

**Addendum to the
Los Angeles County Flood Control District
Enhanced Watershed Management Programs
Final Program Environmental Impact Report
(State Clearinghouse No. 2014081106)**

**Adventure Park Multi-Benefit
Stormwater Capture Project**

August 30, 2021

PREPARED FOR:

Los Angeles County Public Works

900 South Fremont Avenue
Alhambra, CA 91803

PREPARED BY:

Tetra Tech

5383 Hollister Avenue, Suite 130
Santa Barbara, CA 93111

TABLE OF CONTENTS

1.0 INTRODUCTION.....	1-1
1.1 PURPOSE OF THIS ADDENDUM	1-1
1.2 CEQA REQUIREMENTS	1-2
1.3 ADOPTED MITIGATION MEASURES.....	1-3
2.0 PROJECT DESCRIPTION	2-1
2.1 ENVIRONMENTAL SETTING	2-1
2.2 BACKGROUND	2-2
2.3 PROJECT DESCRIPTION	2-3
2.4 OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED	2-6
3.0 EVALUATION OF ENVIRONMENTAL IMPACTS	3-1
3.1.1 AESTHETICS	3-1
3.1.2 AGRICULTURE AND FOREST RESOURCES.....	3-4
3.1.3 AIR QUALITY	3-7
3.1.4 BIOLOGICAL RESOURCES	3-15
3.1.5 CULTURAL RESOURCES.....	3-22
3.1.6 GEOLOGIC AND MINERAL RESOURCES	3-28
3.1.7 GREENHOUSE GAS EMISSIONS.....	3-33
3.1.8 HAZARDS AND HAZARDOUS MATERIALS.....	3-36
3.1.9 HYDROLOGY AND WATER QUALITY	3-41
3.1.10 LAND USE AND PLANNING.....	3-46
3.1.11 NOISE	3-48
3.1.12 POPULATION AND HOUSING AND ENVIRONMENTAL JUSTICE.....	3-54
3.1.13 PUBLIC SERVICES AND RECREATION.....	3-56
3.1.14 TRANSPORTATION/TRAFFIC	3-60
3.1.15 UTILITIES, SERVICE SYSTEMS, AND ENERGY	3-64
4.0 LIST OF PREPARERS	4-1
5.0 REFERENCES.....	5-1

LIST OF TABLES

Table 1-1 Mitigation Measures and Status	1-3
Table 3-1 Attainment Status of Los Angeles County.....	3-8
Table 3-2 Applicable Rules	3-8
Table 3-3 SCAQMD Air Quality Significance Thresholds	3-10
Table 3-4 Project Construction Emissions of Criteria Pollutants (lb/day).....	3-11
Table 3-5 Special-Status Wildlife Species with Potential to Occur.....	3-17
Table 3-6 Special-Status Plant Species with Potential to Occur.....	3-18
Table 3-7 Project GHG Construction Emissions	3-34
Table 3-8 Summary of Hydrologic Conditions for Adventure Park.....	3-44
Table 3-9. Vibration Source Levels for Construction Equipment	3-50

LIST OF FIGURES

1-1	Project Location and Vicinity Map
1-2	Conceptual Landscape Plan
1-3	Shoring and Construction Limits

APPENDICES

A	California Emissions Estimator Model Data
B	California Historical Resources Information System Data
C	Native American Heritage Commission SLF Search
D	Department of Parks and Recreation 523 forms
E	Geotechnical Engineering Report
F	Noise Modeling Results

1.0 INTRODUCTION

1.1 PURPOSE OF THIS ADDENDUM

On May 26, 2015, Los Angeles County (County) certified the Los Angeles County Flood Control District Enhanced Watershed Management Programs Final Environmental Impact Report (PEIR) (DPW, 2015). The PEIR analyzed the general effects due to the structural and non-structural best management practices (BMPs) identified in the 12 Enhanced Watershed Management Programs (EWMPs) submitted to the Los Angeles Regional Water Quality Control Board (LARWQCB). As a component of the PEIR, potential BMPs were identified for the Upper San Gabriel River Watershed and Adventure Park was one of the potential BMP locations identified (PEIR Appendix G, Priority Projects List). The PEIR analyzed the general effects of the BMPs and identified program mitigation measures to reduce potential impacts; however, site-specific environmental analysis was not completed.

The purpose of this Addendum to the PEIR is to evaluate the site-specific environmental effects associated with the proposed Adventure Park Multi-Benefit Stormwater Capture Project (proposed project) and determine whether these impacts are consistent with the evaluation in the PEIR in compliance with the California Environmental Quality Act (CEQA) (Public Resources Code Sections 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Sections 15000 et seq.).

The PEIR and this Addendum together serve as the environmental review of the proposed project. As the proposed project is a later activity to a previously certified PEIR, CEQA Guidelines Section 15168(c) applies. Section 15168(c) requires that later activities in a program be examined in light of the PEIR to determine whether any additional environmental document must be prepared. Whether a later activity is within the scope of a program EIR is a factual question that the lead agency determines based on substantial evidence in the record. Factors that an agency may consider in making that determination include, but are not limited to, consistency of the later activity with the type of allowable land use, overall planned density and building intensity, geographic area analyzed for environmental impacts, and covered infrastructure, as described in the program EIR. An agency shall incorporate feasible mitigation measures and alternatives developed in the program EIR into later activities in the program.

The proposed project involves site-specific operations and thus, this evaluation must comply with CEQA Guidelines Section 15168(c)(4) which states, "Where the later activities involve site specific operations, the agency should use a written checklist or similar device to document the evaluation of the site and the activity to determine whether the environmental effects of the operation were within the scope of the Program EIR." Accordingly, this Addendum includes a written checklist and evaluation of the project site and activity to determine whether additional environmental document must be prepared. The environmental checklist form prepared for this project is found in Section 3 of this Addendum. It contains two checklist categories about the proposed project for each of the impact categories. These categories are:

- Addendum: No Changes or New Information Requiring Preparation of a Subsequent Environmental Impact Report (EIR). This is indicated if a potential impact is 1) determined to be "no impact" or "less than significant"; or 2) on the basis of substantial evidence in the light of the whole record, an EIR has been certified or a negative declaration has been adopted for a project, and none of the conditions listed above apply.
- Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects. This is indicated if a substantial change in the proposed project, substantial changes in the circumstances under which the project is undertaken, or new information of substantial importance not known at the time the PEIR was certified shows that the project will have one or more significant effects not discussed in the PEIR; or, significant effects previously examined will be substantially more severe than shown in the PEIR.

1.2 CEQA REQUIREMENTS

An Addendum to an EIR is the appropriate tool to evaluate the environmental effects associated with minor modifications to previously approved projects. In the case of a PEIR, if the agency finds that pursuant to State CEQA Guidelines Section 15162 (see below) no new effects could occur or new mitigation measures would be required, the agency (County) can approve the site-specific activity as being within the scope of the program covered by the PEIR, and no new environmental document would be required.

According to State CEQA Guidelines Section 15164(a), "the lead agency or a responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred." An addendum may be prepared if only minor technical changes or additions are necessary. A brief explanation of the decision not to prepare a subsequent EIR must also be provided in the addendum, findings, or the public record. Pursuant to Section 15162 of the State CEQA Guidelines, no subsequent EIR may be required for the project unless the County determines, on the basis of substantial evidence, that one or more of the following conditions are met:

- (a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:
 1. Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
 2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
 3. New information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
 - a. The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
 - b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
 - c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measures or alternative; or
 - d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

As the CEQA Lead Agency, the County has determined, based on the analysis presented herein, that none of the conditions apply which would require preparation of a subsequent or supplemental EIR and that an Addendum to the certified PEIR is the appropriate environmental documentation under CEQA for the proposed project.

Section 3 discusses issue-by-issue how the impacts anticipated for the proposed project would be within those previously identified in the PEIR. The Mitigation Monitoring and Reporting Program (MMRP) adopted with the PEIR would continue to apply to the proposed project to ensure all significant impacts remain less than significant.

1.3 ADOPTED MITIGATION MEASURES

The PEIR identified mitigation measures that reduce the potential significant impacts of the anticipated structural and non-structural BMPs identified in the 12 EWMPs submitted to the LARWQCB. The PEIR mitigation measures were approved as part of the certification of the PEIR and associated MMRP. The implementing agency for these measures would be the Los Angeles County Public Works (LACPW).

The mitigation measures that apply to the proposed project are listed in Table 1-1 and in respective Section 3 subsections of this Addendum. As part of the design process and to support preparation of this Addendum, several of the PEIR mitigation measures have already been complied with and are shown in Table 1-1 and described in Section 3.

**Table 1-1
Mitigation Measures and Status**

Applicable PEIR Mitigation Measures	Status
Aesthetics	
AES-1: Aboveground structures shall be designed to be consistent with local zoning codes and applicable design guidelines and to minimize features that contrast with neighboring development.	To be implemented prior to construction.
AES-2: Implementing agencies shall develop BMP maintenance plans that are approved concurrently with each structural BMP approval. The maintenance plans must include measures to ensure functionality of the structural BMPs for the life of the BMP. These plans may include general maintenance guidelines that apply to a number of smaller distributed BMPs.	To be implemented prior to construction and during operations.
Air Quality	
AIR-1: Implementing agencies shall require for large regional or centralized BMPs the use of low-emission equipment meeting Tier II emissions standards at a minimum and Tier III and IV emission standards where available as California Air Resources Board (CARB)-required emission technologies become readily available to contractors in the region.	To be implemented during construction.
AIR-4: During planning of structural BMPs, implementing agencies shall assess the potential for nuisance odors to affect a substantial number of people. BMPs that minimize odors shall be considered the priority when in close proximity to sensitive receptors.	To be implemented during operation of the proposed project.
Biological Resources	
BIO-1: Prior to approving a Regional or Centralized BMP, the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate BMP sites should avoid impacting large areas of native habitats including upland woodlands and riparian forests that support sensitive species to the extent feasible. The evaluation shall include an assessment of potential downstream impacts resulting from flow diversions.	Completed as part of the environmental and design process.
BIO-2: Prior to ground disturbing activities in areas that could support sensitive biological resources, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur within affected areas, including areas directly or indirectly impacted by construction or operation of the BMPs.	Completed as part of the environmental and design process.

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

Applicable PEIR Mitigation Measures	Status
<p>BIO-3: If a special-status wildlife species is determined to be present or potentially present within the limits of construction activities, a qualified biologist shall conduct pre-construction surveys of proposed work zones and within an appropriately sized buffer around each area as determined by a qualified biologist within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species shall be flagged for avoidance if feasible.</p>	<p>To be implemented prior to construction.</p>
<p>BIO-4: If avoidance of special-status species or sensitive habitats that could support special-status species (including, but not limited to, critical habitat, riparian habitat, and jurisdictional wetlands/waters) is not feasible, the Permittee shall consult with the appropriate regulating agency (USACE/USFWS or CDFW) to determine a strategy for compliance with the Endangered Species Act, California Fish and Game Code, and other regulations protecting special-status species and sensitive habitats. The Permittee shall identify appropriate impact minimization measures and compensation for permanent impacts to sensitive habitats and species in consultation with regulatory agencies. Construction of the project will not begin until the appropriate permits from the regulatory agencies are approved.</p>	<p>To be implemented prior to construction.</p>
<p>BIO-5: If construction and vegetation removal is proposed between February 1 and August 31, a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds and raptors within 500-feet of the construction limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.</p>	<p>To be implemented prior to construction.</p>
<p>BIO-6: All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special- status wildlife species as determined by a qualified biologist.</p>	<p>To be implemented prior to construction.</p>
<p>BIO-9: Prior to construction, a qualified wetland delineator shall be retained to conduct a formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) subject to the jurisdiction of USACE, RWQCB, and CDFW, may be affected by the project. If jurisdictional resources are identified in the EWMP area and would be directly or indirectly impacted by individual projects, the qualified wetland delineator shall prepare a jurisdictional delineation report suitable for submittal to USACE, RWQCB, and CDFW for purposes of obtaining the appropriate permits. Habitat mitigation and compensation requirements shall be implemented prior to construction in accordance with Mitigation Measure BIO-4.</p>	<p>To be implemented prior to construction.</p>
<p>Cultural Resources</p>	
<p>CUL-1: For individual EWMP projects that could impact buildings or structures (including infrastructure) 45 years old or older, implementing agencies shall ensure that a historic built environment survey is conducted or supervised by a qualified historian or architectural historian meeting the Secretary of the Interior’s Professional Qualification Standards for Architectural History. Historic built environment resources shall be evaluated for their eligibility for listing in the CRHR or local register prior to the implementing agency’s approval of project plans. If eligible resources that would be considered historical resources under CEQA are identified, demolition or substantial</p>	<p>Measure implemented and complied with.</p>

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

Applicable PEIR Mitigation Measures	Status
<p>alteration of such resources shall be avoided. If avoidance is determined to be infeasible, the implementing agency shall require the preparation of a treatment plan to include, but not be limited to, photo-documentation and public interpretation of the resource. The plan will be submitted to the implementing agency for review and approval prior to implementation.</p>	
<p>CUL-2: Implementing agencies shall ensure that individual EWMP projects that require ground disturbance shall be subject to a Phase I cultural resources inventory on a project-specific basis prior to the implementing agency’s approval of project plans. The study shall be conducted or supervised by a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior’s Professional Qualifications Standards for Archaeology, and shall be conducted in consultation with the local Native American representatives expressing interest. The cultural resources inventory shall include a cultural resources records search to be conducted at the South Central Coastal Information Center; scoping with the NAHC and with interested Native Americans identified by the NAHC; a pedestrian archaeological survey where deemed appropriate by the qualified archaeologist; and formal recordation of all identified archaeological resources on California Department of Parks and Recreation 523 forms and significance evaluation of such resources presented in a technical report following the guidelines in <i>Archaeological Resource Management Reports (ARMR): Recommended Contents and Format</i>, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990.</p> <p>If potentially significant archaeological resources are encountered during the survey, the implementing agency shall require that the resources are evaluated by the qualified archaeologist for their eligibility for listing in the CRHR and for significance as a historical resource or unique archaeological resource per <i>CEQA Guidelines</i> Section 15064.5. Recommendations shall be made for treatment of these resources if found to be significant, in consultation with the implementing agency and the appropriate Native American groups for prehistoric resources. Per <i>CEQA Guidelines</i> Section 15126.4(b)(3), preservation in place shall be the preferred manner of mitigation to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. Consistent with <i>CEQA Guidelines</i> Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, which may include data recovery or other appropriate measures, in consultation with the implementing agency, and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.</p>	<p>Measure implemented and complied with.</p>
<p>CUL-3: The implementing agency shall retain archaeological monitors during ground-disturbing activities that have the potential to impact archaeological resources qualifying as historical resources or unique archaeological resources, as determined by a qualified archaeologist in consultation with the implementing agency, and any local Native American representatives expressing interest in the project. Native American monitors shall be retained for projects that have a high potential to impact sensitive Native</p>	<p>To be implemented prior to construction and during ground disturbing activities.</p>

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

Applicable PEIR Mitigation Measures	Status
<p>American resources, as determined by the implementing agency in coordination with the qualified archaeologist from the information provided by the consulting tribe(s) during the AB52 consultation process. .</p>	
<p>CUL-4: During project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find shall stop and a qualified archaeologist shall be contacted to assess the significance of the find according to <i>CEQA Guidelines</i> Section 15064.5. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agency and the tribe(s) that have consulted through the AB52 process, appropriate avoidance measures or other appropriate mitigation. Per <i>CEQA Guidelines</i> Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. Consistent with <i>CEQA Guidelines</i> Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and the tribe(s) that have consulted through the AB52 process. . If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2</p>	<p>To be implemented during construction.</p>
<p>CUL-5: For individual structural BMP projects that require ground disturbance, the implementing agency shall evaluate the sensitivity of the project site for paleontological resources. If deemed necessary, the implementing agency shall retain a qualified paleontologist to evaluate the project and provide recommendations regarding additional work, potentially including testing or construction monitoring.</p>	<p>To be implemented prior to construction. This condition shall be implemented during the Final Plans and Specifications and during construction.</p>
<p>CUL-6: In the event that paleontological resources are discovered during construction, the implementing agency shall notify a qualified paleontologist. The paleontologist will evaluate the potential resource, assess the significance of the find, and recommend further actions to protect the resource.</p>	<p>To be implemented prior to construction and during construction.</p>
<p>CUL-7: The implementing agency shall require that, if human remains are uncovered during project construction, work in the vicinity of the find shall cease and the County Coroner shall be contacted to evaluate the remains, following the procedures and protocols set forth in Section 15064.5 (e)(1) of the <i>CEQA Guidelines</i>. If the County Coroner determines that the remains are Native American, the Coroner will contact the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). The NAHC will then designate a Most Likely Descendant of the deceased Native American, who will engage in consultation to determine the disposition of the remains.</p>	<p>To be implemented during construction.</p>

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

Applicable PEIR Mitigation Measures	Status
Geological and Mineral Resources	
<p>GEO-1: Prior to approval of infiltration BMPs, implementing agencies shall conduct a geotechnical investigation of each infiltration BMP site to evaluate infiltration suitability. If infiltration rates are sufficient to accommodate an infiltration BMP, the geotechnical investigation shall recommend design measures necessary to prevent excessive lateral spreading that could destabilize neighboring structures. Implementing agencies shall implement these measures in project designs.</p>	<p>Measure implemented and complied with.</p>
Hazards and Hazardous Materials	
<p>HAZ-1: Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the individual BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. The Maintenance Plan shall include vector control requirements. The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.</p>	<p>To be implemented prior to construction.</p>
<p>HAZ-2: Prior to the initiation of any construction requiring ground disturbing activities in areas where hazardous material use or management may have occurred, the implementing agencies shall complete a Phase I Environmental Site Assessment (ESA) in accordance with American Society for Testing and Materials (ASTM) Standard E1527-13 for each construction site. Any recommended follow up sampling (Phase II activities) set forth in the Phase I ESA shall be implemented prior to construction. The results of Phase II studies, if necessary, shall be submitted to the local overseeing agency and any required remediation or further delineation of identified contamination shall be completed prior to commencement of construction.</p>	<p>To be implemented prior to construction.</p>
Noise	
<p>NOISE-1: The implementing agencies shall implement the following measures during construction as needed:</p> <ul style="list-style-type: none"> • Include design measures necessary to reduce the construction noise levels where feasible. These measures may include noise barriers, curtains, or shields. • Place noise-generating construction activities (e.g., operation of compressors and generators, cement mixing, general truck idling) as far as possible from the nearest noise-sensitive land uses. • Locate stationary construction noise sources as far from adjacent noise-sensitive receptors as possible. 	<p>To be implemented prior to and during construction.</p>

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

Applicable PEIR Mitigation Measures	Status
<ul style="list-style-type: none"> • If construction is to occur near a school, the construction contractor shall coordinate the with school administration in order to limit disturbance to the campus. Efforts to limit construction activities to non-school days shall be encouraged. • For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, identify a liaison for these off-site sensitive receptors, such as residents and property owners, to contact with concerns regarding construction noise and vibration. The liaison’s telephone number(s) shall be prominently displayed at construction locations. • For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, notify in writing all landowners and occupants of properties adjacent to the construction area of the anticipated construction schedule at least 2 weeks prior to groundbreaking. 	
<p>NOISE-2: All structural BMPs that employ mechanized stationary equipment that generate noise levels shall comply with the applicable noise standards established by the implementing agency with jurisdiction over the structural BMP site. The equipment shall be designed with noise-attenuating features (e.g., enclosures) and/or located at areas (e.g., belowground) where nearby noise-sensitive land uses would not be exposed to a perceptible noise increase in their noise environment.</p>	<p>To be implemented during construction.</p>
<p>Public Services and Recreation</p>	
<p>PS-1: The Permittee implementing the EWMP project shall provide reasonable advance notification to the service providers such as fire, police, local businesses, home owners and residents of adjacent to and within areas potentially affected by the proposed EWMP project about the nature, extent and duration of construction activities. Interim updates should be provided to inform them of the status of the construction activities.</p>	<p>To be implemented prior to and during construction.</p>
<p>Transportation and Circulation</p>	
<p>TRAF-1: For projects that may affect traffic, implementing agencies shall require that contractors prepare a construction traffic control plan. Elements of the plan should include, but are not necessarily limited to, the following:</p> <ul style="list-style-type: none"> • Develop circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible. • To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours. • Install traffic control devices as specified in Caltrans’ Manual of Traffic Controls for Construction and Maintenance Work Zones where needed to maintain safe driving conditions. Use flaggers and/or signage to safely direct traffic through construction work zones. • Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, hospitals, and schools. Provide advance notification to the facility owner or operator of the timing, location, and duration of construction activities. 	<p>To be implemented prior to and during construction.</p>

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

Applicable PEIR Mitigation Measures	Status
Utilities and Service Systems	
<p>UTIL-1: Prior to implementation of BMPs, the implementing agency shall conduct a search for local utilities above and below ground that could be affected by the project. The implementing agencies shall contact each utility potentially affected to address relocation of the utility if necessary to ensure access and services are maintained.</p>	<p>To be implemented prior to and during construction.</p>
<p>UTIL-2: Prior to approval of BMPs, implementing agencies shall evaluate the potential for impacts to downstream beneficial uses including surface water rights. Implementing agencies shall not approve BMPs that result in preventing access to previously appropriated surface water downstream.</p>	<p>To be implemented prior to project approval.</p>
<p>UTIL-3: Implementing agencies shall encourage construction contractors to recycle construction materials and divert inert solids (asphalt, brick, concrete, dirt, fines, rock, sand, soil, and stone) from disposal in a landfill where feasible. Implementing agencies shall incentivize construction contractors with waste minimization goals in bid specifications where feasible.</p>	<p>To be implemented during construction.</p>

2.0 PROJECT DESCRIPTION

Project title:	Adventure Park Multi-Benefit Stormwater Capture Project
Addendum Lead agency name and address:	Los Angeles County Public Works 900 South Fremont Avenue Alhambra, CA 91803
Contact person and phone number:	Grace Komjakraphan Environmental Engineering Specialist Los Angeles County Public Works (626) 458-4330
Project location:	10130 S. Gunn Avenue in Whittier, California 90605
Assessor Parcel Number (APN):	8156-001-910
Project sponsor's name and address:	Los Angeles County Public Works 900 South Fremont Avenue Alhambra, CA 91803
General Plan Designation:	OS-PR/ Parks and Recreation
Zoning Designation:	R-A-6000/Residential Agricultural
Surrounding land uses:	North: Residential South: Residential East: Residential West: Residential

2.1 ENVIRONMENTAL SETTING

The Adventure Park Multi-Benefit Stormwater Capture Project (proposed project) is located at 10130 S. Gunn Avenue in Whittier, California. The site, formerly Gunn Avenue County Park, is located at the intersection of Gunn Avenue and Light Street (the Site) within the Coyote Creek North Fork Sub-watershed. It is an existing public park (Adventure Park) under the jurisdiction of the County of Los Angeles Department of Parks and Recreation (DPR).

The 15.5-acre Adventure Park provides services for youth and senior programs including an after-school day camp, sports, and senior programs. Adventure Park is divided into two distinct areas by the Los Angeles County Flood Control District (LACFCD) Sorensen Drain channel. Two pedestrian bridges cross over the channel to connect the two halves of the park.

The park amenities on the west side of the channel include two buildings that house a children's play room, community room, computer room, fitness zone, gymnasium, and weight room. Additionally, there are outdoor children play structures, basketball courts, and a restroom facility located next to the buildings. The west side is landscaped with turf grass and scattered trees designed to provide shade to various areas. Outdoor lighting is provided around the basketball courts, play structure and sidewalks.

The east side amenities include picnic areas, sports fields, fitness equipment, a restroom facility, and a walking path. The walking path encircles the sports fields and the picnic areas, and fitness equipment branch off the path. The east side is landscaped with turf grass and has trees around the outside perimeter of the park. Lights are found around the walking path and large field lights surround the sports fields for as-needed use.

Addendum to LACFCD EWMP Final PEIR Adventure Park Multi-Benefit Stormwater Capture Project

The proposed project is entirely contained within the east portion of the park within the sports fields. Access to the site is provided by Reis Street to the west, Gunn Avenue to the north, and Light Street to the east. The streets are two lane roads with parking available on both sides. The park site is located within a developed urban neighborhood and is surrounded by residential uses to the north, south, east and west. The estimated proximity of the nearest housing unit to the project site is approximately 20 meters (66 feet). A project location and vicinity map is provided as Figure 1-1.

2.2 BACKGROUND

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit Order No. R4-2012-0175 (Permit) allows permittees, including municipalities and other agencies in Los Angeles County, to establish an Enhanced Watershed Management Program (EWMP). The EWMP addresses MS4 permit requirements and watershed priorities by providing a robust, comprehensive approach on a watershed scale. The Environmental Protection Agency's (EPA) 303(d) Program assists states, territories and authorized tribes in submitting lists of impaired waters and developing total maximum daily load (TMDLs). A TMDL establishes the maximum amount of a pollutant allowed in a waterbody and serves as the starting point or planning tool for restoring water quality. The EWMP identifies the pollutants of concern including adopted TMDLs and Clean Water Act Section 303(d) listings. Pollutant reduction targets and possible projects and programs are identified to set the allowable loading and concentration limits and meet water quality objectives. The EWMP also identifies multi-benefit regional projects that are capable of capturing stormwater runoff and of providing other benefits including flood control, conservation, water supply, and recreational improvements. In response to the provisions of the MS4 Permit, the Upper San Gabriel River Watershed Management Area Group (USGR) EWMP Group was formed. The USGR EWMP Group is comprised of the County of Los Angeles (County), Los Angeles County Flood Control District (LACFCD), and the cities of Baldwin Park, Covina, Glendora, Industry, La Puente, and West Covina. The USGR EWMP Group, through a cooperative and collaborative process, developed the EWMP Plan in June 2015, provided revisions in August 2015, and the latest revisions were completed in January 2016. The Final USGR EWMP Plan was subsequently approved by the Los Angeles Regional Water Quality Control Board in a letter dated April 11, 2016.

In conjunction with the USGR Group EWMP, the County prepared a Program Environmental Impact Report (PEIR) to provide the public and governing agencies with information on the potentials impacts on the local and regional environment associated with the implementation of the EWMP. The PEIR evaluated the positive and negative cumulative impacts of the EWMP projects and was approved on May 26, 2015. The report identifies several proposed stormwater quality improvement projects and serves as the backbone for this study and addendum.

For the USGR Group EWMP, zinc was identified as the current limiting pollutant for wet weather events and meeting the required reduction for zinc would bring the other pollutants into compliance. The USGR Group EWMP identified a suite of watershed control measures and structural Best Management Practices (BMPs) to address the required zinc reduction and water quality objectives within the watershed. Through initial screening and coordination with the USGR group members, the Adventure Park site was identified as one of the top eight "signature" or "priority" example Regional USGR EWMP projects within the EWMP for implementation (Appendix G – EWMP Proposed BMP and Priority Project Data, pg. 4). Adventure Park, which is located just outside the City of Whittier in unincorporated Los Angeles County, is owned by the County and operated and maintained by DPR. The location of Adventure Park has the potential to provide significant water quality benefits for multiple jurisdictions due to the large drainage area, location of the adjacent storm drains, and available development space for large stormwater capture facilities within the park.

2.3 PROJECT DESCRIPTION

The proposed project would capture, treat, and discharge urban runoff and stormwater per rain event from an approximately 6,985-acre drainage area from BI-0693 and the Sorensen Drain channel storm drain systems. The proposed project would feature a pretreatment system and a modular underground stormwater vault located beneath the sports fields on the east side of Sorensen Drain channel that would capture and treat approximately 19.5 acre-feet (AF) urban runoff and stormwater diverted from the two storm drain systems. BI-0693 is a 48-inch reinforced concrete pipe (RCP) that collects from an approximately 85-acre drainage area. The Sorensen Drain channel is a large open channel that bisects Adventure Park and covers approximately 6,894-acres of drainage area.

The BI-0693 line runs underneath Gunn Avenue where it then connects to the Sorensen Drain channel. Collected runoff from BI-0693 and the Sorensen Drain channel would be diverted through a combined system of a drop inlet and an inflatable rubber dam located downstream from the BI-0693 outfall within the Sorensen Drain channel. Flow will be diverted from Sorensen Drain to a pretreatment system and then an underground storage vault where the water may be directed to the sanitary sewer or returned to Sorensen Drain based on analysis of given site constraints. Infiltration was initially considered as an option; however, preliminary site investigations have determined infiltration infeasible as groundwater depths are too shallow to provide adequate separation from the bottom of the proposed storage vault. Figure 1-1 provides a preliminary site layout of the proposed project.

For the BI-0693 storm drain system, evidence of dry weather flow has been observed and monitoring identified an average dry weather flow rate of 0.002 cubic feet per second (cfs). A monitoring study was performed to measure the dry weather flow rates of the line to identify when discharge is entering the channel. The typical peak flows generally occurred between 1am and 2am. In addition, a low flow channel within the Sorensen Drain continually has flows observed. Based on monitoring results, the average dry weather flow rate from the Sorensen Drain system is 1.64 cfs, with a peak flow between 6am and 12pm. Composite three-hour wet weather monitoring for both lines was performed during the water year 2018 rainy season and results showed copper, zinc, and E. Coli concentrations that exceeded the water quality objectives in both drains.

The goal of the proposed project is to treat stormwater runoff from the 85th-percentile, 24-hour storm from BI-0693 and remove as much zinc and other pollutants for the BI-0693 and Sorensen drainage areas as feasible. In addition, the proposed project will reduce potable water use, provide educational opportunities on sustainable infrastructure, environmental awareness, and enhance the park amenities. The proposed amenity improvements include a larger multi-use sports field, additional trees, drought-tolerant landscaping, bioswales (low-impact development, or LID), and permeable parking lots. Additionally, there may be updates to the interior of an existing bathroom and an existing drinking fountain located north of the underground storage footprint. A conceptual site plan is included in Figure 1-2. The proposed project is completely contained within the park area east of Sorensen Drain and no work or modifications are anticipated on the park area west of the channel.

Project Elements

In a technical memorandum prepared by Tetra Tech, modeling was utilized to identify the optimal diversion rates and BMP configuration for the proposed project site, including storage and discharge to provide the best zinc removal totals per dollar spent. Based on the hydrology and water quality results, the following project elements were recommended for the stormwater capture unit:

- A two-foot rubber dam with a two-foot drop inlet diversion that spans the channel width (34 feet) of Sorensen Drain;
- An air compressor housed in a new small aboveground utility structure for the rubber dam;
- A 36-inch reinforced concrete pipe for 130 feet to convey diverted flow from Sorensen Drain to pretreatment unit at a rate of 50 cfs;

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

- A nutrient separating baffle box pretreatment unit capable of receiving 50 cfs flows;
- A 19.5 AF modular subsurface storage vault under the park that has a capacity of 21 AF due to the outflow draining as water enters the vault. Initial recommendations are a footprint of 1.95 acres and a depth of 10 feet with an available expansion area of 0.5 acres if desired; and
- A temporary water treatment system for perchlorate that assumes 29 pumps operating 24 hours a day for a 3 month period. The pumps are expected to operate with a sound power level of 87 dBA or less and be located within the existing project footprint.
- An outflow pump and filtration system that treats up to 5.76 cfs that outfalls to the Sorensen Drain and can discharge up to 2.88 cfs to the sanitary sewer during non-peak hours. The pump will be housed in an underground vault.
- Electronic monitoring/telemetry equipment which will be housed in the small aboveground utility structure with the air compressor.

Construction Activities

Construction is anticipated to occur from May 2022 through January 2024. Construction activities will include site clearing and concrete pavement removal; excavation/trenching and rough grading; subgrading and installing the treatment system; underground storage vault; associated diversion piping; backfilling, repaving, landscaping; and installing electrical. Construction equipment may include heavy earth-moving equipment such as dozers, backhoes, boring/drill rigs, forklifts; crane equipment; and haul trucks. Temporary dewatering activities will be required for excavation activities 22-feet in depth or greater, which includes the inlet work at the Sorensen Channel, the underground storage vault, and the trench that connects the storm drain pipe between Sorensen Channel and the underground vault. A utility search was performed prior to construction, and it is anticipated that minor relocations of existing irrigation and electric lines will be required. Excess excavated soil would be removed off-site to the Savage Canyon Landfill located approximately four miles from the proposed project site. Based on a footprint of 1.95 acres and a depth of 10 feet for the underground storage facility, it is estimated that approximately 45,300 cubic yards (CY) of debris would be delivered to/from the site.

These construction activities would occur in four phases all within the park boundary with general assumption provided herein:

- Phase I. Mobilization/Clearing & Grubbing/Concrete Pavement Removal (Channel and East side park)
 - 42 Calendar days
 - 2,800 CY of total clearing and grubbing debris delivered off-site (280 truck trips)
 - 300 CY/day exported soil per day (30 truck trips per day)
- Phase II. Excavation/Trenching/Rough Grading (Channel and East side park)
 - 161 Calendar days
 - 39,600 CY of soil hauled off-site (3,960 truck trips)
 - 750 CY/day exported soil per day (75 truck trips per day)
- Phase III. Subgrade/Utility Installation/Treatment Building (East side park)
 - 126 Calendar Days
 - 2,900 CY of aggregate delivered to site, plus 940 storage units delivered to site (~40 units/day) (290 truck trips)
 - 400 CY/day imported soil per day (40 trucks per day)

Addendum to LACFCD EWMP Final PEIR Adventure Park Multi-Benefit Stormwater Capture Project

- Phase IV. Backfill/Fine Grading/Paving/Landscaping/Electrical (East side park)
 - 280 Calendar days
 - No debris delivered to/from site
 - No soil imported or exported

This analysis is based on the assumption that the modular underground storage vault is constructed in one stage and costs/construction schedule is not extended across multiple stages.

Construction BMPs will be installed to prevent debris and pollutants from entering the storm drains and the channel. Once the vault structure is in place, it would be connected to existing storm drains, requiring lateral excavation and installation of additional pipeline. Construction in the channel would be required to install connective infrastructure and would involve the permanent placement of a rubber dam to divert flows to the underground storage vault. Once installation is complete, fill would be placed back on top of the unit up to the existing park grade and the area would be landscaped or ballfields reinstalled with approval from DPR. Additional housing for pumping/filtration infrastructure, such as the air compressor and electronic monitoring/telemetry equipment, may require construction of a small aboveground utility structure. The location for the small aboveground utility structure will be within the park along the north side of Sorensen Drain and about 50 feet east of the existing parking lot.

Approximately 44 personnel would be used for project construction with activities typically occurring Monday through Friday between the hours of 7:00 am and 6:00 pm, not including holidays. No nighttime construction activities are anticipated. Temporary lane closures may be required for limited duration to install diversion and connecting pipelines.

During project construction, park facilities to the west of the Sorensen Drain would remain open and available for park users. Park land to the east of Sorensen Drain within the project site would be secured with construction fencing and would be closed to the public. The northeast parking lot would also be used as a temporary construction staging area with additional construction access provided from Light Street. Figure 1-3 identifies the construction area including construction access point from Light Street.

Operation and Maintenance Activities

Ongoing inspections and maintenance activities would be required to ensure the diversion structure, pre-treatment device, underground storage vault, and outflow filters are free of debris so sediment and larger materials do not accumulate. The frequency of inspections would occur on a routine schedule by a field technician in accordance with manufacturer's recommendations. Inspections should look at all project elements to ensure their continued operation. If maintenance activities are required for the diversion drop inlet, the pretreatment, or the underground storage, a vacuum truck may be brought on-site at the access locations to remove accumulated debris. Hydro-jetting to the drop inlet grate and pretreatment device screen may be required dependent upon the amount of accumulated material. The length of time for maintenance will depend on the amount of sediment or debris buildup or type of maintenance required, but work would be temporary and on average is estimated to take up to one day of work.

The outflow filter cartridges require rinsing approximately every 18 months to ensure continued operation. The cartridge filters are removed, placed in a container (e.g. garbage can), and rinsed with the wastewater being captured using a low-pressure nozzle. The cartridge is put aside while the chamber is power washed and vacuumed clean. After the filter and chamber are rinsed and cleaned, the filters are put back into place within the chamber. The rinsed material within the garbage can is disposed of following County requirements. To meet the 5.76 cfs outflow, there are approximately 300 filters and the effort to clean the entire outflow filter system is estimated to take 4 working days.

New electrical service from Southern California Edison (SCE) will be required for the pumps, air compressor, and electronic monitoring/telemetry equipment.

2.4 OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED

Other public agencies whose approval is required for permits, financing approval, or participation agreement, for example, is as follows:

- County of Los Angeles
- County of Los Angeles Sanitation District
- United States Army Corp of Engineers
- Los Angeles Regional Water Quality Control Board
- California Department of Fish and Wildlife

3.0 EVALUATION OF ENVIRONMENTAL IMPACTS

3.1.1 AESTHETICS

		Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:			
a.	Have a substantial adverse effect on a scenic vista?		X
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?		X
c.	Substantially degrade the existing visual character or quality of the site and its surroundings?		X
d.	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?		X

Existing Conditions:

According to the General Plan Conservation and Natural Resources Element, the County recognizes that the coastline, mountain vistas, and other scenic features of the region are a significant resource. Scenic resources consist of designated scenic highways and corridors (or routes), hillsides, ridgelines, and scenic viewsheds. A scenic viewshed provides a scenic vista from a given location, such as a highway, a park, a hiking trail, river/waterway, or even from a particular neighborhood (LA County 2015). The San Gabriel Mountains, Verdugo Hills, Santa Susana Mountains, Simi Hills, Santa Monica Mountains and Puente Hills play a major role in physically defining the diverse communities in the unincorporated areas. They not only create dramatic backdrops against densely developed suburbs and communities, but also provide extensive environmental and public benefits to residents (LA County 2015).

The project site is Adventure Park that is located within a developed urban environment. The nearest hillsides to the project site are Puente Hills. The project site is not located within the vicinity of a designated or eligible state scenic highway (Caltrans 2018).

Discussion:

a. Would the project have a substantial adverse effect on a scenic vista?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. A scenic vista generally provides focal views of objects, settings, or features of visual interest; or panoramic views of large geographic areas of scenic quality, primarily from a given vantage point. Substantial constraints occur if the proposed project would introduce incompatible visual elements within a field of view containing a scenic vista or substantially alters a view of a scenic vista. The project site is Adventure Park that is located within a developed urban environment. The proposed project would include primarily subsurface infrastructure improvements except for a small aboveground utility structure. Given that the proposed water quality improvements would occur primarily

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

subsurface and park conditions restored after construction, project visual impact on scenic resources would be less than significant.

As identified in the EWMP PEIR, aboveground structures would be designed to be similar to, and compatible with, surrounding architecture and neighborhood character. With implementation of PEIR Mitigation Measure AES-1, aboveground structures would be designed to avoid obstructing scenic vistas or views from public vantage points. The PEIR anticipated that the majority of structural BMPs would be located underground and not visible once construction is complete. Therefore, construction and operation of the majority of structural BMP improvements would not permanently affect views or scenic vistas. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project is not located within the vicinity of a designated or eligible state scenic highway based on a review of the California Scenic Highway Mapping System (Caltrans 2018). Therefore, no project impact would result. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

c. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project includes the construction and operation of stormwater infrastructure improvements within Adventure Park. Infrastructure improvements would be installed underground except for the small aboveground utility structure. Once installation is complete, fill would be placed back on top of the unit up to the existing park grade and the area would be landscaped or ballfields reinstalled with approval from DPR. Since the infrastructure improvements would primarily occur underground, there would be minimal visual change in comparison to existing conditions and the proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings. The proposed aboveground utility structure would be compatible with the existing visual character with implementation of PEIR Mitigation Measure AES-1. Once operational, BMP maintenance will be required including periodic removal of trash and debris to prevent odor and preserve aesthetic values. With implementation of PEIR Mitigation Measure AES-2, requiring a BMP maintenance plan, project impact would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would not result in a substantial source of new light or glare. Currently, lights are found around the walking path and large field lights surround the sports fields for as-needed use. The proposed project includes stormwater infrastructure improvements within Adventure Park. Except for a small aboveground utility structure, all the stormwater infrastructure would be installed underground. The aboveground building would be constructed in accordance with County standards with building materials that would not generate excessive levels of reflective glare. The aboveground utility structure may include some low intensity security lighting that would typically not represent a substantial source of new lighting. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measures:

The following mitigation measures from the EWMP PEIR (2015) shall be implemented:

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

AES-1: Aboveground structures shall be designed to be consistent with local zoning code and applicable design guidelines and to minimize features that contrast with neighboring development.

AES-2: Implementing agencies shall develop BMP maintenance plans that are approved concurrently with each structural BMP approval. The maintenance plans must include measures to ensure functionality of the structural BMPs for the life of the BMP. These plans may include general maintenance guidelines that apply to a number of smaller distributed BMPs.”

3.1.2 AGRICULTURE AND FOREST RESOURCES

		Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:			
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?		X
b.	Conflict with existing zoning for agricultural use, or a Williamson Act contract?		X
c.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined in Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?		X
d.	Result in the loss of forest land or conversion of forest land to non-forest use?		X
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?		X

Existing Conditions:

The project site is located on the existing 15.5-acre Adventure Park that is located within an existing urban environment. There are no agricultural or forestry uses located on or adjacent to the project site. The project site is not mapped by the Farmland Mapping and Monitoring Program according to the California Department of Conservation, Important Farmland Finder (DOC 2018).

Discussion:

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?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is the existing Adventure Park that would continue to be utilized as a public park with implementation of the proposed project. There are no agricultural uses on or adjacent to the project site. The project site is also not mapped by the Farmland Mapping and Monitoring Program according to the California Department of Conservation, Important Farmland Finder (DOC 2018). Therefore, the proposed project would not convert farmland to non-agricultural uses and no project impact would result.

