULTS

LYNWOOD CITY PARK STORMWATER CAPTURE PROJECT
LYNWOOD, CALIFORNIA

212102001 | 3/23

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

APPENDIX E

Drum Characterization Test Results

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

09 February 2023

Jennifer Schmidt
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: Lynwood Park

Enclosed are the results of analyses for samples received by the laboratory on 02/03/23 12:26. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Joann Marroquin
Director of Operations

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
212102001_Composite	T230311-07	Soil	01/30/23 14:04	02/03/23 12:26

SunStar Laboratories, Inc.



Joann Marroquin, Director of Operations

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

DETECTIONS SUMMARY

Sample ID: 212102001_Composite **Laboratory ID:** T230311-07

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**130**	1.0	mg/kg	EPA 6010b	
Chromium	**16**	2.0	mg/kg	EPA 6010b	
Cobalt	**11**	2.0	mg/kg	EPA 6010b	
Copper	**29**	1.0	mg/kg	EPA 6010b	
Lead	**4.1**	3.0	mg/kg	EPA 6010b	
Nickel	**12**	2.0	mg/kg	EPA 6010b	
Vanadium	**39**	5.0	mg/kg	EPA 6010b	
Zinc	**58**	1.0	mg/kg	EPA 6010b	

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Joann Marroquin

Joann Marroquin, Director of Operations

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Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

212102001_Composite

T230311-07 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	23B0069	02/03/23	02/06/23	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*93.9 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	4.0	mg/kg	1	23B0057	02/03/23	02/09/23	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**130**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	02/09/23	"	
Cadmium	ND	2.0	"	"	"	"	02/09/23	"	
Chromium	**16**	2.0	"	"	"	"	"	"	
Cobalt	**11**	2.0	"	"	"	"	"	"	
Copper	**29**	1.0	"	"	"	"	"	"	
Lead	**4.1**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**12**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	5.0	"	"	"	"	"	"	
Vanadium	**39**	5.0	"	"	"	"	"	"	
Zinc	**58**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	23B0058	02/03/23	02/07/23	EPA 7471A Soil	

SunStar Laboratories, Inc.



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Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

212102001_Composite

T230311-07 (Soil)

SunStar Laboratories, Inc.

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromobenzene	ND	2.5	ug/kg	1	23B0052	02/03/23	02/04/23	EPA 8260B	
Bromochloromethane	ND	2.5	"	"	"	"	"	"	
Bromodichloromethane	ND	2.5	"	"	"	"	"	"	
Bromoform	ND	2.5	"	"	"	"	"	"	
Bromomethane	ND	2.5	"	"	"	"	"	"	
n-Butylbenzene	ND	2.5	"	"	"	"	"	"	
sec-Butylbenzene	ND	2.5	"	"	"	"	"	"	
tert-Butylbenzene	ND	2.5	"	"	"	"	"	"	
Carbon tetrachloride	ND	2.5	"	"	"	"	"	"	
Chlorobenzene	ND	2.5	"	"	"	"	"	"	
Chloroethane	ND	2.5	"	"	"	"	"	"	
Chloroform	ND	2.5	"	"	"	"	"	"	
Chloromethane	ND	2.5	"	"	"	"	"	"	
2-Chlorotoluene	ND	2.5	"	"	"	"	"	"	
4-Chlorotoluene	ND	2.5	"	"	"	"	"	"	
Dibromochloromethane	ND	2.5	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	2.5	"	"	"	"	"	"	
Dibromomethane	ND	2.5	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	2.5	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	2.5	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	2.5	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	2.5	"	"	"	"	"	"	
1,1-Dichloroethane	ND	2.5	"	"	"	"	"	"	
1,2-Dichloroethane	ND	2.5	"	"	"	"	"	"	
1,1-Dichloroethene	ND	2.5	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	2.5	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	2.5	"	"	"	"	"	"	
1,2-Dichloropropane	ND	2.5	"	"	"	"	"	"	
1,3-Dichloropropane	ND	2.5	"	"	"	"	"	"	
2,2-Dichloropropane	ND	2.5	"	"	"	"	"	"	
1,1-Dichloropropene	ND	2.5	"	"	"	"	"	"	

SunStar Laboratories, Inc.

Joann Marroquin

Joann Marroquin, Director of Operations

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Lake Forest, California 92630
949.297.5020 Phone
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Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

212102001_Composite

T230311-07 (Soil)

SunStar Laboratories, Inc.

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
cis-1,3-Dichloropropene	ND	2.5	ug/kg	1	23B0052	02/03/23	02/04/23	EPA 8260B	
trans-1,3-Dichloropropene	ND	2.5	"	"	"	"	"	"	
Hexachlorobutadiene	ND	2.5	"	"	"	"	"	"	
Isopropylbenzene	ND	2.5	"	"	"	"	"	"	
p-Isopropyltoluene	ND	2.5	"	"	"	"	"	"	
Methylene chloride	ND	10	"	"	"	"	"	"	
Naphthalene	ND	2.5	"	"	"	"	"	"	
n-Propylbenzene	ND	2.5	"	"	"	"	"	"	
Styrene	ND	2.5	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	2.5	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	2.5	"	"	"	"	"	"	
Tetrachloroethene	ND	2.5	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	2.5	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	2.5	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	2.5	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	2.5	"	"	"	"	"	"	
Trichloroethene	ND	2.5	"	"	"	"	"	"	
Trichlorofluoromethane	ND	2.5	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	2.5	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	2.5	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	2.5	"	"	"	"	"	"	
Vinyl chloride	ND	2.5	"	"	"	"	"	"	
Benzene	ND	2.5	"	"	"	"	"	"	
Toluene	ND	2.5	"	"	"	"	"	"	
Ethylbenzene	ND	2.5	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	2.5	"	"	"	"	"	"	
Acetone	ND	5.0	"	"	"	"	"	"	
Methyl ethyl ketone	ND	5.0	"	"	"	"	"	"	
Methyl isobutyl ketone	ND	5.0	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	5.0	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*124 %*	*75.4-139*		"	"	"	"	

SunStar Laboratories, Inc.



Joann Marroquin, Director of Operations

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Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

212102001_Composite

T230311-07 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organic Compounds by EPA Method 8260B									
Surrogate: Dibromofluoromethane		*112 %*		*73.1-125*	*23B0052*	*02/03/23*	*02/04/23*	*EPA 8260B*	
Surrogate: Toluene-d8		*99.8 %*		*82.6-117*	*"*	*"*	*"*	*"*	

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Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 23B0069 - EPA 3550B GC										
Blank (23B0069-BLK1)				Prepared: 02/03/23 Analyzed: 02/06/23						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*92.9*		*"*	*100*		*92.9*	*65-135*			
LCS (23B0069-BS1)				Prepared: 02/03/23 Analyzed: 02/06/23						
C13-C28 (DRO)	470	10	mg/kg				75-125			
Surrogate: p-Terphenyl	*98.9*		*"*	*100*		*98.9*	*65-135*			
LCS Dup (23B0069-BSD1)				Prepared: 02/03/23 Analyzed: 02/06/23						
C13-C28 (DRO)	480	10	mg/kg				75-125	2.38	20	
Surrogate: p-Terphenyl	*106*		*"*	*100*		*106*	*65-135*			

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Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 23B0057 - EPA 3050B										
Blank (23B0057-BLK1)				Prepared: 02/03/23 Analyzed: 02/09/23						
Antimony	ND	4.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	5.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (23B0057-BS1)				Prepared: 02/03/23 Analyzed: 02/09/23						
Arsenic	102	5.0	mg/kg	100		102	75-125			
Barium	105	1.0	"	100		105	75-125			
Cadmium	107	2.0	"	100		107	75-125			
Chromium	108	2.0	"	100		108	75-125			
Lead	106	3.0	"	100		106	75-125			
Matrix Spike (23B0057-MS1)	**Source: T230291-01**			Prepared: 02/03/23 Analyzed: 02/09/23						
Arsenic	81.5	5.0	mg/kg	100	ND	81.5	75-125			
Barium	166	1.0	"	100	82.7	83.6	75-125			
Cadmium	77.7	2.0	"	100	ND	77.7	75-125			
Chromium	112	2.0	"	100	19.0	92.7	75-125			
Lead	95.7	3.0	"	100	14.5	81.2	75-125			

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Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 23B0057 - EPA 3050B										
Matrix Spike Dup (23B0057-MSD1)	**Source: T230291-01**			Prepared: 02/03/23 Analyzed: 02/09/23						
Arsenic	86.0	5.0	mg/kg	100	ND	86.0	75-125	5.31	20	
Barium	176	1.0	"	100	82.7	92.9	75-125	5.48	20	
Cadmium	80.8	2.0	"	100	ND	80.8	75-125	3.93	20	
Chromium	101	2.0	"	100	19.0	81.8	75-125	10.2	20	
Lead	88.9	3.0	"	100	14.5	74.4	75-125	7.38	20	QM-07

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Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 23B0058 - EPA 7471A Soil										
Blank (23B0058-BLK1)				Prepared: 02/03/23 Analyzed: 02/07/23						
Mercury	ND	0.10	mg/kg							
LCS (23B0058-BS1)				Prepared: 02/03/23 Analyzed: 02/07/23						
Mercury	0.447	0.10	mg/kg	0.397		113	80-120			
Matrix Spike (23B0058-MS1)	**Source: T230291-02**			Prepared: 02/03/23 Analyzed: 02/07/23						
Mercury	0.426	0.10	mg/kg	0.385	ND	111	75-125			
Matrix Spike Dup (23B0058-MSD1)	**Source: T230291-02**			Prepared: 02/03/23 Analyzed: 02/07/23						
Mercury	0.475	0.10	mg/kg	0.417	ND	114	75-125	10.7	20	

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Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 23B0052 - EPA 5030 GCMS										
Blank (23B0052-BLK1)				Prepared: 02/02/23 Analyzed: 02/03/23						
Bromobenzene	ND	2.5	ug/kg							
Bromochloromethane	ND	2.5	"							
Bromodichloromethane	ND	2.5	"							
Bromoform	ND	2.5	"							
Bromomethane	ND	2.5	"							
n-Butylbenzene	ND	2.5	"							
sec-Butylbenzene	ND	2.5	"							
tert-Butylbenzene	ND	2.5	"							
Carbon tetrachloride	ND	2.5	"							
Chlorobenzene	ND	2.5	"							
Chloroethane	ND	2.5	"							
Chloroform	ND	2.5	"							
Chloromethane	ND	2.5	"							
2-Chlorotoluene	ND	2.5	"							
4-Chlorotoluene	ND	2.5	"							
Dibromochloromethane	ND	2.5	"							
1,2-Dibromo-3-chloropropane	ND	5.0	"							
1,2-Dibromoethane (EDB)	ND	2.5	"							
Dibromomethane	ND	2.5	"							
1,2-Dichlorobenzene	ND	2.5	"							
1,3-Dichlorobenzene	ND	2.5	"							
1,4-Dichlorobenzene	ND	2.5	"							
Dichlorodifluoromethane	ND	2.5	"							
1,1-Dichloroethane	ND	2.5	"							
1,2-Dichloroethane	ND	2.5	"							
1,1-Dichloroethene	ND	2.5	"							
cis-1,2-Dichloroethene	ND	2.5	"							
trans-1,2-Dichloroethene	ND	2.5	"							
1,2-Dichloropropane	ND	2.5	"							
1,3-Dichloropropane	ND	2.5	"							
2,2-Dichloropropane	ND	2.5	"							
1,1-Dichloropropene	ND	2.5	"							
cis-1,3-Dichloropropene	ND	2.5	"							
trans-1,3-Dichloropropene	ND	2.5	"							
Hexachlorobutadiene	ND	2.5	"							
Isopropylbenzene	ND	2.5	"							

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Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 23B0052 - EPA 5030 GCMS										
Blank (23B0052-BLK1)				Prepared: 02/02/23 Analyzed: 02/03/23						
p-Isopropyltoluene	ND	2.5	ug/kg							
Methylene chloride	ND	10	"							
Naphthalene	ND	2.5	"							
n-Propylbenzene	ND	2.5	"							
Styrene	ND	2.5	"							
1,1,2,2-Tetrachloroethane	ND	2.5	"							
1,1,1,2-Tetrachloroethane	ND	2.5	"							
Tetrachloroethene	ND	2.5	"							
1,2,3-Trichlorobenzene	ND	2.5	"							
1,2,4-Trichlorobenzene	ND	2.5	"							
1,1,2-Trichloroethane	ND	2.5	"							
1,1,1-Trichloroethane	ND	2.5	"							
Trichloroethene	ND	2.5	"							
Trichlorofluoromethane	ND	2.5	"							
1,2,3-Trichloropropane	ND	2.5	"							
1,3,5-Trimethylbenzene	ND	2.5	"							
1,2,4-Trimethylbenzene	ND	2.5	"							
Vinyl chloride	ND	2.5	"							
Benzene	ND	2.5	"							
Toluene	ND	2.5	"							
Ethylbenzene	ND	2.5	"							
m,p-Xylene	ND	5.0	"							
o-Xylene	ND	2.5	"							
Acetone	ND	5.0	"							
Methyl ethyl ketone	ND	5.0	"							
Methyl isobutyl ketone	ND	5.0	"							
2-Hexanone (MBK)	ND	5.0	"							
Surrogate: 4-Bromofluorobenzene	*61.1*		*"*	*50.0*		*122*	*75.4-139*			
Surrogate: Dibromofluoromethane	*52.1*		*"*	*50.0*		*104*	*73.1-125*			
Surrogate: Toluene-d8	*49.2*		*"*	*50.0*		*98.4*	*82.6-117*			

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Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 23B0052 - EPA 5030 GCMS										
LCS (23B0052-BS1)				Prepared: 02/02/23 Analyzed: 02/03/23						
Chlorobenzene	49.6	2.5	ug/kg	50.0		99.3	65.2-124			
1,1-Dichloroethene	40.5	2.5	"	50.0		80.9	60.9-131			
Trichloroethene	41.2	2.5	"	50.0		82.3	62.1-126			
Benzene	43.7	2.5	"	50.0		87.5	65.3-127			
Toluene	41.0	2.5	"	50.0		81.9	64.3-122			
Surrogate: 4-Bromofluorobenzene	*63.4*		"	*50.0*		*127*	*75.4-139*			
Surrogate: Dibromofluoromethane	*49.6*		"	*50.0*		*99.2*	*73.1-125*			
Surrogate: Toluene-d8	*48.9*		"	*50.0*		*97.9*	*82.6-117*			
Matrix Spike (23B0052-MS1)		**Source: T230291-01**		Prepared: 02/02/23 Analyzed: 02/03/23						
Chlorobenzene	44.4	2.5	ug/kg	50.0	ND	88.8	65.2-125			
1,1-Dichloroethene	41.2	2.5	"	50.0	ND	82.4	60.9-131			
Trichloroethene	40.0	2.5	"	50.0	ND	80.0	62.1-126			
Benzene	41.0	2.5	"	50.0	ND	82.0	65.3-127			
Toluene	38.4	2.5	"	50.0	ND	76.8	64.3-125			
Surrogate: 4-Bromofluorobenzene	*64.6*		"	*50.0*		*129*	*75.4-139*			
Surrogate: Dibromofluoromethane	*51.1*		"	*50.0*		*102*	*73.1-125*			
Surrogate: Toluene-d8	*49.6*		"	*50.0*		*99.1*	*82.6-117*			
Matrix Spike Dup (23B0052-MSD1)		**Source: T230291-01**		Prepared: 02/02/23 Analyzed: 02/03/23						
Chlorobenzene	37.4	2.5	ug/kg	50.0	ND	74.9	65.2-125	17.0	20	
1,1-Dichloroethene	36.2	2.5	"	50.0	ND	72.3	60.9-131	13.0	20	
Trichloroethene	35.0	2.5	"	50.0	ND	70.1	62.1-126	13.2	20	
Benzene	36.3	2.5	"	50.0	ND	72.6	65.3-127	12.2	20	
Toluene	34.2	2.5	"	50.0	ND	68.5	64.3-125	11.5	20	
Surrogate: 4-Bromofluorobenzene	*62.2*		"	*50.0*		*124*	*75.4-139*			
Surrogate: Dibromofluoromethane	*50.2*		"	*50.0*		*100*	*73.1-125*			
Surrogate: Toluene-d8	*50.0*		"	*50.0*		*99.9*	*82.6-117*			

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Joann Marroquin

Joann Marroquin, Director of Operations

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Ninyo & Moore	Project: Lynwood Park	
475 Goddard, Ste. 200	Project Number: 212102001	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/09/23 16:29

Notes and Definitions

QM-07	The spike recovery and or RPD was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Joann Marroquin, Director of Operations

SunStar Laboratories, Inc.
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Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: Ninyo & Moore
Address: 475 Goddard Suite 200
Phone: 949-753-7070 Fax:
Project Manager: Jennifer Schmidt

Date: 2/1/2023 Page: 1 Of 1
Project Name: Lynwood Park
Collector: Client Project #: 212102001
Batch #: T230311 EDF #:

Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals					Laboratory ID #	Comments/Preservative	Total # of containers
212102001_DRUM 7+2	1/30/23	12:30pm	Soil	4oz jar	X							X	X					01		
212102001_DRUM 4	1/31/23	12:30pm	Soil		X							X	X					02		
212102001_DRUM 9	1/31/23	10:00am	Soil		X							X	X					03	Composite; run 1 test	
212102001_DRUM 3,8,10,11,12	2/1/23	1:00pm	Soil		X							X	X					04		
212102001_DRUM 1	1/30/23	10:20am	Soil		X							X	X					05		
212102001_DRUM 6+5	1/30/23	2:04pm	Soil		X							X	X					06		

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
Allison Pylon	2/2/23 4:50pm	[illegible]	2/3/23 12:26
[signature]	2/3/23 12:26	[signature]	2/3/23 12:26
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

PB

Total # of containers	
Chain of Custody seals Y/N/NA	N
Seals intact? Y/N/NA	NA
Received good condition/cold	3.1°C

Turn around time:

Notes

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

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SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T230311

Client Name: Ninyo + Moore Project: Lynwood Park

Delivered by: ☑ Client ☐ SunStar Courier ☐ GLS ☐ FedEx ☐ Other

If Courier, Received by: _____ Date/Time Courier Received: _____

Lab Received by: Paul Date/Time Lab Received: 2/3/23 12:26

Total number of coolers received: 1 Thermometer ID: SC-1 Calibration due : 8/2/23

Temperature:	Cooler #1	3.0 °C +/- the CF (+ 0.1°C)	=	3.1	°C corrected temperature
Temperature:	Cooler #2	°C +/- the CF (+ 0.1°C)	=		°C corrected temperature
Temperature:	Cooler #3	°C +/- the CF (+ 0.1°C)	=		°C corrected temperature

Temperature criteria = ≤ 6°C (no frozen containers) — Within criteria? ☑ **Yes** ☐ **No** ☐ **N/A**

If NO:

Samples received on ice? ☐ Yes ☐ **No → Complete Non-Conformance Sheet**

If on ice, samples received same day collected? ☐ Yes → Acceptable ☐ **No → Complete Non-Conformance Sheet**

Custody seals intact on cooler/sample	☐ Yes	☐ No*	☑ N/A
Sample containers intact	☑ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☑ Yes	☐ No*	
Total number of containers received match COC	☑ Yes	☐ No*	
Proper containers received for analyses requested on COC	☑ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☑ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☑ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked Cooler/Sample Review - Initials and date: PB 2/3/23

Comments:

Page 1 of 1

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T230311

Client:	**Ninyo & Moore**	**Project Manager:**	**Joann Marroquin**
Project:	**Lynwood Ave.**	**Project Number:**	**212102001**

Report To:
Ninyo & Moore
Jennifer Schmidt
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due:	02/10/23 17:00 (5 day TAT)		
Received By:	Paul Berner	Date Received:	02/03/23 12:26
Logged In By:	Rebecca Traficanto	Date Logged In:	02/03/23 14:55

Samples Received at: **3.1°C**

Custody Seals	Yes	Received On Ice	Yes
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confirı	Yes		

Analysis	Due	TAT	Expires	Comments

T230311-01 212102001_Drum 7+2 [Soil] Sampled 01/30/23 12:30 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T230311-02 212102001_Drum 4 [Soil] Sampled 01/30/23 12:30 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T230311-03 212102001_Drum 9 [Soil] Sampled 01/30/23 10:00 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T230311-04 212102001_Drum 3,8,10,11,12 [Soil] Sampled 01/30/23 13:00 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T230311-05 212102001_Drum 1 [Soil] Sampled 01/30/23 10:20 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T230311-06 212102001_Drum 6+5 [Soil] Sampled 01/30/23 14:04 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T230311

Client:	**Ninyo & Moore**	**Project Manager:**	**Joann Marroquin**
Project:	**Lynwood Ave.**	**Project Number:**	**212102001**

Analysis	Due	TAT	Expires	Comments
T230311-07 212102001_Composite [Soil] Sampled 01/30/23 14:04 (GMT-08:00) Pacific Time (US &				**Composite 6:1 Samples 1,2,3,4,5,6**
6010 Title 22	02/10/23 15:00	5	07/29/23 14:04	Composite 6:1 Samples 1,2,3,4,5,6
8015 Carbon Chain	02/08/23 15:00	3	02/13/23 14:04	Composite 6:1 Samples 1,2,3,4,5,6
8260	02/08/23 15:00	3	02/13/23 14:04	Composite 6:1 Samples 1,2,3,4,5,6

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By

Date

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T230311

Client:	**Ninyo & Moore**	**Project Manager:**	**Joann Marroquin**
Project:	**Lynwood Park**	**Project Number:**	**212102001**

Report To:

Ninyo & Moore
Jennifer Schmidt
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due:	02/10/23 17:00 (5 day TAT)		
Received By:	Paul Berner	Date Received:	02/03/23 12:26
Logged In By:	Rebecca Traficanto	Date Logged In:	02/03/23 14:55

Samples Received at:	**3.1°C**		
Custody Seals	Yes	Received On Ice	Yes
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confirme	Yes		

Analysis	Due	TAT	Expires	Comments

T230311-01 212102001_Drum 7+2 [Soil] Sampled 01/30/23 12:30 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T230311-02 212102001_Drum 4 [Soil] Sampled 01/30/23 12:30 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T230311-03 212102001_Drum 9 [Soil] Sampled 01/30/23 10:00 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T230311-04 212102001_Drum 3,8,10,11,12 [Soil] Sampled 01/30/23 13:00 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T230311-05 212102001_Drum 1 [Soil] Sampled 01/30/23 10:20 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T230311-06 212102001_Drum 6+5 [Soil] Sampled 01/30/23 14:04 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T230311

Client:	**Ninyo & Moore**	**Project Manager:**	**Joann Marroquin**
Project:	**Lynwood Park**	**Project Number:**	**212102001**

Analysis	Due	TAT	Expires	Comments
T230311-07 212102001_Composite [Soil] Sampled 01/30/23 14:04 (GMT-08:00) Pacific Time (US &				**Composite 6:1 Samples 1,2,3,4,5,6**
6010 Title 22	02/10/23 15:00	5	07/29/23 14:04	Composite 6:1 Samples 1,2,3,4,5,6
8015 Carbon Chain	02/08/23 15:00	3	02/13/23 14:04	Composite 6:1 Samples 1,2,3,4,5,6
8260	02/10/23 15:00	3	02/13/23 14:04	Composite 6:1 Samples 1,2,3,4,5,6

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By

Date

APPENDIX F

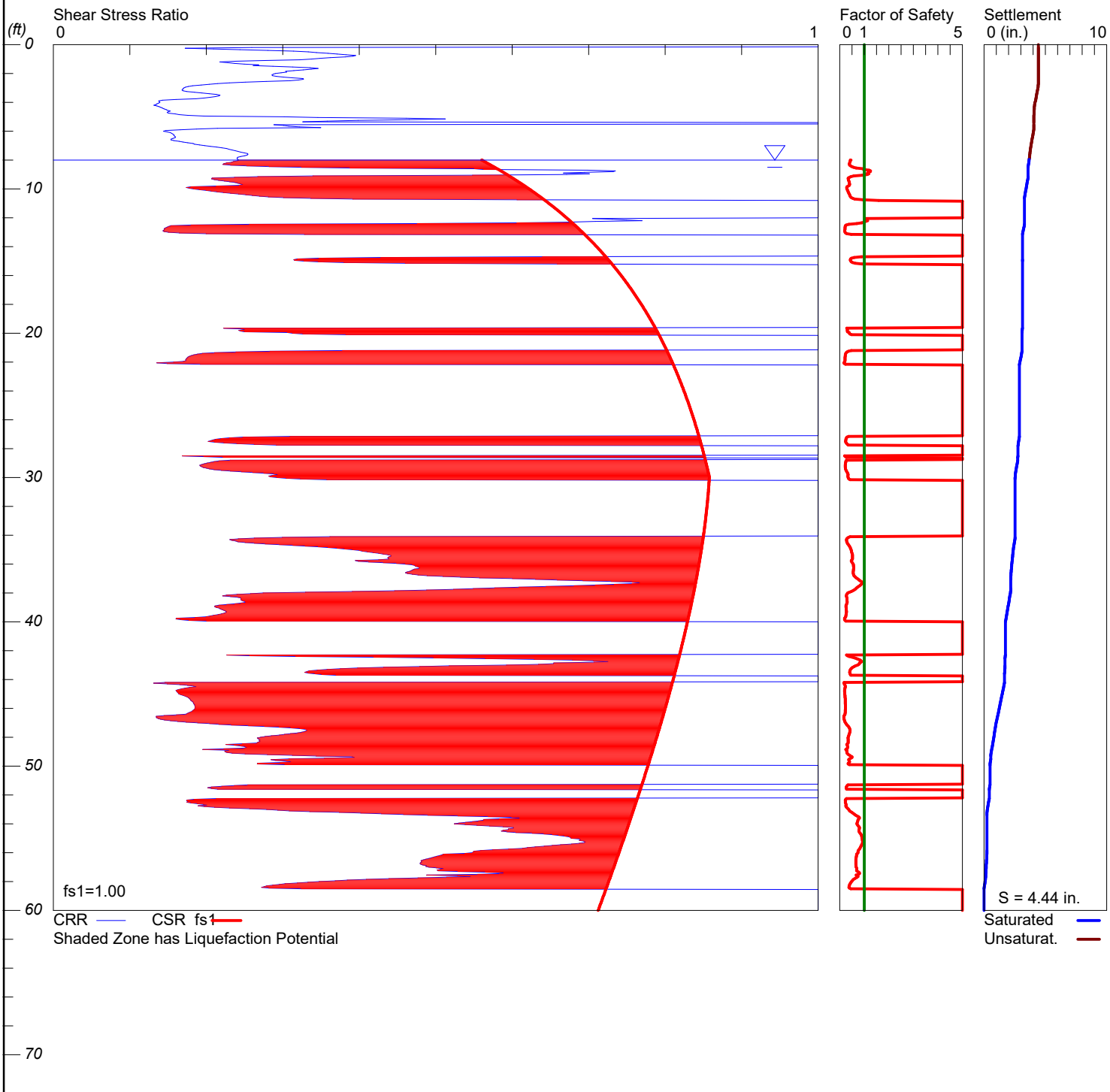
Liquefaction Analysis

LIQUEFACTION ANALYSIS

Lynwood City Park Stormwater Capture Project

Hole No.=CPT-1 Water Depth=8 ft

Magnitude=7.3
Acceleration=0.878g



LiquefyPro CivilTech Software USA www.civiltech.com

```
   ********************************************************************************************
                                      LIQUEFACTION ANALYSIS SUMMARY
                                     Copyright by CivilTech Software
                                           www.civiltech.com
   ********************************************************************************************
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       Licensed to ,   3/2/2023        2:40:55 PM

       Input File Name: G:\File Share\RVC temp\Projects\212102001 Lynwood City Park Stormwater Capture\Geo
Calcs\Liq\212102001 Lynwood City Park CPT-1.liq
       Title:  Lynwood City Park Stormwater Capture Project
       Subtitle:  212102001

       Surface Elev.=
       Hole No.=CPT-1
       Depth of Hole= 60.00 ft
       Water Table during Earthquake= 8.00 ft
       Water Table during In-Situ Testing= 42.40 ft
       Max. Acceleration= 0.88 g
       Earthquake Magnitude= 7.30

 Input Data:
       Surface Elev.=
       Hole No.=CPT-1
       Depth of Hole=60.00 ft
       Water Table during Earthquake= 8.00 ft
       Water Table during In-Situ Testing= 42.40 ft
       Max. Acceleration=0.88 g
       Earthquake Magnitude=7.30
       No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

       1. CPT Calculation Method: Modify Robertson*
       2. Settlement Analysis Method: Ishihara / Yoshimine
       3. Fines Correction for Liquefaction: Stark/Olson et al.*
       4. Fine Correction for Settlement: During Liquefaction*
       5. Settlement Calculation in: All zones*
       9. User request factor of safety (apply to CSR) ,   User= 1
          Plot one CSR curve (fs1=User)
```

10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth	qc	fs	Rf	gamma	Fines	D50
ft	atm	atm	pcf	%	mm	
0.00	0.00	0.04	100.00	120.00	*	0.50
0.93	19.25	0.46	2.40	120.00	*	0.50
1.87	28.72	0.54	1.87	120.00	*	0.50
2.77	28.72	0.42	1.48	120.00	*	0.50
3.68	34.58	0.47	1.35	120.00	*	0.50
4.59	21.49	0.37	1.71	120.00	*	0.50
5.53	11.14	0.36	3.20	120.00	*	0.50
6.47	26.47	0.47	1.76	120.00	*	0.50
7.38	32.14	0.79	2.45	120.00	*	0.50
8.31	29.31	0.69	2.37	120.00	*	0.50
9.20	33.51	0.82	2.45	120.00	*	0.50
10.11	53.63	0.82	1.52	120.00	*	0.50
11.03	19.34	1.14	5.92	120.00	*	0.50
11.96	26.47	1.04	3.92	120.00	*	0.50
12.86	35.46	0.56	1.57	120.00	*	0.50
13.80	14.85	0.73	4.90	120.00	*	0.50
14.70	32.34	1.05	3.25	120.00	*	0.50
15.63	21.10	1.00	4.75	120.00	*	0.50
16.55	14.17	0.80	5.62	120.00	*	0.50
17.47	17.10	0.71	4.16	120.00	*	0.50
18.38	17.39	0.94	5.42	120.00	*	0.50
19.29	27.74	1.45	5.21	120.00	*	0.50
20.21	35.56	1.08	3.05	120.00	*	0.50
21.14	36.54	1.20	3.29	120.00	*	0.50
22.05	43.08	0.63	1.46	120.00	*	0.50
22.99	10.45	0.43	4.09	120.00	*	0.50
23.89	14.17	0.63	4.45	120.00	*	0.50
24.80	11.14	0.53	4.79	120.00	*	0.50
25.73	20.91	1.17	5.61	120.00	*	0.50
26.66	37.51	1.33	3.55	120.00	*	0.50
27.59	54.41	1.26	2.32	120.00	*	0.50

28.49	41.62	0.77	1.84	120.00	*	0.50
29.42	71.22	1.46	2.05	120.00	*	0.50
30.32	54.51	1.90	3.49	120.00	*	0.50
31.24	19.88	1.17	5.91	120.00	*	0.50
32.16	40.35	1.82	4.52	120.00	*	0.50
33.07	17.49	1.13	6.47	120.00	*	0.50
34.00	55.49	2.01	3.62	120.00	*	0.50
34.90	159.30	2.49	1.56	120.00	*	0.50
35.84	193.00	2.05	1.06	120.00	*	0.50
36.78	207.60	2.46	1.18	120.00	*	0.50
37.67	223.50	2.85	1.28	120.00	*	0.50
38.58	114.80	2.22	1.93	120.00	*	0.50
39.51	88.90	1.90	2.14	120.00	*	0.50
40.42	18.37	1.12	6.10	120.00	*	0.50
41.34	12.41	0.49	3.98	120.00	*	0.50
42.27	69.65	1.88	2.71	120.00	*	0.50
43.17	188.00	3.12	1.66	120.00	*	0.50
44.09	68.19	2.31	3.39	120.00	*	0.50
45.01	112.20	1.34	1.19	120.00	*	0.50
45.94	122.50	1.57	1.28	120.00	*	0.50
46.86	94.86	1.37	1.45	120.00	*	0.50
47.77	177.60	2.32	1.30	120.00	*	0.50
48.69	173.10	1.70	0.98	120.00	*	0.50
49.60	153.10	2.69	1.75	120.00	*	0.50
50.54	24.96	0.69	2.77	120.00	*	0.50
51.47	80.40	1.83	2.27	120.00	*	0.50
52.37	84.31	1.64	1.95	120.00	*	0.50
53.29	200.80	3.46	1.72	120.00	*	0.50
54.21	247.70	3.97	1.60	120.00	*	0.50
55.15	289.90	3.51	1.21	120.00	*	0.50
56.04	272.10	2.74	1.01	120.00	*	0.50
56.98	256.90	2.71	1.05	120.00	*	0.50
57.89	242.70	2.01	0.83	120.00	*	0.50
58.80	37.03	2.16	5.84	120.00	*	0.50
59.73	26.67	0.87	3.24	120.00	*	0.50

* Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=3.67 in.
Settlement of Unsaturated Sands=0.76 in.
Total Settlement of Saturated and Unsaturated Sands=4.44 in.
Differential Settlement=2.218 to 2.928 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.57	5.00	3.67	0.76	4.44
1.00	0.34	0.57	5.00	3.67	0.76	4.43
2.00	0.29	0.57	5.00	3.67	0.76	4.43
3.00	0.17	0.57	5.00	3.67	0.72	4.40
4.00	0.14	0.57	5.00	3.67	0.49	4.16
5.00	0.30	0.56	5.00	3.67	0.39	4.06
6.00	0.14	0.56	5.00	3.67	0.36	4.04
7.00	0.20	0.56	5.00	3.67	0.15	3.83
8.00	0.24	0.56	0.43*	3.67	0.00	3.67
9.00	0.67	0.59	1.13	3.59	0.00	3.59
10.00	0.18	0.62	0.29*	3.42	0.00	3.42
11.00	2.00	0.65	5.00	3.30	0.00	3.30
12.00	2.00	0.67	5.00	3.30	0.00	3.30
13.00	0.15	0.69	0.22*	3.16	0.00	3.16
14.00	2.00	0.71	5.00	3.13	0.00	3.13
15.00	0.33	0.73	0.45*	3.13	0.00	3.13
16.00	2.00	0.74	5.00	3.13	0.00	3.13
17.00	2.00	0.76	5.00	3.13	0.00	3.13
18.00	2.00	0.77	5.00	3.13	0.00	3.13
19.00	2.00	0.78	5.00	3.13	0.00	3.13
20.00	0.31	0.79	0.40*	3.09	0.00	3.09
21.00	2.00	0.80	5.00	3.09	0.00	3.09
22.00	0.16	0.81	0.19*	2.93	0.00	2.93
23.00	2.00	0.82	5.00	2.88	0.00	2.88
24.00	2.00	0.82	5.00	2.88	0.00	2.88
25.00	2.00	0.83	5.00	2.88	0.00	2.88
26.00	2.00	0.84	5.00	2.88	0.00	2.88
27.00	2.00	0.84	5.00	2.88	0.00	2.88
28.00	2.00	0.85	5.00	2.77	0.00	2.77

29.00	0.20	0.85	0.24*	2.71	0.00	2.71
30.00	0.29	0.86	0.34*	2.54	0.00	2.54
31.00	2.00	0.86	5.00	2.53	0.00	2.53
32.00	2.00	0.85	5.00	2.53	0.00	2.53
33.00	2.00	0.85	5.00	2.53	0.00	2.53
34.00	2.00	0.85	5.00	2.53	0.00	2.53
35.00	0.39	0.85	0.46*	2.39	0.00	2.39
36.00	0.46	0.84	0.55*	2.26	0.00	2.26
37.00	0.60	0.84	0.71*	2.18	0.00	2.18
38.00	0.27	0.84	0.33*	2.15	0.00	2.15
39.00	0.21	0.83	0.26*	1.95	0.00	1.95
40.00	2.00	0.83	5.00	1.74	0.00	1.74
41.00	2.00	0.82	5.00	1.74	0.00	1.74
42.00	2.00	0.82	5.00	1.74	0.00	1.74
43.00	0.59	0.82	0.73*	1.71	0.00	1.71
44.00	2.00	0.81	5.00	1.67	0.00	1.67
45.00	0.16	0.81	0.20*	1.48	0.00	1.48
46.00	0.19	0.80	0.23*	1.24	0.00	1.24
47.00	0.19	0.79	0.24*	0.99	0.00	0.99
48.00	0.27	0.79	0.34*	0.80	0.00	0.80
49.00	0.22	0.78	0.29*	0.59	0.00	0.59
50.00	2.00	0.78	5.00	0.48	0.00	0.48
51.00	2.00	0.77	5.00	0.48	0.00	0.48
52.00	2.00	0.77	5.00	0.42	0.00	0.42
53.00	0.28	0.76	0.37*	0.27	0.00	0.27
54.00	0.52	0.75	0.70*	0.23	0.00	0.23
55.00	0.68	0.75	0.91*	0.23	0.00	0.23
56.00	0.55	0.74	0.74*	0.23	0.00	0.23
57.00	0.49	0.73	0.67*	0.17	0.00	0.17
58.00	0.35	0.73	0.48*	0.09	0.00	0.09
59.00	2.00	0.72	5.00	0.00	0.00	0.00
60.00	2.00	0.71	5.00	0.00	0.00	0.00

---

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

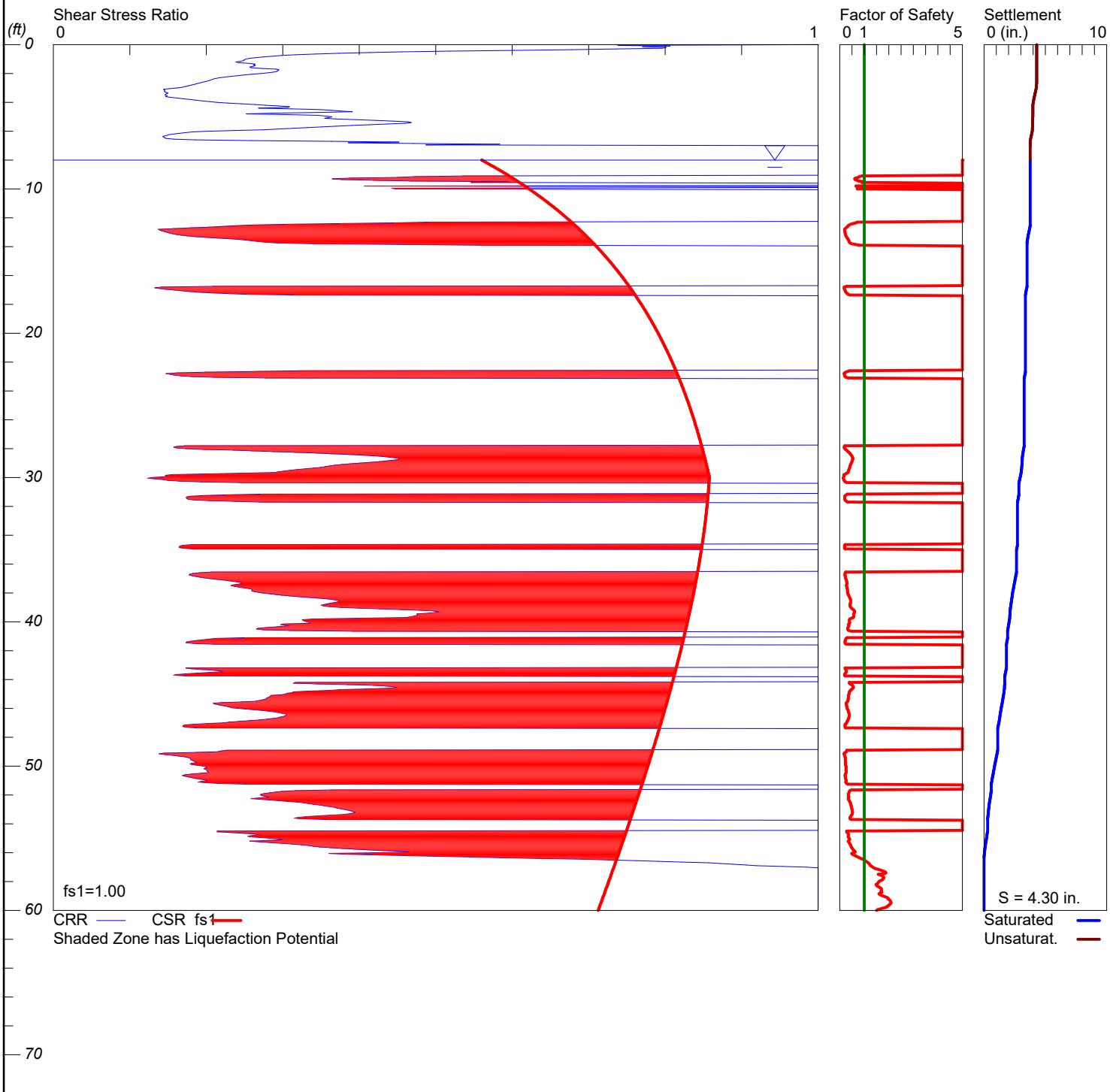
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Lynwood City Park Stormwater Capture Project

Hole No.=CPT-2 Water Depth=8 ft

Magnitude=7.3
Acceleration=0.878g



LiquefyPro CivilTech Software USA www.civiltech.com

```
   ********************************************************************************************
                                      LIQUEFACTION ANALYSIS SUMMARY
                                     Copyright by CivilTech Software
                                           www.civiltech.com
   ********************************************************************************************
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       Licensed to ,   3/2/2023        2:59:32 PM

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Calcs\Liq\212102001 Lynwood City Park CPT-2.liq
       Title:  Lynwood City Park Stormwater Capture Project
       Subtitle:  212102001

       Surface Elev.=
       Hole No.=CPT-2
       Depth of Hole= 60.00 ft
       Water Table during Earthquake= 8.00 ft
       Water Table during In-Situ Testing= 42.40 ft
       Max. Acceleration= 0.88 g
       Earthquake Magnitude= 7.30

 Input Data:
       Surface Elev.=
       Hole No.=CPT-2
       Depth of Hole=60.00 ft
       Water Table during Earthquake= 8.00 ft
       Water Table during In-Situ Testing= 42.40 ft
       Max. Acceleration=0.88 g
       Earthquake Magnitude=7.30
       No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

       1. CPT Calculation Method: Modify Robertson*
       2. Settlement Analysis Method: Ishihara / Yoshimine
       3. Fines Correction for Liquefaction: Stark/Olson et al.*
       4. Fine Correction for Settlement: During Liquefaction*
       5. Settlement Calculation in: All zones*
       9. User request factor of safety (apply to CSR) ,   User= 1
          Plot one CSR curve (fs1=User)
```

10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth	qc	fs	Rf	gamma	Fines	D50
ft	atm	atm	pcf	%	mm	
0.00	0.10	0.11	109.00	120.00	*	0.50
1.00	17.67	0.34	1.95	120.00	*	0.50
1.99	28.12	0.51	1.82	120.00	*	0.50
2.99	24.80	0.35	1.40	120.00	*	0.50
3.94	40.23	0.42	1.04	120.00	*	0.50
4.92	71.18	0.47	0.66	120.00	*	0.50
5.91	57.32	0.72	1.25	120.00	*	0.50
6.91	17.48	0.60	3.40	120.00	*	0.50
7.89	8.59	0.70	8.10	120.00	*	0.50
8.87	14.74	0.61	4.14	120.00	*	0.50
9.86	19.33	0.63	3.26	120.00	*	0.50
10.83	11.91	0.73	6.09	120.00	*	0.50
11.82	14.26	0.63	4.45	120.00	*	0.50
12.80	35.15	0.51	1.46	120.00	*	0.50
13.78	33.69	0.93	2.75	120.00	*	0.50
14.77	9.76	0.26	2.69	120.00	*	0.50
15.75	12.01	0.66	5.49	120.00	*	0.50
16.75	29.88	0.63	2.12	120.00	*	0.50
17.72	13.28	0.80	6.05	120.00	*	0.50
18.74	11.52	0.65	5.63	120.00	*	0.50
19.72	13.47	0.63	4.65	120.00	*	0.50
20.70	15.23	1.08	7.08	120.00	*	0.50
21.66	29.20	1.34	4.58	120.00	*	0.50
22.65	42.18	1.06	2.52	120.00	*	0.50
23.62	15.82	0.97	6.14	120.00	*	0.50
24.60	10.55	0.77	7.26	120.00	*	0.50
25.60	7.32	0.48	6.61	120.00	*	0.50
26.60	6.83	0.51	7.44	120.00	*	0.50
27.59	33.88	1.54	4.54	120.00	*	0.50
28.54	150.30	2.50	1.66	120.00	*	0.50
29.53	92.76	2.26	2.44	120.00	*	0.50

30.51	47.26	1.65	3.48	120.00	*	0.50
31.53	62.69	1.22	1.94	120.00	*	0.50
32.51	43.94	1.95	4.44	120.00	*	0.50
33.48	13.67	0.88	6.46	120.00	*	0.50
34.45	18.26	1.15	6.29	120.00	*	0.50
35.43	21.58	0.65	3.01	120.00	*	0.50
36.42	47.55	1.54	3.23	120.00	*	0.50
37.43	144.40	1.49	1.03	120.00	*	0.50
38.40	171.90	2.40	1.40	120.00	*	0.50
39.39	218.60	2.61	1.20	120.00	*	0.50
40.37	164.80	1.95	1.18	120.00	*	0.50
41.37	104.00	1.52	1.46	120.00	*	0.50
42.33	23.24	0.81	3.47	120.00	*	0.50
43.31	87.10	1.80	2.07	120.00	*	0.50
44.29	148.20	3.09	2.09	120.00	*	0.50
45.27	158.50	2.28	1.44	120.00	*	0.50
46.26	163.50	2.39	1.46	120.00	*	0.50
47.24	111.50	1.47	1.32	120.00	*	0.50
48.24	15.62	0.54	3.48	120.00	*	0.50
49.25	114.90	1.24	1.08	120.00	*	0.50
50.20	114.60	1.93	1.69	120.00	*	0.50
51.21	88.17	2.10	2.38	120.00	*	0.50
52.16	164.70	2.47	1.50	120.00	*	0.50
53.17	202.60	3.06	1.51	120.00	*	0.50
54.15	33.69	2.59	7.68	120.00	*	0.50
55.11	174.50	2.62	1.50	120.00	*	0.50
56.10	250.90	1.46	0.58	120.00	*	0.50
57.08	367.30	3.67	1.00	120.00	*	0.50
58.07	370.40	4.36	1.18	120.00	*	0.50
59.07	412.10	2.58	0.63	120.00	*	0.50

* Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=3.76 in.
Settlement of Unsaturated Sands=0.54 in.
Total Settlement of Saturated and Unsaturated Sands=4.30 in.
Differential Settlement=2.152 to 2.840 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.57	5.00	3.76	0.54	4.30
1.00	0.25	0.57	5.00	3.76	0.54	4.30
2.00	0.27	0.57	5.00	3.76	0.53	4.30
3.00	0.16	0.57	5.00	3.76	0.49	4.26
4.00	0.21	0.57	5.00	3.76	0.25	4.01
5.00	0.36	0.56	5.00	3.76	0.21	3.97
6.00	0.20	0.56	5.00	3.76	0.17	3.93
7.00	2.00	0.56	5.00	3.76	0.00	3.76
8.00	2.00	0.56	5.00	3.76	0.00	3.76
9.00	2.00	0.59	5.00	3.76	0.00	3.76
10.00	0.45	0.62	0.72*	3.76	0.00	3.76
11.00	2.00	0.65	5.00	3.76	0.00	3.76
12.00	2.00	0.67	5.00	3.76	0.00	3.76
13.00	0.15	0.69	0.21*	3.66	0.00	3.66
14.00	2.00	0.71	5.00	3.51	0.00	3.51
15.00	2.00	0.73	5.00	3.51	0.00	3.51
16.00	2.00	0.74	5.00	3.51	0.00	3.51
17.00	0.16	0.76	0.21*	3.45	0.00	3.45
18.00	2.00	0.77	5.00	3.38	0.00	3.38
19.00	2.00	0.78	5.00	3.38	0.00	3.38
20.00	2.00	0.79	5.00	3.38	0.00	3.38
21.00	2.00	0.80	5.00	3.38	0.00	3.38
22.00	2.00	0.81	5.00	3.38	0.00	3.38
23.00	0.18	0.82	0.22*	3.30	0.00	3.30
24.00	2.00	0.82	5.00	3.28	0.00	3.28
25.00	2.00	0.83	5.00	3.28	0.00	3.28
26.00	2.00	0.84	5.00	3.28	0.00	3.28
27.00	2.00	0.84	5.00	3.28	0.00	3.28
28.00	0.17	0.85	0.20*	3.23	0.00	3.23
29.00	0.40	0.85	0.47*	3.10	0.00	3.10
30.00	0.13	0.86	0.15*	2.94	0.00	2.94
31.00	2.00	0.86	5.00	2.85	0.00	2.85
32.00	2.00	0.85	5.00	2.73	0.00	2.73
33.00	2.00	0.85	5.00	2.73	0.00	2.73