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

The PEIR found that none of the BMPs would replace designated Prime, Unique, or Important Farmland. There would be no impact on farmland. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. There are no agricultural uses on or adjacent to the project site. The project site is zoned for R-A-6000/Residential Agricultural. Parks, recreation facilities, and use normal and appurtenant to the storage and distribution of water, are allowed uses subject to a conditional use permit (22.20.440). The project site is currently developed and utilized as a public park and would continue to be used as a public park with implementation of the proposed project. Therefore, the proposed project would not conflict with existing zoning for agricultural use and no project impact would result.

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments which are much lower than normal because they are based upon farming and open space uses as opposed to full market value (CDC 2018). The project site is an existing County park located within an urban environment that would not qualify for a Williamson Act Contract. Therefore, no project impact would result. The PEIR found that there are no Williamson Act contracts within the project area. As a result, there would be no impacts to existing agricultural zoning or land under a Williamson Act contract. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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 in Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. There are no forestry or timberland located on or adjacent to the project site. The project site is zoned for R-A-6000/Residential Agricultural. The project site is currently utilized as a public park within a developed urban environment and would continue to do so with implementation of the proposed project. Therefore, no project impacts on forest or timberland would result. The PEIR found that structural BMPs would be constructed and implemented primarily on urbanized land primarily on streets, sidewalks, and in parks or other city-owned lands, and would therefore have no impact on forest land, timberland, or timberland zoned timberland production. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. There is no forest land located on or adjacent to the project site. Therefore, the proposed project would not result in the loss of forest land or conversion of forest land to a non-forest use and no project impact would result. The PEIR found that structural BMPs would be constructed and implemented primarily on urbanized land primarily on streets, sidewalks, and in parks or other city-owned lands, and would therefore have no impact on forest land, timberland, or timberland zoned timberland production. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would not involve changes to the existing environment which, due to their location or nature, could result in the conversion of Farmland to non-agricultural use. As identified above, the project site is located with a developed urban environment and there are no agricultural uses or forestland on or adjacent to the project site. The project

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

site is currently developed and utilized as a public park and would continue to be used as a public park with implementation of the proposed project. Therefore, no project impact would result. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measures:

No mitigation measures are required.

3.1.3 AIR QUALITY

	Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:		
a. Conflict with or obstruct implementation of the applicable air quality plan?		X
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X
c. 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?		X
d. Expose sensitive receptors to substantial pollutant concentrations?		X
e. Create objectionable odors affecting a substantial number of people?		X

Existing Conditions:

Pursuant to the Clean Air Act (CAA) Amendments of 1990, the United States Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The NAAQS are classified as primary and secondary standards. Primary standards prescribe the maximum permissible concentration in the ambient air and are required to protect public health. Secondary standards specify levels of air quality required to protect public welfare, including materials, soils, vegetation, and wildlife, from any known or anticipated adverse effects. NAAQS are established for six pollutants (known as criteria pollutants): ozone (O₃), particle pollution (i.e., respirable particulate matter less than 10 microns in diameter [PM₁₀] and respirable particulate matter less than 2.5 microns in diameter [PM_{2.5}]), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and lead (Pb). The California Air Resources Board (CARB) has also established its own air quality standards in the state of California under the California Clean Air Act (CCAA), known as the California Ambient Air Quality Standards (CAAQS). The CAAQS are generally more stringent than the NAAQS and include air quality standards for all the criteria pollutants listed under NAAQS plus sulfates (SO₄), hydrogen sulfide (H₂S), vinyl chloride, and visibility-reducing particulate matter. The California Clean Air Act (CCAA) established California's air quality goals, planning mechanisms, regulatory strategies, and standards of progress aimed at meeting and/or exceeding CAA requirements for air quality. The CCAA requires attainment of CAAQS for criteria pollutants by the earliest practicable date.

The USEPA classifies the air quality within an Air Quality Control Region with regard to its attainment of federal primary and secondary NAAQS. According to USEPA guidelines, an area with air quality better than the NAAQS for a specific pollutant is designated as being in attainment for that pollutant. Any area not meeting the NAAQS is classified as a nonattainment area. Where there is a lack of data for the USEPA to make a determination regarding

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

attainment or nonattainment, the area is designated as unclassified and is treated as an attainment area until proven otherwise. Areas that once were in non-attainment status but have reached attainment of the NAAQS are classified as maintenance.

The proposed project is within Los Angeles County, which is subject to the South Coast Air Quality Management District (SCAQMD) regulations. Pollutant concentrations within the Los Angeles County are assessed relative to both the federal and state ambient air quality standards.

A summary of attainment for Los Angeles County is summarized in Table 3-1.

**Table 3-1
Attainment Status of Los Angeles County**

Pollutant	¹National Attainment Status	²State Attainment Status
8-Hour Ozone	Non-attainment	Non-attainment
PM _{2.5}	Non-attainment	Non-attainment
PM ₁₀	Maintenance	Non-attainment
Carbon Monoxide	Maintenance	Attainment
Nitrogen Dioxide	Maintenance	Attainment
Sulfur Dioxide	Attainment	Attainment
Sulfates	No national standard	Attainment
Lead	Non-attainment	Attainment
Hydrogen Sulfide	No national standard	Unclassified
Visibility Reducing Particles	No national standard	Unclassified

Source: 1 United States Environmental Protection Agency 2018
2 California Air Resources Board 2017

Applicable SCAQMD rules are presented in Table 3-2.

**Table 3-2
Applicable Rules**

Rule	Title
401	Visible Emissions
402	Nuisance
403	Fugitive Dust

Rule 401 prohibits the discharge of visible emissions, with respect to Ringelmann Chart Shades Number 1 and Number 2, for a period or periods aggregating more than three minutes in any one hour.

Rule 402 prohibits the discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

Rule 403 requires control measures for fugitive dust from active operations, open storage piles, or disturbed surface areas and prohibits activities that would cause visible dust emissions of 20 percent. The rule also includes provision for mitigating fugitive dust emissions (e.g., watering the site during grading and properly covering truck beds when hauling soil or other material).

Discussion:

a. Would the project conflict with or obstruct implementation of the applicable air quality plans?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is located within an unincorporated area just outside the City of Whittier within the Los Angeles County and within the jurisdiction of the SCAQMD, which oversees the welfare of air quality in Los Angeles County. The SCAQMD promotes air quality improvement through air quality monitoring, evaluation, education, implementation of control measures to reduce emissions from stationary sources, permitting and inspection of pollution sources, enforcement of air quality regulations, and support and implementation of measures to reduce emissions from motor vehicles.

The federal CAA requires states to develop plans, known as State Implementation Plans (SIPs), stating how they will attain or maintain NAAQS. SIPs are a compilation of new and previously approved plans, programs, district rules, state regulations and federal controls. States and local air quality management agencies prepare SIPs for approval by the USEPA. To this end, the SCAQMD in conjunction with CARB, the Southern California Association of Governments (SCAG) and the USEPA have prepared the Final 2016 Air Quality Management Plan (AQMP) to ensure continued progress toward clean air and reach federal and state compliance requirements over the next two decades.

The AQMP incorporates emissions projections based on growth forecasts accounted for in local and regional general plans. Local governments maintain the authority to determine the types of land use that are allowed within their jurisdiction. For example, in city General Plans, each parcel of land within that city is given a land use designation (i.e., residential, industrial, etc.). Land use types that do not comply with general plan designations are inconsistent with the general plan. A proposed project that is inconsistent with a local General Plan is also inconsistent with the AQMP.

The project site General Plan land use designation is Parks and Recreation (OS-PR) (Los Angeles County Department of Regional Planning 2018). The project site is currently used as a public park and will remain the same with implementation of the proposed project. No change in land use designation is proposed and operation would remain consistent with the land use identified within the County of Los Angeles General Plan and thereby, also with the AQMP. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

b. Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Significance thresholds are established to assist lead agencies in determining whether a project may have a significant air quality impact. Projects with emissions below established thresholds will not have a significant impact on air quality. Projects with emissions equal to or exceeding the established significance threshold will have a potentially significant adverse impact on air quality.

Since the proposed project is within the jurisdiction of the SCAQMD, air quality significance thresholds established by the SCAQMD are used as a reference to determine whether the proposed project's air emissions have a significant impact on air quality. A summary of the SCAQMD air quality significance thresholds is presented in Table 3-3.

**Table 3-3
SCAQMD Air Quality Significance Thresholds**

Pollutant	Construction (lb/day)	Operation(lb/day)
NO _x	100	55
VOC	75	55
PM10	150	150
PM2.5	55	55
SO _x	150	150
CO	550	550
Lead	3	3
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	

Notes: CO carbon monoxide
 lb/day pounds per day
 NO_x oxides of nitrogen (nitric oxide and nitrogen dioxide)
 PM_{2.5} respirable particulate matter less than 2.5 microns in diameter
 PM₁₀ respirable particulate matter less than 10 microns in diameter
 SCAQMD South Coast Air Quality Management District
 SO_x oxides of sulfur
 VOC volatile organic compounds

Air emissions originate from construction and/or operation of a project. Construction emissions are temporary emissions occurring only while a project is being constructed and end when construction is complete. Operation emissions are long-term and begin once a project starts and includes day to day operations.

Operation Emissions

The proposed project includes the construction of a stormwater infiltration system within Adventure Park. Except for a small building supporting a water quality treatment system and a rubber dam all the stormwater infiltration system components (e.g., vaults, pipes, and storage) would be installed underground, rendering a very small visible change to the site.

Once the proposed project is constructed, the park would be restored, and its operations would resume and would be similar to pre-construction conditions (e.g., neighboring residents would visit the park for recreational purposes). The only day-to-day operational activities added by the proposed project would be the cycling of the pumps within the pump station, which would operate on electricity and would not be expected to generate direct emissions of criteria air pollutants. The underground infrastructure is not expected to generate a significant source of operational activities. Operational emissions from the proposed project are not expected to differ significantly from current operations and, therefore, are not further discussed in this air quality section.

Construction Emissions

Emissions from the proposed project would result from construction activities including the following phases:

- Site Preparation. Mobilization, clearing and grubbing, removal of debris in preparation for excavation and soil removal phase;
- Grading. Excavation, soil removal, rough grading, fine grading;
- Construction. Subgrade, utility installation, construction of treatment structure, and restoring the playgrounds; and

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

- Paving. Backfilling, paving, and landscape and electrical installation.

Construction emissions originate primarily from the combustion of fossil fuels used by mobile on-road sources (e.g., workers vehicles, material and equipment delivery trucks, soil haul trucks) and mobile off-road sources (e.g., concrete industrial saws, excavators, off-highway trucks, dozers, backhoes, excavators, rollers, trenchers, skid steer loaders, welders, air compressors, cranes, pavers, water trucks, concrete delivery trucks, and cement and mortar mixers). Construction activities would occur during calendar years 2020, 2021, and 2022 with most emissions occurring in 2020 and 2021.

Air emissions resulting from construction activities of the proposed project were calculated based on a worst-case scenario where each equipment piece in each phase runs simultaneously eight hours per day. This approach assumes maximum daily operating time for all equipment assigned in each construction phase (i.e., Site Preparation, Grading, Construction, and Paving). Construction emissions were calculated using the California Emissions Estimator Model (CalEEMod). CalEEMod is widely accepted to provide a uniform platform to estimate potential emissions resulting from construction and operation activities of land use projects. The model uses pre-programmed algorithms to calculate emissions based on data entered. The algorithms are designed to take information such as project size; construction length; vehicle and equipment types; number of vehicle trips and lengths; and equipment operating hours to calculate emissions of criteria pollutants and greenhouse gases. Emission calculations provided in this document factor dust control measures such as those prescribed in SCAQMD Rule 403 and off-road vehicles using on average Tier 3 engines.

CalEEMod input values and calculated air emission results for the proposed project are provided as Appendix A and summarized in Table 3-4.

**Table 3-4
Project Construction Emissions of Criteria Pollutants (lb/day)**

Calendar Year	CO	VOCs	NOx	SOx	PM ₁₀	PM _{2.5}
2021	24.02	1.42	24.09	0.06	4.25	2.49
2022	23.60	1.41	21.53	0.05	1.58	1.17
Threshold of Significance	550	75	100	150	150	55
LST	1,480	N/A	161	N/A	14	7
Significant?	No	No	No	No	No	No

Notes: CO carbon monoxide
 lb/day pounds per day
 LST localized significance threshold
 N/A not applicable
 NO_x oxides of nitrogen (nitric oxide and nitrogen dioxide)
 PM₁₀ respirable particulate matter less than 10 microns in diameter
 PM_{2.5} respirable particulate matter less than 2.5 microns in diameter
 SO_x oxides of sulfur (sulfur dioxide and sulfur trioxide)
 VOC volatile organic compounds

As identified in Table 3-4, project construction emissions would be below the significant thresholds and in agreement with the assessment conducted in the Air Quality Section of the PEIR for a “Distributed Structural BMP” Project, which is similar in size to the proposed project (DPW 2015). This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

c. Would the project 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. CEQA defines cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts and the change in the environment which results from the incremental impact of the project when added to other closely related past, present, or reasonably foreseeable future projects and can result from individually minor, but collectively significant project taking place over a period of time” (SCAQMD 1993). The proposed project would result in cumulative impacts if it exceeds daily thresholds established by SCAQMD or if it incurred an increase of emissions beyond what is planned in the Los Angeles County’s General Plan.

Since emissions resulting from the operation of the proposed project, which is mostly underground or housed in enclosures, would be minimal, SCAQMD established daily thresholds would not be exceeded. Similarly, per the PEIR, operation emissions of other program proposed projects would also be minimal and when added to the proposed project emissions, the total emissions would not exceed SCAQMD daily operational emissions thresholds and would not result in changes or new information requiring preparation of a subsequent EIR.

Construction emissions of the proposed project do not exceed the SCAQMD established daily thresholds. Additionally, the proposed project is consistent with the Los Angeles County PEIR Land Use and Agriculture Section 3.9 which provides a list of goals and policies that promote stormwater quality infrastructure. Since the proposed project emissions do not exceed SCAQMD daily thresholds, its implementation is consistent with the County PEIR goals, and its construction is within the scope of the PEIR, implementation of the propose project would result in no changes or new information requiring preparation of a subsequent EIR.

d. Would the project expose sensitive receptors to substantial pollutant concentrations?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR.

Localized Significance Thresholds

Localized Significance Thresholds (LST) represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor. LST are applicable for projects that generate oxides of nitrogen (NO_x), carbon monoxide (CO), respirable particulate matter less than 10 microns in diameter (PM₁₀), and respirable particulate matter less than 2.5 microns in diameter (PM_{2.5}). LST are based the following criteria: geographic location of the project, project site size, and proximity between the project site and the nearest sensitive receptor such as residences and schools (SCAQMD 2018).

Operation Analysis

Operation of the proposed project is not expected to generate a significant source of operational activities. Operational emissions from the proposed project are not expected to differ significantly from current operations and, therefore, are not further discussed in this section.

Construction Thresholds

The SCAQMD has prepared LST guidance to help lead agencies assess localized air quality impacts from projects that are less than five acres and generate NO_x, CO, PM₁₀, and PM_{2.5}. The methodology for analyzing localized air quality impacts from proposed projects is presented in the SCAQMD *Final Localized Significance Threshold Methodology* document (SCAQMD 2008). The methodology includes look-up tables with localized significance thresholds according to source receptor area for one, two and five acre proposed projects emitting CO, NO_x, PM_{2.5}, or PM₁₀. The LST methodology and associated mass rates are not designed to evaluate localized impacts from

Addendum to LACFCD EWMP Final PEIR Adventure Park Multi-Benefit Stormwater Capture Project

mobile sources traveling over the roadways. Thus, only emissions generated by construction equipment and vehicles while at the site are used to evaluate LST. Construction emissions would have a localized impact if they exceeded LST.

Construction Analysis

The proposed project is located in the Southeast Los Angeles County Area. The nearest receptors to the project site are residential housing units to the north, south, east and west. The estimated proximity of the nearest housing unit to the project site is approximately 20 meters (66 feet). The maximum area disturbed per day based on equipment use is 3.5 acres. Thus, LST were based on the 5-acre LST lookup table and compared against emissions calculated using CalEEMod. Based on the LST analysis, project construction emissions are below LST. LST and significance test are summarized in Table 3-4.

Toxic Air Contaminants

Toxic air contaminants (TACs) are substances that can cause cancer or other serious health effects. One route of exposure to TACs is through breathing contaminated air. Health risks associated with TACs are estimated by determining how hazardous a substance is and how much of this substance a receptor is exposed to. Sources of TACs include passenger cars, construction vehicles, manufacturing plants, and refineries.

Operation Analysis

The operation of the proposed project will not add any significant sources of toxic air contaminant, and therefore, would have a less than significant impact on sensitive receptors.

Construction Analysis and Thresholds

Emissions of TACs associated with the proposed project would be emitted primarily through the combustion of diesel fuel used by construction equipment during the construction of the project. These emissions are temporary and will stop once the construction phase is completed. Additionally, the PEIR stated that since off-road heavy-duty diesel equipment will only be used temporarily during construction at each structural BMP site, construction would not expose sensitive receptors to substantial emissions of TACs and impacts would be less than significant.

Emissions of TACs from mobile sources are regulated at the state level through the implementation of measures and programs including the pursuit of low-emission vehicle programs, low carbon fuel standards and heavy-duty vehicle emissions regulations. Applicable measures for the proposed project are the CARB's In-Use Off-Road Diesel Fueled Fleets Regulation and the In-Use On-Road Diesel-Fueled Vehicles. Both regulations are enforced by CARB and fleet owners (e.g., construction companies, equipment rental companies, brokers) are responsible for meeting compliance requirements. Tier 3 engines in off-road vehicles have been factored into the emissions calculations for this project as this group of engines is anticipated to be predominant in off-road vehicles at the time of construction. The SCAQMD has neither adopted nor recommended methodology for assessing health risk analysis associated with mobile sources at construction sites.

Additionally, the Office of Environmental Health Hazard Assessment (OEHHA), in its Guidance Manual for Preparation of Health Risk Assessments associated with stationary sources, recommends that a 30-year exposure duration be used as the basis for estimating cancer risk at the maximum exposed individual resident in the Hot Spots Program and the 9- and 70- year cancer risk as supplemental information (OEHHA 2015). Since the Hot Spot Program is aimed at stationary sources and long-term exposure, and the proposed project would have neither stationary sources nor result in long term exposure to sensitive receptors, the proposed project would not result in changes or new information requiring preparation of a subsequent EIR.

e. Would the project create objectionable odors affecting a substantial number of people?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR The proposed project would generate odors resulting from diesel combustion by on-road and off-road vehicles during the

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

construction phase. Odors from construction sources would be significant if they were to become a nuisance pursuant to SCAQMD Rule 402. To become a nuisance odor resulting from the proposed project would need to generate multiple valid odor complaints. Since the construction of the proposed project requires intermittent operation of on-road and off-road vehicles, a continuous condition for odor emission is not anticipated and objectionable odors resulting from construction operation are anticipated to be less than significant impact.

Per the PEIR, odors may result from algal blooms in standing water associated with BMP developments (Environmental Science Associates 2015). This condition is likely to result from the operation of the proposed project. To abate potential odors from the operation of the proposed project mitigation measure AIR-4 referenced in the PEIR should be implemented. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measures:

The following mitigation measures from the EWMP PEIR (2015) shall be implemented:

AIR-1: Implementing agencies shall require for large regional or centralized BMPs the use of low-emission equipment meeting Tier II emissions standards at a minimum and Tier III and IV emission standards where available as California Air Resources Board (CARB)-required emission technologies become readily available to contractors in the region.

AIR-4: During planning of structural BMPs, implementing agencies shall assess the potential for nuisance odors to affect a substantial number of people. BMPs that minimize odors shall be considered the priority when in close proximity to sensitive receptors.”

3.1.4 BIOLOGICAL RESOURCES

	Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:		
a.	Have a substantial adverse effect, either directly or through habitat modifications, 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?	X
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 Wildlife or U.S. Fish and Wildlife Service?	X
c.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	X
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?	X
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	X
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?	X

Existing Conditions:

The project site is located within southern Los Angeles County in a highly urbanized region. The site is currently maintained as a public park with school and recreational facilities directly to the west. The site has high levels of human activity and is surrounded by adjacent residential development and roads. Within a one-mile radius, the predominant land uses are residential and commercial development with one golf course and some small parks. No native vegetation or habitats are present at the site, other than the planted native trees described below. The

Addendum to LACFCD EWMP Final PEIR Adventure Park Multi-Benefit Stormwater Capture Project

site consists entirely of non-native turf grass, developed areas (e.g., baseball fields, sidewalks, paved parking lot), and planted trees.

A general biological survey was conducted at the project site on February 7, 2018. A trees assessment was conducted on May 13 and 19, 2020 by the County (LA County Department of Parks and Recreation 2020). During the survey, a small amount of standing water was observed within the unvegetated concrete Sorensen Drain that runs along the western boundary of the site. The site consists of non-native turf grass with common non-native weeds such as clovers (*Melilotus* spp., *Medicago* spp.) and mustards (*Brassica* spp.). Native and non-native trees are also planted within the site along the perimeter and near the Sorensen Drain. Native trees include alder (*Alnus* sp.) and velvet ash (*Fraxinus velutina*); non-native trees include eucalyptus (*Eucalyptus* sp.), black locust (*Robinia pseudoacacia*), sweetgum (*Liquidambar styraciflua*), pepper tree (*Schinus molle*), and white mulberry (*Morus alba*). One sparse stand of pine trees (*Pinus* sp.) occurs within the site along the northern boundary and one sparse stand of eucalyptus trees occurs within the site along the southern boundary.

Common bird species were observed within the project site during the biological survey, including black phoebes (*Sayornis nigricans*), song sparrows (*Melospiza melodia*), and house sparrows (*Passer domesticus*). Common ground squirrels (*Citellus [Otospermophilus] sp.*) were also observed onsite. Other species that commonly occur in residential and disturbed areas, such as European starlings (*Sturnus vulgaris*), Brewer's blackbirds (*Euphagus cyanocephalus*), mourning doves (*Zenaida macroura*), western fence lizards (*Sceloporus occidentalis*), mice (*Mus* spp.), and racoons (*Procyon lotor*), are also reasonably expected to occur as transient visitors or inhabitants of the site.

A visual survey for nesting birds was conducted at trees within the project site during the biological survey. Three inactive bird nests were observed along the western boundary of the site, adjacent and to the east of Sorensen Drain. No individuals were observed utilizing these nests. Bird nesting activity could occur onsite during the nesting season due to close proximity to standing water in Sorensen Drain and the presence of large trees that are potential nesting locations.

Discussion:

a. Would the project have a substantial adverse impact, either directly or through habitat modifications, 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 the U.S. Fish and Wildlife Service?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. A query of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB) was conducted to determine known occurrences of candidate, sensitive, or special-status species or habitats within the Whitter quadrangle, which includes the project site, and the eight adjacent quadrangles around the site (Table 3-5 and Table 3-6). The species presented in Table 3-5 and Table 3-6 are those with any potential of occurring within or adjacent to the project site based on regional occurrence (CDFW CNDDDB 2018). None of the species listed in Table 3-5 or Table 3-6 have been previously observed within the project site. Species that only inhabit dunes, marshes, coastal flats, wetlands, vernal pools, riparian habitats, or coastal sage scrub have not been included, since those habitats are not present within or adjacent to the site.

**Table 3-6
Special-Status Plant Species with Potential to Occur**

Common Name	Scientific Name	Federal Status / State Status	Other Status
Round-leaved filaree	<i>California macrophylla</i>	- / -	1B.2
Plummer's mariposa-lily	<i>Calochortus plummerae</i>	- / -	4.2
Intermediate mariposa-lily	<i>Calochortus weedii</i> var. <i>intermedius</i>	- / -	1B.2
Lyon's pentachaeta	<i>Pentachaeta lyonii</i>	FE / SE	1B.1
San Bernardino aster	<i>Symphyotrichum defoliatum</i>	- / -	1B.2
Greata's aster	<i>Symphyotrichum greatae</i>	- / -	1B.3

Notes: Results based on CNDDDB query for nine regional quadrangles.
 FE = Federally Listed Endangered SE = State Listed Endangered
 California Native Plant Society, California Rare Plant Rank
 1B = Plants Rare, Threatened, or Endangered in California and elsewhere
 4 = Plants of limited distribution (Watch List)
 0.1 = Seriously threatened in California (over 80% of occurrences threatened)
 0.2 = Moderately threatened in California (20-80% occurrences threatened)
 0.3 = Not very threatened in California (less than 20% of occurrences threatened)

The biological survey conducted on February 7, 2018 assessed habitats and potential occurrence of candidate, sensitive, or special-status species. No candidate, sensitive, or special-status species or habitats were observed within or adjacent to the site. In addition, no raptor species or monarch butterfly (*Danaus plexippus*) roosting sites were observed. This biological survey satisfied LACFCD EWMP PEIR (2015) mitigation measures BIO-1 and BIO-2: to conduct an evaluation of the suitability of the BMP location to avoid impacting large areas of native habitats that support sensitive species (BIO-1); and, to conduct a habitat assessment by a qualified biologist to determine the potential for special-status wildlife species to occur within affected areas prior to ground disturbing activities (BIO-2). No native habitats are present at the site, which consists entirely of non-native turf grass, landscaped trees, and developed areas. Diversion of water from the Sorensen Drain during operation of the BMP could result in potential downstream impacts to native habitats and plant and wildlife species, if present. Impacts would occur if the quantity of water remaining after diversion would be insufficient to support native habitats and species such that it would result in direct loss or a significant reduction in health or longevity of these resources. Up to approximately 50 cfs of water would be temporarily or permanently diverted from the channel. This diversion represents only approximately 1% of the maximum design flow of the channel (4,982 cfs) or approximately 13% of the 85th percentile flow (377 cfs). Based on a review of available aerial and satellite imagery, the downstream channel is fed by numerous other drains that would not be affected by the proposed project. These other sources would continue to provide water to the downstream areas. In addition, the majority of the downstream channel is unvegetated concrete and does not support any large areas of native habitats. Therefore, downstream impacts resulting from flow diversions are unlikely to occur.

Due to the lack of natural habitats and use of the project site as a public park, the potential of the site to support the species listed in Table 3-5 and Table 3-6 is low. The species listed in Table 3-5 and Table 3-6 are unlikely to occur. However, because standing water and soil were present at the site and ground squirrels were observed, protected burrowing animals documented in the region have potential to occur; these species include burrowing owl (*Athene cunicularia*) and American badger (*Taxidea taxus*) (CDFW CNDDDB 2018). The site also includes trees that could serve as potential habitat for nesting birds. While no active bird nests were observed during the February 7, 2018 survey, some inactive nests were observed within the site. Protected wildlife species could use water if present within the unvegetated concrete Sorensen Drain. The nearest known occurrence of western spadefoot (*Spea*

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

hammondi) is approximately 2.5 miles from the project site from 2010 and the nearest occurrence of western pond turtle (*Emmys marmorata*) is approximately 5 miles from the site from the 1980s (CDFW CNDDDB 2020). Western spadefoot enters water only to breed and is known to use pools and cattle tanks in grassland habitat with little or no vegetation cover. While small stagnant pools could form in the Sorensen Drain after rainfall, water would likely be in flow after heavy rainfall and pools are unlikely to remain at sufficient depth and for sufficient duration to support this species. Western pond turtle habitat includes ponds, rivers, and marshes with logs or rocks for basking, abundant vegetation, and either rocky or muddy bottoms; these habitat features do not occur in the Sorensen Drain or at the project site. Therefore, these aquatic species are unlikely to occur. However, removal of vegetation (including approximately 18 trees), use of heavy machinery, significant ground disturbance, and/or temporary dewatering during construction activities has the potential to impact these species if present.

Potential impacts from this proposed project are in conformance with those addressed under the LACFCD EWMP PEIR (2015) with the implementation of PEIR mitigation measures BIO-3 through BIO-6, and there are no changes or new information requiring preparation of a subsequent EIR. Mitigation measures BIO-3 and BIO-4 are included for protection of special-status burrowing animals and BIO-3 through BIO-6 are included for other candidate, sensitive, or special-status species. Measure BIO-4 would protect aquatic species that could occur in the Sorensen Drain. Additional measures have been identified for inclusion into BIO-4 to reduce impacts to aquatic species during dewatering activities, including requirements for a pre-construction survey of the dewatering area, biomonitoring during the dewatering activities, and conducting work when the channel is dry if feasible. The proposed project would also be required to follow all measures from Clean Water Act permits issued by the USACE, RWQCB, and CDFW. Measure BIO-5 would protect breeding birds and raptors that could nest in the approximately 18 trees that would be removed. All trees would be replaced after construction as a component of the project design. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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 Wildlife or U.S. Fish and Wildlife Service?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The CNDDDB identified four sensitive habitat types within a nine-quadrangle search around the project site: California Walnut Woodland, Riversidian Alluvial Fan Sage Scrub, Southern Coastal Salt Marsh, and Walnut Forest (CDFW CNDDDB 2018). The proposed project site consists of a maintained public park. None of the four sensitive habitats listed above occur within the site, nor would the project result in significant impacts to habitat outside the site. In addition, no sensitive habitats were observed during the February 7, 2018 survey within or adjacent to the site.

One potential riverine habitat area was identified within the project site based on a search of the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (2018). However, this area was confirmed to be the unvegetated concrete Sorensen Drain during the biological survey. No riparian habitat occurs within the Sorensen Drain. In addition, no riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or protected by the CDFW or USFWS is present within the project site. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

c. Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The CNDDDB indicated that Riversidian Alluvial Fan Scrub and Southern Coastal Salt Marsh occur within a nine-quadrangle radius around the project site, but do not occur within or adjacent to the site (CDFW CNDDDB 2018). These were not found on the site during the biological survey. The NWI identified one potential riverine habitat area within the site (USFWS

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

NWI 2018). This riverine area was confirmed to be the unvegetated concrete Sorensen Drain during the February 7, 2018 survey and was observed to have standing water. A formal wetlands delineation of the site has not been completed. Therefore, there is potential for these waters to be considered jurisdictional.

Temporary dewatering at the Sorensen Drain Channel would likely occur during construction, which would result in impacts to this area. Potential impacts from this proposed project to federally protected wetlands are in conformance with those addressed under the LACFCD EWMP PEIR (2015) with the implementation of PEIR mitigation measure BIO-9 below. Measure BIO-9 would address any impacts to jurisdictional areas and implement mitigation requirements for the impacts. The proposed project would also be required to follow all measures from Clean Water Act permits issued by the USACE, RWQCB, and CDFW. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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 wildlife nursery sites?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site consists of a public park surrounded by urban residential areas. Trees located within the site could potentially provide a refuge for wildlife including nesting birds and raptors. However, the site is not located within or adjacent to any known or mapped wildlife corridors or nursery sites and is generally isolated from natural habitats due to urbanization of the surrounding area. The high level of human use and developed nature of the project site and surrounding area makes the site unlikely to be used as a wildlife corridor or wildlife nursery site. The Sorensen Drain could be used for migration by aquatic species such as western spadefoot.

Potential impacts from this proposed project to the movement of any native resident or migratory wildlife species, established native resident or migratory wildlife corridors, or the use of native wildlife nursery sites are in conformance with those addressed under the LACFCD EWMP PEIR (2015) with the implementation of mitigation measures BIO-3 through BIO-6. Measure BIO-4 would protect aquatic species that could occur in the Sorensen Drain. Additional measures have been identified for inclusion into BIO-4 to reduce impacts to aquatic species during dewatering activities, including requirements for a pre-construction survey of the dewatering area, biomonitoring during the dewatering activities, and conducting work when the channel is dry if feasible. Measure BIO-5 would protect breeding birds and raptors that could nest in the approximately 18 trees that would be removed. All trees would be replaced after construction as a component of the project design. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site consists of a public park surrounded by urban residential uses with no natural habitat. The proposed project would comply with the requirements of Los Angeles County Code of Ordinances Chapter 2.26.090 regarding trees, shrubs and flowers- planting and maintenance. Some native landscaped trees are present at the project site as described above, but do not include oak trees (*Quercus* spp.) and no impacts to oaks would occur. A total of approximately 18 native and non-native trees would be removed during construction (LA County Department of Parks and Recreation 2020). No native tree species protected by local policies or ordinances would be removed, such as oak trees. Tree removal would be minimized to the extent feasible and would be completed per County requirements. All trees would be replaced after construction as a component of the project design.

The proposed project would not conflict with any local polices or ordinances protecting biological resources including trees. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is not included in an adopted habitat conservation plan or natural community's conservation plan. In addition, the site is not included within any other approved local, regional, or state habitat conservation plan. The site is within a developed urban area and is maintained as a public park.

The proposed project would not conflict with the provisions of an adopted habitat conservation plan, natural community's conservation plan, or any other approved local, regional, or state habitat conservation plan. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measures:

The following mitigation measures from the EWMP PEIR (2015) shall be implemented:

BIO-3: If a special-status wildlife species is determined to be present or potentially present within the limits of construction activities, a qualified biologist shall conduct pre-construction surveys of proposed work zones and within an appropriately sized buffer around each area as determined by a qualified biologist within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species shall be flagged for avoidance if feasible.

BIO-4: If avoidance of special-status species or sensitive habitats that could support special-status species (including, but not limited to, critical habitat, riparian habitat, and jurisdictional wetlands/waters) is not feasible, the Permittee shall consult with the appropriate regulating agency (USACE/USFWS or CDFW) to determine a strategy for compliance with the Endangered Species Act, California Fish and Game Code, and other regulations protecting special-status species and sensitive habitats. The Permittee shall identify appropriate impact minimization measures and compensation for permanent impacts to sensitive habitats and species in consultation with regulatory agencies. Construction of the project will not begin until the appropriate permits from the regulatory agencies are approved.

BIO-5: If construction and vegetation removal is proposed between February 1 and August 31, a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds and raptors within 500-feet of the construction limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.

BIO-6: All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist.

BIO-9: Prior to construction, a qualified wetland delineator shall be retained to conduct a formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) subject to the jurisdiction of USACE, RWQCB, and CDFW, may be affected by the project. If jurisdictional resources are identified and would be directly or indirectly impacted, the qualified wetland delineator shall prepare a jurisdictional delineation report suitable for submittal to USACE, RWQCB, and CDFW for purposes of obtaining the appropriate permits. Habitat mitigation and compensation requirements shall be implemented prior to construction in accordance with Mitigation Measure BIO-4.

3.1.5 CULTURAL RESOURCES

	Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:		
a.	Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	X
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	X
c.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	X
d.	Disturb any human remains, including those interred outside of formal cemeteries?	X

Existing Conditions:

The project area of potential effect (APE) includes the horizontal and vertical areas of ground disturbance in the 4.5-acre work area of the 15.5 acre Adventure Park site. The direct horizontal archaeological APE consists of the footprint of the entire eastern portion of the park, the direct vertical APE consists of approximately 30 feet deep. The project site is relatively flat with surface elevations at approximately 200 feet above mean sea level. According to the Cultural Resource section of the PEIR, the project site is within an alluvial plain and located in an area “preferred for past prehistoric subsistence and occupation and archaeological sites in these areas may have been subject to substantial burial” (LACFCD 2015). Therefore, the project area is considered sensitive for cultural resources within undisturbed subsurface deposits.

The surficial deposits within the APE have been subjected to previous ground disturbance. The entire APE has been historically used as a recreational park with athletic fields. The geotechnical study for the project identified 1 to 2.5 feet of fill across the site (Public Works 2018; Ninyo & Moore 2015). The project site is within the Los Angeles Basin, and specifically, the APE is within and adjacent to the historic Turnbull Creek (currently channelized as Sorensen Drain Channel). The APE consists of young Holocene and Pleistocene alluvium deposits derived from the erosion of bedrock out of the San Gabriel and Santa Monica Mountains which has resulted in construction of a broad and recent alluvial plain between the mountain foothills (LACFCD 2015). Intact Late Pleistocene and Holocene deposits are generally considered more likely to contain prehistoric cultural resource deposits.

An architectural survey was conducted on January 21, 2019. A Phase I cultural resources record and literature search was conducted on January 22, 2018 for the project and a one mile radius (study area) at the South Central Coastal Information Center (SCCIC) of the California Historical Resources Information System (CHRIS) at California State University, Fullerton, California (Appendix B). In addition, a sacred lands file search was conducted through the Native American Heritage Commission (NAHC) on January 9, 2018 (Appendix C).

No California Register of Historical Resources (CRHR) eligible or previously recorded resources were identified within the Project APE.

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

Discussion:

a. Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Section 15064.5(a) (3) of the CEQA Guidelines defines a “historical resource” as a resource that meets one or more of the following criteria:

- Listed in, or determined eligible for listing in, the CRHR; or
- A resource listed in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code (PRC); or
- Identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the PRC; or
- Any object, building, structure, site, area, place, record, or manuscript which 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 that may be considered to be an historical 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 California Register of Historical Resources (PRC, § 5024.1, Title 14 California Code of Regulation [CCR], Section 4852) including the following:

- An association with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
- An association with the lives of persons important to local, California, or national history.
- An embodiment of the distinctive characteristics of a type, period, region, or method of construction, or a representation of the work of a master, or possesses high artistic values.
- A resource that has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Per LACFCD EWMP PEIR (2015) mitigation measure CUL-1, a built environment study was conducted for the proposed project by a qualified architectural historian. The archival research (see below) and review of historic maps and aerials conducted for the Initial Study determined that the Project APE does contain potential historic resources including Sorensen Drain Channel and the sports fields of the park (see discussion below in b.) as defined by the CEQA Guidelines. Historic aerial photographs dating from 1943, 1949, 1960, 1967, 1975, 1981, 1994, 2005, 2009, 2010, and 2012 (EDR 2016) and USGS historic maps dating from 1925 and 1975 were reviewed. Based on historic aerials and maps, both the Sorensen Drain Channel and Adventure Park (the sports fields) were constructed between 1954 and 1963, are potential historic resources (as they are historic in age) that have not been previously recorded within the APE. An architectural historian conducted an architectural survey of the project on January 21, 2019. As a result of the architectural survey, the Sorensen Drain Channel and Adventure Park were recorded, evaluated for eligibility to the CRHR, and DPR 523 forms were prepared (see Appendix D).

Sorensen Drain Channel

The Sorensen Drain is an open, rectangular, concrete channel bordered with a chain-link fence. It curves through South Whittier, following the general contours of Turnbull Creek, the natural waterway it channelizes. The channel is 13-feet high and 34-feet wide. A slightly deeper four foot wide section at its center holds water perennially, while the larger channel is dry except during the rainy season. A large underground storm drain pipe empties into it just

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

south of Gunn Avenue. There are bridges over the channel at Gunn Avenue and two pedestrian crossings where it curves through Adventure Park. This resource does not meet the criteria of a historic resource. Therefore, the Sorensen Drain Channel is recommended not eligible to the CRHR and no further management is recommended (See Appendix D).

Adventure Park

Adventure Park is located in a residential neighborhood in South Whittier. It occupies most of the block between Gunn Avenue, Light Street, Ben Hur Avenue, and Reis Street. It is landscaped with grass and mature trees. There are long parking lots along the Reis Street and Gunn Avenue sides of the park, which is bisected by Sorensen Drain, with two pedestrian bridges over it, connecting the two sides of the park. The larger area to the east of Sorensen Drain includes the baseball fields, a simple restroom building, and a shed. A dirt path bordered in concrete wraps around the edges of this section, punctuated by occasional small plazas with picnic tables or workout equipment in them. The western section of the park is smaller and includes the original recreation building and the 2004 gymnasium building as well as a playground and basketball courts. The recreation building was constructed in 1959, during the park's initial development. It is near the northwest corner of the parcel adjacent to Gunn Avenue. The post-and-beam building is rectangular in plan with a low-pitch gabled roof, exposed beams, and fixed vinyl windows. Its main entry is an automatic sliding door on the west elevation. The tall gymnasium building is behind the recreation building to the south and features an arched roof and concrete masonry unit construction. The residential neighborhood around the land that would become Adventure Park, part of the Rancho Santa Gertrudes tract, is far south of the city of Whittier's core; the park was developed in the early 1950s as Whittier expanded outward. The DPR purchased 15.52 acres of land for Adventure Park in 1959. Edward A. Weitzul, a contractor based in West Covina, was given the contract to build the park. Originally from Wisconsin, Weitzul attended the Armour Institute of Technology in Chicago, then worked in the engineering department of the Kimberly-Clark corporation. He was in West Covina by 1959. The park, originally named Gunn Avenue Park, opened in 1962. It featured a recreation building, two softball diamonds, and basketball and tether courts. The DPR, in conjunction with the Board of Supervisors, likely changed the name to Adventure Park sometime around 2000. In 2004, a new gymnasium was built on the property. Adventure Park does not meet the criteria of a historic resource. Therefore, Adventure Park is recommended not eligible to the CRHR and no further management is recommended (see Appendix D).

An architectural survey was conducted for the project and the Sorensen Drain Channel and Adventure Park are recommended not eligible for listing to the CRHR and no further management is necessary. Potential impacts to historic resources from this proposed project are in conformance with those addressed under the LACFCD EWMP PEIR (2015) and have been implemented and complied with per PEIR mitigation measure CUL-1. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Per LACFCD EWMP PEIR (2015) mitigation measure CUL-2, a qualified cultural resource specialist conducted a Phase I cultural resource inventory that included a record search and NAHC sacred lands file search. On January 22, 2018, a literature and records search was conducted of the cultural resource site and project file collection through the SCCIC of the CHRIS (Appendix B). As part of the record search, the SCCIC database of survey reports and overviews, documented cultural resources, cultural landscapes, and ethnic resources was consulted. Additionally, the search included a review of the following publications and lists: California Office of Historical Preservation (OHP) Historic Properties Directory/National Register of Historic Properties, OHP Archaeological Determinations of Eligibility, California Inventory of Historical Resources/California Register of Historic Resources, *California Points of Historical Interest*, *California Historical Landmarks*, Caltrans Bridge Survey, ethnographic information, historical

Addendum to LACFCD EWMP Final PEIR Adventure Park Multi-Benefit Stormwater Capture Project

literature, historical maps, and local historic resource inventories. The record search focused specifically on the project site (APE) and a one-mile buffer around the APE (study area).