34.00	2.00	0.85	5.00	2.73	0.00	2.73
35.00	2.00	0.85	5.00	2.65	0.00	2.65
36.00	2.00	0.84	5.00	2.65	0.00	2.65
37.00	0.20	0.84	0.24*	2.55	0.00	2.55
38.00	0.27	0.84	0.33*	2.33	0.00	2.33
39.00	0.37	0.83	0.45*	2.16	0.00	2.16
40.00	0.33	0.83	0.40*	2.04	0.00	2.04
41.00	2.00	0.82	5.00	1.92	0.00	1.92
42.00	2.00	0.82	5.00	1.82	0.00	1.82
43.00	2.00	0.82	5.00	1.82	0.00	1.82
44.00	2.00	0.81	5.00	1.69	0.00	1.69
45.00	0.30	0.81	0.38*	1.60	0.00	1.60
46.00	0.24	0.80	0.30*	1.40	0.00	1.40
47.00	0.22	0.79	0.28*	1.21	0.00	1.21
48.00	2.00	0.79	5.00	1.11	0.00	1.11
49.00	0.22	0.78	0.27*	1.10	0.00	1.10
50.00	0.20	0.78	0.25*	0.86	0.00	0.86
51.00	0.20	0.77	0.26*	0.64	0.00	0.64
52.00	0.27	0.77	0.35*	0.54	0.00	0.54
53.00	0.38	0.76	0.50*	0.37	0.00	0.37
54.00	2.00	0.75	5.00	0.29	0.00	0.29
55.00	0.28	0.75	0.38*	0.20	0.00	0.20
56.00	0.42	0.74	0.57*	0.04	0.00	0.04
57.00	0.98	0.73	1.34	0.00	0.00	0.00
58.00	1.16	0.73	1.60	0.00	0.00	0.00
59.00	1.27	0.72	1.76	0.00	0.00	0.00
60.00	1.07	0.71	1.50	0.00	0.00	0.00

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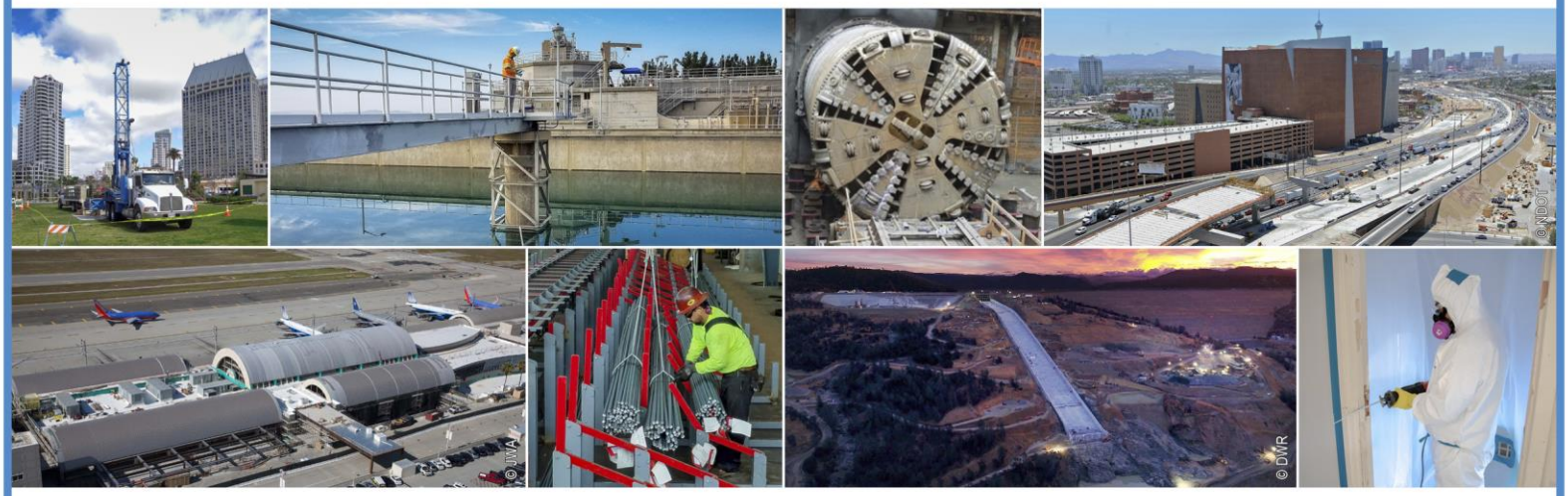
* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)

F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils



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Geotechnical & Environmental Sciences Consultants

APPENDIX F

STORMWATER CAPTURE STUDY TECHNICAL MEMORANDUM

MEMO

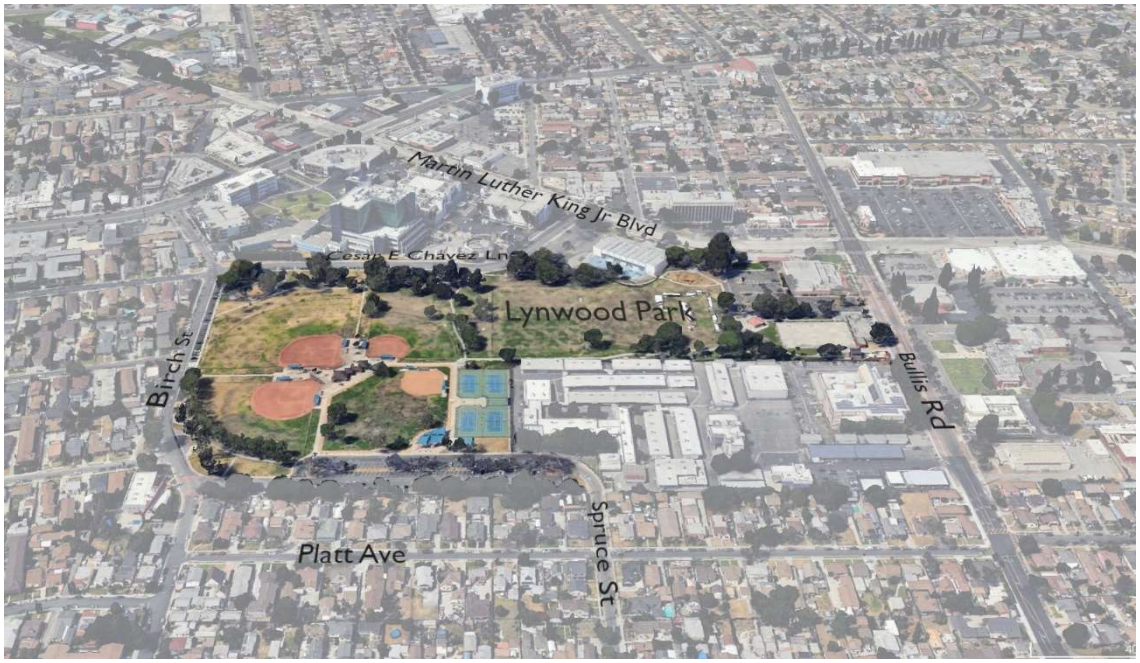
TO: Mir T. Fattahi, Acting City Engineer – City of Lynwood

FROM: Courtney Semlow & Yulun Wu – Craftwater Engineering, Inc.

SUBJECT: Lynwood Park Stormwater Capture Project
Stormwater Capture Study Technical Memorandum

DATE: June 9, 2023

The Lower Los Angeles River Watershed Management Program (LLAR WMP) Group has been charged with achieving reductions of pollutants in the subwatersheds of Reach 1 and Reach 2 of the Lower Los Angeles River, Compton Creek, and Rio Hondo. In accordance with the plans outlined in the LLAR WMP, a regional project has been identified at Lynwood Park in the City of Lynwood. The project is intended to intercept the dry-weather flow and a sizeable portion of the wet-weather flows from an adjacent storm drain. Stormwater will be diverted from a 72" reinforced concrete pipe (RCP; BI 0006 Unit 3 Line D) along Birch Street and an 81" reinforced concrete pipe (RCP; BI 0006 Unit 3 Line A) along Bullis Road, both managed by the Los Angeles County Flood Control District (LACFCD). Subsurface and surface best management practices (BMP) are proposed at the Lynwood Park site to capture stormwater from the diverted storm drain. Project constraints and potential options will be detailed in this memo to present an array of options that will contribute to both water quality goals and other important project considerations and desired outcomes.

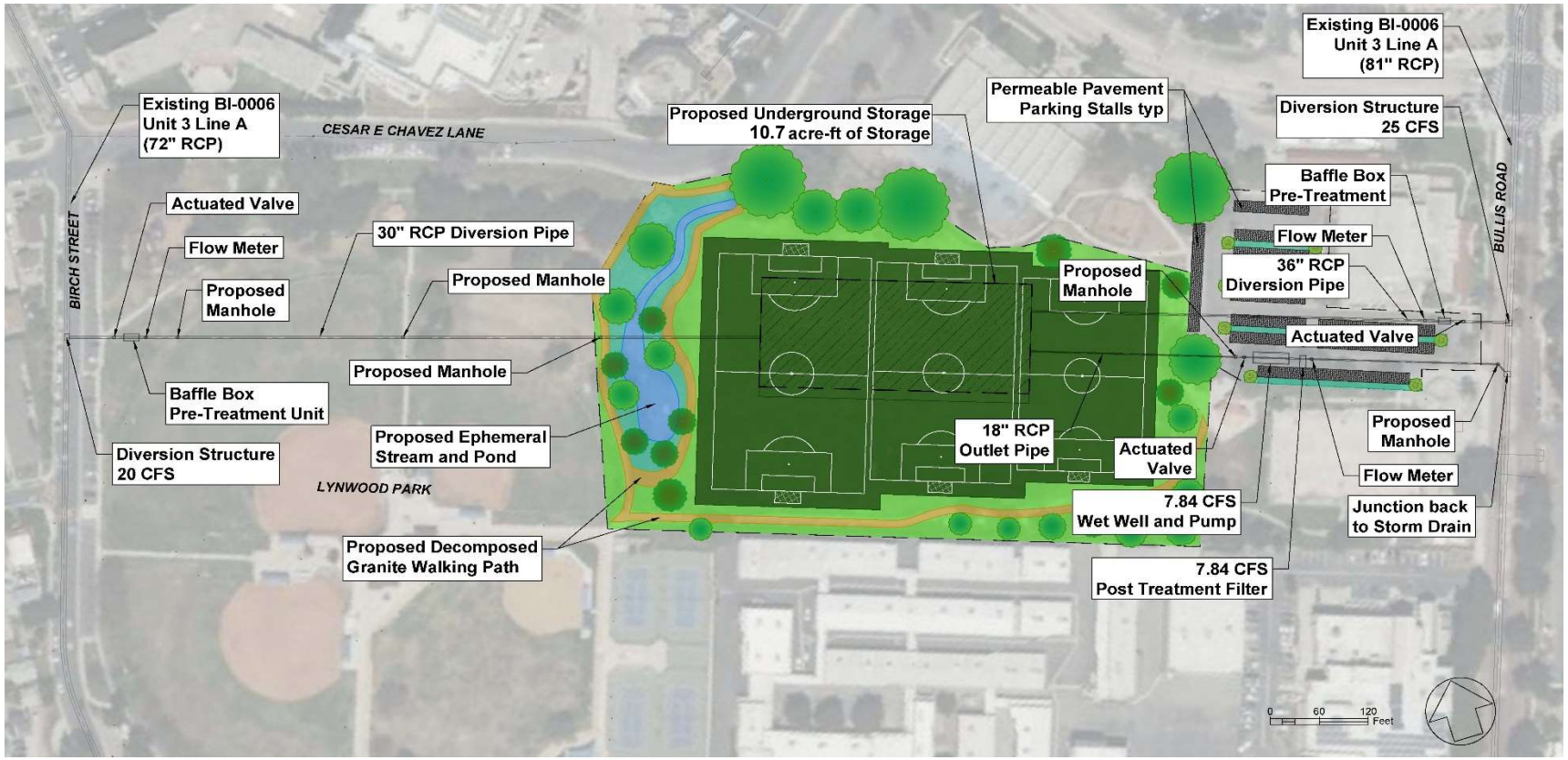


1.0 OBJECTIVES

To identify the most effective stormwater capture configuration at the project site, decision support modeling has been conducted to identify the optimal BMP configuration using a balanced approach that incorporates design storm hydrologic targets as well as long-term water quality considerations. This optimal configuration addresses stormwater runoff that will be diverted to the project site from the storm drain pipes along Birch St and Bullis Rd.

BMP configuration recommendations will be made for Lynwood Park for three key design parameters: 1) diversion rates, 2) discharge rates, and 3) BMP storage size. Each parameter can take a range of feasible values based on baseline hydrology and site assessment. The long-term performance of all the feasible BMP configurations was simulated by a custom BMP model that allows robust assessment of a range of treatment options using hourly Loading Simulation Program C++ (LSPC) data in Water Years 2009-2018. The updated Watershed Management Modeling System (WMMS 2.0) developed by LACFCD and LACDPW was used to generate the LSPC data. The resulting performance statistics of these alternative configurations were then evaluated against water quality objectives and construction and O&M considerations. The optimal BMP configurations that fulfill all the requirements are recommended. ***Figure 1-1*** is the preliminary concept schematics of the proposed BMP.

This memo explains how the recommended BMP configurations at Lynwood Park were developed. Section 2.0 introduces the existing condition of the watersheds draining to Lynwood Park. Section 3.0 explains how the BMP optimization model was set up and how BMP performance should be evaluated and compared. Section 4.0 presents the modeling results showing the water quality benefits different BMP alternatives could attain. Section 5.0 analyzes the results from Section 4.0 using the methods in Section 3.0, and recommends the BMP configurations that fulfill all the project requirements while maintaining cost-effectiveness.


Existing BI-0006 Unit 3 Line A (72" RCP)
CESAR E CHAVEZ LANE
Proposed Underground Storage 10.7 acre-ft of Storage
Permeable Pavement Parking Stalls typ
Existing BI-0006 Unit 3 Line A (81" RCP)
Diversion Structure 25 CFS
BIRCH STREET
Actuated Valve
Flow Meter
Proposed Manhole
30" RCP Diversion Pipe
Proposed Manhole
Proposed Manhole
Baffle Box Pre-Treatment
Flow Meter
36" RCP Diversion Pipe
BULLIS ROAD
Actuated Valve
Proposed Manhole
Baffle Box Pre-Treatment Unit
Diversion Structure 20 CFS
Proposed Ephemeral Stream and Pond
LYNWOOD PARK
18" RCP Outlet Pipe
Actuated Valve
Proposed Manhole
Flow Meter
7.84 CFS Wet Well and Pump
Junction back to Storm Drain
Proposed Decomposed Granite Walking Path
7.84 CFS Post Treatment Filter
0 60 120 Feet

2.0 BASELINE SITE CONDITIONS

The following subsections summarize the baseline watershed, hydrologic, and on-site conditions and constraints that will be accounted for in BMP configuration and optimization analysis for the Lynwood Park site.

2.1 Watershed Characterization

For this study, the Loading Simulation Program C++ (LSPC) software was used to simulate the contaminant loading, runoff volume, and flow rate associated with a long-term, 10-year continuous time series (Water Year 2009 to Water Year 2018). LSPC was also used for 85th percentile design storm calculations. A regionally calibrated LSPC model was used as this model was used in EWMP/WMP development and is accepted by the Los Angeles Water Quality Control Board for compliance analyses. This LSPC model is a component of the updated Watershed Management Modeling System (WMMS 2.0).

The drainage area delineations for the project site (***Figure 2-1***) were developed using geospatial data associated with the LSPC modeling subwatersheds and verified/corrected slightly using further GIS analysis where full subwatersheds did not coincide with project locations and where subsurface storm drains overlapped. Digital stormwater pipe inventories and high-resolution Light Detection and Ranging (LiDAR) elevation data were used to accomplish subwatershed splitting. Developed drainage areas were used to model runoff and water quality baseline time series. These were then incorporated into BMP models to optimize the BMP decision variables. The overall area and impervious fraction are summarized in ***Table 2-1***. ***Figure 2-2*** depicts the land uses within the drainage area. The watershed's impervious area is predominantly composed of residential areas.

Table 2-1. Summary of Watershed and Hydrologic Conditions for the Lynwood Park BMP Drainage Areas

Location	Drainage Area (acres)	Impervious Area (acres, %)	85th Percentile Design Storm (inches)	Avg. Annual Runoff (ac-ft)	Avg. Annual Zinc Load (lbs)	85th Percentile Storm Runoff (ac-ft)	85th Percentile Storm Peak Flow (cfs)
Birch St.	399	221 (55.42%)	0.92	165	86.7	9.2	16.6
Bullis Rd.	556	299 (53.69%)		226	107.3	12.6	24.2
Total	955	520 (54.4%)		391	194	21.8	40.8

2.2 Hydrologic Considerations

Long-term baseline flows and pollutant loads to the site are also summarized in ***Table 2-1***. The total loadings presented in this table represent the maximum possible reductions that could be achieved by control measures at the project site. However, pragmatic diversion limitations, space constraints, and subsequent treatment mechanisms will ultimately limit how much runoff and pollutant mass can potentially be diverted into the BMP. Peak flow rate and total runoff for the 85th percentile design storm (0.92 in., taken from isohyetal data for the centroid of the drainage areas) are found in ***Table 2-1***. The precipitation and baseline storm drain runoff time series are plotted in ***Figure 2-3***.