The records search revealed that a total of 11 previous cultural resources investigations have been conducted within the project study area. These surveys were conducted between 1995 and 2013 and consist of linear, small (less than 10 acres) and large (over 40 acres) block surveys covering approximately 10 percent of the study area. No previous cultural resource investigations have been conducted within the APE. The SCCIC literature and records search also revealed one previously recorded historic site (P-19-188166: a one to three story commercial building) within one mile of the APE. In addition, reviewed historic aerial photographs dating from 1943, 1949, 1960, 1967, 1975, 1981, 1994, 2005, 2009, 2010, and 2012 (EDR 2016) and USGS historic maps dating from 1925 and 1975 were reviewed. Based on historic aerials and maps, both the Sorensen Drain Channel and Adventure Park (the sports fields) were constructed between 1954 and 1963 and are historic in age (see b. above). There are no previously recorded archaeological sites or CRHR eligible historic resources recorded within or near the project's APE.

On January 1, 2018, the NAHC was contacted to request a Sacred Lands file search. The NAHC responded on January 9, 2018 that no Native American cultural resources were identified by their search as being within the proposed project study area (Appendix C). A list of five Native American contacts was also provided. The Los Angeles County Department of Public Works sent formal AB 52 notification letters via certified mail on October 27, 2018 to the following:

Andrew Salas, Chairperson, Gabrieleño Band of Mission Indians – Kizh Nation

Anthony Morales, Chairperson, Gabrieleno/Tongva San Gabriel Band of Mission Indians

Sandonne Goad, Chairperson, Gabrielino/Tongva Nation

Robert Dorame, Chairperson, Gabrielino Tongva Indians of California Tribal Council

Charles Alvarez, Gabrielino-Tongva Tribe

The only tribe that responded for tribal consultation was the Gabrieleno Band of Mission Indians – Kizh Nation (Kizh Nation) and a consultation meeting was held on April 23, 2019 at the Kizh Nation offices in Covina, California. The Kizh Nation provided the County with information indicating that past Native American activities have occurred in the vicinity of the project area; thus, disturbance of native soils would have a higher than average potential for the discovery of tribal cultural resources. Additionally, the Kizh Nation expressed concern that even though the project APE has 2 feet of fill material, the fill soils are from unknown locations. Although no longer in the original context, there is the possibility that fill soils contain cultural resources that have tribal significance. A follow-up meeting was held on February 3, 2020 to discuss clarifications from the Kizh Nation and the consultation was concluded via teleconference on April 8, 2020. A tribal consultation conclusion letter was sent via certified mail to the Kizh Nation on November 3, 2020.

Mitigation measure CUL-3 is included and requires a Native American monitor to be retained during ground disturbance activities with the potential to impact sensitive Native American resources. With implementation of PEIR Mitigation Measure CUL-3, adverse impacts to cultural tribal resources would be lessened, but as analyzed in the PEIR, potential impacts could be significant and unavoidable.

As noted above, geotechnical studies determine the project APE has approximately 2 feet of fill material overlaying alluvial deposits. Due to the lack of natural ground surface visibility, an archaeological survey was not conducted for the project. PEIR Mitigation measures CUL-3 and CUL-4 are included for protection of archaeological and tribal cultural resources, and any final determination of resources will be made by the County.

Potential impacts to historic resources from this proposed project are in conformance with those addressed under the LACFCD EWMP PEIR (2015) and PEIR mitigation measure CUL-2 has been implemented and complied with.

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

c. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project is located within the northeastern portion of the Los Angeles Basin, which is part of the Peninsular Ranges Geomorphic Province. The Los Angeles Basin is divided into four structural blocks which are generally bounded by prominent fault systems. The project site is located in the northeastern block that is characterized as a deep basin that consist of thick sequences of alluvium and sedimentary units overlying basement rocks. The project site is underlain by Holocene and older Pleistocene age alluvium derived from unconsolidated deposits of gravel, sand, and silt of valleys and floodplains (Tetra Tech 2018). The alluvium is estimated to extend to a depth of approximately 600 to 850 feet below ground surface (bgs). Young alluvial deposits are considered to have a low sensitivity for paleontological resources. Older Pleistocene alluvial deposits are considered to have a moderate sensitivity for paleontological resources. Potential impacts to paleontological resource from this proposed project are in conformance with those addressed under the LACFCD EWMP PEIR (2015) with the implementation of PEIR mitigation measure CUL-5 and CUL 6. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

d. Would the project disturb any human remains, including those interred outside of formal cemeteries?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent. Results of the SCCIC records search revealed there are no known burials within the Project APE.

Existing regulations require that if human remains and/or cultural items defined by the Health and Safety Code, Section 7050.5, are inadvertently discovered, all work in the vicinity of the find would cease and the Los Angeles County Coroner would be contacted immediately. If the remains are found to be Native American as defined by Health and Safety Code, Section 7050.5, the coroner will contact the NAHC by telephone within 24 hours. The NAHC shall immediately notify the person it believes to be the Most Likely Descendant (MLD) as stipulated by California PRC, Section 5097.98. The MLD(s), with the permission of the landowner and/or authorized representative, shall inspect the site of the discovered remains and recommend treatment regarding the remains and any associated grave goods. The MLD shall complete their inspection and make their recommendations within 48 hours of notification by the NAHC. Any discovery of human remains would be treated in accordance with Section 5097.98 of the PRC and Section 7050.5 of the Health and Safety Code.

Potential impacts from this proposed project to human remains, including those interred outside of formal cemeteries, are in conformance with those addressed under the LACFCD EWMP PEIR (2015) with the implementation of PEIR mitigation measure CUL-7 below This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measures:

The following mitigation measures from the EWMP PEIR (2015) shall be implemented:

CUL-3: The implementing agency shall retain archaeological monitors during ground-disturbing activities that have the potential to impact archaeological resources qualifying as historical resources or unique archaeological resources, as determined by a qualified archaeologist in consultation with the implementing agency, and any local Native American representatives expressing interest in the project. Native American monitors shall be retained for projects that have a high potential to impact sensitive Native American resources, as determined by the implementing agency in coordination with the qualified archaeologist from the information provided by the consulting tribe(s) during the AB52 consultation process. .

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

CUL-4: During project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find shall stop and a qualified archaeologist shall be contacted to assess the significance of the find according to *CEQA Guidelines* Section 15064.5. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agency and the tribe(s) that have consulted through the AB52 process, appropriate avoidance measures or other appropriate mitigation. Per *CEQA Guidelines* Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. Consistent with *CEQA Guidelines* Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and the tribe(s) that have consulted through the AB52 process. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2

CUL-5: For individual structural BMP projects that require ground disturbance, the implementing agency shall evaluate the sensitivity of the project site for paleontological resources. If deemed necessary, the implementing agency shall retain a qualified paleontologist to evaluate the project and provide recommendations regarding additional work, potentially including testing or construction monitoring.

CUL-6: In the event that paleontological resources are discovered during construction, the implementing agency shall notify a qualified paleontologist. The paleontologist will evaluate the potential resource, assess the significance of the find, and recommend further actions to protect the resource.

CUL-7: The implementing agency shall require that, if human remains are uncovered during project construction, work in the vicinity of the find shall cease and the County Coroner shall be contacted to evaluate the remains, following the procedures and protocols set forth in Section 15064.5 (e)(1) of the *CEQA Guidelines*. If the County Coroner determines that the remains are Native American, the Coroner will contact the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). The NAHC will then designate a Most Likely Descendant of the deceased Native American, who will engage in consultation to determine the disposition of the remains.

3.1.6 GEOLOGIC AND MINERAL RESOURCES

	Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:		
a. Expose people or structures to 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.		X
ii.) Strong seismic ground shaking?		X
iii.) Seismic-related ground failure, including liquefaction?		X
iv.) Landslides?		X
b. Result in substantial soil erosion or the loss of topsoil?		X
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 on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?		X
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?		X
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?		X
f. 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?		X
g. 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?		X

Addendum to LACFCD EWMP Final PEIR Adventure Park Multi-Benefit Stormwater Capture Project

Existing Conditions:

The following is based on the Geotechnical and Infiltration Feasibility Investigation Adventure Park Multi-Benefit Project Regional Project Sites in the USGR Watershed prepared by Public Works, June 21, 2018.

The project site is located within the floodplain of the San Gabriel River and its tributaries in the northeasterly portion of the Los Angeles Basin.

The geology of the project site includes thin fill soils overlying young Quaternary alluvial deposits. These young alluvial deposits were observed in the portion of the park located north of Sorensen Drain. Regional mapping shows older (Pleistocene age) alluvium in the portion of the park south of the Sorensen Drain. The alluvial deposits overlying bedrock in this area are between 600 and 850 feet thick.

Groundwater is relatively shallow. It was reported to be at 31 feet bgs in the southerly portion of the project site in 2015 and was encountered between 22 and 28.5 feet bgs in the northerly portion of the project site in 2018. The historically highest groundwater is estimated to be at 20 feet bgs.

No faults are known to underlie the project site. The project site is located approximately three miles southwest of the Whittier Fault. The Whittier Fault is considered to be active and trends west-northwest across the southern part of the Puente Hills.

The California Department of Conservation protects mineral resources to ensure adequate supplies for future production. The California Surface Mining and Reclamation Act of 1975 (SMARA) was adopted to encourage the production and conservation of mineral resources, prevent or minimize adverse effects to the environment, and protect public health and safety (LA County 2015).

Mineral resources are commercially-viable aggregate or mineral deposits, such as sand, gravel, and other construction aggregate. The Los Angeles metropolitan area produces and consumes more construction aggregate than any other metropolitan area in the country. Mineral resources also includes areas that are appropriate for the drilling for the production of oil and natural gas (LA County 2015).

According to the General Plan Mineral Resources Map (Figure 9.6), the project site is not located within Mineral Resource Zone (LA County 2015).

Discussion:

a. Would the project expose people or structures to 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.**

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is not located within an Alquist-Priolo (AP) Earthquake Fault Zone (CDC 2018). No active faults are known to cross the project site. The probability of damage because of surface ground rupture is low due to the lack of known active faults crossing the project area. The proposed project is designed in accordance with adherence to the current California Building Code (CBC), the County's Low Impact Development Standards Manual (LID Standards), and local ordinances and laws regulating construction. The operation of the proposed project, therefore, is not anticipated to expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death from the rupture of a known earthquake fault. The impact is anticipated to be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

II. Strong seismic ground shaking?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project is located within the seismically active Southern California region and is likely to experience strong ground shaking from seismic events generated on regionally active faults. The project is designed in accordance with the current CBC, LID Standards, and local ordinances and laws regulating construction. Although there may be some damage to the proposed project elements caused by strong seismic ground shaking, the operation of the proposed project, is not anticipated to expose people or structures to potential substantial adverse effects from strong seismic ground-shaking. The impact is anticipated to be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

III. Seismic-related ground failure, including liquefaction?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The park straddles the boundary of a liquefaction zone (LACPW 2018). The project site is located in the northeasterly portion of the park, which is within this delineated liquefaction zone. Liquefaction occurs when saturated granular soils lose their inherent shear strength due to increased pore water pressures that may be induced by earthquake activity. The project site is potentially susceptible to liquefaction, due to the shallow depth to groundwater and the granular nature of the underlying deposits. Construction projects within a liquefaction hazard zone require geotechnical reports to address and mitigate the potential vulnerability of structural integrity during earthquakes. Construction of the proposed project will comply with applicable measures of the current CBC, LID Standards, and local ordinances and laws regulating construction, and the Bureau of Engineering Standard Project Specifications regarding construction in a liquefaction zone and other seismic safety measures. Operation of the proposed project would not expose people or structures to substantial impacts involving seismic-related ground failure from liquefaction; therefore, a less than significant impact would occur. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

IV. Landslides?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is not located in a landslide area. The park and the surrounding properties are relatively flat; thus, no impact from landslides is anticipated. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

b. Would the project result in substantial soil erosion or the loss of topsoil?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Construction of the project would include ground disturbing activities, such as excavation and grading in order to build the and install the project elements. Excess excavated soil would be removed off-site to the Savage Canyon Landfill located approximately 4 miles from the project site. In total, it is estimated that approximately 45,300 CY of debris would be delivered to/from the site.

As the proposed project is greater than one acre, the proposed project would be required to comply with the requirement for a Storm Water Pollution Prevention Plan (SWPPP), which includes BMPs for erosion and sediment control. The project site will be paved or landscaped so that no exposed soil would remain. The project will have a less than significant impact related to erosion and loss of topsoil in the construction and operational phases. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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 on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Based on the analysis provided in Response (a.) (iv) above, no impact would be experienced related to on-site or off-site landslides. Since the project site is located within a liquefaction hazard zone, the potential for liquefaction to occur during intense ground shaking does exist. Liquefaction-induced lateral spreading is defined as the finite lateral displacement of gently sloping ground as a result of pore pressure build-up or liquefaction in a shallow underlying deposit during an earthquake. Lateral spreading is unlikely because the project site is generally flat and there is no presence of free faces on or near the project site. The EWMP PEIR Mitigation Measure GEO-1 required that a geotechnical investigation of each infiltration BMP site to evaluate infiltration suitability. A Geotechnical and Infiltration Feasibility Investigation was prepared for the proposed project (LACPW 2018). The investigation determined that infiltration is not a feasible option as the groundwater depths are too shallow to provide adequate separation from the bottom of the proposed facility; therefore, the project will not involve infiltration. The proposed project complies with the recommended design measures of the geotechnical investigation. Construction of the project will comply with applicable measures of the current CBC, LID Standards, and local ordinances and laws regulating construction, and the Bureau of Engineering Standard Project Specifications regarding construction in a liquefaction hazard zone and other seismic safety measures. Operation of the proposed project would not expose people or structures to substantial impacts involving seismic-related ground failure from liquefaction; therefore, a less than significant impact would occur. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Expansiveness refers to the potential to swell and shrink with repeated cycles of wetting and drying and is a common feature of fine-grained clayey soils. This wetting and drying causes damage due to differential settlement within buildings and other improvements. Testing on the project site indicate the soils are not expansive (Ninyo and Moore 2015; Los Angeles County Department of Public Works 2018). The number of testing samples were limited; however, the design and construction of the project will be in compliance with applicable regulations and standard specifications to prevent potential risk of damage from expansive soils. The project would be required to comply with the current CBC, LID Standards, and local ordinances and laws regulating construction in order to minimize the potential for hazards due to expansive soils. Therefore, regulatory compliance will ensure that impacts would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. No septic tanks or alternative wastewater systems will be constructed as part of the project, and no impacts will occur. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

f. 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?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would be located within an existing park developed with recreational uses and would continue to be used as a public park with implementation of the proposed project. The project site is located within an urban environment and is surrounded by residential land uses that contain sensitive receptors (residents) which are generally not

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

compatible land uses with mineral extraction. In addition, according to the General Plan Mineral Resources Map (Figure 9.6), the project site is not located within a Mineral Resource Zone (LA County 2015). Therefore, no impacts on minerals would result. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

g. 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?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. According to the General Plan Mineral Resources Map (Figure 9.6), the project site is not located within a Mineral Resource Zone (LA County 2015). The proposed project would be located within an existing park developed with recreational uses and the land would continue to be used as a public park with implementation of the proposed project. No impacts on minerals would result. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measures:

No mitigation measures are required.

3.1.7 GREENHOUSE GAS EMISSIONS

		Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:			
a.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?		X
b.	Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?		X

Existing Conditions:

Significant changes in global climate patterns have recently been associated with global warming, an average increase in the temperature of the atmosphere near the Earth’s surface, attributed to accumulation of greenhouse gas (GHG) emissions in the atmosphere. GHGs trap heat in the atmosphere, which in turn heats the surface of the earth. Some GHGs occur naturally and are emitted to the atmosphere through natural processes while others are anthropogenic (i.e., created and emitted solely through human activities).

Regulated GHGs consist of carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃) (California Health and Safety Code 38505). GHGs are commonly quantified in the equivalent mass of CO₂, denoted CO₂e, which takes into account the global warming potential of each individual GHG compound.

Carbon dioxide enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees and wood products, and also as a result of certain chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle. Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills. Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste. Hydrofluorocarbons, PFCs, SF₆, and NF₃ are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases (“High GWP gases”). HFCs and PFCs are sometimes used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). SF₆ is employed in electricity transmission and distribution and semiconductor manufacturing. NF₃ results from semiconductor manufacturing processes (CARB 2017).

The Governor’s Office of Planning and Research (OPR) in cooperation with the Resources Agency, the California Environmental Protection Agency (Cal/EPA), and the ARB developed the *CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review Technical Advisory* in an effort to facilitate an informal guidance regarding the steps lead agencies should take to address climate change in their CEQA documents (OPR 2008). The general approach presented in the OPR’s Technical Advisory (i.e., determining GHG emissions, identifying significance, and mitigating impacts) is employed in the following sections.

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

On December 5, 2008, pursuant to state law (i.e., CEQA Guidelines 15064.7) the SCAQMD Governing Board adopted a proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. The significance threshold is applicable for stationary sources and can be used for determining significant impacts for proposed projects (SCAQMD 2008). Under the interim significance thresholds projects can emit up to 10,000 metric tons (MT) per year of CO₂eq before being deemed as having significant air quality impacts. Also, the SCAQMD has proposed but not adopted a screening threshold of 3,000 MT per year CO₂e for residential and commercial developments, including industrial parks, warehouses, etc. The 3,000 MT per year CO₂e threshold suggested in the PEIR is used for the proposed project as a screening reference only. GHG thresholds are not established for temporary sources. There are no other federally, statewide, or regionally established significance thresholds to support impact assessments of GHG emissions from proposed projects. Instead, the state has pursued other initiatives to meet GHG reduction goals. Some of those initiatives include the pursuit of low-emission vehicle programs, low carbon fuel standards, heavy-duty vehicle GHG regulations, and renewable energy technologies (e.g., wind and solar power).

Discussion:

- a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Greenhouse gas emissions would result primarily during the construction of the proposed project. GHG emissions resulting from the operation of the proposed project are deemed insignificant. The only day-to-day operational activities added by the proposed project would be the cycling of the pumps within the pump station, which would operate on electricity and would not be expected to generate direct emissions of criteria air pollutants. The underground infrastructure is not expected to generate a significant source of operational activities. Operational emissions from the proposed project are not expected to differ significantly from current operations and, therefore, are not further discussed in this air quality section. GHG emissions from the construction activities of the proposed project were calculated using CalEEMod. CalEEMod output results are included in Appendix A. The total calculated GHG emissions resulting from the construction activities, significant thresholds, and assessment of significance are summarized in Table 3-7. As presented in Table 3-7, GHG emissions from construction activities do not exceed either the annual or amortized emissions and would not result in changes or new information requiring preparation of a subsequent EIR. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

**Table 3-7
Project GHG Construction Emissions**

Calendar Year	GHG (MTCO₂eq/yr)
2021	528
2022	166
Total	694
Average Annual Emissions Amortized over 30 years	23
Threshold of Significance	3,000
Significant?	No

Notes: GHG greenhouse gas
MTCO₂eq/yr metric tons of carbon dioxide equivalent per year

b. Would the project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. GHG emissions would conflict with applicable plans, policy or regulation if the proposed project conflicts with any of the plans, policies or regulations adopted for the purpose of reducing GHG emissions in the Los Angeles County.

The current applicable GHG plan is the Los Angeles County Community Climate Action Plan (CCAP), which is incorporated into the Air Quality Element of the Los Angeles County General Plan 2035. The CCAP is designed to help the County achieve its part of the GHG goals addressed in the California Climate Change Scoping Plan (Scoping Plan), which lays out California’s strategy for meeting the GHG emission reduction goals of Assembly Bill (AB) 32. AB 32 was signed into law on September 27, 2006, and it requires the ARB to develop and implement regulations and initiatives to reduce GHG emissions to 1990 levels, or lower, by 2020. GHG emission reduction goals are primarily based on strategies aimed at reducing both energy usage and pollution. Since the proposed project would not result in an increase of either population (which requires energy) nor emissions sources and does not required a general plan amendment, it is consistent with and will have a less than significant impact on the implementation of the County’s General Plan, and the State’s Climate Change Scoping Plan. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measures:

No mitigation measures are required.

3.1.8 HAZARDS AND HAZARDOUS MATERIALS

		Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:			
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?		X
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?		X
c.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?		X
d.	Be located on a site that 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?		X
e.	For a project located within an airport land use plan area or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?		X
f.	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?		X
g.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?		X
h.	Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?		X

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

Existing Conditions:

The project site is located within an existing public park within a developed urban neighborhood and is surrounded by residential uses to the north, south, east and west. There are no records of current or historical Recognized Environmental Conditions (RECs) associated with the park or surrounding area (DTSC 2018, Water Boards 2018).

Schools located near Adventure Park include the Mulberry Elementary School located approximately 0.22 miles to the northeast, Faith Lutheran Church and School located approximately 0.31 miles to the east, and McKibben Elementary School located approximately 0.27 miles to the south.

The project site is not located within two miles of a public airport or public use airport. The nearest airport to the project site is the Fullerton Municipal Airport located approximately six miles to the southeast.

Los Angeles County Office of Emergency Management (LAC OEM) is the designated lead agency for emergency response and coordinates the development, maintenance, and implementation of the Los Angeles County Operational Area Emergency Response Plan. This Plan serves as a guide for the County's response to emergencies/disasters in the County. (ESA 2015)

The project site is not located within or near a Fire Hazard Severity Zone (County of Los Angeles 2018).

Discussion:

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

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The short-term construction process for the proposed project would not involve any routine transport, use, or disposal of hazardous materials. Some examples of hazardous materials include fuels, lubricating fluids such as paints and adhesives, and solvents. Fuels and solvents for construction would be stored and utilized pursuant to existing regulatory requirements.

The construction contractor would be required to comply with all relevant and applicable federal, state, and local laws and regulations that pertain to the transport, storage, use, and disposal of hazardous materials and waste during construction of the proposed project, therefore, short-term construction impacts would be less than significant.

The proposed project will not use chemicals for treatment, instead will use passive treatment techniques that capture stormwater and then reduce pollutant loads and stormwater volumes through containment and filtration. Operation of the proposed project would generally require minimal to no transport, usage, or disposal of hazardous materials for purposes of operating equipment (e.g., weed-whackers), maintenance activities, and the transport of workers in vehicles. All relevant and applicable federal, state, and local laws and regulations that pertain to the transport, storage, use, and disposal of hazardous materials and waste during operation of the proposed project would be required to be complied with, therefore, operation impacts would be less than significant.

This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The existing storm sewer systems convey stormwater and dry-weather flows to receiving waters that ultimately flow to the ocean. The proposed project would not increase the potential for accidental releases of hazardous materials into the environment. Because of the project's function as a water conveyance system, it would collect and retain sediment

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

and chemicals from urban runoff, along with any accidental or illicit spills of hazardous materials. The introduction of hazardous materials into the storm sewer system could occur in large events as in a catastrophic spill or could occur in small concentrations as in petroleum hydrocarbons and heavy metals picked up and carried by stormwater in urban runoff from the streets.

The proposed project would slow and retain spills. This retention would help to minimize impacts of large spills compared to existing conditions. The LAC OEM leads emergency response activities within Los Angeles County that would include responses to large hazardous spills. LAC OEM has prepared an Emergency Response Plan to coordinate response efforts. The responsibility for responding to and remediating spills would be similar to existing conditions.

In the case of small concentrations of contaminants either from small spills or the accumulation of contaminants from urban runoff, the proposed project would collect and retain pollutants on site. Potential contaminants include typical urban runoff contaminants, such as fuels, oil and grease, pesticides, polychlorinated biphenyls (PCBs), polyaromatic hydrocarbons (PAHs), metals, and nutrients, as well as sediment that would clog filter media (e.g., soil) or reduce volume capacity. Proposed project operation and maintenance activities would be required to ensure the diversion structure, pre-treatment device, underground storage vault, and outflow filters are free of debris so sediment and larger materials do not accumulate. In addition, the outflow filter cartridges require rinsing approximately every 18 months to ensure continued operation. The material rinsed from the cartridges will be disposed of following County requirements. All relevant and applicable federal, state, and local laws and regulations that pertain to the operation of the proposed project would be required to be complied with, therefore, operation impacts would be less than significant.

This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The Mulberry Elementary School is located approximately 0.22 miles to the northeast of the proposed project site. There is a potential for release of hazardous emissions or handling of hazardous materials and substances during the short-term construction activities for the proposed project. However, because substantial federal, state and local regulations addressing the transport, use, storage and disposal of hazardous materials are in place, the potential for substantial effects to schools would be less than significant. Compliance with applicable hazardous materials regulations would reduce the likelihood of unsafe release of hazardous emissions to less than significant levels. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

d. Would the project be located on a site that is included on a list of hazardous material 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?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Since the project site is not on the list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, the potential for it to create a significant hazard to the public or the environment is less than significant. It is possible that a proposed project may be on an unknown hazardous materials site not yet included in the databases. Contaminated soil and/or groundwater could be encountered during excavation and dewatering activities, posing a health hazard to construction crews, the public, and the environment. Implementation of Mitigation Measures HAZ-1 and HAZ-2 would reduce the potential impact to less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

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 for people residing or working in the project area?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is not located within two miles of a public airport or public use airport. The project would not result in a safety hazard for people residing or working in the project area and no impact would occur. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

f. For a project located within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is not located in the vicinity of a private airstrip; therefore, the project would not result in a safety hazard for people residing or working in the project area and no impact would occur. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

g. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Construction of the proposed project will be confined to the project site and will not obstruct access to the surrounding lots or otherwise hinder emergency evacuation within the surrounding properties. At no time will any of the surrounding streets be completely closed to traffic to accommodate construction equipment or activities. The impact is anticipated to be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

h. Would the project expose people or structures to the risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is located in an urbanized and fully developed area and it is not located within or near any wildland areas nor would the proposed landscaping create hazardous conditions due to wildland fires. Therefore, the project would not pose a fire hazard due to wildland fires and no impact would occur. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Since certification of the EWMP PEIR, the CEQA Guidelines were amended in 2019 to evaluate impacts on wildfire hazards for projects located in or near state responsibility areas or lands classified as very high fire severity zones by local agencies. CAL FIRE has mapped zones/areas of significant fire hazards, which have been designated as Fire Hazard Severity Zones (FHSZs) per Government Code Sections 51175-51189. These areas are subject to additional development and maintenance standards to reduce risks associated with wildland fires. FHSZs in unincorporated areas are classified as Very High, High, and Moderate in State Responsibility Areas (SRAs), and Very High in Local Responsibility Areas (LRAs) and Federal Responsibility Areas (FRAs).

The project site is not located within or near a Fire Hazard Severity Zone (County of Los Angeles 2018, California Department of Forestry and Fire Protection 2021). The proposed Project consists of the construction and operation of stormwater infrastructure improvements within Adventure Park. Infrastructure improvements would be installed underground except for the small aboveground utility structure. Once installation is complete, fill would be placed back on top of the unit up to the existing park grade and the area would be landscaped or ballfields reinstalled with approval from DPR. As noted in the EWMP PEIR adherence to federal and state regulations would reduce the potential impacts from wildfires to less than significant and no mitigation measures would be required. No new or

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

increased risk of wildland fire beyond what was accounted for in the EWMP PEIR is anticipated to result with implementation of the proposed project and no additional analysis required.

Mitigation Measures:

HAZ-1: Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the individual BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. The Maintenance Plan shall include vector control requirements. The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

HAZ-2: Prior to the initiation of any construction requiring ground disturbing activities in areas where hazardous material use or management may have occurred, the implementing agencies shall complete a Phase I Environmental Site Assessment (ESA) in accordance with American Society for Testing and Materials (ASTM) Standard E1527-13 for each construction site. Any recommended follow up sampling (Phase II activities) set forth in the Phase I ESA shall be implemented prior to construction. The results of Phase II studies, if necessary, shall be submitted to the local overseeing agency and any required remediation or further delineation of identified contamination shall be completed prior to commencement of construction.

3.1.9 HYDROLOGY AND WATER QUALITY

		Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:			
a.	Violate any water quality standards or waste discharge requirements?		X
b.	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?		X
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?		X
d.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?		X
e.	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?		X
f.	Otherwise substantially degrade water quality?		X
g.	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?		X
h.	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?		X
i.	Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?		X

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

		Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
j.	Contribute to inundation by seiche, tsunami, or mudflow?		X

Existing Conditions:

The project site is located in the Upper San Gabriel Watershed. The Upper San Gabriel Watershed is characterized by higher-density development in the lower watershed area and lower-density development and open space in the upper watersheds where the foothills to the San Gabriel Mountains begin. The San Gabriel River is unlined in the upper watershed and conveys controlled non-storm and storm flows to recharge basins and downstream sections of the river. The San Gabriel River is bound by the San Gabriel Mountains to the north, San Bernardino to the east, Los Angeles River to the west, and Pacific Ocean to the south. The San Gabriel River flows 58 miles south until its confluence with the Pacific Ocean. Major tributaries to the San Gabriel River include Walnut Creek, San Jose Creek, Coyote Creek, and numerous storm drains entering from the 19 cities that the San Gabriel River passes through. Much of the channel above the Whittier Narrows is unlined. The Whittier Narrows is a water gap between the Puente Hills to the east and Montebello Hills to the west that separates the San Gabriel Valley on the north from the Downey Plain on the south. The San Gabriel River and Rio Hondo flow through the Whittier Narrows. The Whittier Narrows is located in the western central area of the Upper San Gabriel Watershed approximately 6 miles northwest of Adventure Park. Storm flows are diverted from the San Gabriel River into four different spreading grounds by dams for ground water recharge. The 10-mile segment below Whittier Narrows is a concrete-lined channel. (ESA 2015)

The project site is located in a Federal Emergency Management Agency (FEMA) flood Zone X, where the probability of flooding inundation has been evaluated to be 0.2 percent (i.e., a 500-year event, FEMA 2008).

Discussion:

a. Would the project violate any water quality standards or waste discharge requirements?

Less than Significant Impact. The proposed project could potentially result in water quality impacts during the short-term construction process but will be less than significant. The grading and excavation required for project implementation would result in exposed soils that may be subject to wind and water erosion. Since the project impact area would be greater than one acre, the proposed project would be subject to the requirement of the Construction General Permit under the NPDES program administered by the State Water Resources Control Board. The proposed project would be required to comply with the requirement for a SWPPP, which includes BMPs for erosion and sediment control and spill prevention and control. These requirements would be equal to or more stringent than construction BMPs will be installed during construction to prevent debris and pollutants from entering the storm drains and the channel. The project will also require temporary dewatering activities for excavation activities 22-feet in depth or greater, which includes the inlet work at the Sorensen Channel, the underground storage vault, and the trench that connects the storm drain pipe between Sorensen Channel and the underground vault. During construction, any dewatering discharge is anticipated to be discharged into the Sorensen Channel. After construction, during dry-periods the flows will go to the sanitary sewer while wet weather flows will pass through a filter and then back to the Sorensen Channel. The proposed project would be subject to the requirement of the Dewatering General Permit also under the NPDES program. The proposed project would be required to comply with the General Waste Discharge Requirements (WDRs) governing nonstormwater construction-related discharges from activities such as dewatering, water line testing, and sprinkler system testing. The discharge requirements include provisions mandating notification, testing, and reporting of dewatering and testing-related

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

discharges. The General WDRs authorize such construction-related discharges so long as all conditions of the permit are fulfilled. Upon adherence to these existing requirements, short term impacts to water quality standards and waste discharge requirements would be less than significant.

Due to the location of the project site, operation of the project has the potential to provide significant water quality benefits for multiple jurisdictions due to the large drainage area, location of the adjacent storm drains, and available development space for large stormwater capture facilities within the park. The proposed project would capture and treat approximately 21 AF of urban runoff and stormwater per rain event from an approximately 7,000-acre drainage area; resulting in improvement to downstream water quality. Therefore, project operation would have no adverse impacts to water quality. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

b. Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would not result in any substantial changes in the quantity of groundwater supplies. During construction, the project will also require temporary dewatering activities for excavation activities 22-feet in depth or greater. The extraction of groundwater during these activities will be temporary and the amount would be too small to have a measurable effect on local groundwater levels. During project operation, no groundwater extraction activities would occur, and no wells would be constructed. Mitigation Measure HYDRO-1 was completed and determined a stormwater infiltration system is not a feasible option for this project as groundwater depths are too shallow to provide adequate separation from the bottom of the proposed facility; therefore, the project will not involve recharge of groundwater supplies through infiltration. As the project will not include an infiltration system, the PEIR Mitigation Measures HYDRO-2 and HYDRO-3 would not apply to the project.

Stormwater flow will travel to a pretreatment system and then to an underground storage vault where the water may be directed to the sanitary sewer or treated and returned to Sorensen Drain based on analysis of given site constraints. The project would not deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the groundwater table level. Therefore, impacts to groundwater supply would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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, in a manner which would result in substantial erosion or siltation on- or off-site?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project is a stormwater capture project that would capture and treat diverted urban runoff and stormwater from two separate storm drain systems. Collected runoff from BI-0693 and the Sorensen Drain channel would be diverted through a combined system of a drop inlet and an inflatable rubber dam located downstream from the BI-0693 outfall within the Sorensen Drain channel. The proposed project will alter the flow of Sorensen Drain at this location by diverting flow from Sorensen Drain to a pretreatment system and then an underground storage vault. The two outflows being considered are discharge to sanitary sewer lines given capacity and filtration to meet required water quality standards for return to the channel (Sorensen Drain). While flow will be diverted from the channel, the project will improve stormwater quality by treating stormwater pollutants and minimizing erosion or transportation of sedimentation before discharge into the San Gabriel River. The proposed project is expected to improve off-site runoff water quality in comparison to existing conditions, thus reducing erosion and siltation. Impacts would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

d. 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 substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Less than Significant Impact. As discussed above, the proposed project will alter the flow of Sorensen Drain by diverting flow from Sorensen Drain to a pretreatment system and then an underground storage vault. While flow will be diverted from the channel, the proposed project would increase stormwater retention. By retaining stormwater flows and releasing these flows closer to the natural hydrograph, the change in drainage patterns would result in reduced peak flows and as a result a reduced potential for flooding on- or off-site. Therefore, the potential impact would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

e. Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project is a stormwater capture project that would capture and treat diverted urban runoff and stormwater from two separate storm drain systems. As shown in Table 3-8, the expected diversion amount is a small percentage of the existing design capacity of Sorensen Channel and could be accommodated by the existing stormwater drainage system.

**Table 3-8
Summary of Hydrologic Conditions for Adventure Park**

Drainage Area	85th Percentile Surface Runoff (ac-ft)	85th Percentile Peak Flow (cfs)	Average Annual Runoff (ac-ft)	Original Design Capacity Flow (cfs)	Diversion Design Flow (cfs)
Sorensen Channel	198.5	377	3,984	4,982	50

The project will improve stormwater quality by treating stormwater pollutants before discharge into the San Gabriel River. The proposed project is expected to improve off-site runoff water quality in comparison to existing conditions. Impacts would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

f. Would the project otherwise substantially degrade water quality?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would be subject to the Los Angeles County Flood Control District NPDES permit conditions for discharges into the storm drain system and would improve water quality. Impacts to water quality are expected to be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

g. Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is not located within a 100-year floodplain (FEMA 2008) and does not include construction of housing; therefore, no impact would occur. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

h. Would the project place within a 100-year floodplain structures that would impede or redirect flood flows?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is not located within a 100-year floodplain (FEMA 2008); therefore, no impact would occur. The proposed project would increase stormwater retention. By retaining stormwater flows and releasing these flows closer to the natural hydrograph, the change in drainage patterns would result in reduced peak flows and as a result a reduced potential for flooding on- or off-site. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

i. Would the project expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is not located near any areas at risk for flooding as a result of failure of a levee or a dam; therefore, no impact would occur (Los Angeles County Department of Regional Planning 2018). This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

j. Would the project contribute to inundation by seiche, tsunami, or mudflow?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is not located near any areas at risk for seiche, tsunami or mudflows; therefore, no impact would occur (Los Angeles County Department of Regional Planning 2018). This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measure:

No mitigation measures are required.

3.1.10 LAND USE AND PLANNING

		Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:			
a.	Physically divide an established community?		X
b.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?		X
c.	Conflict with any applicable habitat conservation plan or natural community conservation plan?		X

Existing Conditions:

The project site, formerly Gunn Avenue County Park, is located at the intersection of Gunn Avenue and Light Street within a developed urban environment. It is an existing public park (Adventure Park) under the jurisdiction of the DPR.

The project site has a General Plan designation of Parks and Recreation (OS-PR). The OS-PR designation is for open space recreational uses, such as regional and local parks, trails, athletic fields, community gardens, and golf courses (LA County 2015). The project site is zoned for R-A-6000/Residential Agricultural. Parks, recreation facilities, and use normal and appurtenant to the storage and distribution of water, are allowed uses subject to a conditional use permit (LA County Code 22.20.440).

Discussion:

a. Would the project physically divide an established community?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would not physically divide an established community. The project site is currently used as a public park and would continue to do so with implementation of the proposed project. Implementation of the proposed project would result in primarily subsurface water quality improvements and would not make any changes to existing public streets. Therefore, no project impact would result.

The PEIR indicated that centralized and regional structural BMPs require greater footprints for construction and implementation. However, the installation of these larger BMPs would not physically divide an established community as they would be implemented primarily on existing sidewalks, streets, parks, and city-owned land. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

b. Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is zoned for R-A-6000/Residential Agricultural. Parks, recreation facilities, and use normal and appurtenant to the storage and distribution of water, are allowed uses subject to a conditional use permit (22.20.440). As indicated in the PEIR, approval by local jurisdictions (in this case the County) of land use conditions would ensure consistency with local plans. The project site is currently developed and utilized as a public park and would continue to be used as a public park with implementation of the proposed project. Implementation of the proposed project to enhance water quality would not conflict with applicable land use plans. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

c. Would the project conflict with any applicable habitat conservation plan or natural communities conservation plan?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is not included in an adopted habitat conservation plan or natural community's conservation plan. In addition, the site is not included within any other approved local, regional, or state habitat conservation plan. The site is within a developed urban area and is maintained as a public park. Therefore, the proposed project would not conflict with the provisions of an adopted habitat conservation plan, natural community's conservation plan, or any other approved local, regional, or state habitat conservation plan and no impact would occur. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measures:

No mitigation measures are required.

3.1.11 NOISE

		Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project result in:			
a.	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		X
b.	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?		X
c.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?		X
d.	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		X
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 expose people residing or working in the project area to excessive noise levels?		X
f.	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?		X

Existing Conditions:

The existing noise environment consists of vehicle noise from local street traffic on Gunn Avenue, Light Street, and Reis Street as well as nature sounds and community sounds. Adjacent land uses include residential single-family homes located to the north directly across Gunn Avenue and east directly across Light Street. There are also residential single-family homes located directly south of the park. No ambient noise monitoring data have been identified for the project vicinity, but existing land use patterns and traffic volumes published by the County of Los Angeles indicate that the existing ambient noise levels at the proposed project site should be at or below 62 dBA Community Noise Equivalent Level (CNEL).

Discussion:

- a. **Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The County of Los Angeles has an established General Plan to be used as a planning tool to develop strategies and action programs that address the multitude of noise sources and issues throughout the County. The noise guidelines used by the County which are based on the community noise compatibility guidelines established by the State of California identifies acceptable noise levels for residential land uses to range from 50 dBA CNEL to 70 dBA CNEL.

The County of Los Angeles Municipal Code Chapter 12.08 establishes noise standards to control unnecessary, excessive, and annoying noise and vibration in the County. The County's code establishes exterior noise level limits for residential properties of 50 dBA for the daytime period (7:00 a.m. to 10:00 p.m.) and 45 dBA for the nighttime period (10:00 p.m. to 7:00 a.m.). The Project is proposing a pump station that includes two pumps which are only operated for very brief periods of time. The pumps are not operated continuously. These pumps are expected to be low horsepower (hp) pumps. Given the size of the pumps and that they will be enclosed within the pump house enclosure or submerged within the underground storage tank, the noise levels generated from the proposed pumps will comply with the County of Los Angeles noise ordinance regulations and the County's Noise Element to the General Plan. Therefore, these noise levels are considered to be less than significant.

The Project is also proposing an above ground building enclosure that will house an air-compressor, monitoring controls, electric monitoring equipment, and telemetry equipment. The air-compressor will be the predominate noise source within this building enclosure, which is expected to have a sound power level of 100 dBA. The nearest sensitive receptor is located approximately 250 feet from the building enclosure. Given the sound transmission loss from the enclosure as well as the distance to the receptor the noise levels at the receptor are expected to be less than 40 dBA. These noise levels will comply with the County of Los Angeles nighttime noise threshold of 45 dBA. Therefore, these noise levels are considered to be less than significant.

The County of Los Angeles Municipal Code Chapter 12.08 Part 4 establishes noise standards for construction operations. This standard prohibits the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m. or anytime on Sundays or holidays, such that the sound creates a noise disturbance across a residential real-property line. This standard also limits construction noise from activities occurring longer than 10 days to 60 dBA maximum instantaneous noise (L_{max}) at single-family residents from 7:00 a.m. to 8:00 p.m. and 50 dBA L_{max} at single-family residents from 8:00 p.m. to 7:00 a.m.

Construction of the proposed facility site is planned to start in February of 2021 and last approximately 23 months. Project construction activities are anticipated to occur in phases and include site clearing and pavement removal, excavation and grading, utility installation, and backfill and fine grading during the daytime period from 7:00 a.m. to 6:00 p.m. These construction activities would require a variety of equipment. Typical construction equipment would not be expected to generate noise levels above 90 dBA at 50 feet, and most equipment types would typically generate noise levels of less than 85 dBA at 50 feet. The highest noise levels during construction are normally generated during the use of earth moving equipment or pavement removal. The site clearing, pavement removal, and excavation would incorporate the loudest equipment used at the site. This equipment is expected to generate a L_{max} ranging from 74 to 84 dBA at single family homes located at a distance of 100 feet. The utility installation, backfill, and fine grading construction would result in noise levels ranging from 74 to 79 dBA L_{max} at a distance of 100 feet. Implementation of PEIR Mitigation Measure NOISE-1 would reduce construction noise levels at the nearest residences to comply with the construction noise standards defined in the Noise Ordinance Section 12.08 Part 4. However, it is possible noise levels from construction could temporarily exceed the noise standards resulting in a significant, unavoidable impact.