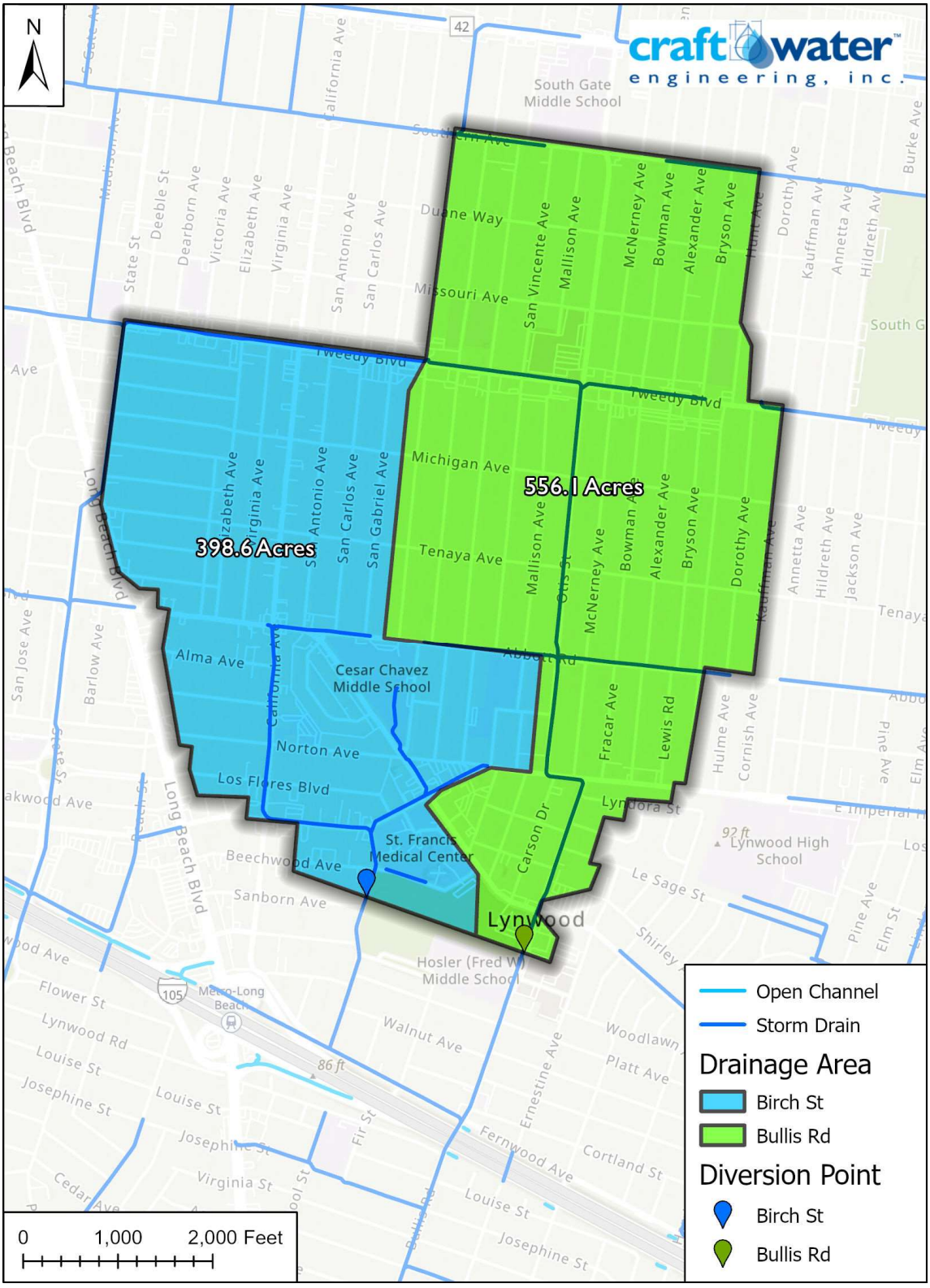


Figure 2-1. Lynwood Park Project Drainage Area

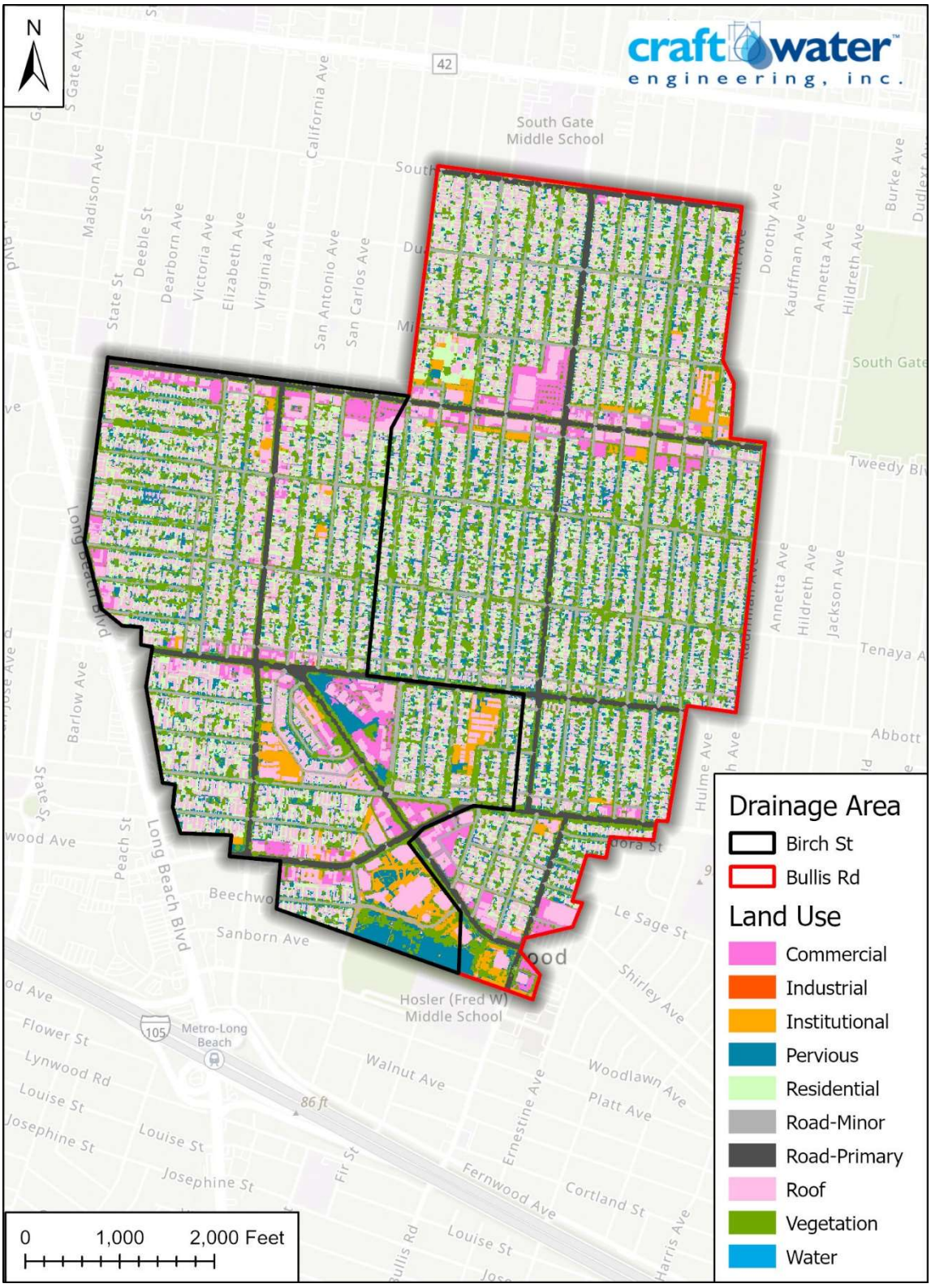


Figure 2-2. Lynwood Park Project Drainage Area Land Use

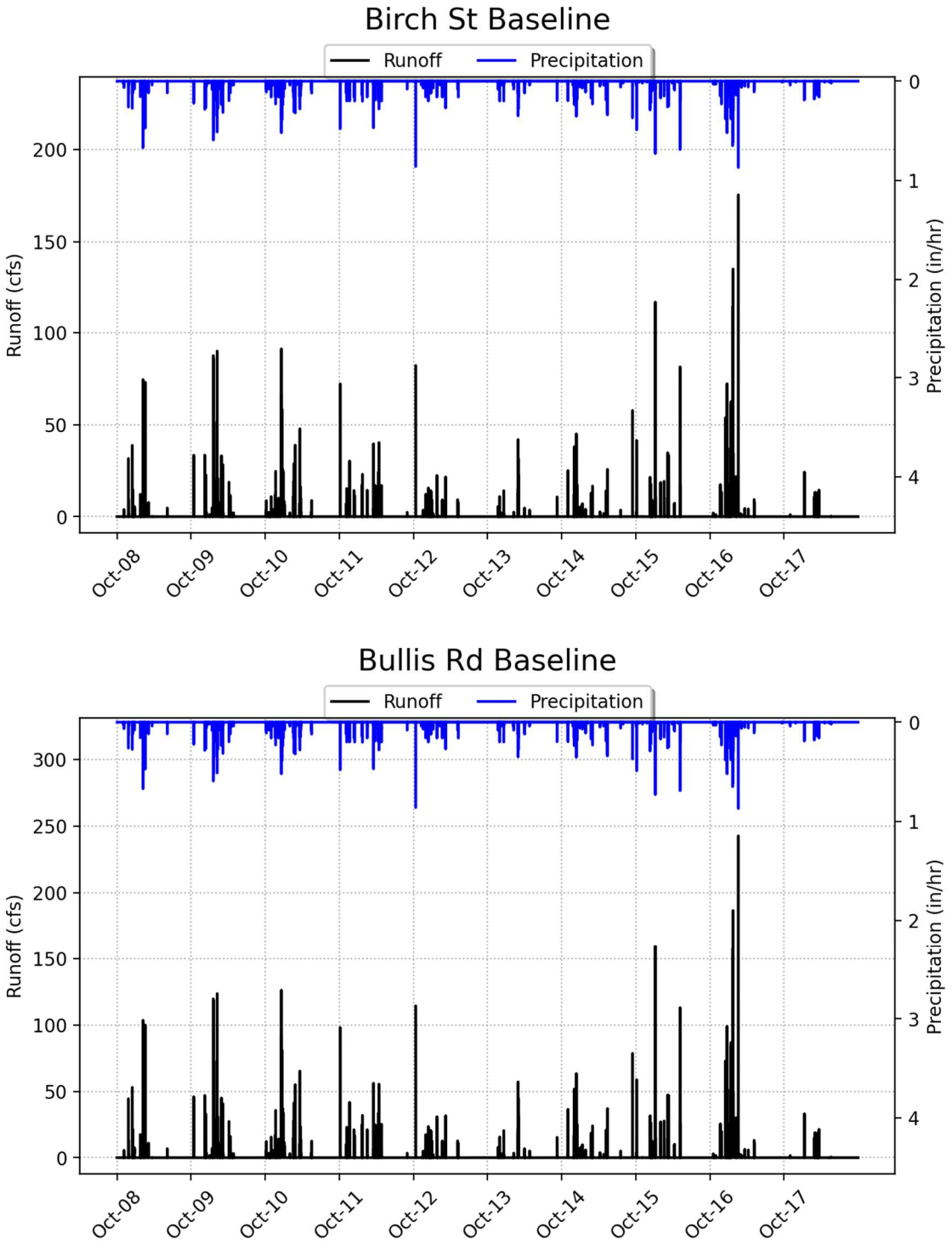


Figure 2-3. Precipitation and Baseline Storm Drain Runoff (top: Birch St drain, bottom: Bullis Rd drain)

3.0 STORMWATER CAPTURE OPTIMIZATION METHODS

3.1 Water Quality Optimization Strategy

The primary design goal of the Lynwood Park Project is to reduce long-term annual loading of pollutants in the LLAR Watershed using zinc as the limiting pollutant of interest in the analysis as established by the LLAR WMP. According to the latest WMP Reasonable Assurance Analysis, the City needs to install a total BMP volume of 95.4 acre-ft by 2028 to meet the final compliance milestone. To ensure that the system will be sized to maximize load reductions in a cost-effective manner, optimization modeling was performed.

The purpose of optimization modeling is to balance design components (including BMP volume, inflow diversion rates, and outflow treatment rates) such that no one component limits the performance of the system subject to potential discharge options (see ***Figure 3-1*** at right). Optimization supports decision making throughout the design process by guiding selection of the most cost-effective system design.

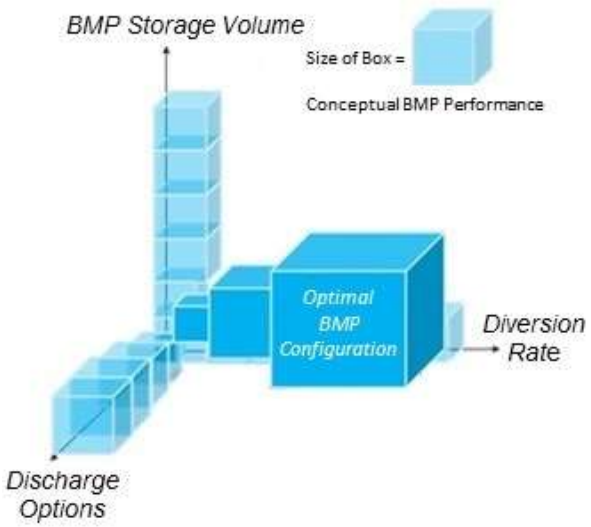


Figure 3-1. Conceptual illustration of optimization modeling balancing various design components to maximize performance.

The model setup for water quality simulation and optimization is complex, involving several modeling systems and iterative feedback from design engineers. The general methodology is discussed below, and the results are presented thereafter.

3.2 BMP Performance Modeling and Optimization

The first step of the modeling was to predict BMP performance for a range of 1) potential diversion rates, 2) discharge alternatives, and 3) BMP sizes. Different combinations of these parameters will lead to different BMP performance statistics, including runoff capture and pollutant capture. These BMP model inputs and outputs are discussed in this section.

A custom BMP model was used to improve upon certain modeling limitations in EPA's System for Urban Stormwater Treatment and Analysis Integration (SUSTAIN). This custom model is grounded in the physical BMP representations used in SUSTAIN, and it provides built-in optimization algorithms to more systematically automate the process of evaluating many different BMP configurations to select an effective solution related to project goals. The model was run using 10 years of runoff and pollutant loading time-series data generated by LSPC at an hourly time step for water years 2009-2018. For each potential BMP configuration, the hourly inflow, storage, and outflow of stormwater and pollutants were simulated. The simulated performance statistics of all the BMP configurations are then evaluated against the objectives and considerations in Section 3.3 to develop the optimal project configuration alternatives.

3.2.1 Model Input - Diversion Rates

Model runs were limited to feasible diversion ranges for the proposed diversion point based on prior project knowledge related to the drainage area and potential project storage size. Diversion rates from the Birch St diversion point and the Bullis Rd diversion point were both modeled over the range of 15 to 35 cfs, varying in 5

cfs increments. Gravity diversion is feasible at the site and is generally more cost effective than pump diversion especially at higher diversion rates.

3.2.2 Model Input - Discharge Alternatives

Infiltration

Falling head percolation tests performed by Ninyo & Moore in March 2023 produced adjusted percolations rates of 0.61, 0.01, 0.32, and 0.34 inches/hour using a safety factor of 4 (boring P-1, P-2, P-3 and P-4, respectively). The 0.61 in/hr test was performed at a 3-5’ depth while the other three tests were performed at a 15-20' depth. Because the proposed subsurface BMP footprint only covers P-3 and P-4, 0.32 inches/hour was selected as the design infiltration rate that is used in modeling.

Filtration

Several commonly available stormwater filtration devices (at 2.88 cfs, 5.76 cfs, and 7.84 cfs discharge rates) were modeled. These values were chosen to cover a range of potential outflows common to off-the-shelf proprietary filter products. If the desired outflow rate changes, rates can be revaluated in later stages of design. Water treated through filtration would be returned downstream of the diversion point through gravity flow.

Filtration and Infiltration

A combination of filtered outlet and infiltration outlet provides both water quality and water supply benefits. To allow for gravity flow, the filter outlet needs to be set at a level below the maximum water level within the BMP storage. Water will only flow through the filter when the water level is above the filter outlet. Filter outlet heights of 0.1, 0.5, 1, 3, 6, and 9 ft are modeled to explore its effect on BMP performance. The vertical configuration of the BMP is illustrated in ***Figure 3-2***.