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

The construction of the proposed facility will also incorporate a temporary water treatment system for perchlorate that assumes 29 pumps operating 24 hours a day for a 3 month period. The pumps are expected to operate with a sound power level of 87 dBA or less. The noise levels from the pump operations are expected to range from 47 to 49 dBA at the nearest sensitive receptors. These levels will comply with both the daytime and nighttime standards defined in the Noise Ordinance Section 12.08 Part 4. However, if the pumps exceed a sound power level of 87 dBA then implementation of PEIR Mitigation Measure NOISE-1 would reduce noise at the residences to comply with the construction noise standards. The PEIR concluded that noise effects from construction of individual projects could exceed local standards under certain scenarios (e.g. where established numerical noise standards for construction noise levels cannot be achieved), even with implementation of mitigation measures, resulting in a significant and unavoidable impact. The PEIR also concluded that the operational noise would be reduced to a less than significant level with implementation of PEIR mitigation measure NOISE-2. The proposed project’s operational noise impacts were determined to be less than significant and the proposed project’s construction impacts were determined to be significant and unavoidable. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

b. Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Operation of the air compressor and pumps would not generate vibration; however, construction of the underground storage facilities and site grading would require the use of equipment that could generate vibration. Possible sources of vibration may include bulldozers, dump trucks, backhoes, rollers, and other construction equipment that produces vibration. No blasting or pile driving will be required at the project site.

Project construction activities would occur within approximately 100 feet from single family residences. According to the Federal Transit Administration (FTA) guidelines, a vibration level of 65 vibration decibels (VdB) is the threshold of perceptibility for humans. For a significant impact to occur, vibration levels must exceed 80 VdB during infrequent events (FTA 2018). Based on the levels published by the FTA in Table 3-9 and the type of equipment proposed for use at the proposed Project, coupled with the distance to the existing identified noise sensitive receptors, analysis shows that all identified sensitive receptors will be below the maximum vibration level of 80 VdB (FTA 2006). This vibration level is considered acceptable for impacts to residential homes and is, therefore, considered to be a less than significant impact.

**Table 3-9.
Vibration Source Levels for Construction Equipment**

Equipment	Approximate VdB¹ at 25 feet	Approximate VdB¹ at 100 feet
Clam shovel drop (slurry wall)	94	76
Hydromill (slurry wall)	In Soil	66
	In Rock	75
Vibratory Roller	94	76
Hoe Ram	87	69
Large Bulldozer	87	69
Caisson Drilling	87	69
Loaded Trucks	86	68
Jackhammer	79	61

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

Small Bulldozer	58	40
-----------------	----	----

Notes: ¹ Root mean square velocity in decibels, VdB re 1 micro-in/sec
Source: FTA 2018

The PEIR concluded that vibration impacts from individual projects would be less than significant. The proposed Project would also result in a less than significant impact. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

c. Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent The dominant noise sources in the vicinity of the proposed project site is traffic noise associated with Gunn Avenue, Light Street, and Reis Street. Based on existing traffic volumes published by the Los Angeles County Department of Public Works, noise impacts to adjacent residences range from 57 dBA CNEL to 62 dBA CNEL. The operation of the project would require periodic maintenance that would result in a minimal increase in traffic noise levels resulting in an overall increase of less than one dBA. An increase in the ambient noise levels of three dBA or greater is considered significant. Since the proposed Project is shown to only increase the overall ambient community noise level by less than one dBA, it is considered to be a less than significant impact.

The project is proposing a pump station that includes two pumps. These pumps are expected to be low hp pumps. Given the size of the pumps and that they will be enclosed within the pump house enclosure the noise levels generated from the proposed project will be well below the existing traffic noise and will result in a less than one dBA increase to the existing noise level. Since the proposed project is shown to only increase the overall ambient community noise level by less than one dBA, it is considered to be a less than significant impact.

The PEIR concluded that ambient noise levels from the operation of pumps could be potentially significant, but with implementation of PEIR mitigation measure NOISE-2 would be reduced to a less than significant level. The proposed project impacts were determined to be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

d. Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR.

The highest noise levels during construction are normally generated during the use of earth moving equipment or pavement removal. The site clearing, pavement removal, and excavation would incorporate the loudest equipment used at the site. This equipment is expected to generate a maximum instantaneous noise level (L_{max}) ranging from 74 to 84 dBA at single family homes located at a distance of 100 feet. The utility installation, backfill, and fine grading construction would result in noise levels ranging from 74 to 79 dBA L_{max} at a distance of 100 feet. The noise levels from the construction would be loud enough to temporarily interfere with speech communication outdoors and indoors with the windows open. Typical project construction would occur between the hours of 7:00 a.m. and 6:00 p.m., Monday through Friday as well as implement standard noise reduction measures. Due to the infrequent nature of loud construction activities at the site, the limited hours of construction, and the implementation of Mitigation Measure NOISE-1, the temporary increase in noise due to construction is considered to be a less than significant impact.

The temporary treatment system pumps would operation between the hours of 6:00 p.m. and 7:00 a.m. and will generate noise levels ranging from 47 to 49 dBA at the nearest sensitive noise receptors. These levels are well

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

below the existing ambient noise levels and are expected result in a noise level increase of less than 3 dB. This increase is expected to be a less than significant impact.

The construction of the proposed facility will generate maximum trips during Phase 2, which incorporates 188 daily trips. The construction route is expected to enter the site from Gunn Avenue. Noise level increases as a result of project traffic near residential developments will result in a less than 2 dBA increase along Gunn Avenue. The noise impacts from the project construction traffic will result in a less than significant impact.

The PEIR concluded that temporary ambient noise levels may be significant if a structural BMP were to be located within 25 feet of an existing noise-sensitive land uses. The proposed project is not located within 25 feet of any noise-sensitive land uses and was determined to have a less than significant level with the implementation of PEIR Mitigation Measures NOISE-1. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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 expose people residing or working in the project area to excessive noise levels?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. There are no public airport or public use airports located within 2 miles of the proposed project site. Therefore, there would be no project impact.

The PEIR concluded that the structural BMPs would not expose people to excessive airport-related noise levels and the impact was determined to be less than significant. The proposed project would have no impact. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

f. For a project located within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. There are no private airstrips close enough to the proposed project site to generate a significant noise impact at the proposed site. Therefore, there would be no project impact.

The PEIR concluded that the structural BMPs would not expose people to excessive noise levels associated with an airstrip and the impact was determined to be less than significant. The proposed project would have no impact. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measure:

The following mitigation measures from the EWMP PEIR (2015) shall be implemented:

NOISE-1: The implementing agencies shall implement the following measures during construction as needed:

- Include design measures necessary to reduce the construction noise levels to where feasible. These measures may include noise barriers, curtains, or shields.
- Place noise-generating construction activities (e.g., operation of compressors and generators, cement mixing, general truck idling) as far as possible from the nearest noise-sensitive land uses.
- Locate stationary construction noise sources as far from adjacent noise-sensitive receptors as possible.
- If construction is to occur near a school, the construction contractor shall coordinate with the school administration in order to limit disturbance to the campus. Efforts to limit construction activities to non-school days shall be encouraged.

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

- For centralized and regional BMP projects located adjacent to noise-sensitive land uses, identify a liaison for these off-site sensitive receptors, such as residents and property owners, to contact with concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at construction locations.
- For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, notify in writing all landowners and occupants of properties adjacent to the construction area of the anticipated construction schedule at least 2 weeks prior to groundbreaking.

NOISE-2: All structural BMPs that employ mechanized stationary equipment that generate noise levels shall comply with the applicable noise standards established by the implementing agency with jurisdiction over structural BMP site. The equipment shall be designed with noise-attenuating features (e.g., enclosures) and/or located at areas (e.g., belowground) where nearby noise-sensitive land uses would not be exposed to a perceptible noise increase in their noise environment.

3.1.12 POPULATION AND HOUSING AND ENVIRONMENTAL JUSTICE

	Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:		
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?		X
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?		X
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?		X
d. Affect the health or environment of minority or low income populations disproportionately?		X

Existing Conditions:

The proposed project site is within south Whittier, an unincorporated community of Los Angeles County. The south Whittier population was estimated at 57,156 individuals as of the 2010 Census and has likely increased since the reporting of the 2010 Census (Los Angeles Almanac 2018).

Discussion:

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

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would make improvements to the stormwater system. The project site is an existing public park and would continue operating as a public park with implementation of the proposed project. The construction of the proposed project would require construction workers. However, due to the relatively small size of the project and short duration of project construction activities, the proposed project is not anticipated to induce employees to move to the project vicinity and induce population growth or the need for housing. During long-term project operations, workers would be needed for routine maintenance activities but it is anticipated they would be drawn from the local Los Angeles region workforce. Consistent, with the PEIR, the proposed project would not alter population demographics. Therefore, there would be no impact on population growth, either directly or indirectly. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

b. **Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?**

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is an existing public park that does not contain any housing units. Since no existing housing would be removed, there would be no need for the construction of replacement housing elsewhere. Therefore, no project impact would result.

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

c. Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The PEIR determined potential future structural BMPs are not anticipated to result in displacement of existing housing. The project site is an existing public park that contains no housing units. No people would be displaced as a result of the proposed project since no housing units are located onsite. Therefore, no project impact would result. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

d. Affect the health or environment of minority or low income populations disproportionately?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The PEIR determined that Structural BMPs would not disproportionately affect the health or environment of minority or low-income populations. As indicated in the PEIR, structural BMPs are not expected to be concentrated in any one area or city in particular within the EWMP areas. The proposed project would be located on public land and would treat surface water runoff in a manner that would not result in human contact with surface flows that are potentially harmful to health. Therefore, project impact would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measures:

No mitigation measures are required.

3.1.13 PUBLIC SERVICES AND RECREATION

	Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:		
a.	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental 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:	X
	i.) Fire protection?	X
	ii.) Police protection?	X
	iii.) Schools?	X
	iv.) Parks?	X
b.	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?	X
c.	Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	X

Existing Conditions:

Fire Protection Services

The Los Angeles County Fire Department provides fire protection services to the project site, and currently has ten stations located within three miles of the project site. The nearest fire station is Station 96, approximately 0.5-mile southwest of the project site.

Police Protection Services

The project site is in unincorporated Los Angeles County, and is therefore served by Los Angeles County Sheriff's Department for police protection services. The nearest sheriff's station is located approximately 0.5-mile southwest of the project site.

Public Education

The project site falls within the boundary of the South Whittier School District for elementary and middle school public education; the South Whittier School District is currently comprised of six elementary schools, and two middle schools (South Whittier School District 2018). High school education is served by the Whittier Union High School District, which consists of five comprehensive high schools, one continuation school, one alternative studies program, and one adult school (Whittier Union High School District 2018). Both Howard J. McKibben Elementary School and Faith Lutheran School (private school) are approximately 0.3-mile from the project site.

Recreation/Parks

The Los Angeles DPR provides residents and visitors of Los Angeles County with quality recreational opportunities that promote a healthy lifestyle and strengthen the community through diverse physical, educational and cultural programming. The Los Angeles DPR also enhances the community environment by acquiring, developing and maintaining 182 County parks including 4 gardens, the largest municipal golf course system with 20 courses at 18 locations, trails and open space areas and more (DPR 2018).

Discussion:

a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental 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:

I. Fire Protection

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The stormwater infrastructure improvements would be installed underground except for the small aboveground utility structure. Project operational impact on fire protection services would be similar to existing conditions since these infrastructure improvements would primarily be underground and the proposed project would not result in an increase use of park facilities. The project site is located within Adventure Park and construction activities could temporarily disrupt the provision of fire services. Implementation of PEIR Mitigation Measure PS-1 to provide construction noticing would reduce project impact to less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

II. Police Protection

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project is located within the existing Adventure Park and includes the construction and operation of stormwater BMPs. Except for the small aboveground utility structure, the stormwater infrastructure improvements would be installed underground. Since these infrastructure improvements would primarily be underground, and the proposed project would not result in an increase use of park facilities or induce population growth into the area through the generation of a substantial number of new jobs, project impact on police protection services would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

III. Schools

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Demand for educational services is typically linked to an increase in population growth in the area through the development of new housing units or the generation of new jobs. The proposed project includes water quality improvement facilities that would not increase housing or induce population growth through the generation of a substantial number of new jobs that could in turn increase the need for schools. Therefore, project impact is less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

IV. Parks

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Demand for park and recreational services are typically linked to an increase in population growth in the area through the development of new housing units or the generation of new jobs. The water quality improvement facilities do not increase housing stock and do not result in the movement or relocation of people. Therefore, project long-term operational impact is less than significant.

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

During construction, some park users may elect to use other parks during the approximately 22-month construction period. During project construction, park facilities to the west of the Sorensen Drain would remain open and available for park users. Park land to the east of Sorensen Drain within the project site would be secured with construction fencing and would be closed to the public. The northeast parking lot would also be used as a temporary construction staging area and with additional construction access provided from Light Street. Since park facilities would resume after construction and construction activities would be short term and temporary, project impact from construction activities would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

V. Other Public Facilities

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project includes water quality improvement infrastructure facilities that would not increase housing or induce population growth through the generation of substantial number of new jobs that could in turn increase the need for new public facilities. Therefore, project impact is less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

b. 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?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR.

During project construction, park facilities to the west of the Sorensen Drain would remain open and available for park users. Park land to the east of Sorensen Drain within the project site would be secured with construction fencing and would be closed to the public. The northeast parking lot would also be used as a temporary construction staging area and with additional construction access provided from Light Street. Temporary limits on access to parks and recreational resources may create increased demand on other parks and recreational resources within the EWMP area. Since park facilities would resume after construction and construction activities would be short term and temporary, the physical deterioration of park and recreational facilities to which recreational activities were diverted would not be substantial. The structural BMPs operated as part of the proposed project would be compatible with recreational and park-set activities; therefore, no impacts would occur during operation. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

c. 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?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Demand for park and recreational services are typically linked to an increase in population growth in the area through the development of new housing units or the generation of new jobs. The water quality improvement facilities do not increase housing stock and do not result in the movement or relocation of people. Implementation of the proposed project would not increase the population and would therefore not create a need for the construction of new or expansion of existing recreational facilities.

The proposed project is located within the existing Adventure Park and would include primarily subsurface infrastructure improvements. Once installation is complete, fill would be placed back on top of the unit up to the existing park grade and the area would be landscaped or ballfields reinstalled with approval from DPR. The complete park land area would resume operation after construction is complete. The proposed project would be located on existing recreational facilities and would be compatible with recreational uses during operation. Therefore, the proposed project would not impact parkland in such a way that would require its expansion or creation of new parkland. Impacts would be less than significant. Therefore, project impact is less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measures:

The following mitigation measures from the EWMP PEIR (2015) shall be implemented:

PS-1: The Permittee implementing the EWMP project shall provide reasonable advance notification to service providers such as fire, police, and emergency medical services as well as to local businesses, homeowners, and other residents adjacent to and within areas potentially affected by the proposed EWMP project about the nature, extent, and duration of construction activities. Interim updates should be provided to inform them of the status of the construction activities.

3.1.14 TRANSPORTATION/TRAFFIC

	Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:		
a.	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	X
b.	Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	X
c.	Result in a change in air traffic patterns including either an increase in traffic levels or a change in location that results in substantial safety risks?	X
d.	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	X
e.	Result in inadequate emergency access?	X
f.	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	X

Existing Conditions:

Metro is the responsible congestion management agency for Los Angeles County and is responsible for implementing the congestion management program (CMP). The CMP was created to link local land use decision with their impacts on regional transportation, and air quality; and to develop a partnership among transportation decision makers on devising appropriate transportation solutions that include all modes of travel (Metro 2010).

Since certification of the EWMP PEIR, CEQA was revised in accordance with the passing of Senate Bill (SB) 743, and delay based metrics, including levels of service, are no longer required. Instead, CEQA now requires that

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

vehicle miles traveled (VMT) be the primary metric for evaluating transportation impacts. Los Angeles County Public Works prepared the Transportation Impact Analysis Guidelines (LACPW 2020), which provides guidance and steps to screen projects and the process to prepare a transportation impact analysis if needed.

Discussion:

a. Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would add water quality infrastructure improvements at Adventure Park that would be located primarily subsurface except for a small aboveground utility structure to house electrical equipment. The project site is currently used for recreational activities and would continue to do so with implementation of the proposed project. No changes to the existing street system are proposed as part of the project. After project construction is complete, trips generated by the long-term operation of the proposed project would be from inspections and maintenance activities that are not expected to occur on a daily basis. As such, traffic conditions with the proposed project are anticipated to be similar to existing conditions. The proposed project would not generate a net increase of 110 or more daily vehicle trips and a transportation impact analysis is not required. Therefore, the proposed project would not result in the generation of a substantial number of new vehicle trips as part of long-term operations that could result in conflicts with plans or policies related to the performance of the circulation system. Impacts would be less than significant.

Project construction trips would be short term and temporary. While it is expected that the majority of construction activities for the project would be confined on-site, short-term construction activities may temporarily affect access on streets during certain periods of the day. Temporary lane closures may be required for limited duration to install diversion and connecting pipelines. Minor traffic control may be necessary during such activities and PEIR Mitigation Measure TRAF-1 would require a traffic control plan. After project construction is complete, trips generated by the long-term operation of the proposed project are not expected to occur on a daily basis and are considered nominal. Impacts would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

b. Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would add water quality infrastructure improvements at Adventure Park that would be located primarily subsurface except for a small aboveground utility structure. As identified in the EWMP PEIR, the project site is located in the County of Los Angeles, which has established vehicle miles traveled (VMT) standards and a congestion management program that are intended to monitor and address long-term transportation impacts resulting from future development, but do not apply to temporary impacts associated with construction projects. Since certification of the EWMP PEIR, CEQA was revised and delay based metrics, including levels of service, are no longer required. Instead, CEQA now requires that VMT be the primary metric for evaluating transportation impacts. As of July 2020, County of Los Angeles has updated the approach to traffic analyses and CEQA documentation to require assessment of VMT and for development projects, to determine if the project is in conflict or will be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)(1). The County's new transportation impact analysis guidelines (LACPW 2020) provides guidance regarding screening and impact criteria to understand if the project is consistent with the above CEQA Guidelines. The screening criteria provided by the County's transportation impact analysis guidelines finds that if the project does not generate a net increase of 110 or more

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

daily vehicle trips, a transportation impact analysis is not required and the impact is less than significant. The project site is currently used for recreational activities and would continue to do so with implementation of the proposed project. No changes to the existing street system are proposed as part of the project. Construction will be temporary and after project construction is complete, trips generated for operation of the proposed project would be from inspections and maintenance activities that are not expected to occur on a daily basis. As such, traffic conditions with the proposed project are anticipated to be similar to existing conditions, and the proposed project would not generate a net increase of 110 or more daily vehicle trips. Therefore, the proposed project would not result in the generation of a substantial number of new vehicle trips as part of long-term operations that could conflict with the CMP and this finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

c. Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is not located within 2 miles of a public airport or public use airport. Construction and operation of water quality infrastructure improvements on the project site would not affect air traffic levels or change the location of the flight paths at an airport. Therefore, no project impact would result. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

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

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would add water quality infrastructure improvements at Adventure Park that would be located primarily subsurface except for a small aboveground utility structure. The small aboveground utility structure will be located within the park facility and will not increase traffic hazards. The project site is currently used for recreational activities and would continue to do so with implementation of the proposed project. No changes to the existing street system are proposed as part of the project. Therefore, no project impact would result from a design feature or incompatible use impacting traffic. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

e. Would the project result in inadequate emergency access?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is currently used for recreational activities and the proposed project would add water quality improvement infrastructure within the park. With the exception of the small aboveground utility structure, all the stormwater infrastructure improvements would be installed underground. No changes to the existing roadway network are proposed as part of the project. Therefore, the proposed project would not result in inadequate emergency access during long-term project operations.

Construction trucks generated by the proposed project would interact with other vehicles on project area roadways, including emergency vehicles, but would not alter the physical configuration of the existing roadway network serving the area. As such, while individual emergency vehicles could be slowed if traveling behind a slow-moving truck, per vehicle code requirements, vehicles must yield to emergency vehicles using a siren and red lights. Lane closures would be subject to County Department of Traffic requiring coordination with emergency providers. This potential impact is considered less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

f. Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would be located primarily subsurface, except for a small aboveground utility structure and that would not result in permanent changes to the street system that could affect alternative transportation routes, such as bike lanes or bike paths. Therefore, no project impacts would result. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measure:

The following mitigation measures from the EWMP PEIR (2015) shall be implemented:

TRAF-1: For projects that may affect traffic, implementing agencies shall require that contractors prepare a construction traffic control plan. Elements of the plan should include, but not necessarily limited to, the following:

- Develop circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible.
- To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours.
- Install traffic control devices as specified in Caltrans' Manual of Traffic Controls for Construction and Maintenance Work Zones where needed to maintain safe driving conditions. Use flaggers and/or signage to safely direct traffic through construction work zones.
- Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, hospitals, and schools. Provide advance notification to the facility owner or operator of the timing, location, and duration of construction activities.

3.1.15 UTILITIES, SERVICE SYSTEMS, AND ENERGY

		Subsequent/Supplemental EIR: New Significant Impacts Not Identified in the previous PEIR Or Substantially More Severe Effects	Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR
Would the project:			
a.	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?		X
b.	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?		X
c.	Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?		X
d.	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?		X
e.	Result in a determination by the wastewater treatment provider that 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?		X
f.	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?		X
g.	Comply with federal, state, and local statutes and regulations related to solid waste?		X
h.	Cause a substantial increase in overall or per capita energy consumption or cause wasteful or unnecessary consumption of energy?		X
i.	Require construction of new sources of energy supplies or additional energy infrastructure capacity, the construction of which could cause significant environmental effects?		X
j.	Conflict with applicable energy efficiency policies or standards?		X

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

Existing Conditions:

The proposed project site is within south Whittier, an unincorporated community of Los Angeles County, and receives water supply from Orchard Dale Water District. Water supply within the district is sourced from four production wells and imported water from the Metropolitan Water District State Water Project (SWP) and Colorado River (ODWD 2018).

The EWMP areas are served by various landfills and recycling centers operated by cities, the County, and private facility operators. Sanitation Districts of Los Angeles County (LACSD) serves the solid waste management needs of a large portion of Los Angeles County with several landfills, recycle centers, materials recovery/transfer facilities, and energy recovery facilities (EWMP EIR 2015)

Discussion:

a. Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project could potentially result in water quality impacts during the short-term construction process but impacts would be less than significant. The grading and excavation required for project implementation would result in exposed soils that may be subject to wind and water erosion. Construction activities requiring ground disturbance could encounter buried utilities and PEIR Mitigation Measure UTIL-1 would be required. Since the project impact area would be greater than one acre, the proposed project would be subject to the requirement of the Construction General Permit under the NPDES program administered by the State Water Resources Control Board. The Construction General Permit requires developing a Storm Water Pollution Prevention Plan (SWPPP) and the SWPPP must contain BMPs for erosion and sediment control and spill prevention and control. These requirements would be equal to or more stringent than the Los Angeles County Flood Control District's MS4 (NPDES) Permit. Construction BMPs will be installed during construction to prevent debris and pollutants from entering the storm drains and the channel. Upon adherence to these existing requirements, short term impacts to water quality standards and waste discharge requirements would be less than significant.

Due to the location of the project site, operation of the project has the potential to provide significant water quality benefits for multiple jurisdictions due to the large drainage area, location of the adjacent storm drains, and available development space for large stormwater capture facilities within the park. The proposed project would capture and treat approximately 21 AF of urban runoff and stormwater per rain event from an approximately 7,000-acre drainage area; resulting in improvement to downstream water quality. Therefore, project operation would have no adverse impacts to water quality.

Alternative BMP Discharge options for the proposed project could occur via 1) the sanitary sewer or 2) filtration and discharge back to Sorensen Drain. Investigation of nearby sanitary sewer assets using Los Angeles County geospatial data as well as systems maps from LACPW indicate that there is a potential for this type of discharge. There are larger sanitary sewer lines maintained by the LACSD that could accept stormwater discharge given sufficient capacity. Analysis of sewer capacity was obtained from the LACSD and it was determined that the South Whittier Outfall Trunk was not available for discharge but the North Plant Outfall Relief Trunk could potentially receive stormwater discharges (Tetra Tech 2019). According to email correspondence with LACSD, there is capacity for the Adventure Park Project for dry-weather flow diversion in the North Plant Outfall Relief Sewer. The North Plant Outfall Relief Sewer has capacity for 4.98 cfs during dry peak periods (5 pm to 11 pm daily). The full requested 5.76 cfs can be accommodated between 11 pm and 5 am daily. The South Whittier Outfall Trunk Sewer cannot accommodate the proposed project and no flows can be accepted in either sewer until 24 hours after cessation of rainfall (Ruffell 2018).

This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

b. Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would not require the construction of new water services or wastewater treatment facilities as part of operations. Alternative BMP Discharge options for the proposed project could occur via 1) the sanitary sewer or 2) filtration and discharge back to Sorensen Drain. Investigation of nearby sanitary sewer assets using Los Angeles County geospatial data as well as systems maps from LACPW indicate that there is a potential for this type of discharge. There are larger sanitary sewer lines maintained by the LACSD that could accept stormwater discharge given sufficient capacity. Analysis of sewer capacity was obtained from the LACSD and it was determined that the South Whittier Outfall Trunk was not available for discharge, but the North Plant Outfall Relief Trunk could potentially receive stormwater discharges (Tetra Tech 2019). According to email correspondence with LACSD, there is capacity for the Adventure Park Project for dry-weather flow diversion in the North Plant Outfall Relief Sewer. The North Plant Outfall Relief Sewer has capacity for 4.98 cfs during dry peak periods (5 pm to 11 pm daily). The full requested 5.76 cfs can be accommodated between 11 pm and 5 am daily. The South Whittier Outfall Trunk Sewer cannot accommodate the proposed project and no flows can be accepted in either sewer until 24 hours after cessation of rainfall (Ruffell 2018).

According to the PEIR, the wastewater treatment provider would be a lead agency in evaluating impacts to their facility. If additional capacity is required, or additional treatment processes are required to meet discharge limitations, the implementing agency (County) would evaluate these elements as part of the proposed low-flow diversion project. Implementation of these low-flow diversion projects would require the cooperation and approval of the wastewater treatment provider under the discharge permit limitations (EWMP EIR 2015). The proposed project is designed to meet the wastewater treatment requirements of the RWQCB and does not require new or expansion of existing facilities. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

c. Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Potential environmental impacts associated with the proposed project which is the construction and operation of the proposed new stormwater drainage facility at Adventure Park are discussed by environmental resource topics throughout this document and no additional analysis is required under this impact discussion. As indicated in the EWMP PEIR, storm drainage capacity would be verified during design as applicable, and temporary retention facilities may be used until such time as adequate downstream storm drainage facilities are constructed and operational. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

d. Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is currently used as a public park and would continue to do so with implementation of the proposed project. No new or expanded water service is needed. The proposed project would result in primarily subsurface improvements to the stormwater system. BMP Discharge options for the proposed project could occur via 1) the sanitary sewer or 2) filtration and discharge back to Sorensen Drain. If the sanitary sewer option is selected, then implementation of PEIR Mitigation Measure UTIL-2 would ensure that downstream water rights would not be affected by upstream diversions. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

e. **Has the wastewater treatment provider that serves or may serve the project determined that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The project site is currently used as a public park and would continue to do so with implementation of the proposed project. Alternative BMP Discharge options for the proposed project could occur via 1) the sanitary sewer or 2) filtration and discharge back to Sorensen Drain. Investigation of nearby sanitary sewer assets using Los Angeles County geospatial data as well as systems maps from LACPW indicate that there is a potential for this type of discharge. There are larger sanitary sewer lines maintained by the LACSD that could accept stormwater discharge given sufficient capacity. Analysis of sewer capacity was obtained from the LACSD and it was determined that the South Whittier Outfall Trunk was not available for discharge but the North Plant Outfall Relief Trunk could potentially receive stormwater discharges (Tetra Tech 2019). According to email correspondence with LACSD, there is capacity for the Adventure Park Project for dry-weather flow diversion in the North Plant Outfall Relief Sewer. The North Plant Outfall Relief Sewer has capacity for 4.98 cfs during dry peak periods (5 pm-11 pm daily). The full requested 5.76 cfs can be accommodated between 11 pm and 5 am daily. The South Whittier Outfall Trunk Sewer cannot accommodate the proposed project and no flows can be accepted in either sewer until 24 hours after cessation of rainfall (Ruffell 2018).

According to the PEIR, the wastewater treatment provider would be a lead agency in evaluating impacts to their facility. If additional capacity is required, or additional treatment processes are required to meet discharge limitations, the implementing agency (County) would evaluate these elements as part of the proposed low-flow diversion project. Implementation of these low-flow diversion projects would require the cooperation and approval of the wastewater treatment provider under the discharge permit limitations (EWMP EIR 2015). The proposed project is designed to meet the wastewater treatment requirements of the RWQCB. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

f. **Is the project served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?**

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project is a water quality infrastructure project with associated landscape improvements that would not generate substantial amounts of solid waste. Project construction waste would be recycled to the extent feasible. Excess excavated soil would be removed off-site to the Savage Canyon Landfill located approximately four miles from the proposed project site. Savage Canyon Landfill has a remaining capacity of 9,510,833 cubic yards with a ceased operation date of December 31, 2055 (CalRecycle 2019). Implementation of PEIR Mitigation Measure UTIL-3 would reduce this impact. Once operational, waste generation from the proposed project would primarily be from routine maintenance activities that would not be a significant source of new waste. The PEIR determined, construction and operation of the structural BMPs would generate solid waste; however, landfills serving the program area are expected to have sufficient capacity to accommodate the amount of waste generated. Development of a waste management or recycling plan (Mitigation Measure UTIL-3) would reduce this impact (EWMP EIR 2015). This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

g. **Would the project comply with federal, state, and local statutes and regulations related to solid waste?**

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed project would result in primarily subsurface improvements to the stormwater system and would comply with applicable federal, state, and local statutes and regulations related to solid waste. Project construction waste would be recycled to the extent feasible and no substantial amounts of solid waste are anticipated to be generated during

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

operation. Implementation of PEIR Mitigation Measure UTIL-3 would reduce this impact to less than significant. Once operational, waste generation from the proposed project would primarily be from routine maintenance activities that would not be a significant source of new waste. Therefore, project impact would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

h. Cause a substantial increase in overall or per capita energy consumption or cause wasteful or unnecessary consumption of energy?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Construction of the proposed project would require use of non-renewable energy in the form of gasoline and diesel to power construction equipment. However, use of this fuel for construction would not be at such a large scale that it could be seen as wasteful or as affecting local or regional energy supplies. Impacts to energy supplies for construction would be less than significant.

The proposed project would require energy for the pump station and security lighting as part of long-term operations. Electricity is generated and made available to Southern California from generating facilities and transmission lines located throughout the western United States. The use of energy anticipated for the proposed project is minor when compared to the County-wide use of electricity. Therefore, the proposed project would not result in a substantial increase in overall or per capita energy consumption or cause wasteful or unnecessary energy consumption and project impacts would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

i. Require construction of new sources of energy supplies or additional energy infrastructure capacity, the construction of which could cause significant environmental effects?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. Construction requiring ground disturbance could encounter buried or overhead utilities including electric or gas conveyance infrastructure. As standard construction practices require, LACPW would conduct an underground utility search prior to excavation and would coordinate with utility providers in advance to ensure no disruption in services to the utility customers. Impacts to electric or gas infrastructure would be less than significant. As discussed in the response to 3.1.15 (h) above, the proposed project would not require or use a substantial amount of energy during construction or as part of long-term project operations. The use of energy anticipated for the proposed project is minor when compared to the County-wide use of electricity. Therefore, project impacts would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

j. Conflict with applicable energy efficiency policies or standards?

Addendum: No Changes or New Information Requiring Preparation of a Subsequent EIR. The proposed use of energy anticipated for the proposed project is minor when compared to the County-wide use of electricity. The aboveground utility structure may include some low intensity security lighting that would include energy efficiency lighting to the extent feasible. As discussed in the response to 3.1.15 (h) above, the proposed project would not require or use a substantial amount of energy during construction or as part of long-term project operations. In addition, the proposed project is part of the program supporting water conservation efforts and water quality requirements of the MS4 Permit, which would not result in wasteful consumption, affect local and regional energy supplies, conflict with applicable energy efficiency policies or standards, or conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Therefore, project impacts would be less than significant. This finding is consistent with the issues and impacts accounted for in the EWMP PEIR and therefore, the proposed project is in conformance with the PEIR.

Mitigation Measures:

The following mitigation measures from the EWMP PEIR (2015) shall be implemented:

UTIL-1: Prior to implementation of BMPs, the implementing agency shall conduct a search for local utilities above and below ground that could be affected by the project. The implementing agencies shall contact each utility potentially affected to address relocation of the utility if necessary to ensure access and services are maintained.

UTIL-2: Prior to approval of BMPs, implementing agencies shall evaluate the potential for impacts to downstream beneficial uses including surface water rights. Implementing agencies shall not approve BMPs that result in preventing access to previously appropriated surface water downstream.

UTIL3: Implementing agencies shall encourage construction contractors to recycle construction materials and divert inert solids (asphalt, brick, concrete, dirt, fines, rock, sand, soil, and stone) from disposal in a landfill where feasible. Implementing agencies shall incentivize construction contractors with waste minimization goals in bid specifications where feasible.

4.0 LIST OF PREPARERS

LEAD AGENCY

Los Angeles County Public Works

900 South Fremont Avenue
Alhambra, CA 91803

Contact: Grace Komjakraphan, Supervising Environmental Engineering Specialist

ENVIRONMENTAL CONSULTANT

Tetra Tech
5383 Hollister Avenue, Suite 130
Santa Barbara, CA 93111

Merrill Taylor, P.E.

Randy Westhaus, P.E.

Renee Longman, AICP, LEED_AP

Jim Steele, PG, CEG, CHG

Victor Velazquez

Kevin Fowler, INCE

Jenna Farrell

Amy Noddings

Paula Fell

Daniel Berg

THIS PAGE INTENTIONALLY LEFT BLANK

5.0 REFERENCES

California Air Resources Board

2017 Area Designation Maps/State and National Website. <https://www.arb.ca.gov/desig/adm/adm.htm>. Accessed September 2018.

2018 Greenhouse Gases. <http://www.arb.ca.gov/cc/inventory/background/ghg.htm>. Accessed September 2018.

California Department of Conservation (CDC)

2018 Earthquake Zones of Required Investigation. <https://maps.conservation.ca.gov/cgs/EQZApp/app/>. Accessed November 6, 2018.

California Department of Forestry and Fire Protection

2021 Fire Resource and Assessment Program (FRAP)'s "FHSZ" mapping tool. <https://egis.fire.ca.gov/FHSZ/> Accessed July 2021.

California Department of Toxic Substances Control (DTSC)

2018 "EnviroStor" mapping tool, database of hazardous substance release sites, Government Code Section 65962.5. <http://www.envirostor.dtsc.ca.gov/public/> Accessed November 8, 2018.

California Water Resources Control Board (Water Board)

2018 "GeoTracker" Water Boards' data management system. <http://geotracker.waterboards.ca.gov/>. Accessed November 8, 2018.

California Department of Conservation (DOC)

2018. California Important Farmland Finder. Accessed November 2018. <https://maps.conservation.ca.gov/DLRP/CIFF/>

California Department of Resources Recycling and Recovery (CalRecycle)

2019. SWIS Facility Detail. Savage Canyon Landfill (19-AH-0001). <https://www2.calrecycle.ca.gov/swfacilities/Directory/19-AH-> . Accessed September 2019.

California Department of Transportation (Caltrans)

2018. California Scenic Highway Mapping System, Los Angeles County. http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/. Accessed November 2018.

CDFW CNDDDB.

2018. Biogeographic Information and Observation System (BIOS). <https://www.wildlife.ca.gov/data/cnddb/maps-and-data>. Accessed February 1, 2018.

CNDDDB. 2020. Biogeographic Information and Observation System (BIOS). <https://www.wildlife.ca.gov/data/cnddb/maps-and-data>. Accessed October 13, 2020.

ESA

2015 *Los Angeles County Flood Control District Enhanced Watershed Management Programs Draft Program Environmental Impact Report*. January 2015.

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

Federal Emergency Management Agency (FEMA)

2008 Flood Insurance Rate Map, Los Angeles County, California, Map Number 06037C1835F, Effective Date September 26, 2008.

Governor's Office of Planning and Research

2008 Technical Advisory. *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review*.

Los Angeles Almanac

2018 *South Whittier*. Accessed November 12, 2018. <http://www.laalmanac.com/cities/ci95u28.php>.

Los Angeles County

County of Los Angeles Code of Ordinances, Chapter 22.20.440. https://library.municode.com/ca/los_angeles_county/codes/code_of_ordinances?nodeId=TIT22PLZO_DIV1PLZO_CH22.20REZO_PT6REAGZO_22.20.440USSUPE. Accessed November 2018.

County of Los Angeles Code of Ordinances, Chapter 2.26.090. Accessed April 2019, URL: http://lacounty-ca.elaws.us/code/coor_title2_div2_ch2.26_sec2.26.090

2015 Los Angeles County General Plan Adopted October 6, 2015.

Los Angeles County Department of Parks and Recreation (DPR)

2018. County website, About the Los Angeles County Department of Parks and Recreation. Accessed November 2018, <http://parks.lacounty.gov/media-information/>.

2020. *Adventure Park Trees Assessment*. Prepared by Kevin Kane, ISA Certified Arborist # WE-6397A.

Los Angeles County Public Works

2018 *Geotechnical and Infiltration Feasibility Investigation Adventure Park Multi-Benefit Project Regional Project Sites in Upper San Gabriel River Watershed*. Prepared for County of Los Angeles Public Works Stormwater Quality Division. Prepared by the County of Los Angeles Public Works Geotechnical and Materials Engineering Division Soils Investigations Unit. June 21, 2018

2020 *Transportation Impact Analysis Guidelines*. <https://dpw.lacounty.gov/traffic/docs/Transportation-Impact-Analysis-Guidelines-July-2020-v1.1.pdf>. Accessed July 2021.

Los Angeles County Department of Regional Planning

2018 Los Angeles County General Plan 2035. Updated/Adopted General Plan for Unincorporated LA County. http://rpgis.isd.lacounty.gov/Html5Viewer/index.html?configBase=http://rpgis.isd.lacounty.gov/Geocortex/Essentials/REST/sites/GPNET/viewers/GP-NET_HTML5/virtualdirectory/Resources/Config/Default. Accessed November 2018.

2018 Los Angeles County GIS Data Viewer. <http://egisgxc.isd.lacounty.gov/slv/?Viewer=GISViewer>. Accessed November 8, 2018.

Los Angeles County Fire Department

2018 <https://locator.lacounty.gov/fire>. Accessed November 12, 2018.

Los Angeles County Flood Control District

2015 Enhanced Watershed Management Programs Draft Program Environmental Impact Report.

**Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project**

Los Angeles County Metropolitan Transportation Authority (Metro)

2010 2010 Congestion Management Program. http://media.metro.net/docs/cmp_final_2010.pdf. Accessed November 2018.

Ninyo & Moore

2015 *Geotechnical Services Adventure Park Upper Gabriel River EWMP, Los Angeles County, California*. Task Order No. T10503269-102669-OM. Project No. 107900001. Prepared for MWH Americas. June 3, 2015.

Office of Environmental Health Hazard Assessment

2015 Air Toxics Hot Spot Program Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments.

OPR (Governor's Office of Planning and Research)

2008 Technical Advisory. *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review*.

Orchard Dale Water District (ODWD). 2018. Accessed November 12, 2018. <https://www.odwd.com/#Home>.

Ruffell, Kristen.

2018. Email communication from Kristen Ruffell to Merrill Taylor, Genevieve Osmena, Cristian Duran, Iwen Tseng, Oliver Galang, Thom Epps, and Mark Lombos Regarding Adventure Park Capacity Analysis. Dated December 28, 2018.

Sanitation Districts of Los Angeles County

2018 *Solid Waste Facilities*. <https://www.lacsd.org/solidwaste/swfacilities/default.asp>. Accessed November 12, 2018.

South Coast Air Quality Management District

1993 CEQA Air Quality Handbook.

2008 Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans.

2013 Final –Localized Significance Thresholds Methodology. Revised July 2008.

2018 SCAQMD Website. <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds>. Accessed March 2018.

South Whittier School District

2018 <https://www.swhittier.k12.ca.us/>. Accessed November 12, 2018.

Tetra Tech

2019. Adventure park Stormwater and Urban Runoff Capture Project. Preliminary Concept Design Report-Adventure Park, January 29, 2019.

United States Environmental Protection Agency

2018 Nonattainment Areas for Criteria Pollutants (Green Book) Website. <https://www.epa.gov/green-book>. Accessed September 2018.

Addendum to LACFCD EWMP Final PEIR
Adventure Park Multi-Benefit Stormwater Capture Project

USFWS NWI

2018 Wetlands Mapper. <https://www.fws.gov/wetlands/data/mapper.html>. Accessed February 1, 2018.

Whittier Union High School District

2018 <https://www.wuhsd.org/>. Accessed November 12, 2018.

THIS PAGE INTENTIONALLY LEFT BLANK

Adventure Park - South Coast AQMD Air District, Summer

Adventure Park
South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	3.52	Acre	3.52	153,331.20	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	9			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Schedule per planning process

Off-road Equipment -

Off-road Equipment - Equipment provided by civil engineer

Off-road Equipment - Equipment provided by civil engineer

Off-road Equipment - Equipment provided by engineering

Off-road Equipment - Equipment provided by civil engineer

Off-road Equipment - Equipment provided by civil engineer

Trips and VMT - Values provided by civil engineer

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	18.00	2.00
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	8.00	115.00
tblConstructionPhase	NumDays	18.00	200.00
tblConstructionPhase	NumDays	5.00	30.00
tblConstructionPhase	PhaseEndDate	3/4/2022	1/3/2022
tblConstructionPhase	PhaseEndDate	1/13/2022	1/3/2022
tblConstructionPhase	PhaseEndDate	2/25/2021	8/30/2021
tblConstructionPhase	PhaseEndDate	2/8/2022	10/10/2022
tblConstructionPhase	PhaseEndDate	2/15/2021	3/22/2021
tblConstructionPhase	PhaseStartDate	2/9/2022	12/31/2021
tblConstructionPhase	PhaseStartDate	2/26/2021	8/31/2021
tblConstructionPhase	PhaseStartDate	2/16/2021	3/23/2021
tblConstructionPhase	PhaseStartDate	1/14/2022	1/4/2022
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	MaterialExported	0.00	39,600.00
tblGrading	MaterialExported	0.00	2,843.00
tblOffRoadEquipment	HorsePower	80.00	89.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.20
tblOffRoadEquipment	LoadFactor	0.46	0.46
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws

tblOffRoadEquipment	OffRoadEquipmentType			Excavators
tblOffRoadEquipment	OffRoadEquipmentType			Cranes
tblOffRoadEquipment	OffRoadEquipmentType			Rollers
tblOffRoadEquipment	OffRoadEquipmentType			Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType			Excavators
tblOffRoadEquipment	OffRoadEquipmentType			Rollers
tblOffRoadEquipment	OffRoadEquipmentType			Welders
tblOffRoadEquipment	OffRoadEquipmentType			Sweepers/Scrubbers
tblOffRoadEquipment	OffRoadEquipmentType			Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType			Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType			Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		4.00	1.00
tblOffRoadEquipment	UsageHours		6.00	8.00
tblOffRoadEquipment	UsageHours		7.00	8.00
tblOffRoadEquipment	UsageHours		8.00	0.00
tblOffRoadEquipment	UsageHours		8.00	0.00
tblOffRoadEquipment	UsageHours		8.00	0.00
tblOffRoadEquipment	UsageHours		6.00	0.00
tblOffRoadEquipment	UsageHours		6.00	8.00
tblOffRoadEquipment	UsageHours		7.00	8.00
tblTripsAndVMT	HaulingTripLength		20.00	8.00
tblTripsAndVMT	HaulingTripLength		20.00	8.00
tblTripsAndVMT	HaulingTripNumber		4,950.00	0.00
tblTripsAndVMT	VendorTripLength		6.90	8.00
tblTripsAndVMT	VendorTripLength		6.90	8.00
tblTripsAndVMT	VendorTripLength		6.90	8.00

tblTripsAndVMT	VendorTripLength	6.90	8.00
tblTripsAndVMT	VendorTripLength	6.90	8.00
tblTripsAndVMT	VendorTripNumber	0.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	75.00
tblTripsAndVMT	VendorTripNumber	25.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	26.00
tblTripsAndVMT	WorkerTripNumber	20.00	14.00
tblTripsAndVMT	WorkerTripNumber	64.00	22.00
tblTripsAndVMT	WorkerTripNumber	13.00	1.00
tblTripsAndVMT	WorkerTripNumber	20.00	16.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	2.9149	32.8889	21.2975	0.0567	6.8106	1.2338	8.0444	3.5217	1.1357	4.6574	0.0000	5,711.1656	5,711.1656	1.1912	0.0000	5,740.9454
2022	2.6713	21.4281	20.8997	0.0479	0.5537	0.8627	1.4165	0.1536	0.8194	0.9730	0.0000	4,661.1564	4,661.1564	0.8558	0.0000	4,682.5503
Maximum	2.9149	32.8889	21.2975	0.0567	6.8106	1.2338	8.0444	3.5217	1.1357	4.6574	0.0000	5,711.1656	5,711.1656	1.1912	0.0000	5,740.9454

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					

2021	1.4091	24.0901	23.8718	0.0567	3.4568	1.0225	4.2530	1.6957	1.0220	2.4910	0.0000	5,711.1656	5,711.1656	1.1912	0.0000	5,740.9454
2022	1.3957	21.5285	23.5848	0.0479	0.5537	1.0213	1.5750	0.1536	1.0208	1.1744	0.0000	4,661.1564	4,661.1564	0.8558	0.0000	4,682.5503
Maximum	1.4091	24.0901	23.8718	0.0567	3.4568	1.0225	4.2530	1.6957	1.0220	2.4910	0.0000	5,711.1656	5,711.1656	1.1912	0.0000	5,740.9454

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	49.79	16.01	-12.46	0.00	45.54	2.51	38.40	49.69	-4.48	34.90	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	12/9/2021	13/22/2021	5	30	Phase I
2	Excavation, trenching, rough grading	Grading	13/23/2021	18/30/2021	5	115	Phase II
3	Subgrade, Utility installation, building construction	Building Construction	18/31/2021	1/3/2022	5	90	Phase III
4	Architectural coating	Architectural Coating	12/31/2021	1/3/2022	5	2	Phase III
5	Backfill, fine grading, paving, landscape	Paving	1/4/2022	10/10/2022	5	200	Phase IV

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Excavators	1	8.00	158	0.38
Excavation, trenching, rough grading	Cranes	1	8.00	231	0.29
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Excavation, trenching, rough grading	Rollers	1	8.00	80	0.38
Excavation, trenching, rough grading	Excavators	2	8.00	158	0.38
Excavation, trenching, rough grading	Graders	1	0.00	187	0.41
Subgrade, Utility installation, building construction	Air Compressors	1	8.00	78	0.48

Subgrade, Utility installation, building construction	Excavators	1	8.00	158	0.38
Excavation, trenching, rough grading	Rubber Tired Dozers	1	8.00	247	0.40
Excavation, trenching, rough grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Subgrade, Utility installation, building construction	Rollers	1	8.00	89	0.20
Subgrade, Utility installation, building construction	Cranes	1	8.00	231	0.29
Subgrade, Utility installation, building construction	Welders	1	8.00	46	0.45
Subgrade, Utility installation, building construction	Forklifts	3	0.00	89	0.20
Subgrade, Utility installation, building construction	Generator Sets	1	0.00	84	0.74
Backfill, fine grading, paving, landscape	Sweepers/Scrubbers	1	8.00	64	0.46
Backfill, fine grading, paving, landscape	Off-Highway Trucks	1	2.00	402	0.38
Subgrade, Utility installation, building construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Subgrade, Utility installation, building construction	Welders	1	8.00	46	0.45
Architectural coating	Air Compressors	1	6.00	78	0.48
Backfill, fine grading, paving, landscape	Cement and Mortar Mixers	1	8.00	9	0.56
Excavation, trenching, rough grading	Off-Highway Trucks	1	2.00	402	0.38
Backfill, fine grading, paving, landscape	Pavers	1	8.00	130	0.42
Backfill, fine grading, paving, landscape	Paving Equipment	2	0.00	132	0.36
Backfill, fine grading, paving, landscape	Rollers	1	8.00	80	0.38
Subgrade, Utility installation, building construction	Off-Highway Trucks	1	2.00	402	0.38
Backfill, fine grading, paving, landscape	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	4	26.00	30.00	355.00	14.70	8.00	8.00	LD_Mix	HDT_Mix	HHDT
Excavation, trenching, rough grading	8	14.00	75.00	0.00	14.70	8.00	8.00	LD_Mix	HDT_Mix	HHDT
Subgrade, Utility installation, building construction	13	22.00	40.00	0.00	14.70	8.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural coating	1	1.00	0.00	0.00	14.70	8.00	20.00	LD_Mix	HDT_Mix	HHDT
Backfill, fine grading, paving, landscape	8	16.00	0.00	0.00	14.70	8.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1742	0.0000	6.1742	3.3271	0.0000	3.3271			0.0000			0.0000
Off-Road	1.8488	18.0692	13.2602	0.0231		0.9223	0.9223		0.8624	0.8624		2,223.6098	2,223.6098	0.5619		2,237.6572
Total	1.8488	18.0692	13.2602	0.0231	6.1742	0.9223	7.0965	3.3271	0.8624	4.1895		2,223.6098	2,223.6098	0.5619		2,237.6572

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0458	1.8705	0.3287	4.4100e-003	0.0829	3.9600e-003	0.0868	0.0227	3.7900e-003	0.0265		477.3743	477.3743	0.0388		478.3442
Vendor	0.0905	3.0323	0.7280	8.5900e-003	0.2225	6.5900e-003	0.2291	0.0640	6.3000e-003	0.0703		917.3745	917.3745	0.0527		918.6926
Worker	0.1098	0.0712	0.9795	2.8900e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		287.9249	287.9249	7.7400e-003		288.1184
Total	0.2460	4.9740	2.0362	0.0159	0.5960	0.0127	0.6087	0.1638	0.0121	0.1759		1,682.6737	1,682.6737	0.0993		1,685.1552

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Fugitive Dust					2.7784	0.0000	2.7784	1.4972	0.0000	1.4972			0.0000				0.0000
Off-Road	0.5379	11.1035	14.6689	0.0231		0.5943	0.5943		0.5943	0.5943	0.0000	2,223.6098	2,223.6098	0.5619			2,237.6572
Total	0.5379	11.1035	14.6689	0.0231	2.7784	0.5943	3.3727	1.4972	0.5943	2.0915	0.0000	2,223.6098	2,223.6098	0.5619			2,237.6572

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Hauling	0.0458	1.8705	0.3287	4.4100e-003	0.0829	3.9600e-003	0.0868	0.0227	3.7900e-003	0.0265		477.3743	477.3743	0.0388			478.3442
Vendor	0.0905	3.0323	0.7280	8.5900e-003	0.2225	6.5900e-003	0.2291	0.0640	6.3000e-003	0.0703		917.3745	917.3745	0.0527			918.6926
Worker	0.1098	0.0712	0.9795	2.8900e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		287.9249	287.9249	7.7400e-003			288.1184
Total	0.2460	4.9740	2.0362	0.0159	0.5960	0.0127	0.6087	0.1638	0.0121	0.1759		1,682.6737	1,682.6737	0.0993			1,685.1552

3.3 Excavation, trenching, rough grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Fugitive Dust					6.0979	0.0000	6.0979	3.3201	0.0000	3.3201			0.0000				0.0000

Off-Road	2.4466	25.2699	17.6105	0.0337		1.2161	1.2161		1.1188	1.1188		3,262.6928	3,262.6928	1.0552		3,289.0733
Total	2.4466	25.2699	17.6105	0.0337	6.0979	1.2161	7.3141	3.3201	1.1188	4.4390		3,262.6928	3,262.6928	1.0552		3,289.0733

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2262	7.5807	1.8200	0.0215	0.5562	0.0165	0.5727	0.1601	0.0158	0.1759		2,293.4363	2,293.4363	0.1318		2,296.7315
Worker	0.0591	0.0383	0.5274	1.5600e-003	0.1565	1.1500e-003	0.1576	0.0415	1.0600e-003	0.0426		155.0365	155.0365	4.1700e-003		155.1407
Total	0.2853	7.6190	2.3474	0.0231	0.7127	0.0176	0.7303	0.2016	0.0168	0.2184		2,448.4728	2,448.4728	0.1360		2,451.8722

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7441	0.0000	2.7441	1.4941	0.0000	1.4941			0.0000			0.0000
Off-Road	0.8266	16.4711	21.5244	0.0337		0.7786	0.7786		0.7786	0.7786	0.0000	3,262.6928	3,262.6928	1.0552		3,289.0733
Total	0.8266	16.4711	21.5244	0.0337	2.7441	0.7786	3.5226	1.4941	0.7786	2.2726	0.0000	3,262.6928	3,262.6928	1.0552		3,289.0733

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2262	7.5807	1.8200	0.0215	0.5562	0.0165	0.5727	0.1601	0.0158	0.1759		2,293.4363	2,293.4363	0.1318		2,296.7315
Worker	0.0591	0.0383	0.5274	1.5600e-003	0.1565	1.1500e-003	0.1576	0.0415	1.0600e-003	0.0426		155.0365	155.0365	4.1700e-003		155.1407
Total	0.2853	7.6190	2.3474	0.0231	0.7127	0.0176	0.7303	0.2016	0.0168	0.2184		2,448.4728	2,448.4728	0.1360		2,451.8722

3.4 Subgrade, Utility installation, building construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1770	18.2971	17.6428	0.0311		0.9159	0.9159		0.8646	0.8646		2,920.9550	2,920.9550	0.7689		2,940.1778
Total	2.1770	18.2971	17.6428	0.0311		0.9159	0.9159		0.8646	0.8646		2,920.9550	2,920.9550	0.7689		2,940.1778

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.1207	4.0430	0.9706	0.0115	0.2967	8.7800e-003	0.3054	0.0854	8.4000e-003	0.0938		1,223.1661	1,223.1661	0.0703		1,224.9235
Worker	0.0929	0.0602	0.8288	2.4500e-003	0.2459	1.8100e-003	0.2477	0.0652	1.6700e-003	0.0669		243.6287	243.6287	6.5500e-003		243.7925
Total	0.2135	4.1033	1.7994	0.0139	0.5426	0.0106	0.5532	0.1506	0.0101	0.1607		1,466.7948	1,466.7948	0.0769		1,468.7160

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8307	16.2872	20.0326	0.0311		0.9167	0.9167		0.9167	0.9167	0.0000	2,920.9550	2,920.9550	0.7689		2,940.1777
Total	0.8307	16.2872	20.0326	0.0311		0.9167	0.9167		0.9167	0.9167	0.0000	2,920.9550	2,920.9550	0.7689		2,940.1777

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1207	4.0430	0.9706	0.0115	0.2967	8.7800e-003	0.3054	0.0854	8.4000e-003	0.0938		1,223.1661	1,223.1661	0.0703		1,224.9235
Worker	0.0929	0.0602	0.8288	2.4500e-003	0.2459	1.8100e-003	0.2477	0.0652	1.6700e-003	0.0669		243.6287	243.6287	6.5500e-003		243.7925
Total	0.2135	4.1033	1.7994	0.0139	0.5426	0.0106	0.5532	0.1506	0.0101	0.1607		1,466.7948	1,466.7948	0.0769		1,468.7160

3.4 Subgrade, Utility installation, building construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9611	16.1353	17.3663	0.0311		0.7715	0.7715		0.7288	0.7288		2,921.6726	2,921.6726	0.7634		2,940.7585
Total	1.9611	16.1353	17.3663	0.0311		0.7715	0.7715		0.7288	0.7288		2,921.6726	2,921.6726	0.7634		2,940.7585

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1133	3.8274	0.9186	0.0114	0.2967	7.6200e-003	0.3043	0.0854	7.2800e-003	0.0927		1,212.4593	1,212.4593	0.0678		1,214.1544
Worker	0.0871	0.0544	0.7664	2.3600e-003	0.2459	1.7600e-003	0.2477	0.0652	1.6200e-003	0.0668		234.8993	234.8993	5.9200e-003		235.0473
Total	0.2004	3.8818	1.6850	0.0137	0.5426	9.3800e-003	0.5519	0.1506	8.9000e-003	0.1595		1,447.3585	1,447.3585	0.0737		1,449.2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8307	16.2872	20.0326	0.0311		0.9167	0.9167		0.9167	0.9167	0.0000	2,921.6726	2,921.6726	0.7634		2,940.7585

Total	0.8307	16.2872	20.0326	0.0311		0.9167	0.9167		0.9167	0.9167	0.0000	2,921.6726	2,921.6726	0.7634		2,940.7585
-------	--------	---------	---------	--------	--	--------	--------	--	--------	--------	--------	------------	------------	--------	--	------------

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1133	3.8274	0.9186	0.0114	0.2967	7.6200e-003	0.3043	0.0854	7.2800e-003	0.0927		1,212.4593	1,212.4593	0.0678		1,214.1544
Worker	0.0871	0.0544	0.7664	2.3600e-003	0.2459	1.7600e-003	0.2477	0.0652	1.6200e-003	0.0668		234.8993	234.8993	5.9200e-003		235.0473
Total	0.2004	3.8818	1.6850	0.0137	0.5426	9.3800e-003	0.5519	0.1506	8.9000e-003	0.1595		1,447.3585	1,447.3585	0.0737		1,449.2017

3.5 Architectural coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.3013					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	0.5202	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309

Unmitigated Construction Off-Site

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2200e-003	2.7400e-003	0.0377	1.1000e-004	0.0112	8.0000e-005	0.0113	2.9600e-003	8.0000e-005	3.0400e-003		11.0740	11.0740	3.0000e-004	11.0815
Total	4.2200e-003	2.7400e-003	0.0377	1.1000e-004	0.0112	8.0000e-005	0.0113	2.9600e-003	8.0000e-005	3.0400e-003		11.0740	11.0740	3.0000e-004	11.0815

3.5 Architectural coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.3013					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	0.5058	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.9600e-003	2.4700e-003	0.0348	1.1000e-004	0.0112	8.0000e-005	0.0113	2.9600e-003	7.0000e-005	3.0400e-003		10.6772	10.6772	2.7000e-004		10.6840
Total	3.9600e-003	2.4700e-003	0.0348	1.1000e-004	0.0112	8.0000e-005	0.0113	2.9600e-003	7.0000e-005	3.0400e-003		10.6772	10.6772	2.7000e-004		10.6840

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.3013					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0183		281.9062
Total	0.3607	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0183		281.9062

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.9600e-003	2.4700e-003	0.0348	1.1000e-004	0.0112	8.0000e-005	0.0113	2.9600e-003	7.0000e-005	3.0400e-003		10.6772	10.6772	2.7000e-004		10.6840
Total	3.9600e-003	2.4700e-003	0.0348	1.1000e-004	0.0112	8.0000e-005	0.0113	2.9600e-003	7.0000e-005	3.0400e-003		10.6772	10.6772	2.7000e-004		10.6840

3.6 Backfill, fine grading, paving, landscape - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9209	8.6627	10.0332	0.0170		0.4596	0.4596		0.4240	0.4240		1,626.283	1,626.283	0.5149		1,639.155
												8	8			7

Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.9209	8.6627	10.0332	0.0170		0.4596	0.4596		0.4240	0.4240			1,626.2838	1,626.2838	0.5149	1,639.1557

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0634	0.0396	0.5574	1.7100e-003	0.1788	1.2800e-003	0.1801	0.0474	1.1800e-003	0.0486		170.8358	170.8358	4.3100e-003		170.9435
Total	0.0634	0.0396	0.5574	1.7100e-003	0.1788	1.2800e-003	0.1801	0.0474	1.1800e-003	0.0486		170.8358	170.8358	4.3100e-003		170.9435

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3988	8.4172	11.5517	0.0170		0.4906	0.4906		0.4906	0.4906	0.0000	1,626.2837	1,626.2837	0.5149		1,639.1557
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.3988	8.4172	11.5517	0.0170		0.4906	0.4906		0.4906	0.4906	0.0000	1,626.2837	1,626.2837	0.5149		1,639.1557

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0634	0.0396	0.5574	1.7100e-003	0.1788	1.2800e-003	0.1801	0.0474	1.1800e-003	0.0486		170.8358	170.8358	4.3100e-003		170.9435
Total	0.0634	0.0396	0.5574	1.7100e-003	0.1788	1.2800e-003	0.1801	0.0474	1.1800e-003	0.0486		170.8358	170.8358	4.3100e-003		170.9435

Adventure Park - South Coast AQMD Air District, Winter

Adventure Park
South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	3.52	Acre	3.52	153,331.20	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	9			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Schedule per planning process

Off-road Equipment -

Off-road Equipment - Equipment provided by civil engineer

Off-road Equipment - Equipment provided by civil engineer

Off-road Equipment - Equipment provided by engineering

Off-road Equipment - Equipment provided by civil engineer

Off-road Equipment - Equipment provided by civil engineer

Trips and VMT - Values provided by civil engineer

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	18.00	2.00
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	8.00	115.00
tblConstructionPhase	NumDays	18.00	200.00
tblConstructionPhase	NumDays	5.00	30.00
tblConstructionPhase	PhaseEndDate	3/4/2022	1/3/2022
tblConstructionPhase	PhaseEndDate	1/13/2022	1/3/2022
tblConstructionPhase	PhaseEndDate	2/25/2021	8/30/2021
tblConstructionPhase	PhaseEndDate	2/8/2022	10/10/2022
tblConstructionPhase	PhaseEndDate	2/15/2021	3/22/2021
tblConstructionPhase	PhaseStartDate	2/9/2022	12/31/2021
tblConstructionPhase	PhaseStartDate	2/26/2021	8/31/2021
tblConstructionPhase	PhaseStartDate	2/16/2021	3/23/2021
tblConstructionPhase	PhaseStartDate	1/14/2022	1/4/2022
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	MaterialExported	0.00	39,600.00
tblGrading	MaterialExported	0.00	2,843.00
tblOffRoadEquipment	HorsePower	80.00	89.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.20
tblOffRoadEquipment	LoadFactor	0.46	0.46
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws

tblOffRoadEquipment	OffRoadEquipmentType			Excavators
tblOffRoadEquipment	OffRoadEquipmentType			Cranes
tblOffRoadEquipment	OffRoadEquipmentType			Rollers
tblOffRoadEquipment	OffRoadEquipmentType			Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType			Excavators
tblOffRoadEquipment	OffRoadEquipmentType			Rollers
tblOffRoadEquipment	OffRoadEquipmentType			Welders
tblOffRoadEquipment	OffRoadEquipmentType			Sweepers/Scrubbers
tblOffRoadEquipment	OffRoadEquipmentType			Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType			Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType			Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		4.00	1.00
tblOffRoadEquipment	UsageHours		6.00	8.00
tblOffRoadEquipment	UsageHours		7.00	8.00
tblOffRoadEquipment	UsageHours		8.00	0.00
tblOffRoadEquipment	UsageHours		8.00	0.00
tblOffRoadEquipment	UsageHours		8.00	0.00
tblOffRoadEquipment	UsageHours		6.00	0.00
tblOffRoadEquipment	UsageHours		6.00	8.00
tblOffRoadEquipment	UsageHours		7.00	8.00
tblTripsAndVMT	HaulingTripLength		20.00	8.00
tblTripsAndVMT	HaulingTripLength		20.00	8.00
tblTripsAndVMT	HaulingTripNumber		4,950.00	0.00
tblTripsAndVMT	VendorTripLength		6.90	8.00
tblTripsAndVMT	VendorTripLength		6.90	8.00
tblTripsAndVMT	VendorTripLength		6.90	8.00

tblTripsAndVMT	VendorTripLength	6.90	8.00
tblTripsAndVMT	VendorTripLength	6.90	8.00
tblTripsAndVMT	VendorTripNumber	0.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	75.00
tblTripsAndVMT	VendorTripNumber	25.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	26.00
tblTripsAndVMT	WorkerTripNumber	20.00	14.00
tblTripsAndVMT	WorkerTripNumber	64.00	22.00
tblTripsAndVMT	WorkerTripNumber	13.00	1.00
tblTripsAndVMT	WorkerTripNumber	20.00	16.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	2.9299	32.8880	21.3168	0.0561	6.8106	1.2342	8.0448	3.5217	1.1361	4.6578	0.0000	5,641.9605	5,641.9605	1.2001	0.0000	5,671.9619
2022	2.6856	21.4277	20.9190	0.0474	0.5537	0.8629	1.4167	0.1536	0.8197	0.9732	0.0000	4,613.7837	4,613.7837	0.8600	0.0000	4,635.2831
Maximum	2.9299	32.8880	21.3168	0.0561	6.8106	1.2342	8.0448	3.5217	1.1361	4.6578	0.0000	5,641.9605	5,641.9605	1.2001	0.0000	5,671.9619

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					

2021	1.4241	24.0892	24.0193	0.0561	3.4568	1.0227	4.2534	1.6957	1.0222	2.4915	0.0000	5,641.9605	5,641.9605	1.2001	0.0000	5,671.9619
2022	1.4100	21.5281	23.6041	0.0474	0.5537	1.0215	1.5752	0.1536	1.0210	1.1746	0.0000	4,613.7837	4,613.7837	0.8600	0.0000	4,635.2831
Maximum	1.4241	24.0892	24.0193	0.0561	3.4568	1.0227	4.2534	1.6957	1.0222	2.4915	0.0000	5,641.9605	5,641.9605	1.2001	0.0000	5,671.9619

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	49.53	16.01	-12.76	0.00	45.54	2.52	38.40	49.69	-4.47	34.90	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/9/2021	3/22/2021	5	30	Phase I
2	Excavation, trenching, rough grading	Grading	3/23/2021	8/30/2021	5	115	Phase II
3	Subgrade, Utility installation, building construction	Building Construction	8/31/2021	1/3/2022	5	90	Phase III
4	Architectural coating	Architectural Coating	12/31/2021	1/3/2022	5	2	Phase III
5	Backfill, fine grading, paving, landscape	Paving	1/4/2022	10/10/2022	5	200	Phase IV

Acres of Grading (Site Preparation Phase): 4

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Excavators	1	8.00	158	0.38
Excavation, trenching, rough grading	Cranes	1	8.00	231	0.29
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Excavation, trenching, rough grading	Rollers	1	8.00	80	0.38
Excavation, trenching, rough grading	Excavators	2	8.00	158	0.38
Excavation, trenching, rough grading	Graders	1	0.00	187	0.41

Subgrade, Utility installation, building construction	Air Compressors	1	8.00	78	0.48
Subgrade, Utility installation, building construction	Excavators	1	8.00	158	0.38
Excavation, trenching, rough grading	Rubber Tired Dozers	1	8.00	247	0.40
Excavation, trenching, rough grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Subgrade, Utility installation, building construction	Rollers	1	8.00	89	0.20
Subgrade, Utility installation, building construction	Cranes	1	8.00	231	0.29
Subgrade, Utility installation, building construction	Welders	1	8.00	46	0.45
Subgrade, Utility installation, building construction	Forklifts	3	0.00	89	0.20
Subgrade, Utility installation, building construction	Generator Sets	1	0.00	84	0.74
Backfill, fine grading, paving, landscape	Sweepers/Scrubbers	1	8.00	64	0.46
Backfill, fine grading, paving, landscape	Off-Highway Trucks	1	2.00	402	0.38
Subgrade, Utility installation, building construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Subgrade, Utility installation, building construction	Welders	1	8.00	46	0.45
Architectural coating	Air Compressors	1	6.00	78	0.48
Backfill, fine grading, paving, landscape	Cement and Mortar Mixers	1	8.00	9	0.56
Excavation, trenching, rough grading	Off-Highway Trucks	1	2.00	402	0.38
Backfill, fine grading, paving, landscape	Pavers	1	8.00	130	0.42
Backfill, fine grading, paving, landscape	Paving Equipment	2	0.00	132	0.36
Backfill, fine grading, paving, landscape	Rollers	1	8.00	80	0.38
Subgrade, Utility installation, building construction	Off-Highway Trucks	1	2.00	402	0.38
Backfill, fine grading, paving, landscape	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	4	26.00	30.00	355.00	14.70	8.00	8.00	LD_Mix	HDT_Mix	HHDT
Excavation, trenching, rough grading	8	14.00	75.00	0.00	14.70	8.00	8.00	LD_Mix	HDT_Mix	HHDT
Subgrade, Utility installation, building construction	13	22.00	40.00	0.00	14.70	8.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural coating	1	1.00	0.00	0.00	14.70	8.00	20.00	LD_Mix	HDT_Mix	HHDT
Backfill, fine grading, paving, landscape	8	16.00	0.00	0.00	14.70	8.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Fugitive Dust					6.1742	0.0000	6.1742	3.3271	0.0000	3.3271			0.0000				0.0000
Off-Road	1.8488	18.0692	13.2602	0.0231		0.9223	0.9223		0.8624	0.8624		2,223.6098	2,223.6098	0.5619			2,237.6572
Total	1.8488	18.0692	13.2602	0.0231	6.1742	0.9223	7.0965	3.3271	0.8624	4.1895		2,223.6098	2,223.6098	0.5619			2,237.6572

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Hauling	0.0482	1.8588	0.3772	4.2500e-003	0.0829	4.1000e-003	0.0870	0.0227	3.9200e-003	0.0266		459.2170	459.2170	0.0416			460.2563
Vendor	0.0950	3.0305	0.8084	8.3800e-003	0.2225	6.7700e-003	0.2293	0.0640	6.4800e-003	0.0705		893.7097	893.7097	0.0564			895.1192
Worker	0.1199	0.0779	0.8802	2.7000e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		269.2737	269.2737	7.2200e-003			269.4541
Total	0.2631	4.9671	2.0658	0.0153	0.5960	0.0130	0.6090	0.1638	0.0124	0.1762		1,622.2003	1,622.2003	0.1052			1,624.8295

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Fugitive Dust					2.7784	0.0000	2.7784	1.4972	0.0000	1.4972			0.0000				0.0000
Off-Road	0.5379	11.1035	14.6689	0.0231		0.5943	0.5943		0.5943	0.5943	0.0000	2,223.6098	2,223.6098	0.5619			2,237.6572
Total	0.5379	11.1035	14.6689	0.0231	2.7784	0.5943	3.3727	1.4972	0.5943	2.0915	0.0000	2,223.6098	2,223.6098	0.5619			2,237.6572

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Hauling	0.0482	1.8588	0.3772	4.2500e-003	0.0829	4.1000e-003	0.0870	0.0227	3.9200e-003	0.0266		459.2170	459.2170	0.0416			460.2563
Vendor	0.0950	3.0305	0.8084	8.3800e-003	0.2225	6.7700e-003	0.2293	0.0640	6.4800e-003	0.0705		893.7097	893.7097	0.0564			895.1192
Worker	0.1199	0.0779	0.8802	2.7000e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		269.2737	269.2737	7.2200e-003			269.4541
Total	0.2631	4.9671	2.0658	0.0153	0.5960	0.0130	0.6090	0.1638	0.0124	0.1762		1,622.2003	1,622.2003	0.1052			1,624.8295

3.3 Excavation, trenching, rough grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Fugitive Dust					6.0979	0.0000	6.0979	3.3201	0.0000	3.3201			0.0000				0.0000

Off-Road	2.4466	25.2699	17.6105	0.0337		1.2161	1.2161		1.1188	1.1188		3,262.6928	3,262.6928	1.0552		3,289.0733
Total	2.4466	25.2699	17.6105	0.0337	6.0979	1.2161	7.3141	3.3201	1.1188	4.4390		3,262.6928	3,262.6928	1.0552		3,289.0733

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2374	7.5761	2.0209	0.0209	0.5562	0.0169	0.5732	0.1601	0.0162	0.1763		2,234.2743	2,234.2743	0.1410		2,237.7979
Worker	0.0646	0.0420	0.4740	1.4500e-003	0.1565	1.1500e-003	0.1576	0.0415	1.0600e-003	0.0426		144.9935	144.9935	3.8900e-003		145.0907
Total	0.3020	7.6181	2.4949	0.0224	0.7127	0.0181	0.7308	0.2016	0.0173	0.2189		2,379.2678	2,379.2678	0.1448		2,382.8886

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7441	0.0000	2.7441	1.4941	0.0000	1.4941			0.0000			0.0000
Off-Road	0.8266	16.4711	21.5244	0.0337		0.7786	0.7786		0.7786	0.7786	0.0000	3,262.6928	3,262.6928	1.0552		3,289.0733
Total	0.8266	16.4711	21.5244	0.0337	2.7441	0.7786	3.5226	1.4941	0.7786	2.2726	0.0000	3,262.6928	3,262.6928	1.0552		3,289.0733

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2374	7.5761	2.0209	0.0209	0.5562	0.0169	0.5732	0.1601	0.0162	0.1763		2,234.2743	2,234.2743	0.1410		2,237.7979
Worker	0.0646	0.0420	0.4740	1.4500e-003	0.1565	1.1500e-003	0.1576	0.0415	1.0600e-003	0.0426		144.9935	144.9935	3.8900e-003		145.0907
Total	0.3020	7.6181	2.4949	0.0224	0.7127	0.0181	0.7308	0.2016	0.0173	0.2189		2,379.2678	2,379.2678	0.1448		2,382.8886

3.4 Subgrade, Utility installation, building construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1770	18.2971	17.6428	0.0311		0.9159	0.9159		0.8646	0.8646		2,920.9550	2,920.9550	0.7689		2,940.1778
Total	2.1770	18.2971	17.6428	0.0311		0.9159	0.9159		0.8646	0.8646		2,920.9550	2,920.9550	0.7689		2,940.1778

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.1266	4.0406	1.0778	0.0112	0.2967	9.0300e-003	0.3057	0.0854	8.6400e-003	0.0940		1,191.6130	1,191.6130	0.0752		1,193.4922
Worker	0.1015	0.0659	0.7448	2.2900e-003	0.2459	1.8100e-003	0.2477	0.0652	1.6700e-003	0.0669		227.8469	227.8469	6.1100e-003		227.9996
Total	0.2281	4.1065	1.8226	0.0135	0.5426	0.0108	0.5534	0.1506	0.0103	0.1609		1,419.4599	1,419.4599	0.0813		1,421.4918

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8307	16.2872	20.0326	0.0311		0.9167	0.9167		0.9167	0.9167	0.0000	2,920.9550	2,920.9550	0.7689		2,940.1777
Total	0.8307	16.2872	20.0326	0.0311		0.9167	0.9167		0.9167	0.9167	0.0000	2,920.9550	2,920.9550	0.7689		2,940.1777

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1266	4.0406	1.0778	0.0112	0.2967	9.0300e-003	0.3057	0.0854	8.6400e-003	0.0940		1,191.6130	1,191.6130	0.0752		1,193.4922
Worker	0.1015	0.0659	0.7448	2.2900e-003	0.2459	1.8100e-003	0.2477	0.0652	1.6700e-003	0.0669		227.8469	227.8469	6.1100e-003		227.9996
Total	0.2281	4.1065	1.8226	0.0135	0.5426	0.0108	0.5534	0.1506	0.0103	0.1609		1,419.4599	1,419.4599	0.0813		1,421.4918

3.4 Subgrade, Utility installation, building construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9611	16.1353	17.3663	0.0311		0.7715	0.7715		0.7288	0.7288		2,921.6726	2,921.6726	0.7634		2,940.7585
Total	1.9611	16.1353	17.3663	0.0311		0.7715	0.7715		0.7288	0.7288		2,921.6726	2,921.6726	0.7634		2,940.7585

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1189	3.8217	1.0204	0.0111	0.2967	7.8400e-003	0.3045	0.0854	7.4900e-003	0.0929		1,180.9997	1,180.9997	0.0725		1,182.8109
Worker	0.0954	0.0595	0.6874	2.2000e-003	0.2459	1.7600e-003	0.2477	0.0652	1.6200e-003	0.0668		219.6780	219.6780	5.5100e-003		219.8159
Total	0.2143	3.8812	1.7079	0.0133	0.5426	9.6000e-003	0.5522	0.1506	9.1100e-003	0.1597		1,400.6777	1,400.6777	0.0780		1,402.6268

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8307	16.2872	20.0326	0.0311		0.9167	0.9167		0.9167	0.9167	0.0000	2,921.6726	2,921.6726	0.7634		2,940.7585

Total	0.8307	16.2872	20.0326	0.0311		0.9167	0.9167		0.9167	0.9167	0.0000	2,921.6726	2,921.6726	0.7634		2,940.7585
-------	--------	---------	---------	--------	--	--------	--------	--	--------	--------	--------	------------	------------	--------	--	------------

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1189	3.8217	1.0204	0.0111	0.2967	7.8400e-003	0.3045	0.0854	7.4900e-003	0.0929		1,180.9997	1,180.9997	0.0725		1,182.8109
Worker	0.0954	0.0595	0.6874	2.2000e-003	0.2459	1.7600e-003	0.2477	0.0652	1.6200e-003	0.0668		219.6780	219.6780	5.5100e-003		219.8159
Total	0.2143	3.8812	1.7079	0.0133	0.5426	9.6000e-003	0.5522	0.1506	9.1100e-003	0.1597		1,400.6777	1,400.6777	0.0780		1,402.6268

3.5 Architectural coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.3013					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	0.5202	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309

Unmitigated Construction Off-Site

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6100e-003	3.0000e-003	0.0339	1.0000e-004	0.0112	8.0000e-005	0.0113	2.9600e-003	8.0000e-005	3.0400e-003		10.3567	10.3567	2.8000e-004	10.3636
Total	4.6100e-003	3.0000e-003	0.0339	1.0000e-004	0.0112	8.0000e-005	0.0113	2.9600e-003	8.0000e-005	3.0400e-003		10.3567	10.3567	2.8000e-004	10.3636

3.5 Architectural coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.3013					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	0.5058	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	4.3400e-003	2.7100e-003	0.0313	1.0000e-004	0.0112	8.0000e-005	0.0113	2.9600e-003	7.0000e-005	3.0400e-003		9.9854	9.9854	2.5000e-004		9.9916
Total	4.3400e-003	2.7100e-003	0.0313	1.0000e-004	0.0112	8.0000e-005	0.0113	2.9600e-003	7.0000e-005	3.0400e-003		9.9854	9.9854	2.5000e-004		9.9916

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.3013					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0183		281.9062
Total	0.3607	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0183		281.9062

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	4.3400e-003	2.7100e-003	0.0313	1.0000e-004	0.0112	8.0000e-005	0.0113	2.9600e-003	7.0000e-005	3.0400e-003		9.9854	9.9854	2.5000e-004		9.9916
Total	4.3400e-003	2.7100e-003	0.0313	1.0000e-004	0.0112	8.0000e-005	0.0113	2.9600e-003	7.0000e-005	3.0400e-003		9.9854	9.9854	2.5000e-004		9.9916

3.6 Backfill, fine grading, paving, landscape - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9209	8.6627	10.0332	0.0170		0.4596	0.4596		0.4240	0.4240		1,626.2838	1,626.2838	0.5149		1,639.1557

Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.9209	8.6627	10.0332	0.0170		0.4596	0.4596		0.4240	0.4240			1,626.2838	1,626.2838	0.5149	1,639.1557

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0694	0.0433	0.5000	1.6000e-003	0.1788	1.2800e-003	0.1801	0.0474	1.1800e-003	0.0486		159.7658	159.7658	4.0100e-003		159.8661
Total	0.0694	0.0433	0.5000	1.6000e-003	0.1788	1.2800e-003	0.1801	0.0474	1.1800e-003	0.0486		159.7658	159.7658	4.0100e-003		159.8661

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3988	8.4172	11.5517	0.0170		0.4906	0.4906		0.4906	0.4906	0.0000	1,626.2837	1,626.2837	0.5149		1,639.1557
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.3988	8.4172	11.5517	0.0170		0.4906	0.4906		0.4906	0.4906	0.0000	1,626.2837	1,626.2837	0.5149		1,639.1557

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0694	0.0433	0.5000	1.6000e-003	0.1788	1.2800e-003	0.1801	0.0474	1.1800e-003	0.0486		159.7658	159.7658	4.0100e-003		159.8661
Total	0.0694	0.0433	0.5000	1.6000e-003	0.1788	1.2800e-003	0.1801	0.0474	1.1800e-003	0.0486		159.7658	159.7658	4.0100e-003		159.8661

Adventure Park - South Coast AQMD Air District, Annual

Adventure Park
South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	3.52	Acre	3.52	153,331.20	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	9			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Schedule per planning process

Off-road Equipment -

Off-road Equipment - Equipment provided by civil engineer

Off-road Equipment - Equipment provided by civil engineer

Off-road Equipment - Equipment provided by engineering

Off-road Equipment - Equipment provided by civil engineer

Off-road Equipment - Equipment provided by civil engineer

Trips and VMT - Values provided by civil engineer

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	18.00	2.00
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	8.00	115.00
tblConstructionPhase	NumDays	18.00	200.00
tblConstructionPhase	NumDays	5.00	30.00
tblConstructionPhase	PhaseEndDate	3/4/2022	1/3/2022
tblConstructionPhase	PhaseEndDate	1/13/2022	1/3/2022
tblConstructionPhase	PhaseEndDate	2/25/2021	8/30/2021
tblConstructionPhase	PhaseEndDate	2/8/2022	10/10/2022
tblConstructionPhase	PhaseEndDate	2/15/2021	3/22/2021
tblConstructionPhase	PhaseStartDate	2/9/2022	12/31/2021
tblConstructionPhase	PhaseStartDate	2/26/2021	8/31/2021
tblConstructionPhase	PhaseStartDate	2/16/2021	3/23/2021
tblConstructionPhase	PhaseStartDate	1/14/2022	1/4/2022
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	MaterialExported	0.00	39,600.00
tblGrading	MaterialExported	0.00	2,843.00
tblOffRoadEquipment	HorsePower	80.00	89.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.20
tblOffRoadEquipment	LoadFactor	0.46	0.46
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws

tblOffRoadEquipment	OffRoadEquipmentType			Excavators
tblOffRoadEquipment	OffRoadEquipmentType			Cranes
tblOffRoadEquipment	OffRoadEquipmentType			Rollers
tblOffRoadEquipment	OffRoadEquipmentType			Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType			Excavators
tblOffRoadEquipment	OffRoadEquipmentType			Rollers
tblOffRoadEquipment	OffRoadEquipmentType			Welders
tblOffRoadEquipment	OffRoadEquipmentType			Sweepers/Scrubbers
tblOffRoadEquipment	OffRoadEquipmentType			Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType			Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType			Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount		4.00	1.00
tblOffRoadEquipment	UsageHours		6.00	8.00
tblOffRoadEquipment	UsageHours		7.00	8.00
tblOffRoadEquipment	UsageHours		8.00	0.00
tblOffRoadEquipment	UsageHours		8.00	0.00
tblOffRoadEquipment	UsageHours		8.00	0.00
tblOffRoadEquipment	UsageHours		6.00	0.00
tblOffRoadEquipment	UsageHours		6.00	8.00
tblOffRoadEquipment	UsageHours		7.00	8.00
tblTripsAndVMT	HaulingTripLength		20.00	8.00
tblTripsAndVMT	HaulingTripLength		20.00	8.00
tblTripsAndVMT	HaulingTripNumber		4,950.00	0.00
tblTripsAndVMT	VendorTripLength		6.90	8.00
tblTripsAndVMT	VendorTripLength		6.90	8.00
tblTripsAndVMT	VendorTripLength		6.90	8.00

tblTripsAndVMT	VendorTripLength	6.90	8.00
tblTripsAndVMT	VendorTripLength	6.90	8.00
tblTripsAndVMT	VendorTripNumber	0.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	75.00
tblTripsAndVMT	VendorTripNumber	25.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	26.00
tblTripsAndVMT	WorkerTripNumber	20.00	14.00
tblTripsAndVMT	WorkerTripNumber	64.00	22.00
tblTripsAndVMT	WorkerTripNumber	13.00	1.00
tblTripsAndVMT	WorkerTripNumber	20.00	16.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2955	3.2467	2.2461	5.8200e-003	0.5161	0.1263	0.6424	0.2613	0.1174	0.3787	0.0000	525.1982	525.1982	0.1056	0.0000	527.8380
2022	0.0997	0.8815	1.0653	1.8900e-003	0.0178	0.0465	0.0644	4.7400e-003	0.0429	0.0477	0.0000	164.3792	164.3792	0.0475	0.0000	165.5659
Maximum	0.2955	3.2467	2.2461	5.8200e-003	0.5161	0.1263	0.6424	0.2613	0.1174	0.3787	0.0000	525.1982	525.1982	0.1056	0.0000	527.8380