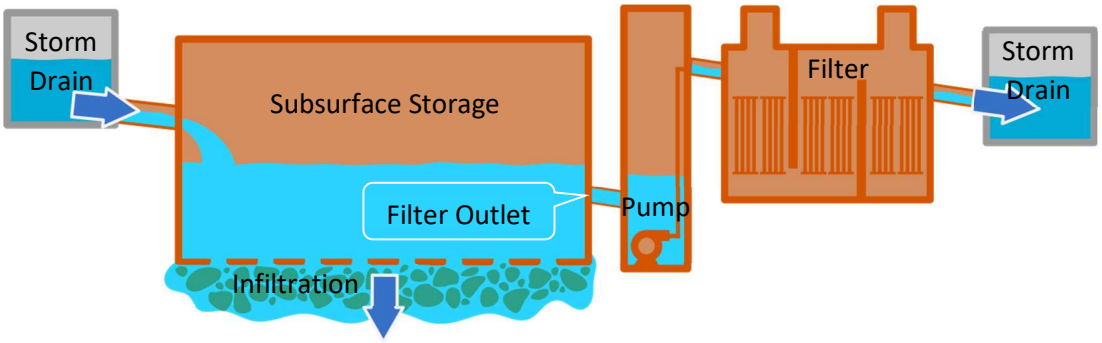


Figure 3-2. Filtration and Infiltration BMP Profile Illustration

The ephemeral stream and pond shown in ***Figure 1-1*** are landscape features that are not modeled as surface BMPs because of their much smaller scales compared to the subsurface BMP. They are also designed to not interfere with the performance of the subsurface BMP. This memo only models the filtration and infiltration processes within the subsurface BMP.

3.2.3 Model Input - Storage Volume

Commonly available storage depths of 5’ and 10’ are modeled. Other storage depths may be used during later stages of design. Modeling was carried out for a BMP footprint ranging from 0.1 to 2.0 acres (maximum feasible footprint due to site constraints) at 0.01-acre increments.

3.2.4 Model Output – 85th Percentile 24-hour Design Storm Performance Statistics

A separate spreadsheet model was developed to verify whether a combination of diversion rate, treatment rate and storage volume can fully capture the peak flow and total runoff volume resulted from an 85th percentile 24-hour design storm.

3.2.5 Model Output – Long-term BMP performance statistics

Hourly inflow and outflow of runoff and pollutant loads can be generated by the custom model for each BMP configuration. This output time series data can be summarized into the following performance statistics that are relevant to the project objectives for BMP optimization:

- **Average Annual Runoff Reduction**: The average amount of stormwater removed from the storm drain system due to infiltration per year.
- **Average Annual Divertible Pollutant (Zinc) Load:** The average mass of pollutants (Total Zinc) the diversion structure can theoretically divert to the BMP per year if the BMP has infinite storage volume.
- **Average Annual Pollutant (Zinc) Load Reduction:** The average mass of pollutants (Total Zinc) the BMP can remove through treatment per year.
- **Cost-effectiveness**: Measured by the planning-level construction cost to capture one pound of Zinc per year, namely the marginal cost of Zinc reduction. This value is only used to compare the cost-effectiveness of alternatives in terms of water quality benefits.

3.3 BMP Optimization Objectives and Considerations

This section discusses how the BMP performance statistics described in Section 3.2.5 are used for BMP optimization. Multiple aspects and stages of the project are considered when optimizing the BMP, including 1) how the BMP contributes to water supply, water quality and flood control, 2) how this project integrates with the Safe Clean Water Program, and 3) whether the BMP is optimized for construction and O&M.

3.3.1 General Project Objectives

From a watershed management perspective, BMP projects should be evaluated against these objectives:

- **Water Quality**: The amount of stormwater pollutants the BMP can remove, and the volume of stormwater the BMP can treat. This will be the primary objective of the Lynwood Park project.
- **Water Supply**: The volume of stormwater that can be used for water supply. As discussed in Section 3.2.2, water supply is not used as a BMP optimization objective.
- **Flood Control**: The peak flow rate the BMP can capture and the runoff volume the BMP can store during a storm event to reduce flooding. The BMPs should be sized to capture the peak flow rate and runoff volume of at least the 85th percentile 24-hour design storm if feasible.

3.3.2 Safe Clean Water Program (SCWP) Metrics

Benefits predicted for different BMP configuration options must also be weighed against Safe Clean Water Program (SCWP) scoring criteria to determine the optimal choice for a given site to ensure a Project meets the needs of this important regional program. The following SCWP scoring categories are primarily dependent on the proposed treatment type:

- **Wet Weather vs. Dry Weather BMP:** Does the proposed BMP capture the 85th percentile storm of the targeted drainage area? If so, it is historically defined as a wet weather project per the SCWP Scoring Committee. Otherwise, it is a dry weather BMP. Wet Weather and Dry Weather BMPs have different water quality scoring criteria, as detailed below. Both BMP types can still fulfill all other project related SCW scoring criteria (Water Supply, Community Investment, etc.)
- **Water Quality:**
    - Wet Weather BMP: Removal of 50%/80% of divertible pollutants.
    - Dry Weather BMP: Removal of 100% of all tributary dry weather flows
- **Water Supply**: Utilizing captured stormwater to replenish local water supply (water reclamation and groundwater recharge).
    - Scoring thresholds for SCW occur at 25, 100, 200, and 300 ac-ft of water supply benefit.
- **Nature Based Solutions**: Implement or mimic natural processes to treat stormwater (infiltration).

3.3.3 Construction and O&M Considerations

Making the BMP size larger increases water quality benefits but also increases construction cost and maintenance efforts. A larger diversion rate requires a pre-treatment unit with a larger capacity which also increases construction and maintenance costs. **Therefore, when the key objectives described in Section 3.3.1 and 3.3.2 can be fulfilled, the lowest diversion rate, the smallest BMP storage size and the smallest filtration rate are recommended to ensure the project is cost-effective.** The cost-effectiveness of all BMP alternatives is reviewed in the next section.

4.0 OPTIMIZATION MODELING RESULTS

The performance statistics of different BMP configurations are presented. The results in this section are then evaluated against the BMP optimization objectives and considerations in the next section to develop the optimal BMP configuration.

4.1 85th Percentile Design Storm Capture

The minimum diversion rate and the minimum storage volumes required to fully capture the 85th percentile storm is summarized in ***Table 4-1***. The filter outlet is set at the bottom of the storage structure.

Table 4-1. BMP Diversion Rate and Volume Required to Capture the 85th Percentile Storm

85th Percentile 24-hr Storm	BMP Design Alternative	Birch St Diversion	Bullis Rd Diversion	Combined
Minimum Diversion Rate (cfs)	All alternatives	16.6	24.2	40.8
Minimum Storage Volume (ac-ft)	0.32 in/hr infil., 5' storage depth	8.3	11.3	19.6
	2.88 cfs filter & infil., 10' depth	4.2	7.2	15.8
	5.76 cfs filter & infil., 10' depth	1.9	3.7	11.3
	7.84 cfs filter & infil., 10' depth	1.2	2.6	8.5

4.2 Storm Drain Diversion BMP Optimization

4.2.1 Water Quality Performance Comparison

Figure 4-1 compares the water quality performance of the BMPs with or without a filter, and the performance of different filter sizes and storage depths. The filter options in the figure have the filter outlet set at the bottom of the storage as explained in Section 3.2.2.

For smaller BMP sizes, adding a filter greatly improves the zinc reduction performance because the filter treats stormwater at a faster rate than infiltration. As BMP size becomes larger, there is a diminishing return in Zinc reduction because 1) the BMP is larger enough to treat most of the pollutants, so the additional volume brings little benefits, and 2) storage volume is no longer the design component that is limiting zinc load reduction.

A 5 ft deep BMP has twice the footprint of a 10 ft deep BMP with the same volume, and therefore has twice the infiltration flow rates (infiltration flow rate = infiltration rate (inches/hour) × footprint (ft^2)). When infiltration is the only treatment mechanism, a 5 ft deep BMP removes more zinc load than 10 ft deep BMP with the same volume. However, for BMPs with both filtration and infiltration treatment, the increase in infiltrate flow rate due to a larger footprint does not have a significant impact on zinc load reduction because filtration rather than infiltration captures most of the zinc load.

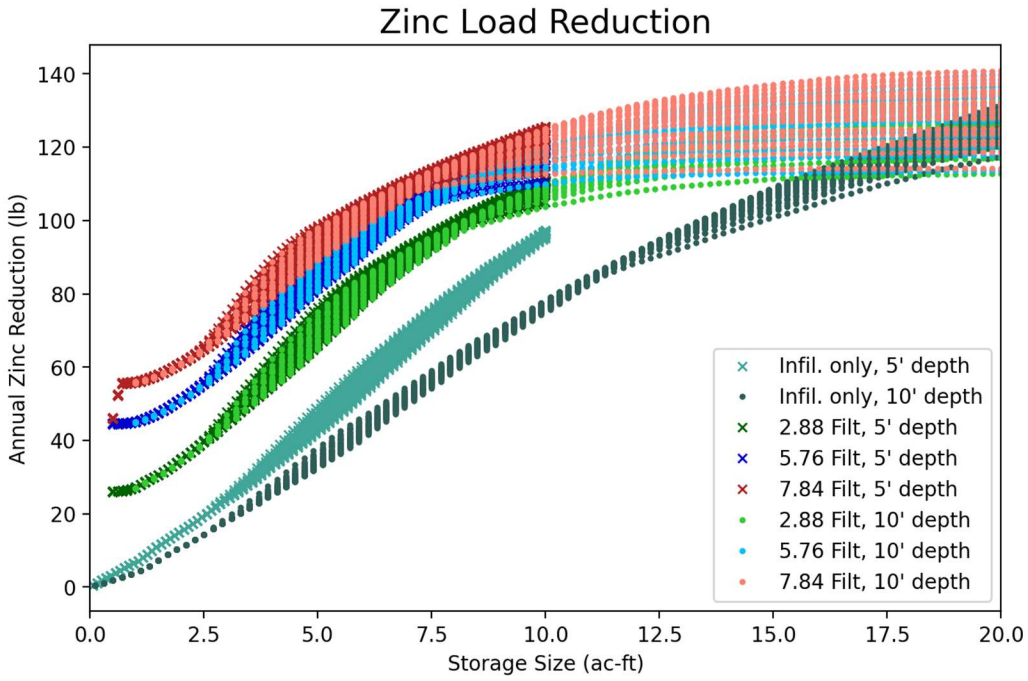


Figure 4-1. Lynwood Park Both Diversion - Zinc Reduction of All Alternatives

Figure 4-2 compares the water quality performance of different filter sizes and diversion rates. These diversion rates are the total diversion capacity at the Birch St and Bullis Rd diversion points.

When other conditions are the same, a larger filter significantly improves the zinc reduction of smaller BMPs. The smaller BMPs treat stormwater primarily through filtration because they have smaller footprints and therefore lower infiltration flow rates. Larger BMPs can treat more water through infiltration but can still benefit from larger filters.

No diversion rate performs the best in all cases. When storage size is close to zero, zinc reduction is hardly affected by diversion rate because storage size is the limiting design factor. As storage size increases, lower diversion rates become more favorable because they can better utilize the storage. Higher diversion rates would fill the storage too early during a storm and bypass most of the flow that could have been partially treated if there is still space in the storage. When storage size further increases, higher diversion rates become more favorable because diversion rate is now the limiting factor. A higher diversion rate simply allows more pollutant into the storage which is big enough to treat the additional runoff being diverted.

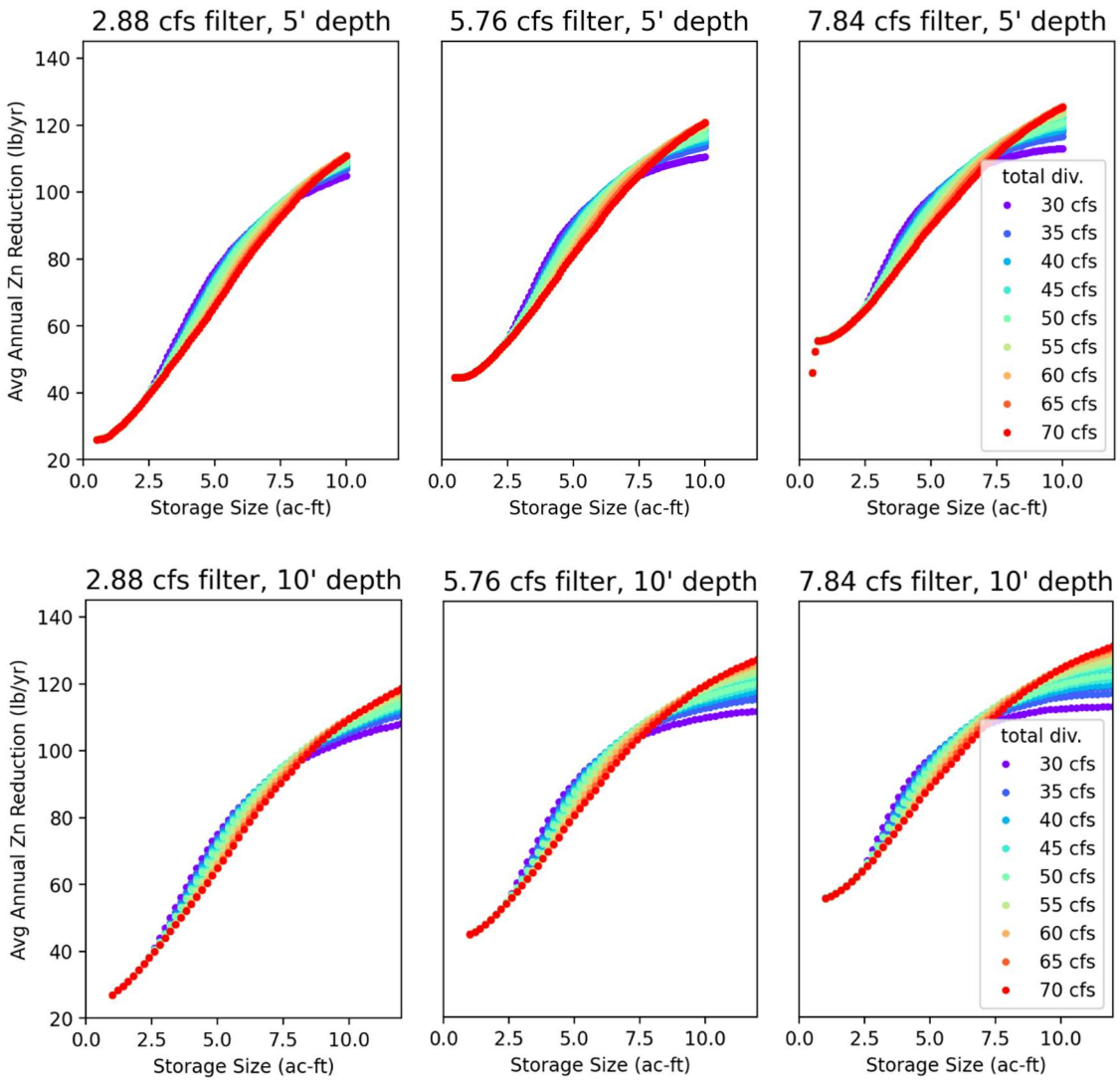


Figure 4-2. Lynwood Park Both Diversion - Zinc Reduction of Filtration & Infiltration Options

4.2.2 Cost Effectiveness Comparison

The planning-level marginal cost of Zinc load reduction is compared in ***Figure 4-3***. The 5'-deep storage options are generally less cost effective because they occupy a larger footprint to achieve the same storage volume, which increases the cost of excavation and backfill.

Alternatives with bigger filters are generally more cost effective because the increase in Zinc reduction outweighs the increase in cost (lower marginal cost = cost, slight increase / zinc reduction, bigger increase). For the same reason, higher diversion rates are more cost effective for large storage sizes. However, high diversion rates are not cost effective in 5'-deep BMPs and the smaller 10'-deep BMPs.

It should be noted that, although *marginal cost (in $/(lb Zn/yr))* does not increase monotonically with storage size, diversion rate and filter size, a BMP with a larger storage size, higher diversion rate and higher filtration rate always has a higher *construction cost (in $)*.