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

2021	0.1227	2.5468	2.5987	5.8200e-003	0.2723	0.0962	0.3685	0.1288	0.0961	0.2250	0.0000	525.1978	525.1978	0.1056	0.0000	527.8376
2022	0.0468	0.8570	1.2184	1.8900e-003	0.0178	0.0497	0.0675	4.7400e-003	0.0497	0.0544	0.0000	164.3790	164.3790	0.0475	0.0000	165.5657
Maximum	0.1227	2.5468	2.5987	5.8200e-003	0.2723	0.0962	0.3685	0.1288	0.0961	0.2250	0.0000	525.1978	525.1978	0.1056	0.0000	527.8376

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	57.11	17.55	-15.27	0.00	45.66	15.55	38.30	49.79	9.04	34.47	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	2-9-2021	5-8-2021	0.9752	0.6762
2	5-9-2021	8-8-2021	1.1704	0.8281
3	8-9-2021	11-8-2021	0.8999	0.7341
4	11-9-2021	2-8-2022	0.6208	0.5461
5	2-9-2022	5-8-2022	0.3081	0.2837
6	5-9-2022	8-8-2022	0.3183	0.2930
7	8-9-2022	9-30-2022	0.1834	0.1688
		Highest	1.1704	0.8281

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/9/2021	3/22/2021	5	30	Phase I
2	Excavation, trenching, rough grading	Grading	3/23/2021	8/30/2021	5	115	Phase II
3	Subgrade, Utility installation, building construction	Building Construction	8/31/2021	1/3/2022	5	90	Phase III
4	Architectural coating	Architectural Coating	12/31/2021	1/3/2022	5	2	Phase III
5	Backfill, fine grading, paving, landscape	Paving	1/4/2022	10/10/2022	5	200	Phase IV

Acres of Grading (Site Preparation Phase): 4

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Excavators	1	8.00	158	0.38
Excavation, trenching, rough grading	Cranes	1	8.00	231	0.29
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Excavation, trenching, rough grading	Rollers	1	8.00	80	0.38
Excavation, trenching, rough grading	Excavators	2	8.00	158	0.38
Excavation, trenching, rough grading	Graders	1	0.00	187	0.41
Subgrade, Utility installation, building construction	Air Compressors	1	8.00	78	0.48
Subgrade, Utility installation, building construction	Excavators	1	8.00	158	0.38
Excavation, trenching, rough grading	Rubber Tired Dozers	1	8.00	247	0.40
Excavation, trenching, rough grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Subgrade, Utility installation, building construction	Rollers	1	8.00	89	0.20
Subgrade, Utility installation, building construction	Cranes	1	8.00	231	0.29
Subgrade, Utility installation, building construction	Welders	1	8.00	46	0.45
Subgrade, Utility installation, building construction	Forklifts	3	0.00	89	0.20
Subgrade, Utility installation, building construction	Generator Sets	1	0.00	84	0.74
Backfill, fine grading, paving, landscape	Sweepers/Scrubbers	1	8.00	64	0.46
Backfill, fine grading, paving, landscape	Off-Highway Trucks	1	2.00	402	0.38
Subgrade, Utility installation, building construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Subgrade, Utility installation, building construction	Welders	1	8.00	46	0.45
Architectural coating	Air Compressors	1	6.00	78	0.48
Backfill, fine grading, paving, landscape	Cement and Mortar Mixers	1	8.00	9	0.56
Excavation, trenching, rough grading	Off-Highway Trucks	1	2.00	402	0.38
Backfill, fine grading, paving, landscape	Pavers	1	8.00	130	0.42
Backfill, fine grading, paving, landscape	Paving Equipment	2	0.00	132	0.36
Backfill, fine grading, paving, landscape	Rollers	1	8.00	80	0.38
Subgrade, Utility installation, building construction	Off-Highway Trucks	1	2.00	402	0.38
Backfill, fine grading, paving, landscape	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Category	tons/yr										MT/yr					
Hauling	7.0000e-004	0.0284	5.2600e-003	7.0000e-005	1.2200e-003	6.0000e-005	1.2800e-003	3.4000e-004	6.0000e-005	3.9000e-004	0.0000	6.3922	6.3922	5.4000e-004	0.0000	6.4058
Vendor	1.3900e-003	0.0463	0.0115	1.3000e-004	3.2900e-003	1.0000e-004	3.3900e-003	9.5000e-004	1.0000e-004	1.0400e-003	0.0000	12.3482	12.3482	7.4000e-004	0.0000	12.3667
Worker	1.6300e-003	1.2000e-003	0.0136	4.0000e-005	4.2800e-003	3.0000e-005	4.3100e-003	1.1400e-003	3.0000e-005	1.1700e-003	0.0000	3.7271	3.7271	1.0000e-004	0.0000	3.7296
Total	3.7200e-003	0.0759	0.0304	2.4000e-004	8.7900e-003	1.9000e-004	8.9800e-003	2.4300e-003	1.9000e-004	2.6000e-003	0.0000	22.4675	22.4675	1.3800e-003	0.0000	22.5021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0417	0.0000	0.0417	0.0225	0.0000	0.0225	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0700e-003	0.1666	0.2200	3.5000e-004		8.9100e-003	8.9100e-003		8.9100e-003	8.9100e-003	0.0000	30.2583	30.2583	7.6500e-003	0.0000	30.4495
Total	8.0700e-003	0.1666	0.2200	3.5000e-004	0.0417	8.9100e-003	0.0506	0.0225	8.9100e-003	0.0314	0.0000	30.2583	30.2583	7.6500e-003	0.0000	30.4495

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-004	0.0284	5.2600e-003	7.0000e-005	1.2200e-003	6.0000e-005	1.2800e-003	3.4000e-004	6.0000e-005	3.9000e-004	0.0000	6.3922	6.3922	5.4000e-004	0.0000	6.4058
Vendor	1.3900e-003	0.0463	0.0115	1.3000e-004	3.2900e-003	1.0000e-004	3.3900e-003	9.5000e-004	1.0000e-004	1.0400e-003	0.0000	12.3482	12.3482	7.4000e-004	0.0000	12.3667
Worker	1.6300e-003	1.2000e-003	0.0136	4.0000e-005	4.2800e-003	3.0000e-005	4.3100e-003	1.1400e-003	3.0000e-005	1.1700e-003	0.0000	3.7271	3.7271	1.0000e-004	0.0000	3.7296

Total	3.7200e-003	0.0759	0.0304	2.4000e-004	8.7900e-003	1.9000e-004	8.9800e-003	2.4300e-003	1.9000e-004	2.6000e-003	0.0000	22.4675	22.4675	1.3800e-003	0.0000	22.5021
-------	-------------	--------	--------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	--------	---------	---------	-------------	--------	---------

3.3 Excavation, trenching, rough grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3506	0.0000	0.3506	0.1909	0.0000	0.1909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1407	1.4530	1.0126	1.9400e-003		0.0699	0.0699		0.0643	0.0643	0.0000	170.1922	170.1922	0.0550	0.0000	171.5683
Total	0.1407	1.4530	1.0126	1.9400e-003	0.3506	0.0699	0.4206	0.1909	0.0643	0.2552	0.0000	170.1922	170.1922	0.0550	0.0000	171.5683

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0133	0.4433	0.1105	1.2200e-003	0.0315	9.6000e-004	0.0325	9.0900e-003	9.2000e-004	0.0100	0.0000	118.3367	118.3367	7.0900e-003	0.0000	118.5138
Worker	3.3600e-003	2.4800e-003	0.0281	9.0000e-005	8.8300e-003	7.0000e-005	8.9000e-003	2.3500e-003	6.0000e-005	2.4100e-003	0.0000	7.6931	7.6931	2.1000e-004	0.0000	7.6982
Total	0.0166	0.4458	0.1385	1.3100e-003	0.0403	1.0300e-003	0.0414	0.0114	9.8000e-004	0.0124	0.0000	126.0297	126.0297	7.3000e-003	0.0000	126.2121

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1578	0.0000	0.1578	0.0859	0.0000	0.0859	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.9471	1.2377	1.9400e-003		0.0448	0.0448		0.0448	0.0448	0.0000	170.1920	170.1920	0.0550	0.0000	171.5681
Total	0.0475	0.9471	1.2377	1.9400e-003	0.1578	0.0448	0.2026	0.0859	0.0448	0.1307	0.0000	170.1920	170.1920	0.0550	0.0000	171.5681

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0133	0.4433	0.1105	1.2200e-003	0.0315	9.6000e-004	0.0325	9.0900e-003	9.2000e-004	0.0100	0.0000	118.3367	118.3367	7.0900e-003	0.0000	118.5138
Worker	3.3600e-003	2.4800e-003	0.0281	9.0000e-005	8.8300e-003	7.0000e-005	8.9000e-003	2.3500e-003	6.0000e-005	2.4100e-003	0.0000	7.6931	7.6931	2.1000e-004	0.0000	7.6982
Total	0.0166	0.4458	0.1385	1.3100e-003	0.0403	1.0300e-003	0.0414	0.0114	9.8000e-004	0.0124	0.0000	126.0297	126.0297	7.3000e-003	0.0000	126.2121

3.4 Subgrade, Utility installation, building construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0969	0.8142	0.7851	1.3800e-003		0.0408	0.0408		0.0385	0.0385	0.0000	117.9181	117.9181	0.0310	0.0000	118.6942
Total	0.0969	0.8142	0.7851	1.3800e-003		0.0408	0.0408		0.0385	0.0385	0.0000	117.9181	117.9181	0.0310	0.0000	118.6942

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.4800e-003	0.1830	0.0456	5.0000e-004	0.0130	4.0000e-004	0.0134	3.7500e-003	3.8000e-004	4.1300e-003	0.0000	48.8439	48.8439	2.9200e-003	0.0000	48.9170
Worker	4.0800e-003	3.0200e-003	0.0341	1.0000e-004	0.0107	8.0000e-005	0.0108	2.8500e-003	7.0000e-005	2.9300e-003	0.0000	9.3559	9.3559	2.5000e-004	0.0000	9.3622
Total	9.5600e-003	0.1860	0.0797	6.0000e-004	0.0237	4.8000e-004	0.0242	6.6000e-003	4.5000e-004	7.0600e-003	0.0000	58.1998	58.1998	3.1700e-003	0.0000	58.2792

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0370	0.7248	0.8915	1.3800e-003		0.0408	0.0408		0.0408	0.0408	0.0000	117.9180	117.9180	0.0310	0.0000	118.6940
Total	0.0370	0.7248	0.8915	1.3800e-003		0.0408	0.0408		0.0408	0.0408	0.0000	117.9180	117.9180	0.0310	0.0000	118.6940

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.4800e-003	0.1830	0.0456	5.0000e-004	0.0130	4.0000e-004	0.0134	3.7500e-003	3.8000e-004	4.1300e-003	0.0000	48.8439	48.8439	2.9200e-003	0.0000	48.9170
Worker	4.0800e-003	3.0200e-003	0.0341	1.0000e-004	0.0107	8.0000e-005	0.0108	2.8500e-003	7.0000e-005	2.9300e-003	0.0000	9.3559	9.3559	2.5000e-004	0.0000	9.3622
Total	9.5600e-003	0.1860	0.0797	6.0000e-004	0.0237	4.8000e-004	0.0242	6.6000e-003	4.5000e-004	7.0600e-003	0.0000	58.1998	58.1998	3.1700e-003	0.0000	58.2792

3.4 Subgrade, Utility installation, building construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.8000e-004	8.0700e-003	8.6800e-003	2.0000e-005		3.9000e-004	3.9000e-004		3.6000e-004	3.6000e-004	0.0000	1.3253	1.3253	3.5000e-004	0.0000	1.3339
Total	9.8000e-004	8.0700e-003	8.6800e-003	2.0000e-005		3.9000e-004	3.9000e-004		3.6000e-004	3.6000e-004	0.0000	1.3253	1.3253	3.5000e-004	0.0000	1.3339

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	1.9400e-003	4.8000e-004	1.0000e-005	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	5.0000e-005	0.0000	0.5440	0.5440	3.0000e-005	0.0000	0.5448

Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1014	0.1014	0.0000	0.0000	0.1014
Total	1.0000e-004	1.9700e-003	8.3000e-004	1.0000e-005	2.7000e-004	0.0000	2.7000e-004	7.0000e-005	0.0000	8.0000e-005	0.0000	0.6453	0.6453	3.0000e-005	0.0000	0.6462

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2000e-004	8.1400e-003	0.0100	2.0000e-005		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004	0.0000	1.3253	1.3253	3.5000e-004	0.0000	1.3339
Total	4.2000e-004	8.1400e-003	0.0100	2.0000e-005		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004	0.0000	1.3253	1.3253	3.5000e-004	0.0000	1.3339

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	1.9400e-003	4.8000e-004	1.0000e-005	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	5.0000e-005	0.0000	0.5440	0.5440	3.0000e-005	0.0000	0.5448
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1014	0.1014	0.0000	0.0000	0.1014
Total	1.0000e-004	1.9700e-003	8.3000e-004	1.0000e-005	2.7000e-004	0.0000	2.7000e-004	7.0000e-005	0.0000	8.0000e-005	0.0000	0.6453	0.6453	3.0000e-005	0.0000	0.6462

3.5 Architectural coating - 2021

Unmitigated Construction On-Site

Off-Road	3.0000e-005	6.8000e-004	9.2000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total	1.8000e-004	6.8000e-004	9.2000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	2.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	4.7800e-003	4.7800e-003	0.0000	0.0000	4.7800e-003
Total	0.0000	0.0000	2.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	4.7800e-003	4.7800e-003	0.0000	0.0000	4.7800e-003

3.5 Architectural coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0000e-004	7.0000e-004	9.1000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total	2.5000e-004	7.0000e-004	9.1000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279

Unmitigated Construction Off-Site

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Worker	0.0000	0.0000	2.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	4.6100e-003	4.6100e-003	0.0000	0.0000	4.6100e-003
Total	0.0000	0.0000	2.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	4.6100e-003	4.6100e-003	0.0000	0.0000	4.6100e-003

3.6 Backfill, fine grading, paving, landscape - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0921	0.8663	1.0033	1.7000e-003		0.0460	0.0460		0.0424	0.0424	0.0000	147.5340	147.5340	0.0467	0.0000	148.7017
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0921	0.8663	1.0033	1.7000e-003		0.0460	0.0460		0.0424	0.0424	0.0000	147.5340	147.5340	0.0467	0.0000	148.7017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2600e-003	4.4500e-003	0.0515	1.6000e-004	0.0176	1.3000e-004	0.0177	4.6600e-003	1.2000e-004	4.7800e-003	0.0000	14.7424	14.7424	3.7000e-004	0.0000	14.7516
Total	6.2600e-003	4.4500e-003	0.0515	1.6000e-004	0.0176	1.3000e-004	0.0177	4.6600e-003	1.2000e-004	4.7800e-003	0.0000	14.7424	14.7424	3.7000e-004	0.0000	14.7516

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0399	0.8417	1.1552	1.7000e-003		0.0491	0.0491		0.0491	0.0491	0.0000	147.5338	147.5338	0.0467	0.0000	148.7015
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0399	0.8417	1.1552	1.7000e-003		0.0491	0.0491		0.0491	0.0491	0.0000	147.5338	147.5338	0.0467	0.0000	148.7015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2600e-003	4.4500e-003	0.0515	1.6000e-004	0.0176	1.3000e-004	0.0177	4.6600e-003	1.2000e-004	4.7800e-003	0.0000	14.7424	14.7424	3.7000e-004	0.0000	14.7516
Total	6.2600e-003	4.4500e-003	0.0515	1.6000e-004	0.0176	1.3000e-004	0.0177	4.6600e-003	1.2000e-004	4.7800e-003	0.0000	14.7424	14.7424	3.7000e-004	0.0000	14.7516

South Central Coastal Information Center

California State University, Fullerton
Department of Anthropology MH-426
800 North State College Boulevard
Fullerton, CA 92834-6846
657.278.5395 / FAX 657.278.5542
sccic@fullerton.edu

California Historical Resources Information System
Orange, Los Angeles, and Ventura Counties

1/22/2018

Records Search File No.: 18491.4547

Jenna Farrell
Tetra Tech, Inc.
2969 Prospect Park Dr., Ste. 100
Rancho Cordova, CA 95670

Re: Record Search Results for 100-IWM-T37434 Adventure Park

The South Central Coastal Information Center received your records search request for the project area referenced above, located on the Whittier, CA USGS 7.5' quadrangle. The following reflects the results of the records search for the project area and a 1-mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: custom GIS maps shape files hand-drawn maps

Resources within project area: 0	None
Resources within 1-mile radius: 1	P-19-188166
Resources listed in the OHP Historic Properties Directory within project area: 0	None
Resources listed in the OHP Historic Properties Directory within 1-mile radius: 18	SEE ATTACHED LIST FOR INDIVIDUAL PROPERTY STATUS CODES – resource locations from the OHP HPD may or may not be plotted on the custom GIS map or provided as a shape file
Resources listed in the Historic Properties Directory that lack specific locational information: 3	SEE ATTACHED LIST FOR INDIVIDUAL PROPERTY STATUS CODES - These properties may or may not be in your project area or in the search radius.
Reports within project area: 0	None
Reports within 1-mile radius: 12	SEE ATTACHED MAP or LIST

- Resource Database Printout (list):** enclosed not requested nothing listed
- Resource Database Printout (details):** enclosed not requested nothing listed
- Resource Digital Database (spreadsheet):** enclosed not requested nothing listed
- Report Database Printout (list):** enclosed not requested nothing listed
- Report Database Printout (details):** enclosed not requested nothing listed
- Report Digital Database (spreadsheet):** enclosed not requested nothing listed

<u>Resource Record Copies:</u>	<input type="checkbox"/> enclosed	<input checked="" type="checkbox"/> not requested	<input type="checkbox"/> nothing listed
<u>Report Copies:</u>	<input type="checkbox"/> enclosed	<input checked="" type="checkbox"/> not requested	<input type="checkbox"/> nothing listed
<u>OHP Historic Properties Directory:</u>	<input checked="" type="checkbox"/> enclosed	<input type="checkbox"/> not requested	<input type="checkbox"/> nothing listed
<u>Archaeological Determinations of Eligibility:</u>	<input type="checkbox"/> enclosed	<input type="checkbox"/> not requested	<input checked="" type="checkbox"/> nothing listed
<u>Los Angeles Historic-Cultural Monuments</u>	<input type="checkbox"/> enclosed	<input type="checkbox"/> not requested	<input checked="" type="checkbox"/> nothing listed
<u>Historical Maps:</u>	<input type="checkbox"/> enclosed	<input checked="" type="checkbox"/> not requested	<input type="checkbox"/> nothing listed
<u>Ethnographic Information:</u>	<input checked="" type="checkbox"/> not available at SCCIC		
<u>Historical Literature:</u>	<input checked="" type="checkbox"/> not available at SCCIC		
<u>GLO and/or Rancho Plat Maps:</u>	<input checked="" type="checkbox"/> not available at SCCIC		
<u>Caltrans Bridge Survey:</u>	<input checked="" type="checkbox"/> not available at SCCIC; please go to http://www.dot.ca.gov/hq/structur/strmaint/historic.htm		
<u>Shipwreck Inventory:</u>	<input checked="" type="checkbox"/> not available at SCCIC; please go to http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp		
<u>Soil Survey Maps: (see below)</u>	<input checked="" type="checkbox"/> not available at SCCIC; please go to http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx		

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System,

Isabela Kott
Digitally signed by Isabela Kott
Date: 2018.01.22 14:13:27 -08'00'

Isabela Kott
GIS Technician/Staff Researcher

Enclosures:

- (X) GIS Shapefiles – 13 shapes
- (X) Resource Database Printout (list) – 1 page
- (X) Resource Database Printout (details) – 1 page
- (X) Report Database Printout (list) – 2 pages
- (X) Report Database Printout (details) – 12 pages
- (X) OHP Historic Properties Directory – 6 pages
- (X) National Register Status Codes – 1 page
- (X) Invoice #18491.4547

NATIVE AMERICAN HERITAGE COMMISSION

Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710



January 9, 2018

Jenna Farrell
Tetra Tech, Inc.

Sent by E-mail: jenna.farrell@tetrattech.com

RE: Proposed Adventure Park Project, Community of Whittier; Whittier USGS Quadrangle, Los Angeles County, California

Dear Ms. Farrell:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.

Attached is a list of tribes culturally affiliated to the project area. I suggest you contact all of the listed Tribes. If they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: gayle.totton@nahc.ca.gov.

Sincerely,

A handwritten signature in blue ink that reads "Gayle Totton".

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst
(916) 373-3714

CONFIDENTIALITY NOTICE: This communication with its contents may contain confidential and/or legally privileged information. It is solely for the use of the intended recipient(s). Unauthorized interception, review, use or disclosure is prohibited and may violate applicable laws including the Electronic Communications Privacy Act. If you are not the intended recipient, please contact the sender and destroy all copies of the communication.

Native American Heritage Commission
Native American Contact List
Los Angeles County
1/9/2018

**Gabrieleno Band of Mission
Indians - Kizh Nation**

Andrew Salas, Chairperson
P.O. Box 393 Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
gabrielenoindians@yahoo.com

**Gabrieleno/Tongva San Gabriel
Band of Mission Indians**

Anthony Morales, Chairperson
P.O. Box 693 Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation

Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., Gabrielino
#231
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

**Gabrielino Tongva Indians of
California Tribal Council**

Robert Dorame, Chairperson
P.O. Box 490 Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino-Tongva Tribe

Charles Alvarez,
23454 Vanowen Street Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

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 Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Adventure Park Project, Los Angeles County.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____

HRI # _____

Trinomial _____

NRHP Status Code 6Z

Other Listings _____

Review Code _____ Reviewer _____ Date _____

Page 1 of 4

*Resource Name or # (Assigned by recorder) Adventure Park

P1. Other Identifier: Adventure Park

*P2. Location: Not for Publication Unrestricted

*a. County Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Whittier Date 2018 T; R _____; _____ ¼ of Sec _____; _____ B.M.

c. Address 10130 Gunn Avenue City Whittier Zip 90605

d. UTM: (give more than one for large and/or linear resources) Zone 10; 404323 mE/ 3756280 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Adventure Park is in a residential neighborhood in South Whittier. It occupies most of the block between Gunn Avenue, Light Street, Ben Hur Avenue, and Reis Street. It is landscaped with grass and mature trees. There are long parking lots along the Reis Street and Gunn Avenue sides of the park, which is bisected by Sorensen Drain, with two pedestrian bridges over it, connecting the two sides of the park. The larger area to the east of Sorensen Drain includes the baseball fields, a simple restroom building, and a shed. A dirt path bordered in concrete wraps around the edges of this section, punctuated by occasional small plazas with picnic tables or workout equipment in them. The western section of the park is smaller and includes the original recreation building and the 2004 gymnasium building as well as a playground and basketball courts.

The recreation building was constructed in 1959, during the park's initial development. It is near the northwest corner of the parcel adjacent to Gunn Avenue. The post-and-beam building is rectangular in plan with a low-pitch gabled roof, exposed beams, and fixed vinyl windows. Its main entry is an automatic sliding door on the west elevation. The tall gymnasium building is behind the recreation building to the south and features an arched roof and concrete masonry unit construction.

*P3b. Resource Attributes: (List attributes and codes) HP29. Landscape architecture

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Baseball fields, camera facing north, photograph taken January 23, 2019.

*P6. Date Constructed/Age and Sources:

Historic Prehistoric Both

1959, County of Los Angeles

*P7. Owner and Address:

City of Whittier

13230 Penn Street

Whittier, CA 90602

*P8. Recorded by: (Name, affiliation, address)

Kara Brunzell, Tetra Tech, Inc.

1999 Harrison Street, Suite 500

Oakland, CA 94612

*P9. Date Recorded: January 23, 2019

*P10. Survey Type: (Describe) Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.")

*Attachments: NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record Other (list) _____

*Resource Name or # (Assigned by recorder) Adventure Park

- B1. Historic Name: Adventure Park
B2. Common Name: Adventure Park
B3. Original Use: recreation B4. Present Use: recreation

***B5. Architectural Style:**

- *B6. Construction History:** (Construction date, alteration, and date of alterations) Original Construction, 1959;
Construction of restroom building, 1973-1993;
Construction of gymnasium, 2004

***B7. Moved?** No Yes Unknown **Date:** _____ **Original Location:** _____

***B8. Related Features:** _____

B9. Architect: N/A b. Builder: Edward A. Weitzul

***B10. Significance: Theme** _____ **Area** _____

Period of Significance N/A **Property Type** N/A **Applicable Criteria** N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)
Adventure Park does not meet the criteria for listing on the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR) (see continuation sheet).

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:**

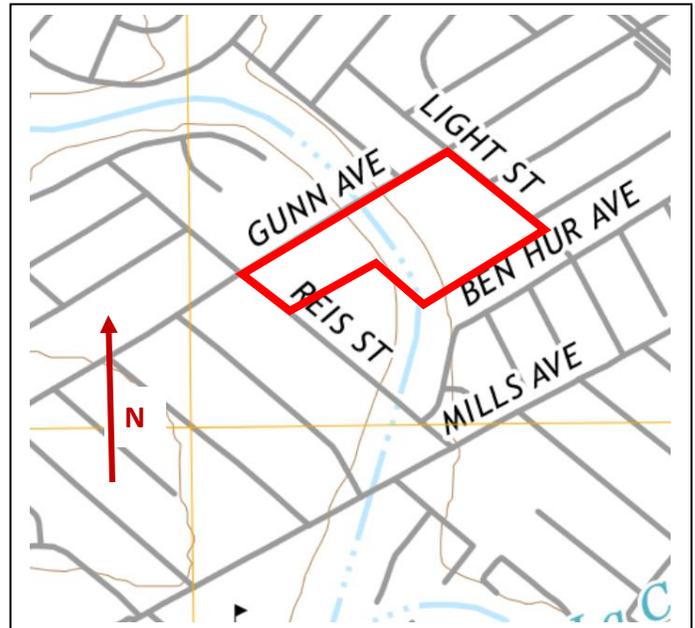
(See Footnotes)

B13. Remarks:

***B14. Evaluator:** Kara Brunzell

***Date of Evaluation:** January 24, 2019

(This space reserved for official comments.)



Page 3 of 4 *Resource Name or # (Assigned by recorder) Adventure Park

*Recorded by Kara Brunzell

*Date: January 23, 2019 Continuation Update

*P3a. Description: (continued) (All photographs taken by Tetra Tech, Inc. unless otherwise noted.)



Photograph 2: Recreation building, camera facing east, January 23, 2019.



Photograph 3: Baseball fields, camera facing southwest, January 23, 2019.



Photograph 4: Pathway near Light Street edge of park, camera facing southeast, January 23, 2019.



Photograph 5: Play equipment and with gym in background, camera facing southwest, January 23, 2019.



Photograph 6: Gym, camera facing northeast, January 23, 2019.

Page 4 of 4 *Resource Name or # (Assigned by recorder) Adventure Park

*Recorded by Kara Brunzell

*Date: January 23, 2019 Continuation Update

B10. Significance (continued):

Whittier

The first inhabitants of the Whittier area were the Tongva people. European settlement began in 1771, when Spanish missionaries founded the San Gabriel mission. The area that is now Whittier remained the property of the mission until 1835, when the Mexican government secularized the missions and the land became part of a privately-owned ranch. The land continued to be used primarily for grazing livestock through the Mexican-American war and into the 20th century. In 1887, Quaker settlers organized the Pickering Land and Water Company to buy the land and found a colony. The Quaker founders named the town after John Greenleaf Whittier, a poet.¹

Agriculture, and later oil, were Whittier's primary industries in the first half of the 20th century. The city's growth was initially clustered around Uptown (the commercial core centered at Philadelphia Street and Greenleaf Avenue) but expanded increasingly outward into former farmland with the rise of the automobile in the 1920s and 30s. After World War II, the importance of oil and agriculture to the city decreased as Whittier's economy shifted towards manufacturing and distribution and the city became a bedroom community for rapidly-growing Los Angeles. The population more than doubled between 1940 and 1960, and residential and industrial development continued to replace farms, ranches, and oil fields; Whittier annexed several unincorporated areas during these decades.²

Adventure Park

The residential neighborhood around the land that would become Adventure Park, part of the Rancho Santa Gertrudes tract, is far south of the city of Whittier's core; the park was developed in the early 1950s as Whittier expanded outward. The Department of Parks and Recreation purchased 15.52 acres of land for Adventure Park in 1959. Edward A. Weitzul, a contractor based in West Covina, was given the contract to build the park. Originally from Wisconsin, Weitzul attended the Armour Institute of Technology in Chicago, then worked in the engineering department of the Kimberly-Clark corporation. He was in West Covina by 1959. The park, originally named Gunn Avenue Park, opened in 1962. It featured a recreation building, two softball diamonds, and basketball and tether courts. The Department of Parks and Recreation, in conjunction with the Board of Supervisors, likely changed the name to Adventure Park sometime around 2000. In 2004, a new gymnasium was built on the property.³

Evaluation:

The California Register of Historical Resources (CRHR) require that a significance criterion from 1 through 4 be met for a resource to be eligible.

Criterion 1: Adventure Park is not associated with events that have made a significant contribution to the broad patterns of our history. It is generally associated with the context of Whittier's postwar residential expansion and suburban recreation, when many parks and municipal facilities were constructed. Research has not revealed any important associations between the park and that or any other historic context. Therefore, the property is recommended not eligible for listing in the CRHR under Criterion 1.

Criterion 2: Adventure Park is not associated with the life of a person important to our history. Research has not revealed significant association with the park and important historical figures. Therefore, it is recommended not eligible for listing in the CRHR under Criterion 2.

Criterion 3: Adventure Park is not significant for its architecture. The original recreation building (the only building at the park constructed within the historic period) is an unremarkable example of a simple 1950s building. Other designed features of the site including ball fields, paths, playground, and landscaping do not exhibit design distinction, but are typical of recreational features in parks of the era. For these reasons, the property is recommended not eligible for listing in CRHR under Criterion 3.

Criterion 4: In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies and be significant under Criterion 4. Adventure Park does not appear to be a principal source of important information in this regard.

¹ Michael Garabedian and Rebecca Ruud, *Images of America: Whittier* (Charleston: Arcadia Publishing, 2016).

² "A Brief History of Whittier to 1970," Whittier Community Development, accessed 16 January 2019, <https://www.cityofwhittier.org/government/community-development/planning-services/historic-preservation/a-brief-history-of-whittier-to-1970>.

³ *Los Angeles Times*, 2 July 1950; USGS maps, Whittier, 1955; "Adventure Park," LA County Parks, County of Los Angeles, accessed 10 January 2019, <http://parks.lacounty.gov/adventure-park/>; "Park in Whittier to be Dedicated," *Los Angeles Times*, 22 November 1959; *Los Angeles Times*, 28 May 1962; *Post-Crescent* (Appleton, WI), 18 September 1939.

June 21, 2018

TO: Paul Alva
Stormwater Quality Division

Attention Iwen Tseng

FROM: Greg Kelley *Greg Kelley*
Geotechnical and Materials Engineering Division

**GEOTECHNICAL AND INFILTRATION FEASIBILITY INVESTIGATION
ADVENTURE PARK MULTI-BENEFIT PROJECT
REGIONAL PROJECT SITES IN UPPER SAN GABRIEL RIVER WATERSHED
PROJECT ID GME0000289 (PCA F21816i10)**

In response to your request dated June 6, 2016, we conducted a geotechnical and infiltration feasibility investigation for the subject project. Our findings and recommendations are presented in the attached report.

If you have any questions regarding this matter, please contact Karen Mendez or William Man at Extension 4925. To provide feedback on our services, please access <http://dpw.lacounty.gov/go/gmedsurvey> to complete a Customer Service Survey.

KM:mc

GME-4/p:\gmepub\secretarial\soilsinv\reports\adventure park infiltration report.docx

Attach.

GEOTECHNICAL AND INFILTRATION FEASIBILITY INVESTIGATION

ADVENTURE PARK MULTI-BENEFIT PROJECT REGIONAL PROJECT SITES IN UPPER SAN GABRIEL RIVER WATERSHED

Prepared for

County of Los Angeles
Department of Public Works
Stormwater Quality Division

Prepared by

County of Los Angeles
Department of Public Works
Geotechnical and Materials Engineering Division
Soils Investigations Unit

June 21, 2018



TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION.....	1
1.1 SITE DESCRIPTION.....	1
1.2 PROPOSED IMPROVEMENTS.....	1
2.0 GEOLOGY AND SEISMICITY.....	2
2.1 SITE GEOLOGY.....	2
2.2 REGIONAL FAULTING AND SITE SEISMICITY.....	2
3.0 PREVIOUS SUBSURFACE EXPLORATION: NINYO AND MOORE GEOTECHNICAL SERVICES UPPER SAN GABRIEL RIVER EWMP.....	3
3.1 SUBSURFACE INVESTIGATION.....	3
3.2 PRELIMINARY RECOMMENDATIONS.....	3
4.0 SUBSURFACE INVESTIGATION.....	3
4.1 PRELIMINARY ENVIRONMENTAL SITE SCREENING.....	4
4.2 CONE PENETRATION TESTING.....	4
4.3 HOLLOW STEM BORINGS AND LABORATORY TESTING.....	4
4.4 PHASE II ENVIRONMENTAL SITE ASSESSMENT.....	4
5.0 FINDINGS AND CONCLUSIONS.....	6
5.1 ENVIRONMENTAL ANALYSIS RESULTS.....	6
5.2 GROUNDWATER CONDITIONS.....	6
5.3 LIQUEFACTION AND POST LIQUEFACTION SETTLEMENT.....	7
6.0 GEOTECHNICAL RECOMMENDATIONS.....	8
6.1 EXCAVATION AND SHORING.....	8
7.0 LIMITATIONS.....	9
8.0 REFERENCES.....	10



TABLE OF CONTENTS (cont.)

FIGURES

- FIGURE 1 – Vicinity Map
- FIGURE 2 – Boring and CPT Location Map
- FIGURE 3 – Historically Highest Groundwater
- FIGURE 4 – Regional Geology Map
- FIGURE 5a – Groundwater Monitoring Well Location Map
- FIGURE 5b – Groundwater Elevation of Monitoring Wells
- FIGURE 6 – Seismic Hazard Map

APPENDICES

- APPENDIX A – Ninyo and Moore Geotechnical Services Upper San Gabriel River EWMP
- APPENDIX B – Preliminary Environmental Site Screening
- APPENDIX C – Cone Penetration Test Logs
- APPENDIX D – Logs of Borings
- APPENDIX E – Laboratory Data
- APPENDIX F – Non-Hazardous Waste Manifest
- APPENDIX G – Environmental Test Results: American Environmental Testing Laboratory, Inc.
- APPENDIX H – Seismic Parameters
- APPENDIX I – Liquefaction Analysis



1.0 INTRODUCTION

At the request of Stormwater Quality Division (SWQD), Geotechnical and Materials Engineering Division (GMED) conducted a geotechnical and infiltration feasibility investigation for the Adventure Park Multi-Benefit Project. In response to provisions of the National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System (MS4) Permit Order No. R4-2012-0175, the Upper San Gabriel River Watershed Management Area Group (USGR Group) was formed. The County of Los Angeles, Los Angeles County Flood Control District (LACFCD), and the cities of Baldwin Park, Covina, Glendora, Industry, and West Covina form the USGR Group. An Enhanced Watershed Management Program (EWMP) was developed by USGR Group to identify an array of watershed control measures and structural Best Management Practices (BMPs) to address water quality objectives. Top ranked projects that have the potential to provide significant water quality benefits were identified in the EWMP. Adventure Park, located in unincorporated Whittier, was identified as a top ranked project due to the large drainage area, location of adjacent storm drains, and available development space. This report presents our findings and recommendations.

1.1 SITE LOCATION AND DESCRIPTION

The project site is located in a residential area of unincorporated Whittier bounded by Reis Street on the southwest, Gunn Avenue on the northwest, Light Street on the northeast and residences on the southeast, as shown on Figures 1 and 2. The Department of Parks and Recreation maintains the park which consists of 15.52 acres of land for recreational purposes. The park includes a playground, sports field, spray pad, gymnasium, and picnic space.

Sorenson Drain bisects the project site from northwest to southeast, separating the sports fields from the playground and gymnasium. The drain is a 34-foot wide and 13-foot deep rectangular reinforced-concrete channel built in October 1958. Storm Drain BI0693 runs along Gunn Avenue and is a 48-inch diameter, reinforced-concrete pipe that intersects and discharges into Sorensen Drain. Sorensen Drain and BI0693 are both LACFCD assets. Stormwater runoff from both drains will be addressed by project BMPs.

1.2 PROPOSED IMPROVEMENTS

The multi-benefit project is expected to enhance flood control, improve downstream water quality, promote water conservation efforts, and improve local aesthetics. Proposed improvements are within the site's open area to avoid removal of existing trees and to reduce the impact to existing facilities.



2.0 GEOLOGY AND SEISMICITY

The subject site is located within the floodplain of the San Gabriel River and its tributaries in the northeasterly portion of the Los Angeles Basin. The geology of this site consists of a thick sequence of alluvium and sedimentary rock overlying crystalline basement rock. The site is located in a seismically active area as is most of California.

2.1 SITE GEOLOGY

The geology of the project site includes thin fill soils overlying young Quaternary alluvial deposits. These young alluvial deposits were observed in the portion of the park located north of the Sorenson Drain. Regional mapping shows older (Pleistocene age) alluvium in the portion of the park south of the Sorenson Drain. The alluvial deposits overlying bedrock in this area are between 600 and 850 feet thick. Geologic features are shown on Figure 3.

Groundwater is relatively shallow and was reported to be at 31 feet below ground surface (bgs) by Ninyo and Moore (2015), in the southerly portion of the park. Groundwater was encountered at 22, 27.5, and 28.5 feet bgs in Borings B1, B2, and B3, respectively, drilled for this investigation in the northerly portion of the site.

The site is located approximately 3 miles southwest of the Whittier Fault. The Whittier Fault is considered to be active and trends west-northwest across the southern part of the Puente Hills.

2.2 REGIONAL FAULTING AND SEISMICITY

Based on our review of available geologic maps, no faults are mapped underlying the site. As discussed above, the closest active fault is the Whittier Fault located approximately 3 miles northeast of the site. As no faults are known to underlie the site, the potential for surface fault rupture at this site is low.

However, the site is located in southern California which is seismically active; therefore, the site and the proposed improvements may experience strong ground motion during their design life. The park straddles the boundary of a liquefaction zone delineated by the State of California. The northeasterly portion of the park, where the proposed site is located, is within this delineated liquefaction zone. As the park and surrounding properties are flat-lying, the chances of landslides occurring on or near the site is considered to be low. However, the site is potentially susceptible to liquefaction, due to the shallow depth to groundwater and the granular nature of the underlying deposits.



3.0 PREVIOUS SUBSURFACE INVESTIGATION: NINYO AND MOORE GEOTECHNICAL SERVICES UPPER SAN GABRIEL RIVER EWMP

A preliminary geotechnical investigation was performed by Ninyo and Moore in an effort to identify any potential geotechnical factors that could affect the conceptual project design; the geotechnical report dated June 3, 2015, is attached in Appendix A. The scope of services included review of pertinent background data, geologic reconnaissance, and subsurface exploration.

3.1 Subsurface Exploration

Subsurface exploration included drilling of one 8-inch diameter hollow stem auger Boring B-1 to a depth of approximately 46.5 feet bgs. Relatively undisturbed and disturbed samples were obtained at selected depths for laboratory testing. Boring B-1 was drilled southwest of Sorensen Drain; the approximate location is shown on Figure 2.

Fill materials were encountered in Boring B-1 extending from ground surface to approximately 1 foot bgs and generally consisted of dark brown silty sand in a moist, medium dense condition with scattered roots and grass. Alluvium was observed underlying the fill material extending to the total depth explored. Alluvial materials consisted of well graded sands with silt, silty sands, clayey sands, and sandy silts in various shades of brown and gray, moist to wet, and in a medium dense to very dense condition. Interbeds of grayish-brown and reddish-brown silty clay and clayey silt in a moist to wet and very stiff to hard condition were also encountered. In addition, scattered gravels were encountered at various depths in the alluvium. Groundwater was encountered in Boring B-1 at an approximate depth of 31 feet bgs. Laboratory testing included in-situ dry density and moisture content, gradation, Atterberg limits, direct shear, and soil corrosivity.

3.2 Preliminary Recommendations

The objective of the geotechnical investigation conducted by Ninyo and Moore was to evaluate the feasibility of an onsite stormwater infiltration system; preliminary criteria for assessing the site was limited to the presence of groundwater and dense materials impeding drilling equipment from reaching 100 feet bgs. At the time of exploration, plans were not available and all BMPs considered for the site were conceptual. General recommendations for the proposed improvements are provided in the geotechnical report.



4.0 **SUBSURFACE INVESTIGATION**

Subsurface investigation performed by GMED included a Preliminary Environmental Site Screening (PESS), Cone Penetration Tests (CPTs), drilling of three hollow stem auger borings, and environmental sampling and testing.

4.1 **Preliminary Environmental Site Screening**

A PESS was completed on November 23, 2016. At that time, the project scope consisted of a subsurface infiltration basin. The PESS included the following:

- site reconnaissance,
- review of aerial photographs and maps,
- and searches of publicly available regulatory databases.

Based on available information and the proposed scope of work at the time, environmental concerns that would affect the site were not identified and further environmental assessment was not required.

While the PESS conclusions were solely based on existing data, contamination could exist in areas that were not identified as environmental concerns because: (1) data gaps existed in the referenced databases, historical photographs, or maps, (2) contamination releases were not reported to the authorities, or (3) contamination releases, such as pipeline releases, were not known to have occurred. Additionally, contamination may have occurred subsequent to the screening. The PESS is included in Appendix B.

To further assess the site, a Phase II Environmental Site Assessment was performed in tandem with the geotechnical investigation under the direction of SWQD for removal depth recommendations, if necessary. A complete description is provided in Section 4.1.4.

4.2 **Cone Penetration Testing**

Preliminary subsurface characterization of the project site was performed with CPTs to identify adequate areas and depths for infiltration. A total of seven locations were selected within the western baseball field and open grass areas of Adventure Park. CPTs were performed by Gregg Drilling to a maximum depth of 100 feet bgs in December 2016.



CPTs indicated subsurface material consisted of silty sand and sandy silt, clay and silty clay with interbedded layers of sand in a medium dense to dense, and very dense to stiff condition. Produced plots include interpreted soil behavior type (SBT) based on charts described by Robertson (1990). SBTs are generally used as a geotechnical guide and subsurface conditions are usually confirmed with borings. The presence of groundwater was not easily evaluated. Complete CPT logs are included in Appendix C.

4.3 Hollow Stem Auger Borings and Laboratory Testing

Three 8-inch diameter borings were drilled in June 2017, with a CME-75 hollow stem drill rig to a maximum depth of 51.5 feet bgs. Drilling services were provided by Stormwater Maintenance Division's (SWMD) drilling crew under direct supervision of GMED personnel. Soils were logged by a State-licensed professional engineer. Environmental samples were collected for analytical testing. Caving conditions were not encountered; however, due to the granular nature of the material at certain depths, caving of soils during excavation for the project is anticipated. Logs of Boring are included in Appendix D.

Both ring and bulk soil samples were collected for select analytical laboratory testing. Laboratory testing included the following:

- In-situ moisture content and dry unit weight,
- Maximum dry density and optimum moisture content,
- Direct shear strength,
- Sieve Analysis,
- Sand Equivalency, and
- Corrosion.

Results of the laboratory testing are included in Appendix E.

4.4 PHASE II ENVIRONMENTAL SITE ASSESSMENT

One of the goal of this project was to characterize the onsite soils for common contaminants that could be encountered during onsite construction. To accomplish this characterization, soil samples were collected from the three borings drilled onsite (see Figure 2).

Exploration consisted of hand augering to a depth of 5 feet. Drilling with a hollow stem auger was then used to advance the borings to the final depths of either 31.5- or 50-feet. Samples were collected at selected depths using the Environmental Protection Agency Method 5035 to sample for Volatile Organic Compounds (VOCs) and gasoline, and wide-mouth, short-profile, glass jars to sample for diesel, heavy hydrocarbons, and



Title 22 metals. A photo ionization detector was used to monitor the presence of organic vapors emanating from the glass jar samples.

Soil cuttings and water rinsate generated from the drilling operation were placed in 55-gallon drums, approved by the Department of Transportation, labeled and inventoried, and stored at Eaton Yard, a Los Angeles County field facility. The drums were later transported by Ocean Blue, a State licensed waste hauler, to a State of California certified disposal facility. The Waste Manifest is provided in Appendix F.

5.0 FINDINGS AND CONCLUSIONS

The soil types encountered at the project site consisted of fill in the upper 2.5 feet followed by alluvium. The fill was observed to be predominantly brown to dark brown silty sand in a medium dense condition; alluvial deposits were observed to consist of brown to dark brown and grey, well-graded, clean sand, silty sand, clayey silt, silty clay, and fat clay, with the clay ranging from a medium dense to dense and stiff to very stiff and hard condition. Pea-sized gravel was observed in Boring B3. Caving conditions could not be determined due to the type of drilling equipment used but should be anticipated due to the granular nature of the material. Groundwater was encountered in Borings B1, B2, and B3 at 22, 27.5, and 28.5 feet bgs. Historic high groundwater levels are discussed in Section 5.2. Expansive Index test results indicate soils are not expansive, however it should be noted that a limited number of samples were tested to represent the overall site.

5.1 Environmental Analysis Results

Minor amounts of benzene were detected at 3 feet bgs in Boring B1, toluene in minor amounts was also detected in this sample and at 23 feet bgs in Boring B3. Various Title 22 Metals were detected in all 12 soils samples collected onsite for environmental testing. The detected VOCs, total petroleum hydrocarbons, and Title 22 Metals were all below action levels. See Appendix G for the test results. No further subsurface environmental evaluation is believed to be necessary.

5.2 Groundwater Conditions

Groundwater or perched water was encountered in all three borings at the time of drilling; depth to groundwater ranged from 22 feet bgs in Boring B1 to 28.5 feet bgs in Boring B3. The historically highest groundwater is estimated to be at 20 feet bgs based on the Seismic Hazard Zone Report for the Whittier 7.5-Minute Quadrangle, as shown on Figure 4.



Well measurements from Stormwater Engineering Division's database were used to analyze historic groundwater level trends at the project site. Monitoring wells located within an approximate 1-mile radius of the site show groundwater levels ranging from approximately 17 to 145 feet bgs. Measurement records range over a time period from 1950 to 1989 and show a constant trend from 1970 to 1989. Please note that the records used correspond to inactive wells that have either been permanently abandoned or are no longer monitored. In addition, we do not know where these wells are screened, they may miss shallow or perched water and only be monitoring deeper aquifers. Groundwater monitoring wells and groundwater elevations above mean sea level are shown on Figures 5a and 5b, respectively.

Fluctuations in groundwater levels may occur due to variations in rainfall, regional climate, and other factors. Shallow groundwater may increase the liquefaction potential at the project site.

5.3 Liquefaction and Post Liquefaction Settlement

Liquefaction occurs when saturated granular soils lose their inherent shear strength due to increased pore water pressures that may be induced by cyclic loading such as that caused by an earthquake. The factors that govern liquefaction are:

- Earthquake intensity and duration
- Depth to groundwater
- Soil type and relative density
- Particle size gradation
- Drainage conditions

The site conditions and soil type most susceptible to liquefaction are:

- Close proximity to the epicenter or location of fault rupture of a major earthquake
- Groundwater table close to ground surface
- Sand that has uniform gradation, rounded particles, and is very loose to loose

A review of the State of California Seismic Hazard maps for the Whittier quadrangle indicate the site is located within an area susceptible to liquefaction. Liquefaction potential at the site was evaluated per "County of Los Angeles GMED Manual for Geotechnical Reports," "County of Los Angeles GMED's Liquefaction/Lateral Spread GS 045.0 Memo" (revised October 1, 2014) and "California Geological Survey Publication 117A: Guidelines for Evaluating and Mitigating Seismic Hazards in California." In accordance with the aforementioned guidelines, liquefaction analysis was performed with the following data:



- Subsurface information from Boring B1, drilled to a depth of 51.5 feet bgs
- Earthquake Magnitude, M_w : 7.2
- Peak Ground Acceleration (PGA): 0.825
- Design Groundwater Level: 20
- N-value correction factors are based on equipment data provided by SWMD, boring dimension, and sampling method used:
 - Hammer energy ratio for automatic hammer on hollow stem auger drill rig CME-75, $C_E = 1.5$
 - Borehole diameter (8-inch boring), $C_B = 1.15$
 - Sampling Method, $C_S = 1.2$
- Factor of Safety (FS) of 1.3

LiquefyPro software was used for our analysis, which considered liquefaction-induced settlement and dynamic settlement of unsaturated soils above the design groundwater elevation. Results indicate the total seismically-induced settlement at the site is expected to be 3.44 inches and is within the allowable limits stated in the Manual for Geotechnical Reports. United States Geological Survey seismic parameters and liquefaction analysis results are included in Appendices H and I, respectively.

Liquefaction usually does not manifest at the surface when it occurs at depths of more than 50 feet due to larger overburden pressures.

Liquefaction-induced lateral spreading is defined as the finite lateral displacement of gently sloping ground as a result of pore pressure build-up or liquefaction in a shallow underlying deposit during an earthquake. Lateral spreading is unlikely because the project site is generally flat and there is no presence of free faces on or near the site.

6.0 GEOTECHNICAL RECOMMENDATIONS

Based on subsurface investigation, which confirmed the shallow depth to groundwater, onsite infiltration is not recommended at the project site. Other options such as filtration and/or onsite storage for nonpotable reuse should be considered. The following are general grading guidelines that should be followed:

- Onsite soils relatively free of organic material are suitable for reuse as fill
- Soils classified as silts or clays should not be used for backfill in the pipe zone
- High plasticity clays, if encountered, should be disposed of off-site
- Import material should consist of granular soils and have a very low to low expansion index and be non-corrosive



Design geotechnical parameters cannot be provided at this point due to unknown BMP's and the absence of design plans. Settlement due to liquefaction is an issue and should be reevaluated when plans are available, specifically for removal of soils. When available, proposed BMP type(s) and design plans should be provided to GMED for design parameters and review.

6.1 Excavation and Shoring

Soils can be classified as Type "C" with an allowable slope of 1.5H:1V (34°) for a maximum excavation depth of 20 feet. Groundwater conditions encountered during grading may cause modification of this recommendation. Per California Occupational Safety and Health Act, the following shall be followed when excavating:

- Operating equipment shall not be operated adjacent to invert ramp or channel wall excavations.
- Construction work within 2 feet of excavation edge shall be performed by hand-operated material.
- If temporary 1.5H:1V slopes are not feasible, shoring should be used during construction in accordance with 2015 Greenbook Standard Specifications.

Please provide final design plans and specifications to GMED for review and approval.



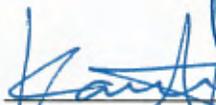
7.0 LIMITATIONS

This report has been prepared for the exclusive use of Public Works for the specific site discussed herein and should not be considered transferable to other sites or projects. In the event that any modification in the design, configuration, or use of the site is implemented, the recommendations contained in this report are no longer valid. This study was conducted according to generally accepted geotechnical engineering practices for projects of this magnitude.

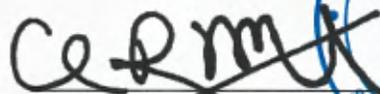
The findings and recommendations in this report are based on the field and laboratory investigations combined with an extrapolation of soil conditions between and beyond the boring locations and below the boring depths. Our recommendations are professional opinions and are not meant to be a control of nature; therefore, no warranty is herein expressed or implied.

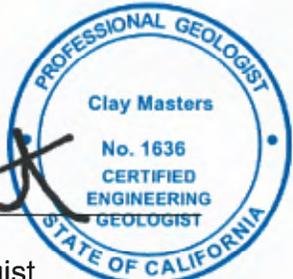
If you have questions regarding this matter, please contact Karen Mendez or William Man at Extension 4925.

Prepared by:


Karen Mendez
Associate Civil Engineer
PE 86375




Clayton R. Masters
Engineering Geologist
PG 4943, CEG 1636

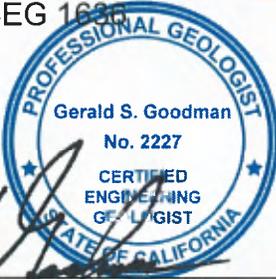


Reviewed by:


William Man
Civil Engineer
PE 74899




Gerald Goodman
Supervising Engineering Geologist III
PG 7094, CEG 2227, CHG 777



 KM:mc
GME4/p:\gmePub\secretarial\soilsinv\reports\adventure park infiltration report.docx

8.0 REFERENCES

Barclays California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 4, Article 6, Appendix A, November 2006.

Bilodeau et al., 2007, Geology of Los Angeles, California, United States of America, Environmental and Engineering Geoscience, Vol. XIII, No. 2, pages 99 through 160.

California Geologic Survey, Seismic Hazard Zone Report for Whittier 7.5 Minute Quadrangle, Los Angeles and Orange Counties, 1998.

California Department of Transportation, Corrosion Guidelines, Version 2.0, November 2012.

County of Los Angeles Department of Public Works; Phase I Environmental Site Assessment Gunn Avenue – Trumbull Street to Reis Street, Unincorporated Whittier Area (RDC0014595), January 26, 2010.

County of Los Angeles Department of Public Works; Phase I Environmental Site Assessment, Gunn Avenue, et al., Unincorporated Whittier Los Angeles County, California, May 6, 2010.

County of Los Angeles Department of Public Works; View LA Maps, 2016.

Day, Robert W. Geotechnical Earthquake Engineering Handbook, 2nd Edition. New York: McGraw-Hill; 2012.

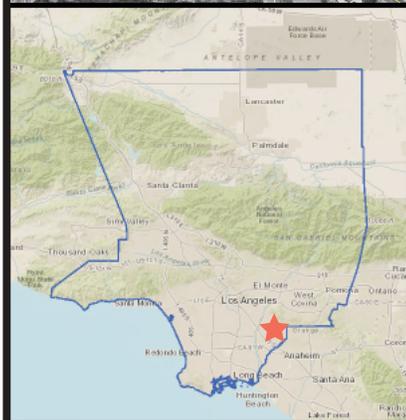
Dibblee, Jr. T.W., 2001, Geologic Map of the Whittier and La Habra Quadrangles (Western Puente Hills), Los Angeles and Orange Counties, California, Dibblee Geology Center Map #DF-74.

Naval Facilities Engineering Command (NAVFAC) Design Manual 7.02, September 1986.

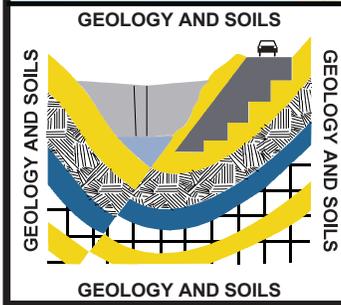
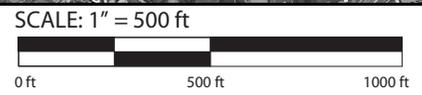
Standard Specifications for Public Works Construction, 2015 Edition.



FIGURES



 Project Site

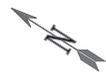
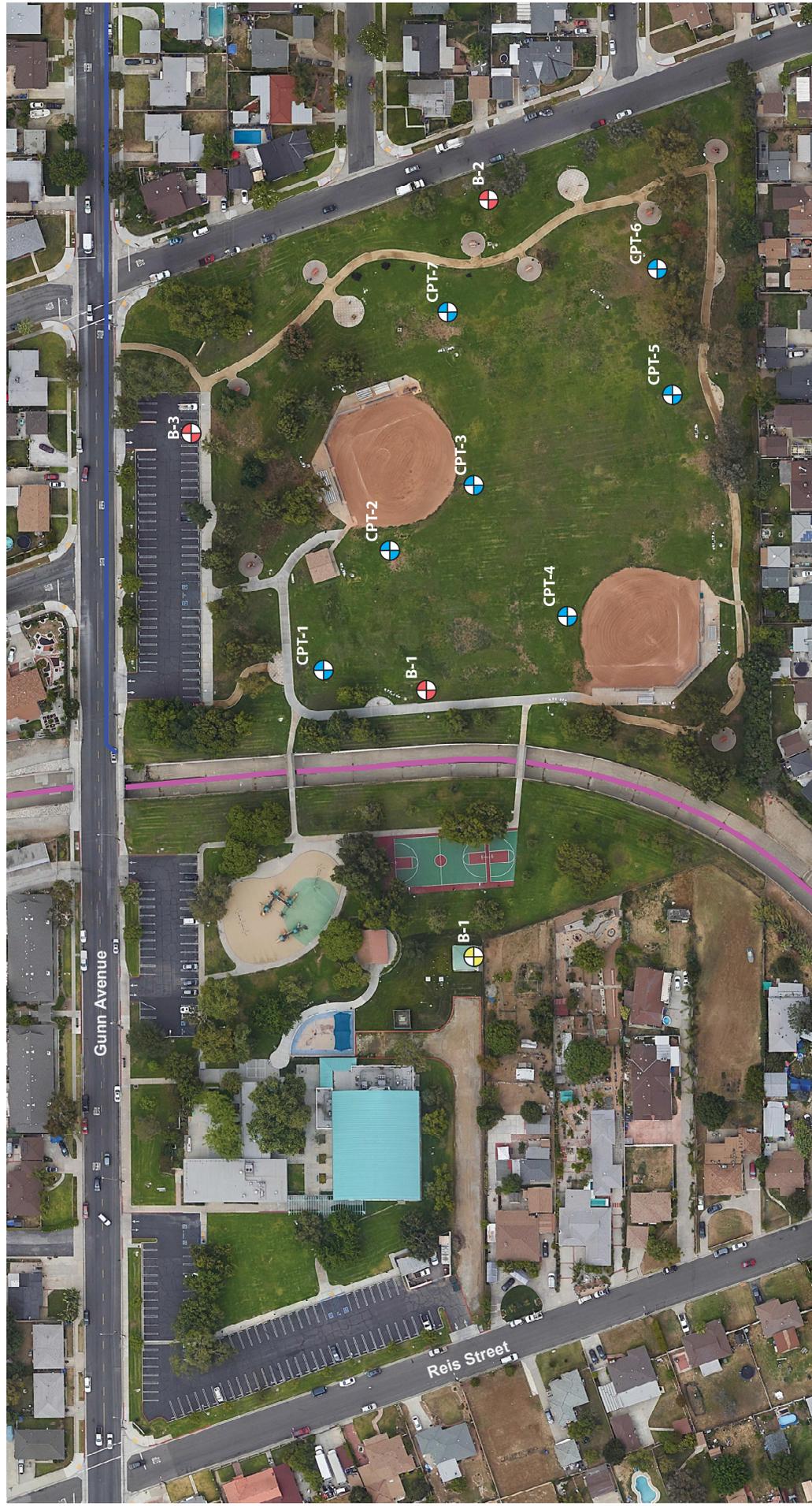


COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

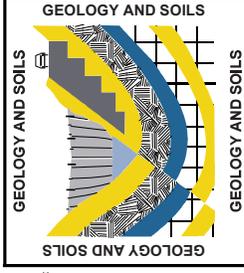
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

Vicinity Map
 Adventure Park Multi-Benefit Project
 Upper San Gabriel River Enhanced Watershed Management Program
 10130 S. Gunn Ave, Unincorporated Whittier

Date: March 2018	Drafted by: KM	Scale: As Shown	FIGURE 1
------------------	----------------	-----------------	----------

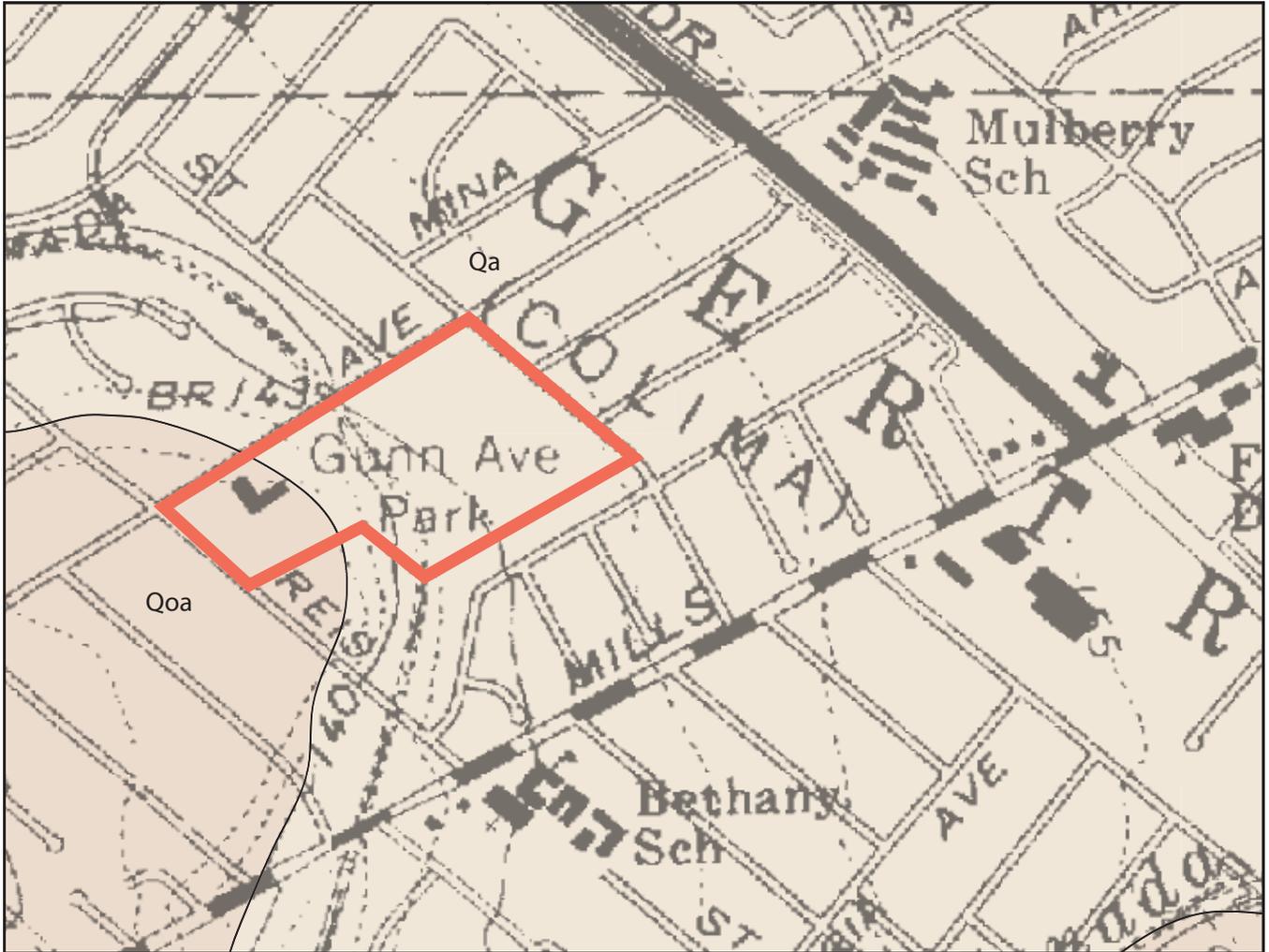


- LEGEND**
- Boring - Ninyo & Moore (June 2015)
 - CPT - GMED (December 2016)
 - Boring - GMED (June 2017)
 - Sorenson Drain (Maintained by LACFCD)
 - BI 0693 Drain (Maintained by LACFCD)



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
 GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
Boring and CPT Location Map
 Adventure Park Multi-Benefit Project
 Upper San Gabriel River Enhanced Watershed Management Program
 10130 S. Gunn Ave, Unincorporated Whittier

Date: April 2018 Drafted by: KM Scale: As Shown **FIGURE 2**

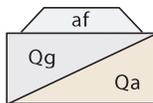


Map modified from Geologic map of the Whittier and La Habra quadrangle 7.5', Dibblee Geology Center map DF-74, 1:24000, 2001.

SCALE: 1" = 600'



LEGEND



SURFICIAL SEDIMENTS

Undissected alluvial deposits

- af Artificial fill, some recent areas may not be shown
- Qg Gravel and sand of major stream channels
- Qa Alluvial gravel, sand, and silt of valleys and floodplains



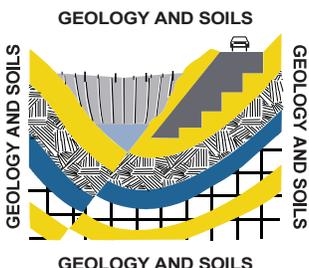
OLDER SURFICIAL SEDIMENTS

Elevated and dissected alluvial deposits

- Qae Slightly elevated and locally dissected alluvial gravel and sand, on north side of Puente Hills
- Qoa Elevated, dissected remnants of alluvial sand and gravel



Project Site



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

Geologic Map

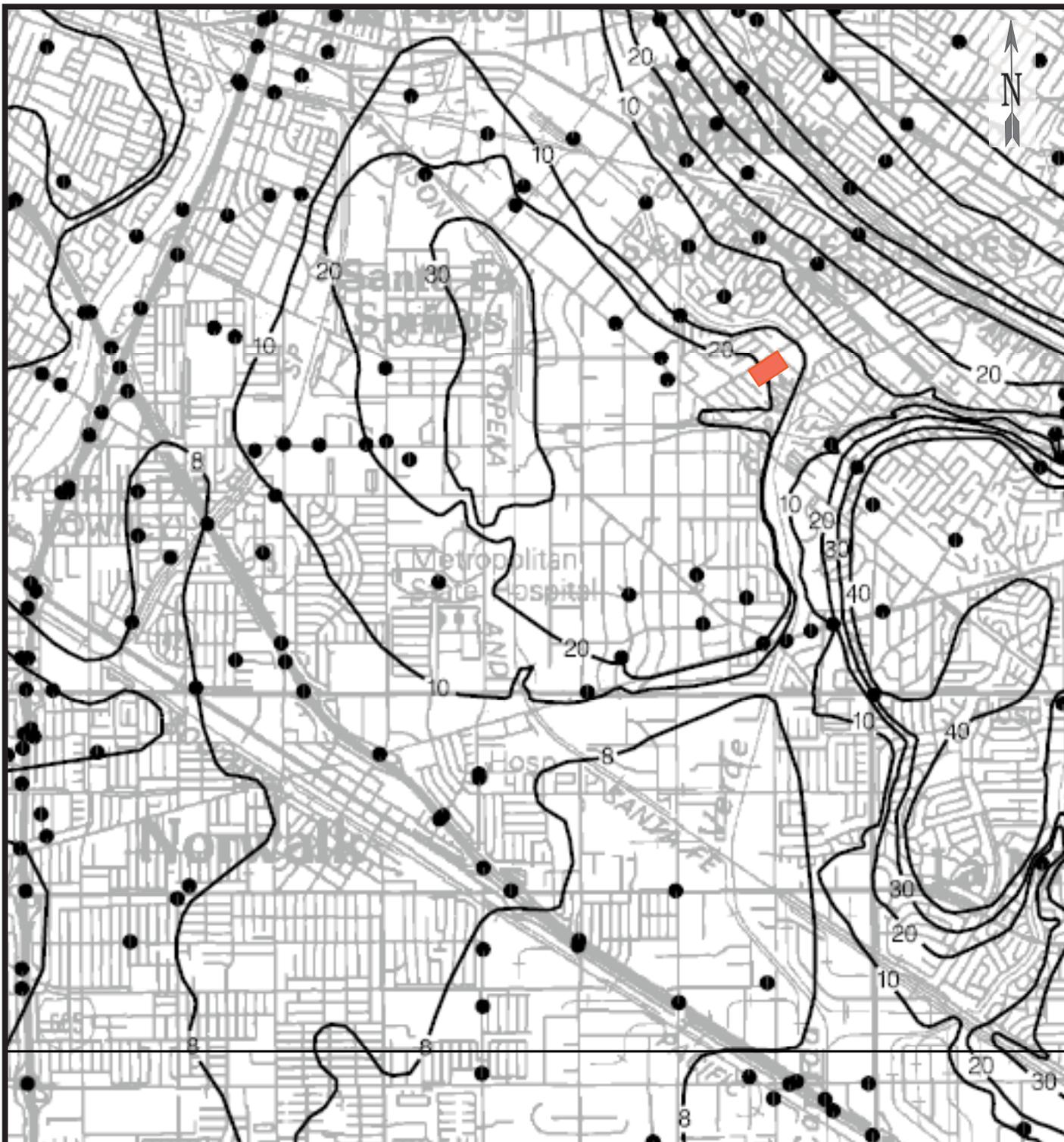
Adventure Park Multi-Benefit Project
 Upper San Gabriel River Enhanced Watershed Management Program
 10130 S. Gunn Ave, Unincorporated Whittier

Date: March 2018

Drafted by: KM

Scale: As Shown

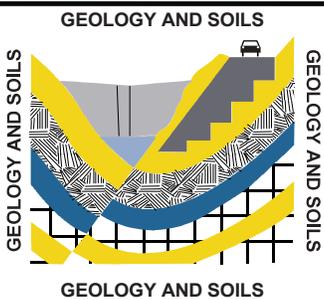
FIGURE 3



Seismic Hazard Zone Report for the Whittier 7.5-Minute Quadrangle, 1998
 Groundwater contours are in feet below ground surface.



 Project Site



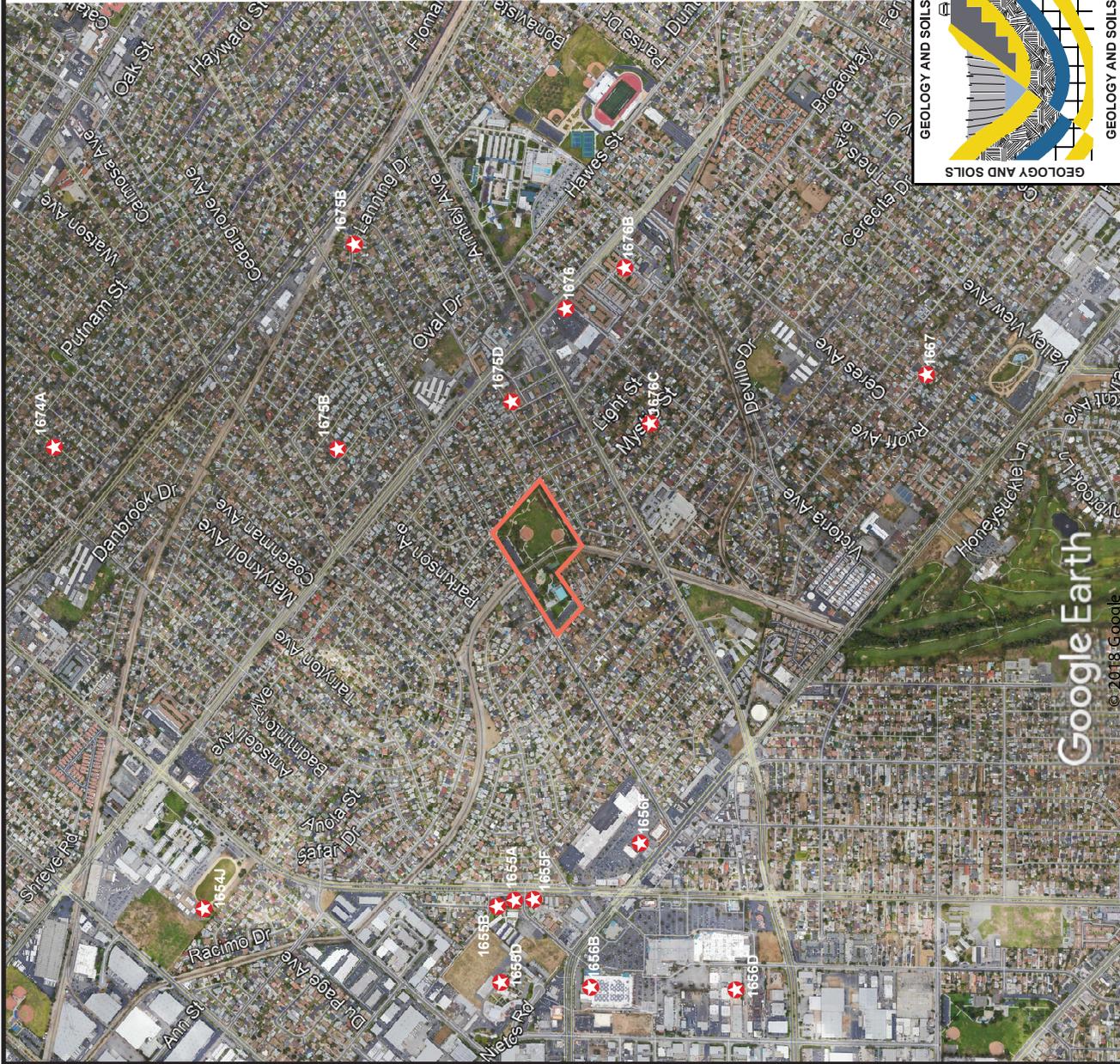
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS			
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION			
Historically Highest Groundwater Adventure Park Multi-Benefit Project Upper San Gabriel River Enhanced Watershed Management Program 10130 S. Gunn Ave, Unincorporated Whittier			
Date: March 2018	Drafted by: KM	Scale: As Shown	FIGURE 4



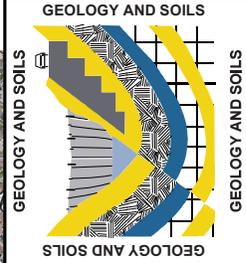
LEGEND:



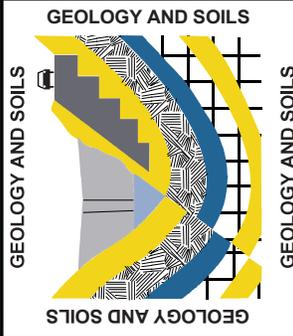
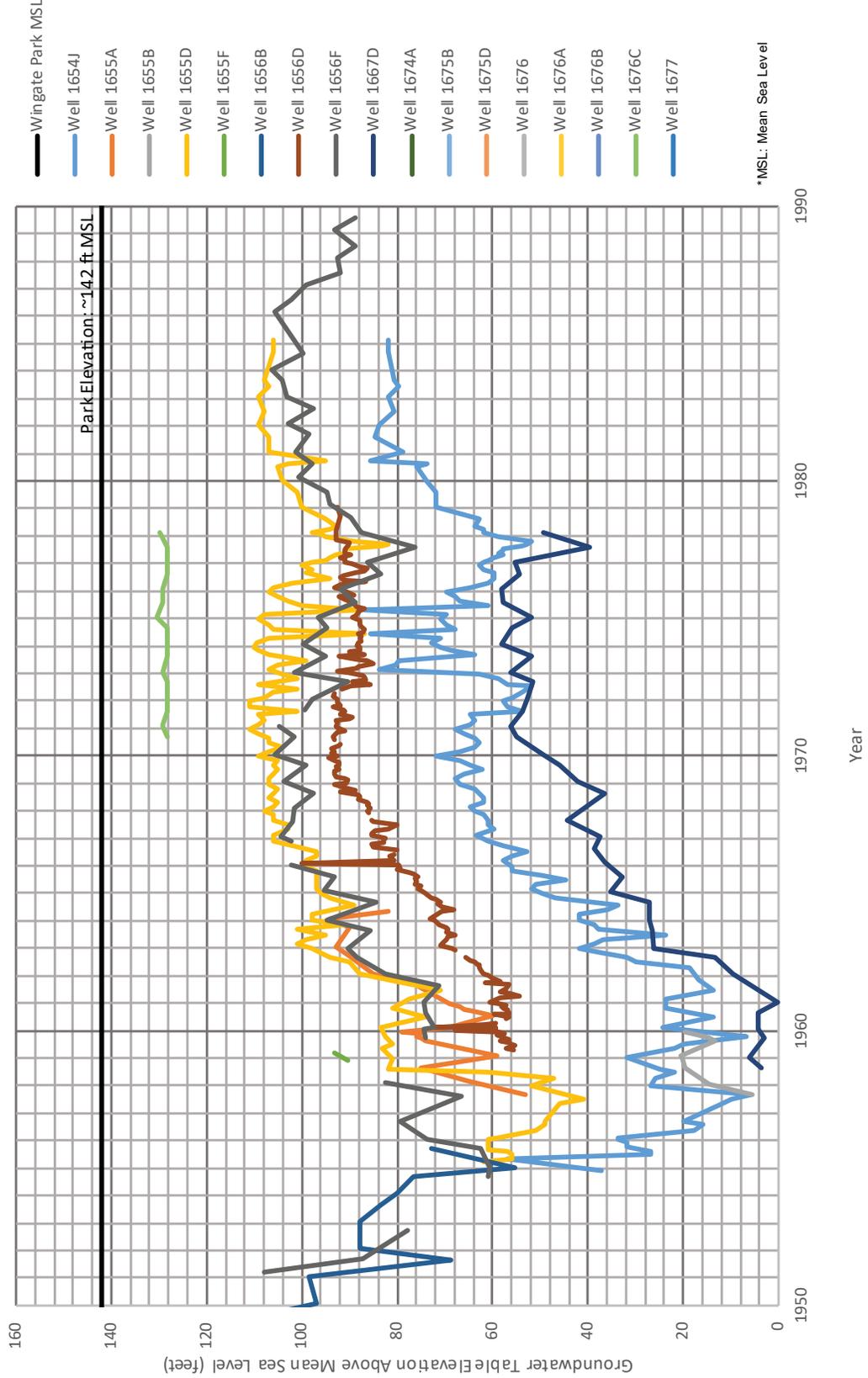
Project Site
Groundwater Monitoring Well
LACDPW SWED Database



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS	
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION	
Groundwater Monitoring Well Location Map	
Adventure Park Multi-Benefit Project Upper San Gabriel River Enhanced Watershed Management Program 10130 S. Gunn Ave, Unincorporated Whittier	
Date: April 2018	Drafted by: KM
Scale: As Shown	FIGURE 5a



Google Earth
© 2018 Google



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

Groundwater Elevation of Monitoring Wells

Adventure Park Multi-Benefit Project

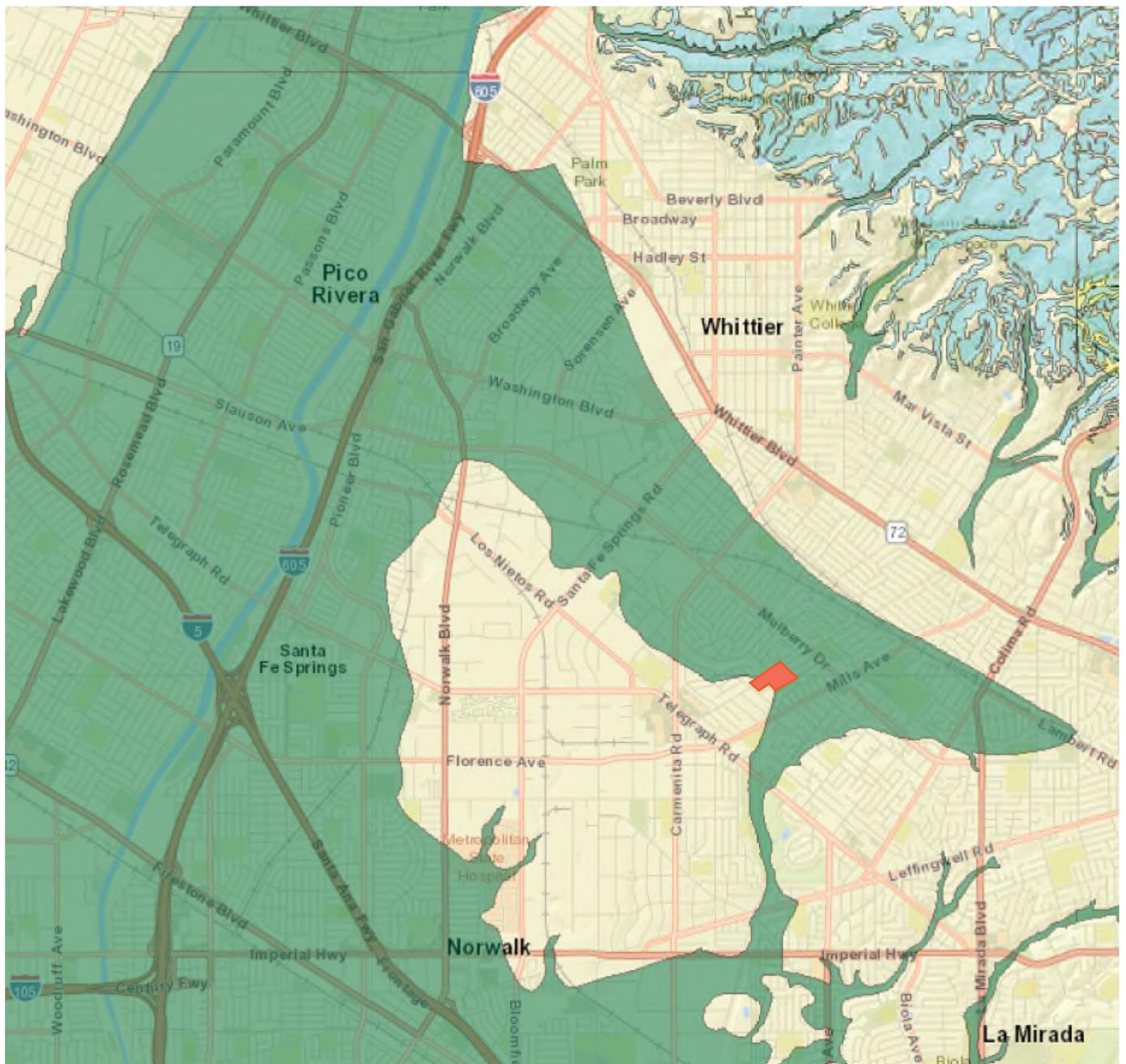
Upper San Gabriel River Enhanced Watershed Management Program
 10130 S. Gunn Ave, Unincorporated Whittier

Date: April 2018

Drafted by: KM

Scale: NTS

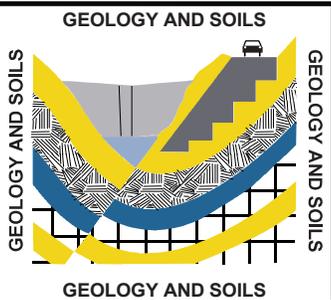
FIGURE 5b



Seismic Hazards Program, California Geological Survey, California Department of Conservation | Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, NGA, USGS

- Project Site
- Liquefaction Zone
- Landslide Zone

SCALE: 1" = 1 mi



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
 GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

Seismic Hazard Map
 Adventure Park Multi-Benefit Project
 Upper San Gabriel River Enhanced Watershed Management Program
 10130 S. Gunn Ave, Unincorporated Whittier

Date: April 2018

Drafted by: KM

Scale: As Shown

FIGURE 6

APPENDIX A

**Ninyo & Moore Geotechnical Services Upper San Gabriel River
EWMP
June 3, 2015**

**GEOTECHNICAL SERVICES
UPPER SAN GABRIEL RIVER EWMP
LOS ANGELES COUNTY, CALIFORNIA
TASK ORDER NOS. T10503269-102669-OM AND
T10507113-102944-OM**

PREPARED FOR:

MWH Americas
300 North Lake Avenue, Suite 400
Pasadena, California 91101

PREPARED BY:

Ninyo & Moore
Geotechnical and Environmental Sciences Consultants
5710 Ruffin Road
San Diego, California 92123

June 3, 2015
Project No. 107900001

June 3, 2015
Project No. 107900001

Ms. Bronwyn Kelly
MWH Americas
300 North Lake Avenue, Suite 400
Pasadena, California 91101

Subject: Geotechnical Services
Upper San Gabriel River EWMP
Los Angeles County, California
Task Order Nos. T10503269-102669-OM and T10507113-102944-OM

Dear Ms. Kelly:

In accordance with your authorization and task orders dated January 21 and 27, 2015, we have performed geotechnical services for the Upper San Gabriel River Enhanced Watershed Management Program (EWMP) project in Los Angeles County, California. Our services included the preparation of geotechnical reports for each of the 10 sites under consideration for the project. Our reports for each site are attached herewith. We appreciate the opportunity to be of service on this project.