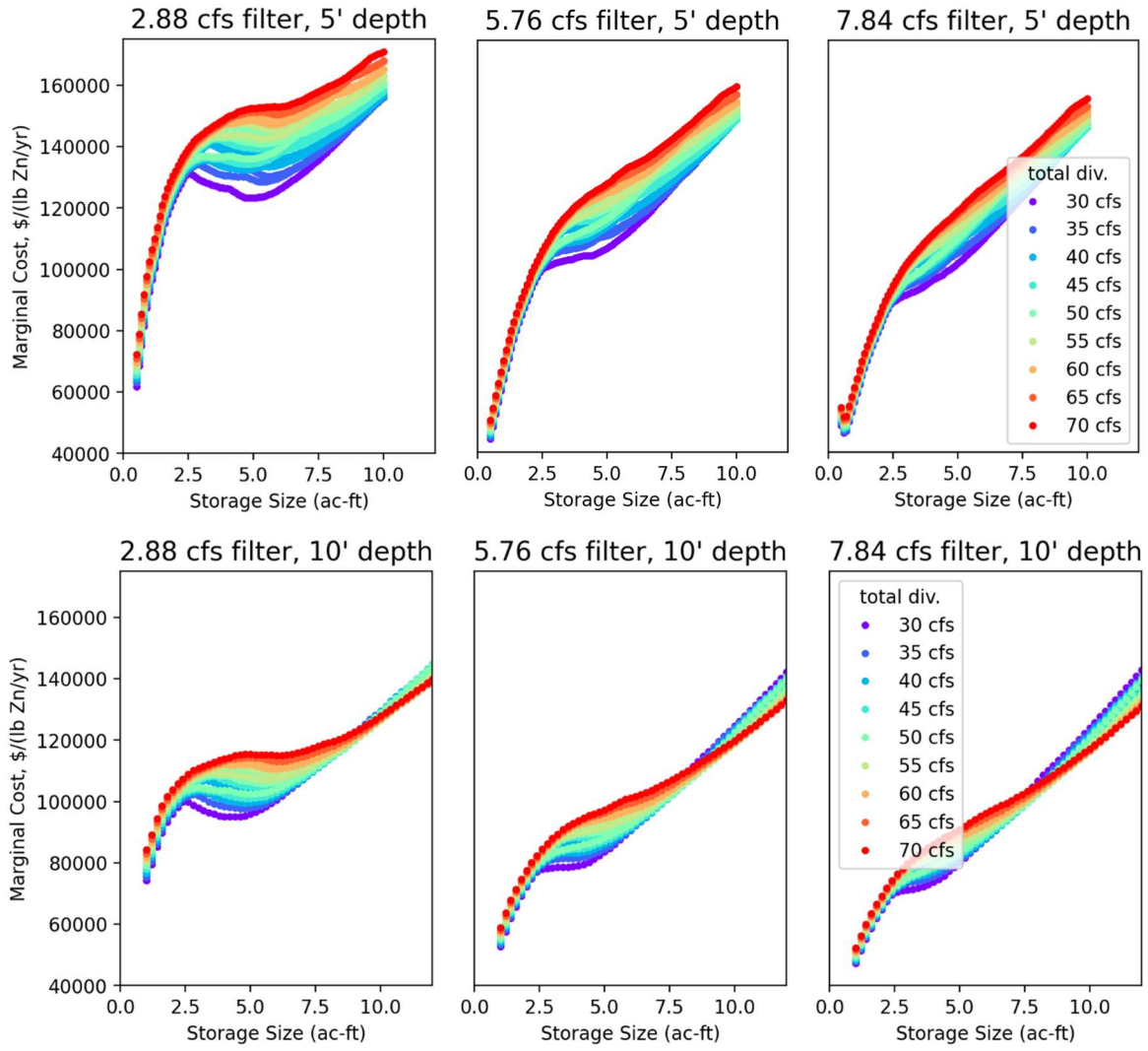


Figure 4-3. Lynwood Park Both Diversion – Marginal Cost of Filtration & Infiltration Options

4.2.3 Water Quality and Water Supply Performance Comparison

Infiltration treatment can potentially recharge groundwater and provide water supply benefits, whereas filtration treatment returns the treated water to the storm drain. The proportion of infiltrated and filtered stormwater can be adjusted by setting the filter outlet within the subsurface storage, as explained in Section 3.2.2. Stored water under the filter outlet level is only available for infiltration, while the water above the outlet can be both infiltrated and filtered.

Figure 4-4 illustrates the trade-off between 1) the water quality benefits measured by average annual zinc load reduction and 2) the water supply benefits measured by average annual groundwater recharge volume. All plotted alternatives have a 7.84 cfs filter, a 10'-deep storage, and a total diversion rate of 45 cfs. Each rainbow-colored line represents the BMP alternatives with the same filter height (0.1 ft, 0.5 ft, …, 9 ft). The grey dotted lines are contours of BMPs with the same storage volume. The blue, red, and green lines are SCW program benchmarks.

There is a trade-off between water quality and water supply benefits. Other configurations unchanged, a higher filter outlet generally leads to more water supply benefit and less water quality benefits, because it reserves more water for infiltration (except for some of the largest BMPs in the plot). More infiltration means more water supply since filtration does not provide water supply, and less pollutant removal because infiltration is slower at removing pollutants. No optimal filter height can maximize both objectives. Therefore, a point has to be picked to balance the water quality and water supply benefits of the BMP. The next section will recommend a BMP configuration using the modeling results presented in Section 4.

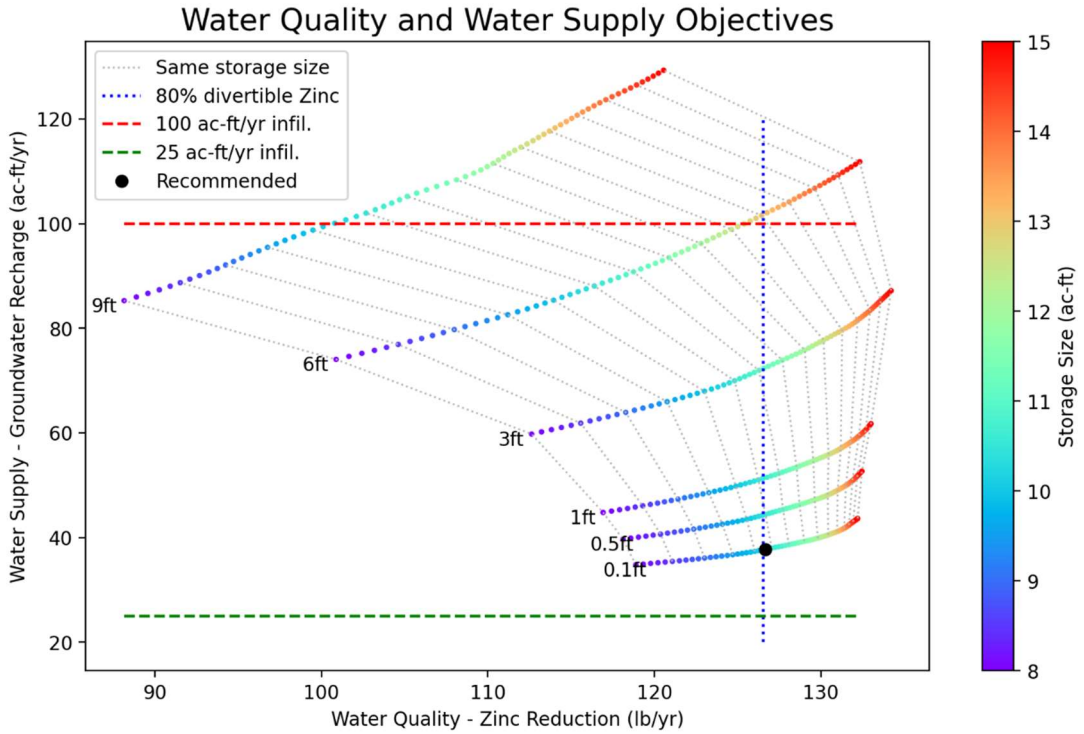


Figure 4-4. Compare Water Quality and Water Supply Objectives using Various Filter Heights

5.0 PROJECT ALTERNATIVES AND RECOMMENDATIONS

5.1 Lynwood Park BMP Recommendation

The recommended BMP for Lynwood Park has the following design parameters:

- **Filter height**: the filter outlet should be set at the bottom of the subsurface storage to prioritize water quality benefits (modeled as 0.1 ft above the bottom). This design maximizes pollutant reduction while also providing more than 25 ac-ft/yr of water supply.
- **Storage depth**: 10 ft storage depth is recommended because it is more cost effective than 5 ft storage depth, as explained in Section 4.2.2.
- **Filter size**: a 7.84 cfs filter is recommended. The large filter treats more pollutant and is more cost-effective, and it greatly reduces the storage volume required to fully capture the 85th percentile storm (***Table 4-1***). Water is pumped from the bottom of the subsurface storage to the filter and then discharged into the Bullis Rd storm drain.
- **Diversion rate**: divert 20 cfs from the Birch St storm drain and 25 cfs from the Bullis Rd storm drain. These two values are larger than the 85th percentile peak flows (***Table 4-1***). Knowing the BMP will have a 7.84 cfs filter and a 10' storage depth, the storage size must be above 8.5 ac-ft to capture the 85th percentile storm (***Table 4-1***). At this size, although larger diversion rates are more cost-effective in terms of zinc reduction (***Figure 4-3***), those BMPs also cost more to build. The recommended diversion rates can fulfill all the project requirements with the lowest construction cost.
- **Storage volume**: a 10.7 acre-ft storage volume with a footprint of 1.07 acres is recommended. This size is selected to treat 80% of the removable zinc load while capturing the 85th percentile storm.

In conclusion, the recommended BMP has **a 20 cfs gravity diversion from the Birch St storm drain, a 25 cfs gravity diversion from the Bullis Rd storm drain, a 10.7 acre-feet 10'-deep subsurface storage volume that allows infiltration at the bottom, and a 7.84 cfs filter that takes water from the bottom of the subsurface storage**.

5.2 Summary of Expected Performance Statistics

The recommended BMP configurations and their expected long-term performance statistics are summarized in ***Table 5-1***.

Table 5-1. Summary of Recommended Configurations and Performance Statistics

Configuration	Diversion Rate	20 cfs gravity diversion from the Birch St storm drain 25 cfs gravity diversion from the Bullis Rd storm drain
	BMP Type	Subsurface Storage with Infiltration
	Depth	10 ft
	Volume	10.7 ac-ft
	Discharge	0.32 in/hr infiltration + 7.84 cfs pumped filtration
Performance	Zinc Load Reduction (lb/yr)	127
	% Divertible Zinc Load Reduction	80.6%
	Water Supply (ac-ft/yr)	38
	Capture 85th Percentile Storm	Yes

6.0 CONCLUSIONS

This Stormwater Capture Memo was prepared for the Lynwood Park Stormwater Capture Project to demonstrate progress towards compliance for City of Lynwood. The existing hydrology and water quality conditions were first characterized, then an optimization analysis informed data-driven selection of effective solutions. The optimization analysis aimed to identify the BMP which provides cost-effective protection to the watershed while contributing to regional goals. ***This analysis determined that a subsurface infiltration BMP that diverts* 20 cfs from the Birch St storm drain and 25 cfs gravity diversion from the Bullis Rd storm drain through gravity*, has 10.0 ft of storage depth, 10.7 ac-ft storage volume and 7.84 cfs pumped filtration discharge is the optimum BMP configuration.*** The proposed BMP can fully capture the 85th percentile 24-hour storm, remove at least 80% of the divertible Zinc load, and provide more than 25 ac-ft/year of groundwater recharge.

APPENDIX G

NOISE CALCULATIONS

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 8/28/2024
Case Descri Lynwood Park Stormwater Capture Project Construction (Average)

---- Receptor #1 ----

	Baselines (dBA)		
Descriptior	Land Use	Daytime	Evening	Night
St Francis ?	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Crane	No	16		80.6	364	0	
Crane	No	16		80.6	364	0	
Excavator	No	40		80.7	364	0	
Excavator	No	40		80.7	364	0	
Front End Loader	No	40		79.1	364	0	
Front End Loader	No	40		79.1	364	0	
Front End Loader	No	40		79.1	364	0	
Impact Pile Driver	Yes	20		101.3	364	0	

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	63.3	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	63.3	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	63.5	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	63.5	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	84	77	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84	77.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Descriptior	Land Use	Daytime	Evening	Night
Holser Mid	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Crane	No	16		80.6	250	0	
Crane	No	16		80.6	250	0	
Excavator	No	40		80.7	250	0	
Excavator	No	40		80.7	250	0	
Front End Loader	No	40		79.1	250	0	
Front End Loader	No	40		79.1	250	0	
Front End Loader	No	40		79.1	250	0	
Impact Pile Driver	Yes	20		101.3	250	0	

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	66.6	58.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	66.6	58.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	87.3	80.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	87.3	80.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Descriptior	Land Use	Daytime	Evening	Night
Lynwood Li	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Crane	No	16		80.6	790	0	
Crane	No	16		80.6	790	0	
Excavator	No	40		80.7	790	0	
Excavator	No	40		80.7	790	0	
Front End Loader	No	40		79.1	790	0	
Front End Loader	No	40		79.1	790	0	
Front End Loader	No	40		79.1	790	0	
Impact Pile Driver	Yes	20		101.3	790	0	

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	56.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	56.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	56.7	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	56.7	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	55.1	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	55.1	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	55.1	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	77.3	70.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.3	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Descriptior	Land Use	Daytime	Evening	Night
Residential	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Crane	No	16		80.6	1058	0	
Crane	No	16		80.6	1058	0	
Excavator	No	40		80.7	1058	0	
Excavator	No	40		80.7	1058	0	
Front End Loader	No	40		79.1	1058	0	
Front End Loader	No	40		79.1	1058	0	
Front End Loader	No	40		79.1	1058	0	
Impact Pile Driver	Yes	20		101.3	1058	0	

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	54	46.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	54	46.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	54.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	54.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	52.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	52.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	52.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	74.8	67.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.8	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Construction Vibration

	Receptors															
	North				South				East				West			
	Max (ft)				Max (ft)				Max (ft)				Max (ft)			
Distance	95				175				105				118			
Equipment	**PPV_{ref} (@ 25 ft, in/sec)**	**PPV (in/sec)**	**Lvref (@ 25 ft, VdB)**	**Lv (VdB)**	**PPV_{ref} (@ 25 ft, in/sec)**	**PPV (in/sec)**	**Lvref (@ 25 ft, VdB)**	**Lv (VdB)**	**PPV_{ref} (@ 25 ft, in/sec)**	**PPV (in/sec)**	**Lvref (@ 25 ft, VdB)**	**Lv (VdB)**	**PPV_{ref} (@ 25 ft, in/sec)**	**PPV (in/sec)**	**Lvref (@ 25 ft, VdB)**	**Lv (VdB)**
Vibratory Roller	0.21	0.028	94	77	0.21	0.011	94	69	0.21	0.024	94	75	0.21	0.020	94	74
Hoe Ram	0.089	0.012	87	70	0.089	0.005	87	62	0.089	0.010	87	68	0.089	0.009	87	67
Large Bulldozer	0.089	0.012	87	70	0.089	0.005	87	62	0.089	0.010	87	68	0.089	0.009	87	67
Caisson Drilling	0.089	0.012	87	70	0.089	0.005	87	62	0.089	0.010	87	68	0.089	0.009	87	67
Loaded Trucks	0.076	0.010	86	69	0.076	0.004	86	61	0.076	0.009	86	67	0.076	0.007	86	66
Jackhammer	0.035	0.005	79	62	0.035	0.002	79	54	0.035	0.004	79	60	0.035	0.003	79	59
Small Bulldozer	0.003	0.000	58	41	0.003	0.000	58	33	0.003	0.000	58	39	0.003	0.000	58	38
Maximum Vibration Levels		**0.028**				**0.011**				**0.024**				**0.020**		
Vibration Damage Threshold		0.30				0.30				0.30				0.30		
Vibration Annoyance Threshold		0.04				0.04				0.04				0.04		
Exceeds Vibration Damage Threshold?		**No**				**No**				**No**				**No**		
Exceeds Vibration Annoyance Threshold?		**No**				**No**				**No**				**No**		

Structure and Condition	Older residential structures
Human Response	Distinctly perceptible

Source: FTA 2018

Pile Driver Vibration

	Receptors															
	North				South				East				West			
	Max (ft)				Max (ft)				Max (ft)				Max (ft)			
Distance	71				175				245				825			
Equipment	**PPV_{ref} (@ 25 ft, in/sec)**	**PPV (in/sec)**	**Lvref (@ 25 ft, VdB)**	**Lv (VdB)**	**PPV_{ref} (@ 25 ft, in/sec)**	**PPV (in/sec)**	**Lvref (@ 25 ft, VdB)**	**Lv (VdB)**	**PPV_{ref} (@ 25 ft, in/sec)**	**PPV (in/sec)**	**Lvref (@ 25 ft, VdB)**	**Lv (VdB)**	**PPV_{ref} (@ 25 ft, in/sec)**	**PPV (in/sec)**	**Lvref (@ 25 ft, VdB)**	**Lv (VdB)**
Pile Driver (impact) - Upper Range	1.518	0.317	112	98	1.518	0.082	112	87	1.518	0.049	112	82	1.518	0.008	112	66
Pile Driver (impact) - Typical	0.644	0.135	104	90	0.644	0.035	104	79	0.644	0.021	104	74	0.644	0.003	104	58
Pile Driver (sonic) - Upper Range	0.734	0.153	105	91	0.734	0.040	105	80	0.734	0.024	105	75	0.734	0.004	105	59
Pile Driver (sonic) - Typical	0.17	0.036	93	79	0.17	0.009	93	68	0.17	0.006	93	63	0.17	0.001	93	47
Maximum Vibration Levels		**0.317**				**0.082**				**0.049**				**0.008**		
Vibration Damage Threshold		**0.30**				**0.30**				**0.30**				**0.30**		
Vibration Annoyance Threshold		**0.04**				**0.04**				**0.04**				**0.04**		
Exceeds Vibration Damage Threshold?		**Yes**				**No**				**No**				**No**		
Exceeds Vibration Annoyance Threshold?		**Yes**				**Yes**				**Yes**				**No**		

Structure and Condition	**Older residential structures**
Human Response	**Distinctly perceptible**

Source: FTA 2018

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/21/2024
Case Descri: Lynwood Park Stormwater Capture Project Demolition (Average)

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
St Francis ?	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Excavator	No	40		80.7	565	0	
Front End Loader	No	40		79.1	565	0	
Front End Loader	No	40		79.1	565	0	
Dozer	No	40		81.7	565	0	
All Other Equipment > 5	No	50	85		565	0	
All Other Equipment > 5	No	50	85		565	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	59.6	55.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	58	54.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	58	54.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	60.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.9	65.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Holser Midd	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Excavator	No	40		80.7	210	0	
Front End Loader	No	40		79.1	210	0	
Front End Loader	No	40		79.1	210	0	
Dozer	No	40		81.7	210	0	
All Other Equipment > 5	No	50	85		210	0	
All Other Equipment > 5	No	50	85		210	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	68.2	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	66.6	62.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	66.6	62.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	69.2	65.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	72.5	69.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	72.5	69.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	72.5	74.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Lynwood Li	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Excavator	No	40		80.7	78	0	
Front End Loader	No	40		79.1	78	0	
Front End Loader	No	40		79.1	78	0	
Dozer	No	40		81.7	78	0	
All Other Equipment > 5	No	50	85		78	0	
All Other Equipment > 5	No	50	85		78	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	76.8	72.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	75.2	71.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	75.2	71.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	77.8	73.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	81.1	78.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	81.1	78.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	81.1	83	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Excavator	No	40		80.7	1394	0	
Front End Loader	No	40		79.1	1394	0	
Front End Loader	No	40		79.1	1394	0	
Dozer	No	40		81.7	1394	0	
All Other Equipment > 5	No	50	85		1394	0	
All Other Equipment > 5	No	50	85		1394	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	51.8	47.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	50.2	46.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	50.2	46.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	52.8	48.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	56.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	56.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	56.1	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/21/2024
Case Descri: Lynwood Park Stormwater Capture Project Demolition (Average)

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
St Francis ?	Residential	60	60	60

			Equipment Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	661	0
Front End Loader	No	40		79.1	661	0
Front End Loader	No	40		79.1	661	0
Dozer	No	40		81.7	661	0
All Other Equipment > 5	No	50	85		661	0
All Other Equipment > 5	No	50	85		661	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	58.3	54.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	56.7	52.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	56.7	52.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.2	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	62.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	62.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.6	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Holser Midd	Residential	60	60	60

			Equipment Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	353	0
Front End Loader	No	40		79.1	353	0
Front End Loader	No	40		79.1	353	0
Dozer	No	40		81.7	353	0
All Other Equipment > 5	No	50	85		353	0
All Other Equipment > 5	No	50	85		353	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	63.7	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	62.1	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	62.1	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	64.7	60.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	68	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	68	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68	69.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Lynwood Li	Residential	60	60	60

			Equipment Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	340	0
Front End Loader	No	40		79.1	340	0
Front End Loader	No	40		79.1	340	0
Dozer	No	40		81.7	340	0
All Other Equipment > 5	No	50	85		340	0
All Other Equipment > 5	No	50	85		340	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	64.1	60.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	62.5	58.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	62.5	58.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	65	61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	68.3	65.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	68.3	65.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.3	70.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential	Residential	60	60	60

			Equipment Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	1487	0
Front End Loader	No	40		79.1	1487	0
Front End Loader	No	40		79.1	1487	0
Dozer	No	40		81.7	1487	0
All Other Equipment > 5	No	50	85		1487	0
All Other Equipment > 5	No	50	85		1487	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	51.2	47.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.6	45.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.6	45.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	52.2	48.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	55.5	52.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	55.5	52.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	55.5	57.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 8/28/2024
Case Desc Lynwood Park Stormwater Capture Project Grading (Average)

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
St Francis I	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
		Impact	Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader	No	40		79.1	364	0	
Excavator	No	40		80.7	364	0	
Excavator	No	40		80.7	364	0	
Grader	No	40	85		364	0	
Grader	No	40	85		364	0	

	Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	63.5	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	63.5	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.8	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.8	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.8	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Holser Mid	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
		Impact	Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader	No	40		79.1	250	0	
Excavator	No	40		80.7	250	0	
Excavator	No	40		80.7	250	0	
Grader	No	40	85		250	0	
Grader	No	40	85		250	0	

	Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	71	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	71	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71	71.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Lynwood Li	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
		Impact	Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader	No	40		79.1	790	0	
Excavator	No	40		80.7	790	0	
Excavator	No	40		80.7	790	0	
Grader	No	40	85		790	0	
Grader	No	40	85		790	0	

	Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	55.1	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	56.7	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	56.7	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	61	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	61	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
		Impact	Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader	No	40		79.1	1058	0	
Excavator	No	40		80.7	1058	0	
Excavator	No	40		80.7	1058	0	
Grader	No	40	85		1058	0	
Grader	No	40	85		1058	0	

	Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	52.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	54.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	54.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	58.5	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	58.5	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.5	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 8/22/2024
Case Descri Lynwood Park Stormwater Capture Project Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
St Francis N	Residential	60	60	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	565	0
Roller	No	20		80	565	0
Compactor (ground)	No	20		83.2	565	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	56.2	53.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58.9	51.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	62.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.2	58.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Holser Midd	Residential	60	60	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	210	0
Roller	No	20		80	210	0
Compactor (ground)	No	20		83.2	210	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	64.8	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	67.5	60.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	70.8	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.8	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Lynwood Li	Residential	60	60	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	78	0
Roller	No	20		80	78	0
Compactor (ground)	No	20		83.2	78	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	73.4	70.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	76.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	79.4	72.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.4	75.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential	Residential	60	60	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	1394	0
Roller	No	20		80	1394	0
Compactor (ground)	No	20		83.2	1394	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	48.3	45.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	51.1	44.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	54.3	47.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	54.3	50.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 8/22/2024
Case Descri Lynwood Park Stormwater Capture Project Paving (Average)

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
St Francis M	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Paver	No	50		77.2	661	0	
Roller	No	20		80	661	0	
Compactor (ground)	No	20		83.2	661	0	

	Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	54.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	57.6	50.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	60.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	60.8	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Holser Midd	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Paver	No	50		77.2	353	0	
Roller	No	20		80	353	0	
Compactor (ground)	No	20		83.2	353	0	

	Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	60.2	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	66.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.3	62.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Lynwood Li	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Paver	No	50		77.2	340	0	
Roller	No	20		80	340	0	
Compactor (ground)	No	20		83.2	340	0	

	Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	60.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63.3	56.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	66.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.6	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Paver	No	50		77.2	1487	0	
Roller	No	20		80	1487	0	
Compactor (ground)	No	20		83.2	1487	0	

	Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	47.8	44.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	50.5	43.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	53.8	46.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	53.8	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Phase		North	661 ft	South	353 ft	East	340 ft	West	1,487 ft
Demolition		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Equipment									
Excavator		58.3	54.3	63.7	59.8	64.1	60.1	51.2	47.3
Front End Loader		56.7	52.7	62.1	58.2	62.5	58.5	49.6	45.7
Front End Loader		56.7	52.7	62.1	58.2	62.5	58.5	49.6	45.7
Dozer		59.2	55.3	64.7	60.7	65	61	52.2	48.2
All Other Equipment > 5 HP		62.6	59.6	68	65	68.3	65.3	55.5	52.5
All Other Equipment > 5 HP		62.6	59.6	68	65	68.3	65.3	55.5	52.5
	Total	63	65	68	70	68	70	56	57
Phase		**North**	**364 ft**	**South**	**250 ft**	**East**	**790 ft**	**West**	**1,058 ft**
Site Preparation		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Equipment									
Front End Loader		61.9	57.9	65.1	61.2	55.1	51.2	52.6	48.6
Front End Loader		61.9	57.9	65.1	61.2	55.1	51.2	52.6	48.6
Dozer		64.4	60.4	67.7	63.7	57.7	53.7	55.2	51.2
All Other Equipment > 5 HP		67.8	64.7	71	68	61	58	58.5	55.5
	Total	68	67	71	71	61	61	59	58
Phase		**North**	**364 ft**	**South**	**250 ft**	**East**	**790 ft**	**West**	**1,058 ft**
Grading		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Equipment									
Front End Loader		61.9	57.9	65.1	61.2	55.1	51.2	52.6	48.6
Excavator		63.5	59.5	66.7	62.8	56.7	52.8	54.2	50.2
Excavator		63.5	59.5	66.7	62.8	56.7	52.8	54.2	50.2
Grader		67.8	63.8	71	67	61	57	58.5	54.5
Grader		67.8	63.8	71	67	61	57	58.5	54.5
Impact Pile Driver		84	77	87.3	80.3	77.3	70.3	74.8	67.8
	Total	84	78	87	81	77	71	75	68
Phase		**North**	**364 ft**	**South**	**250 ft**	**East**	**790 ft**	**West**	**1,058 ft**
Construction		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Equipment									
Crane		63.3	55.3	66.6	58.6	56.6	48.6	54	46.1
Crane		63.3	55.3	66.6	58.6	56.6	48.6	54	46.1
Excavator		63.5	59.5	66.7	62.8	56.7	52.8	54.2	50.2
Excavator		63.5	59.5	66.7	62.8	56.7	52.8	54.2	50.2
Front End Loader		61.9	57.9	65.1	61.2	55.1	51.2	52.6	48.6
Front End Loader		61.9	57.9	65.1	61.2	55.1	51.2	52.6	48.6
Front End Loader		61.9	57.9	65.1	61.2	54.3	50.3	52.6	48.6
	Total	64	66	67	70	57	60	54	57
Phase		**North**	**661 ft**	**South**	**353 ft**	**East**	**340 ft**	**West**	**1,487 ft**
Paving		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Equipment									
Paver		54.8	51.8	60.2	57.2	60.6	57.6	47.8	44.7
Roller		57.6	50.6	63	56	63.3	56.4	50.5	43.5
Compactor (ground)		60.8	53.8	66.3	59.3	66.6	59.6	53.8	46.8
	Total	61	57	66	63	67	63	54	50

Phase		Leq			
		North	South	East	West
Demolition		65	70	70	57
Site Preparation		67	71	61	58
Grading		78	81	71	68
Construction		66	70	60	57
Paving		57	63	63	50
0					
	Highest	78	81	71	68

North	South	East	West
6.3	13.8	6.4	1.5
9.1	14.4	-3.3	2.1
19.4	24.8	7.1	12.4
8.1	13.5	-4.3	1.2
-1.2	6.4	-1	-5.9

Phase	North	565 ft	South	210 ft	East	78 ft	West	1,394 ft
Demolition	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Equipment								
Excavator	59.6	55.7	68.2	64.3	76.8	72.9	51.8	47.8
Front End Loader	58	54.1	66.6	62.7	75.2	71.3	50.2	46.2
Front End Loader	58	54.1	66.6	62.7	75.2	71.3	50.2	46.2
Dozer	60.6	56.6	69.2	65.2	77.8	73.8	52.8	48.8
All Other Equipment > 5 HP	63.9	60.9	72.5	69.5	81.1	78.1	56.1	53.1
All Other Equipment > 5 HP	63.9	60.9	72.5	69.5	81.1	78.1	56.1	53.1
Total	64	66	73	74	81	83	56	58
Phase	**North**	**157 ft**	**South**	**162 ft**	**East**	**531 ft**	**West**	**805 ft**
Site Preparation	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Equipment								
Front End Loader	69.2	65.2	68.9	64.9	58.6	54.6	55	51
Front End Loader	69.2	65.2	68.9	64.9	58.6	54.6	55	51
Dozer	71.7	67.8	71.5	67.5	61.1	57.2	57.5	53.6
All Other Equipment > 5 HP	75.1	72.1	74.8	71.8	64.5	61.5	60.9	57.9
Total	75	75	75	74	65	64	61	60
Phase	**North**	**157 ft**	**South**	**162 ft**	**East**	**531 ft**	**West**	**805 ft**
Grading	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Equipment								
Front End Loader	69.2	65.2	68.9	64.9	58.6	54.6	55	51
Excavator	70.8	66.8	70.5	66.5	60.2	56.2	56.6	52.6
Excavator	70.8	66.8	70.5	66.5	60.2	56.2	56.6	52.6
Grader	75.1	71.1	74.8	70.8	64.5	60.5	60.9	56.9
Grader	75.1	71.1	74.8	70.8	64.5	60.5	60.9	56.9
Impact Pile Driver	91.3	84.3	91.1	84.1	80.7	73.8	77.1	70.1
Total	91	85	91	85	81	74	77	71
Phase	**North**	**157 ft**	**South**	**162 ft**	**East**	**531 ft**	**West**	**805 ft**
Construction	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Equipment								
Crane	70.6	62.7	70.3	62.4	60	52.1	56.4	48.5
Crane	70.6	62.7	70.3	62.4	60	52.1	56.4	48.5
Excavator	70.8	66.8	70.5	66.5	60.2	56.2	56.6	52.6
Excavator	70.8	66.8	70.5	66.5	60.2	56.2	56.6	52.6
Front End Loader	69.2	65.2	68.9	64.9	58.6	54.6	55	51
Front End Loader	69.2	65.2	68.9	64.9	58.6	54.6	55	51
Front End Loader	69.2	65.2	68.9	64.9	58.6	54.6	55	51
Total	71	74	71	73	60	63	57	59
Phase	**North**	**565 ft**	**South**	**210 ft**	**East**	**78 ft**	**West**	**1,394 ft**
Paving	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Equipment								
Paver	56.2	53.1	64.8	61.7	73.4	70.3	48.3	45.3
Roller	58.9	51.9	67.5	60.5	76.1	69.1	51.1	44.1
Compactor (ground)	62.2	55.2	70.8	63.8	79.4	72.4	54.3	47.3
Total	62	58	71	67	79	76	54	51

Phase		Leq			
		North	South	East	West
Demolition		66	74	83	58
Site Preparation		75	74	64	60
Grading		85	85	74	71
Construction		74	73	63	59
Paving		58	67	76	51
0					
	Highest	85	85	83	71

	North	South	East	West
	7.6	18.3	19.2	2.1
	16.4	18.2	0.2	4.5
	26.7	28.5	10.5	14.8
	15.4	17.3	-0.7	3.5
	0.2	10.9	11.8	-5.3

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 8/21/2024
Case Descr Lynwood Park Stormwater Capture Project Site Preparation

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
St Francis M	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader	No	40		79.1	157	0	
Front End Loader	No	40		79.1	157	0	
Dozer	No	40		81.7	157	0	
All Other Equipment > 5	No	50	85		157	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	69.2	65.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	69.2	65.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	71.7	67.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	75.1	72.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.1	74.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Holser Mid	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader	No	40		79.1	162	0	
Front End Loader	No	40		79.1	162	0	
Dozer	No	40		81.7	162	0	
All Other Equipment > 5	No	50	85		162	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	68.9	64.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	68.9	64.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	71.5	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	74.8	71.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.8	74.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Lynwood Li	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader	No	40		79.1	531	0	
Front End Loader	No	40		79.1	531	0	
Dozer	No	40		81.7	531	0	
All Other Equipment > 5	No	50	85		531	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	61.1	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	64.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.5	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader	No	40		79.1	805	0	
Front End Loader	No	40		79.1	805	0	
Dozer	No	40		81.7	805	0	
All Other Equipment > 5	No	50	85		805	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	55	51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	55	51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	57.5	53.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	60.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	60.9	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 8/21/2024
Case Descr Lynwood Park Stormwater Capture Project Site Preparation (Average)

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
St Francis M	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader	No	40		79.1	364	0	
Front End Loader	No	40		79.1	364	0	
Dozer	No	40		81.7	364	0	
All Other Equipment > 5	No	50	85		364	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	64.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	67.8	64.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.8	67.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Holser Mid	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader	No	40		79.1	250	0	
Front End Loader	No	40		79.1	250	0	
Dozer	No	40		81.7	250	0	
All Other Equipment > 5	No	50	85		250	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	67.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	71	68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Lynwood Li	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader	No	40		79.1	790	0	
Front End Loader	No	40		79.1	790	0	
Dozer	No	40		81.7	790	0	
All Other Equipment > 5	No	50	85		790	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	55.1	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	55.1	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	57.7	53.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	61	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61	60.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential	Residential	60	60	60

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader	No	40		79.1	1058	0	
Front End Loader	No	40		79.1	1058	0	
Dozer	No	40		81.7	1058	0	
All Other Equipment > 5	No	50	85		1058	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	52.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	52.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	55.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5	58.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.5	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.