Sincerely,
NINYO & MOORE



William Morrison, PE, GE
Senior Engineer



Gregory T. Farrand, PG, CEG
Principal Geologist



CAT/WRM/GTF/gg

- Attachments:
- Attachment 1 – Geotechnical Report for Adventure Park
 - Attachment 2 – Geotechnical Report for Allen J. Martin Park
 - Attachment 3 – Geotechnical Report for Bassett Park
 - Attachment 4 – Geotechnical Report for San Angelo Park
 - Attachment 5 – Geotechnical Report for Barnes Park
 - Attachment 6 – Geotechnical Report for Kahler Russell Park
 - Attachment 7 – Geotechnical Report for Downtown Properties (Glendora)
 - Attachment 8 – Geotechnical Report for San Jose Properties (Glendora)
 - Attachment 9 – Geotechnical Report for Finkbiner Park
 - Attachment 10 – Geotechnical Report for La Puente Park

Distribution: (1) Addressee (via e-mail)

ATTACHMENT 1
GEOTECHNICAL REPORT FOR ADVENTURE PARK

**GEOTECHNICAL SERVICES
ADVENTURE PARK
UPPER SAN GABRIEL RIVER EWMP
LOS ANGELES COUNTY, CALIFORNIA
TASK ORDER NO. T10503269-102669-OM**

PREPARED FOR:

MWH Americas
300 North Lake Avenue, Suite 400
Pasadena, California 91101

PREPARED BY:

Ninyo & Moore
Geotechnical and Environmental Sciences Consultants
5710 Ruffin Road
San Diego, California 92123

June 3, 2015
Project No. 107900001

June 3, 2015
Project No. 107900001

Ms. Bronwyn Kelly
MWH Americas
300 North Lake Avenue, Suite 400
Pasadena, California 91101

Subject: Geotechnical Services
Adventure Park
Upper San Gabriel River EWMP
Los Angeles County, California
Task Order No. T10503269-102669-OM

Dear Ms. Kelly:

In accordance with your authorization and task order dated January 21, 2015, we have performed geotechnical services at Adventure Park for the Upper San Gabriel River Enhanced Watershed Management Program (EWMP) project in Los Angeles County, California. This report presents geotechnical data obtained by Ninyo & Moore relative to the proposed project. We appreciate the opportunity to be of service on this project.

Sincerely,
NINYO & MOORE



William Morrison, PE, GE
Senior Engineer

CAT/WRM/GTF/KHM/gg

Distribution: (1) Addressee (via e-mail)



Gregory T. Farrand, PG, CEG
Principal Geologist



TABLE OF CONTENTS

	<u>Page</u>
1. INTRODUCTION	1
2. SCOPE OF SERVICES	1
3. PROJECT AND SITE DESCRIPTION	2
4. SUBSURFACE EXPLORATION AND LABORATORY TESTING	2
5. GEOLOGY AND SUBSURFACE CONDITIONS	3
5.1. Regional and Geologic Setting	3
5.2. Site Geology	4
5.2.1. Fill	4
5.2.2. Alluvium	4
5.3. Groundwater	4
6. FAULTING AND SEISMICITY	5
6.1. Ground Motion	5
6.2. Surface Fault Rupture	6
6.3. Liquefaction and Dynamic Settlement	6
7. OTHER GEOTECHNICAL CONSIDERATIONS	6
7.1. Slope Stability	6
7.2. Corrosion	7
8. DISCUSSION AND FINDINGS	7
9. PRELIMINARY RECOMMENDATIONS	8
9.1. Site Preparation	9
9.2. Materials for Fill	9
9.3. Compacted Fill	10
9.4. Utility Trench Backfill	11
9.5. Preliminary Foundation Recommendations	11
9.6. Concrete	12
9.7. Plan Review and Construction Observation	12
10. LIMITATIONS	13
11. REFERENCES	15

Figures

- Figure 1 – Site Location
- Figure 2 – Boring Location
- Figure 3 – Geology
- Figure 4 – Fault Locations

Appendices

Appendix A – Boring Logs

Appendix B – Laboratory Testing

1. INTRODUCTION

In accordance with your authorization and task order dated January 21, 2015, we have performed geotechnical services at Adventure Park for the Upper San Gabriel River Enhanced Watershed Management Program (EWMP) project in Los Angeles County, California (Figure 1). This report presents a compilation of geotechnical data obtained from the project along with preliminary evaluation of potential geotechnical factors that could affect the conceptual design of the project. We understand that the information contained herein will be included in the environmental report.

2. SCOPE OF SERVICES

Ninyo & Moore's scope of services for this project included review of pertinent background data, performance of a geologic reconnaissance, and subsurface exploration with regard to the proposed project. Specifically, we performed the following tasks:

- Review of readily available background materials, including State of California Seismic Hazards Zones map, State of California Earthquake Fault Zone map (Alquist-Priolo Special Studies Zones map), other published geologic maps and literature, in-house information, stereoscopic aerial photographs, and plans provided by the client.
- Performance of a site reconnaissance to observe the existing conditions at the site and to mark the proposed boring location for utility clearance. Mark-out of potential existing underground utilities was conducted through Underground Service Alert (USA).
- Performing a subsurface exploration consisting of drilling, logging and sampling of one exploratory soil boring at the site. The boring was advanced to a depth of approximately 46.5 feet using a truck-mounted drill rig equipped with hollow stem augers.
- Performing geotechnical laboratory testing on soil samples collected during our subsurface exploration. The testing included an evaluation of moisture content, in-situ moisture and dry density, grain-size analysis (sieve and 200 wash), Atterberg Limits, direct shear, and soil corrosivity.
- Compiling the data obtained from our background research, subsurface exploration, and laboratory testing.
- Preparing this report that presents geotechnical data obtained from our background review, site reconnaissance, and subsurface exploration at the project site, along with preliminary evaluation of potential geotechnical factors that could affect the conceptual design of the project.

3. PROJECT AND SITE DESCRIPTION

The purpose of the project is to assist MWH Americas (MWH) and the Los Angeles County Department of Public Works (LADPW) in developing an Enhanced Watershed Management Program (EWMP) for the Upper San Gabriel River Watershed. Our services are intended to help support feasibility analyses being conducted by MWH and LADPW for Better Management Practices (BMPs) at specific locations as part of the EWMP. We understand that the BMPs will help to reduce the impact of storm water and non-storm water discharges on the area (MWH, 2014).

Ten separate sites located within the San Gabriel Valley in Los Angeles County, California have been selected for feasibility analyses for the project. This report addresses the Adventure County Park site which is located at 10130 S. Gunn Avenue in the city of Whittier (Figures 1 and 2). Adventure Park is maintained by the County of Los Angeles. Geotechnical evaluations for the other nine sites are addressed in reports that are being issued under separate covers (Ninyo & Moore, 2015a through 2015i).

Adventure County Park is developed with improvements that include restroom and recreation center buildings, basketball courts, baseball/softball fields, asphalt concrete (AC) paved parking lots, paved and unpaved walkways, playground equipment, light poles, landscaping consisting of trees, shrubs, and grass areas, and other associated appurtenances. The site for the proposed improvements is located in a grass area to the east of the recreation center building. The site coordinates are approximately 33.9420°N latitude and -118.0363°W longitude. Elevations across the project site range from approximately 140 feet at the northern and eastern portions of the park, to 150 feet above mean sea level (MSL) at the southwestern portion of the park.

4. SUBSURFACE EXPLORATION AND LABORATORY TESTING

Our field exploration at the Adventure Park site included a geologic reconnaissance that was conducted on February 19, 2015 and subsurface exploration that was conducted on March 10, 2015. The subsurface exploration consisted of drilling one 8-inch diameter hollow stem auger boring (B-1) to a depth of approximately 46.5 feet below ground surface (bgs). The boring was logged by a geologist from our firm. Representative disturbed and undisturbed soil samples were

obtained at selected depths from the boring for laboratory testing. The approximate location of the boring is presented on Figure 2. The boring log is presented in Appendix A.

Laboratory testing of selected soil samples obtained from our exploratory boring included in-situ dry density and moisture content, gradation, Atterberg limits, direct shear, and soil corrosivity. The results of the in-situ dry density and moisture content tests are presented on the boring logs in Appendix A. The results of the other laboratory tests described above are presented in Appendix B.

5. GEOLOGY AND SUBSURFACE CONDITIONS

Our findings regarding regional and site geology, and groundwater conditions at the Adventure Park site are provided in the following sections.

5.1. Regional and Geologic Setting

The subject site is located within the northeastern portion of the Los Angeles Basin, which is included in the Peninsular Ranges Geomorphic Province (Norris and Webb, 1990). The geomorphic province encompasses an area that extends approximately 125 miles from the Transverse Ranges and the Los Angeles Basin south to the Mexican border, and continues farther to the tip of Baja California. The Los Angeles Basin has been divided into four structural blocks which are generally bounded by prominent fault systems. The site is located within the Northeastern Block, which is bordered on the west and south by the Whittier-Elsinore fault and is bordered on the north by the San Gabriel Mountains and the Raymond Hill Fault. The Northeastern Block is a deep basin characterized by thick sequences of alluvium and sedimentary units overlying basement rocks, which are at depths of up to approximately 12,000 feet below the surface in the central part of the San Gabriel Valley.

5.2. Site Geology

Our review of the referenced geologic maps and literature indicates that the subject site is underlain by Holocene to Pleistocene alluvial gravel and sand (Dibblee, 2001). Geologic units encountered during our reconnaissance and subsurface exploration of the project site included relatively thin fill soils that mantle alluvium. Generalized descriptions of the units encountered are provided in the subsequent sections. Additional descriptions are provided on the boring logs in Appendix A. A geologic map of the region is presented on Figure 3.

5.2.1. Fill

Fill materials were encountered in our boring B-1 extending from the ground surface to a depth of approximately 1 foot below existing grade. As observed, the fill materials generally consisted of dark brown, moist, medium dense, silty sand. Scattered roots and grass were encountered in the fill materials.

5.2.2. Alluvium

Alluvium was encountered in our boring B-1 underlying the fill materials and was observed to extend to the total depth explored of approximately 46.5 feet below existing grade. As observed in our boring, the alluvial materials generally consisted of various shades of brown and gray, moist to wet, medium dense to very dense, well graded sands with silt, silty sands, clayey sands, and sandy silts. Interbeds of grayish-brown and reddish-brown, moist to wet, very stiff to hard, silty clay and clayey silt were also encountered in the alluvium. Scattered gravel was encountered at various depths in the alluvium.

5.3. Groundwater

Groundwater was encountered during our subsurface exploration in our boring B-1 at an approximate depth of 31 feet. Fluctuations in the groundwater level and perched conditions typically occur due to variations in precipitation, ground surface topography, subsurface stratification, irrigation, and other factors.

6. FAULTING AND SEISMICITY

Based on our review of published geologic maps and review of stereoscopic aerial photographs, no active fault traces are mapped as underlying the Adventure Park site. Therefore, the potential for surface fault rupture at the site is considered to be low. The project site is not located within a State of California Earthquake Fault Zone (Alquist-Priolo Special Studies Zone, Hart and Bryant, 1997). However, Adventure Park is located 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 improvements. Figure 4 shows the approximate site location relative to the major faults in the region.

6.1. Ground Motion

The 2013 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. 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 for near-source effects. The horizontal peak ground acceleration (PGA) that corresponds to the MCE_R for the site was calculated at 0.842g using the United States Geological Survey (USGS, 2013) seismic design tool (web-based).

The 2013 CBC 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 with adjustment for site class effects in accordance with the American Society of Civil Engineers (ASCE) 7-10 Standard. The MCE_G peak ground acceleration is based on the geometric mean peak ground acceleration with a 2 percent probability of exceedance in 50 years. The MCE_G peak ground acceleration with adjustment for site class effects (PGA_M) was calculated as 0.822g using the USGS (USGS, 2013) seismic design tool that yielded a mapped MCE_G peak ground acceleration of 0.822g for the site and a site coefficient (F_{PGA}) of 1.0 for Site Class D.

6.2. Surface Fault Rupture

The probability of damage due to surface ground rupture is relatively low due to the lack of known active faults crossing the project site. Surface ground cracking related to shaking from distant events is not considered a significant hazard, although it is a possibility.

6.3. Liquefaction and Dynamic Settlement

Liquefaction is the phenomenon in which loosely deposited, granular soils and some fine-grained soils located below the water table undergo rapid loss of shear strength when subjected to strong earthquake-induced ground shaking. Ground shaking of sufficient duration can result in a loss of grain-to-grain contact due to a rapid rise in pore water pressure causing the soil to behave as a fluid for a short period. Liquefaction is known generally to occur in saturated or near-saturated cohesionless soils at depths shallower than 50 feet below the ground surface. 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.

According to the Seismic Hazard Zones Map for the Whittier Quadrangle, (CGS, 1999), the Adventure Park site is mapped as being in an area susceptible to liquefaction. During our subsurface exploration, groundwater was encountered at Adventure Park at a depth of 31 feet. Accordingly, it is our opinion that the soils underlying Adventure Park may be susceptible to liquefaction. If improvements are planned at Adventure Park, we recommend that a liquefaction evaluation be performed in accordance with California Geological Survey guidelines (CGS, 2008).

7. OTHER GEOTECHNICAL CONSIDERATIONS

7.1. Slope Stability

Our review of maps published by the California Geological Survey (CGS, 1999) indicate that the Adventure Park site is not situated in an area considered to be susceptible to seismic-induced landsliding. In addition, our observations indicate that the site is generally level to gently sloping. Consequently, landsliding or slope instability are not considered to be a constraint at the project site.

7.2. Corrosion

Laboratory testing was performed on representative samples of the on-site soils to evaluate pH and electrical resistivity, as well as chloride and sulfate contents. The pH and electrical resistivity tests were performed in accordance with the California Test (CT) 643 and the sulfate and chloride tests were performed in accordance with CTs 417 and 422, respectively. These laboratory test results are presented in Appendix B.

The results of the corrosivity testing performed on a sample obtained from the site indicated an electrical resistivity value of 950 ohm-cm, a soil pH value of 7.0, a chloride content of 155 ppm, and a sulfate content of 0.022 percent. According to Caltrans criteria and American Concrete Institute (ACI) 318 guidelines, a corrosive soil is defined as one with more than 500 ppm chlorides, more than 0.2 percent sulfates, a pH less than 5.5, or an electrical resistivity of less than 1,000 ohm-cm. Based on the Caltrans criteria and ACI guidelines, the upper soils encountered at the site are considered to be corrosive.

8. DISCUSSION AND FINDINGS

As discussed above, our geotechnical services were performed to assist MWH and LADPW evaluate the preliminary feasibility of an onsite storm water infiltration system at the Adventure Park site. Based on our communications with MWH, we understand that the preliminary criteria at the site is related to the presence of groundwater or dense materials providing refusal to drilling equipment within 100 feet of the ground surface. As such, our scope of services included the drilling of an exploratory boring that extended to a depth of 100 feet, to groundwater, or to refusal (whichever is shallower). We understand that BMPs being considered for the site are conceptual at this time. Based on the information obtained from our geotechnical evaluation, the following findings and conclusions have been made:

- The project site is underlain by relatively shallow fill (approximately 1 foot deep) overlying alluvial soils. The encountered portions of the fill were generally comprised of silty sands that contained scattered organic material, along with scattered amounts of gravel. The underlying alluvial soils were observed to consist of well graded sands with silt, silty sands, clayey sands, sandy silts, clayey silts, and silty clays.

- Groundwater was encountered in our exploratory boring at a depth of 31 feet. Per the request of MWH, this boring was terminated prior to reaching a depth of 100 feet.
- Based on our review of aerial photographs and published geologic maps, there are no known active faults or landslides underlying the project site.
- Our faulting and seismicity evaluation indicated that the site is subject to severe ground shaking due to a design seismic event.
- Review of geological literature indicates that the site is situated in an area that has been mapped as being susceptible to liquefaction. In addition, groundwater was encountered at the site at a depth of 31 feet. If this site is selected as part of the project, we recommend that a detailed liquefaction evaluation be performed in accordance with California Geological Survey guidelines (CGS, 2008).
- In-place infiltration testing was not performed as part of our geotechnical services. However, based on published correlations between a soil's grain size and its permeability (Shepherd, 1989), an estimated permeability on the order of 10^{-4} cm/sec within the sandy and silty soils can be utilized for preliminary evaluation purposes. Clayey soils encountered at the site can be expected to have significantly lower permeabilities. Actual design of storm water infiltration devices should be in accordance with the County of Los Angeles guidelines and should be based on field infiltration testing at the site.
- Recommendations provided in this report are preliminary in nature and are not intended to provide sufficient information to fully address potential geotechnical related issues. Prior to site development an additional geotechnical evaluation should be performed.

9. PRELIMINARY RECOMMENDATIONS

As noted above we understand that the Better Management Practices (BMPs) associated with the proposed Upper San Gabriel River EWMP Project are conceptual at this time. As such, details regarding the types and construction of the BMPs (if any) are not known at this time for the Adventure Park site. We recommend that the geotechnical information presented herein be utilized during the evaluation of the feasibility of the devices associated with the EWMP project at the site. The design of BMPs should be performed in accordance with County of Los Angeles guidelines.

The following sections of this report provide preliminary recommendations for earthwork and design of structure foundations for preliminary planning purposes. Once the type and general construction of the devices is better defined, Ninyo & Moore should review the devices' preliminary design. At that time, supplemental recommendations may be provided.

9.1. Site Preparation

Prior to earthwork, the project site should be cleared of existing structures, pavement, abandoned utilities (if present), and stripped of rubble, debris, vegetation, loose, wet, or otherwise unstable soils, as well as surface soils containing organic material. Materials generated from the clearing operations should be removed from the site and disposed of at a legal dumpsite.

9.2. Materials for Fill

On-site soils relatively free of organic material are suitable for reuse as fill. In general, fill material should not contain rocks or lumps over approximately 4 inches in diameter, and not more than approximately 30 percent larger than ¾-inch. Oversize materials should be separated from material to be used for fill and removed from the site. Although not anticipated, if encountered, high plasticity clays and silts should be disposed of off-site.

Utility trench backfill material should not contain rocks or lumps over approximately 3 inches in general. Soils classified as silts or clays should not be used for backfill in the pipe zone. Larger chunks, if generated during excavation, may be broken into acceptably sized pieces or disposed of off site.

Imported fill material should generally be granular soils with a very low to low expansion potential (i.e., an expansion index of 50 or less as evaluated by ASTM D 4829). Import material should also be non-corrosive in accordance with the Caltrans (2012) corrosion guidelines. Materials for use as fill should be evaluated by Ninyo & Moore's representative prior to filling or importing.

9.3. Compacted Fill

Prior to placement of compacted fill, the contractor should request an evaluation of the exposed ground surface by Ninyo & Moore. Unless otherwise recommended, the exposed ground surface should then be scarified, moisture conditioned as needed to achieve moisture contents generally above the optimum moisture content, and then compacted to a relative compaction of 90 percent as evaluated in accordance with ASTM D 1557. The evaluation of compaction by the geotechnical consultant should not be considered to preclude any requirements for observation or approval by governing agencies. It is the contractor's responsibility to notify the geotechnical consultant and the appropriate governing agency when the project area is ready for observation, and to provide reasonable time for that review.

Fill materials should be moisture conditioned to generally above the laboratory optimum moisture content prior to placement. The optimum moisture content will vary with material type and other factors. Moisture conditioning of fill soils should be generally consistent within the soil mass.

Prior to placement of additional compacted fill material following a delay in the grading operations, the exposed surface of previously compacted fill should be prepared to receive fill. Preparation may include scarification, moisture conditioning, and recompaction.

Compacted fill should be placed in horizontal lifts of approximately 8 inches in loose thickness. Prior to compaction, each lift should be watered or dried as needed to achieve a moisture content generally above the laboratory optimum, mixed, and then compacted by mechanical methods, using sheepfoot rollers, multiple-wheel pneumatic-tired rollers or other appropriate compacting rollers, to a relative compaction of 90 percent as evaluated by ASTM D 1557. Successive lifts should be treated in a like manner until the desired finished grades are achieved.

9.4. Utility Trench Backfill

Based on our subsurface exploration, the on-site earth materials should be generally suitable for re-use as trench backfill provided they are free of organic material, clay lumps, debris, and rocks greater than approximately 3 inches in diameter. We recommend that trench backfill materials be in conformance with the “Greenbook” (Standard Specifications for Public Works) specifications for structure backfill. Fill should be moisture-conditioned to generally above the laboratory optimum. Trench backfill should be compacted to a relative compaction of 90 percent except for the upper 12 inches of the backfill that should be compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557. Lift thickness for backfill will depend on the type of compaction equipment utilized, but fill should generally be placed in lifts not exceeding 8 inches in loose thickness. Special care should be exercised to avoid damaging the pipe during compaction of the backfill.

9.5. Preliminary Foundation Recommendations

For preliminary design purposes, shallow, spread or continuous footings founded on compacted fill or alluvial soils can be considered suitable for support of structures. Shallow, spread or continuous footings bearing on compacted fill or alluvial soils may be designed assuming an allowable bearing capacity of 2,000 psf. This allowable bearing capacity may be increased by one-third when considering loads of short duration such as wind or seismic forces. Spread footings should be founded 18 inches below the lowest adjacent grade. Continuous footings should have a width of 15 inches and isolated footings should be 18 inches in width or more. The spread footings should be reinforced in accordance with the recommendations of the project structural engineer.

For resistance of foundations to lateral loads, we recommend an allowable passive pressure exerted by an equivalent fluid weight of 300 pounds per cubic foot be used. This value assumes that the ground is horizontal for a distance of 10 feet or more, or three times the height generating the passive pressure, whichever is greater. We recommend that the upper 1 foot of soil not protected by pavement or a concrete slab be neglected when calculating passive resistance.

For frictional resistance to lateral loads, we recommend a coefficient of friction of 0.35 be used between soil and concrete. If passive and frictional resistances are to be used in combination, we recommend that the passive value not exceed one-half of the total resistance. The passive resistance values may be increased by one-third when considering loads of short duration such as wind or seismic forces.

9.6. Concrete

Concrete in contact with soil or water that contains high concentrations of soluble sulfates can be subject to chemical deterioration. Laboratory testing indicated the sulfate content of the sample tested was less than 0.2 percent, which is considered negligible for sulfate attack based on ACI criteria (ACI, 2011). Although significant sulfate content was not indicated, due to the potential for variability of site fill soil, we recommend that Type II/V cement be used for concrete structures in contact with soil. The water-cement ratio of the concrete should be 0.45 or less and the slump should be 4 inches or less.

9.7. Plan Review and Construction Observation

The preliminary conclusions and recommendations presented in this report are based on analysis of observed conditions in widely spaced exploratory borings. If conditions are found to vary from those described in this report, Ninyo & Moore should be notified, and additional recommendations will be provided upon request. Because we understand that the design of the BMPs devices for the EWMP project is conceptual at this point, we recommend that Ninyo & Moore review the devices' preliminary design, once the type and general construction of the devices is better defined. At that time, supplemental recommendations may be provided.

Ninyo & Moore should review the final project drawings and specifications prior to the commencement of construction. Ninyo & Moore should perform the needed observation and testing services during construction operations to evaluate the assumptions inherent in the design.

The preliminary recommendations provided in this report are based on the assumption that Ninyo & Moore will provide geotechnical observation and testing services during construction. In the event that it is decided not to utilize the services of Ninyo & Moore during construction, we request that the selected consultant provide the client with a letter (with a copy to Ninyo & Moore) indicating that they fully understand Ninyo & Moore's recommendations, and that they are in full agreement with the design parameters and recommendations contained in this report. Construction of proposed improvements should be performed by qualified subcontractors utilizing appropriate techniques and construction materials.

10. LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses 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 preliminary 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 feasibility and preliminary 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 preliminary 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 controls.

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.

11. REFERENCES

- American Concrete Institute (ACI), 2011, ACI 318 Building Code Requirements for Structural Concrete and Commentary.
- Associated Consulting Civil & Environmental Services, Inc., 2009, Site Assessment, Petroleum Hydrocarbon Contamination, Grand Car Wash, 744 N. Grand Avenue, Covina, CA 91724: dated February 10.
- California Building Standards Commission, 2013, California Building Code (CBC), Title 24, Part 2, Volumes 1 and 2.
- California Department of Transportation (Caltrans), 2012, Corrosion Guidelines (Version 2.0), Division of Engineering and Testing Services, Corrosion Technology Branch: dated November.
- California Geological Survey (CGS), 1999, Seismic Hazard Zones Map, Whittier Quadrangle, Scale 1:24,000: dated March 25.
- California Geological Survey (CGS), 2008, Guidelines for Evaluating and Mitigating Seismic Hazards in California, CGS Special Publication 117A.
- Cao, T., Bryant, W. A., Rowshandel, B., Branum, D., and Willis, C. J., 2003, The Revised 2002 California Probabilistic Seismic Hazards Maps: California Geological Survey: dated June.
- Cardno ERI, 2014, Third Quarter 2013/Fourth Quarter 2013 Semiannual Groundwater Monitoring and Status Report, Former Mobil Station 18E45, 14206 Mulberry Drive, Whittier, California, CRWQCB Case No. I-02988: dated January 10.
- Dibblee, T.W. and Ehrenspeck, H.E., 2001, Geologic Map of the Whittier and La Habra Quadrangles (western Puente Hills), Los Angeles and Orange Counties, California, Scale 1:24,000.
- Geotracker, 2015, www.geotracker.swrcb.ca.gov/
- Google Earth, 2015, www.googleearth.com
- Harden, D.R., 1998, California Geology: Prentice Hall, Inc.
- Hart, E.W., and Bryant, W.A., 1997, Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zone Maps: California Geological Survey, Special Publication 42, with Supplements 1 and 2 added in 1999.
- Jennings, C.W., 2010, Fault Activity Map of California and Adjacent Areas: California Geological Survey, California Geologic Data Map Series, Map No. 6, Scale 1:750,000.
- MWH Americas, 2014, Draft Enhanced Watershed Management Program Work Plan, Prepared for Upper San Gabriel River Enhanced Watershed Management Program Group: dated June.

MWH Americas, 2015a, Health and Safety Plan, Upper San Gabriel River (USGR) Enhanced Watershed Management Program (EWMP) Site Investigations: dated February.

MWH Americas, 2015b, Regional EWMP Project Site Maps: undated.

Ninyo & Moore, 2015a, Geotechnical Services, Allen J. Martin Park, Upper San Gabriel River EWMP, Los Angeles County, California, Task Order No. T10503269-102669-OM, Project No. 107900001: dated June 3.

Ninyo & Moore, 2015b, Geotechnical Services, Bassett Park, Upper San Gabriel River EWMP, Los Angeles County, California, Task Order No. T10503269-102669-OM, Project No. 107900001: dated June 3.

Ninyo & Moore, 2015c, Geotechnical Services, San Angelo Park, Upper San Gabriel River EWMP, Los Angeles County, California, Task Order No. T10503269-102669-OM, Project No. 107900001: dated June 3.

Ninyo & Moore, 2015d, Geotechnical Services, Barnes Park, Upper San Gabriel River EWMP, Los Angeles County, California, Task Order No. T10503269-102669-OM, Project No. 107900001: dated June 3.

Ninyo & Moore, 2015e, Geotechnical Services, Kahler Russell Park, Upper San Gabriel River EWMP, Los Angeles County, California, Task Order No. T10503269-102669-OM, Project No. 107900001: dated June 3.

Ninyo & Moore, 2015f, Geotechnical Services, Downtown Properties (Glendora), Upper San Gabriel River EWMP, Los Angeles County, California, Task Order No. T10507113-102944-OM, Project No. 107900001: dated June 3.

Ninyo & Moore, 2015g, Geotechnical Services, San Jose Properties (Glendora), Upper San Gabriel River EWMP, Los Angeles County, California, Task Order No. T10507113-102944-OM, Project No. 107900001: dated June 3.

Ninyo & Moore, 2015h, Geotechnical Services, Finkbiner Park, Upper San Gabriel River EWMP, Los Angeles County, California, Task Order No. T10503269-102669-OM, Project No. 107900001: dated June 3.

Ninyo & Moore, 2015i, Geotechnical Services, La Puente Park, Upper San Gabriel River EWMP, Los Angeles County, California, Task Order No. T10503269-102669-OM, Project No. 107900001: dated June 3.

Ninyo & Moore, In-House Proprietary Information.

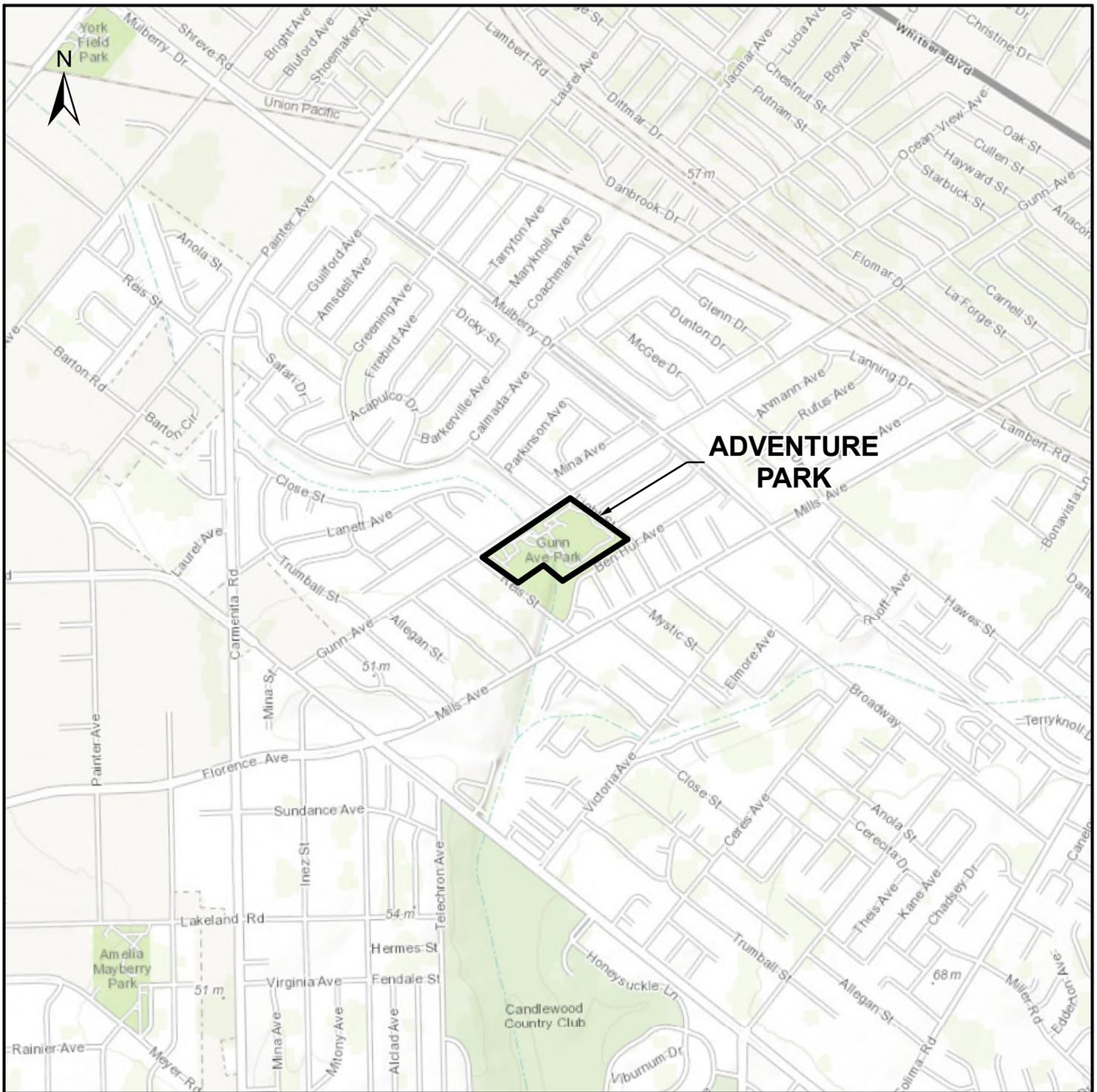
Norris, R. M. and Webb, R. W., 1990, Geology of California, Second Edition: John Wiley & Sons, Inc.

Shepherd, R.G., 1989, Correlations of Permeability and Grain Size, Ground Water, Vol. 27, No. 5, pp. 633-638.

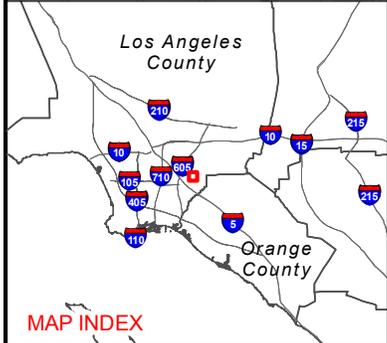
United States Department of the Interior, Bureau of Reclamation, 1998, Engineering Geology Field Manual.

United States Geological Survey (USGS), 2012, Whittier, 7.5-Minute Series Topographic Map, San Diego County, California: Scale 1:24,000.

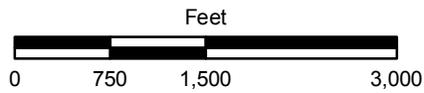
United States Geological Survey (USGS), 2013, U.S. Seismic Design Maps website, <http://geohazards.usgs.gov/designmaps/us/application.php>.



SOURCE: USGS, FAO, NPS, EPA, ESRI, DELORME, TANA, OTHER SUPPLIERS.



MAP INDEX



NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Ninyo & Moore

SITE LOCATION

FIGURE

PROJECT NO.

DATE

ADVENTURE PARK
UPPER SAN GABRIEL RIVER EWMP
LOS ANGELES COUNTY, CALIFORNIA

107900001

6/15

1



SOURCE: Aerial Imagery - ESRI, i-cubed, USDA FSA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGP.

LEGEND

-  SITE BOUNDARY
-  BORING
TD=TOTAL DEPTH IN FEET



SCALE IN FEET



NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Ninyo & Moore

BORING LOCATION

FIGURE

PROJECT NO.

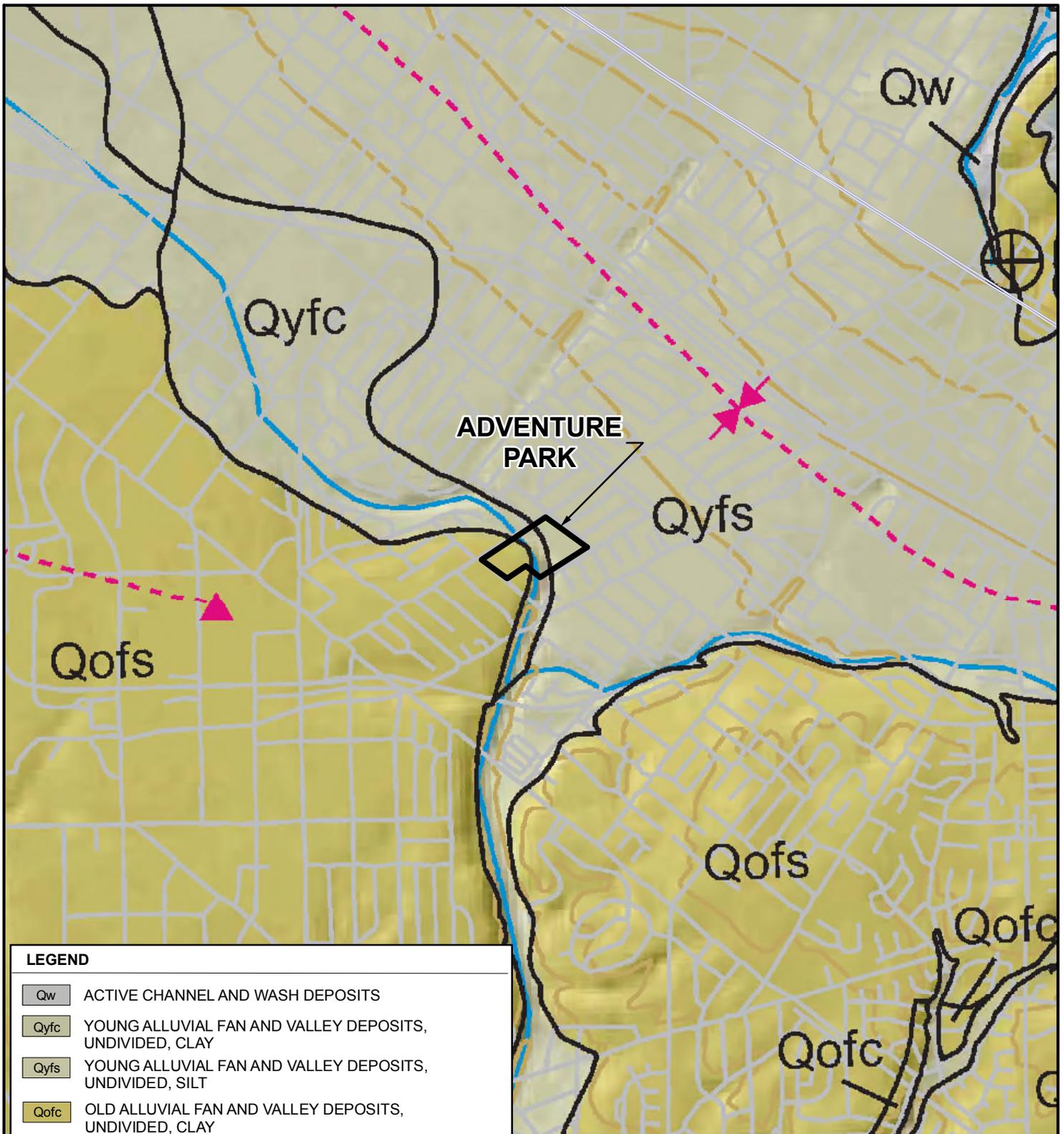
DATE

ADVENTURE PARK
UPPER SAN GABRIEL RIVER EWMP
LOS ANGELES COUNTY, CALIFORNIA

107900001

6/15

2

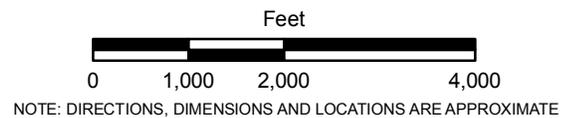


LEGEND

- Qw ACTIVE CHANNEL AND WASH DEPOSITS
- Qyfc YOUNG ALLUVIAL FAN AND VALLEY DEPOSITS, UNDIVIDED, CLAY
- Qyfs YOUNG ALLUVIAL FAN AND VALLEY DEPOSITS, UNDIVIDED, SILT
- Qofc OLD ALLUVIAL FAN AND VALLEY DEPOSITS, UNDIVIDED, CLAY
- Qofs OLD ALLUVIAL FAN AND VALLEY DEPOSITS, UNDIVIDED, SILT

--- SYNCLINAL FOLD - SOLID WHERE WELL LOCATED; DASHED WHERE APPROXIMATELY LOCATED OR INFERRED; DOTTED WHERE CONCEALED. PLUNGE DIRECTION INDICATED BY ARROWHEAD ON FOLD AXIS.

SOURCE: SAUCEDO, G.J., GREENE, H.G., KENNEDY, M.P., AND BEZORE, S.P., 2003. GEOLOGIC MAP OF THE LONG BEACH 30' X 60' QUADRANGLE, CALIFORNIA



Ninyo & Moore

GEOLOGY

FIGURE

PROJECT NO.

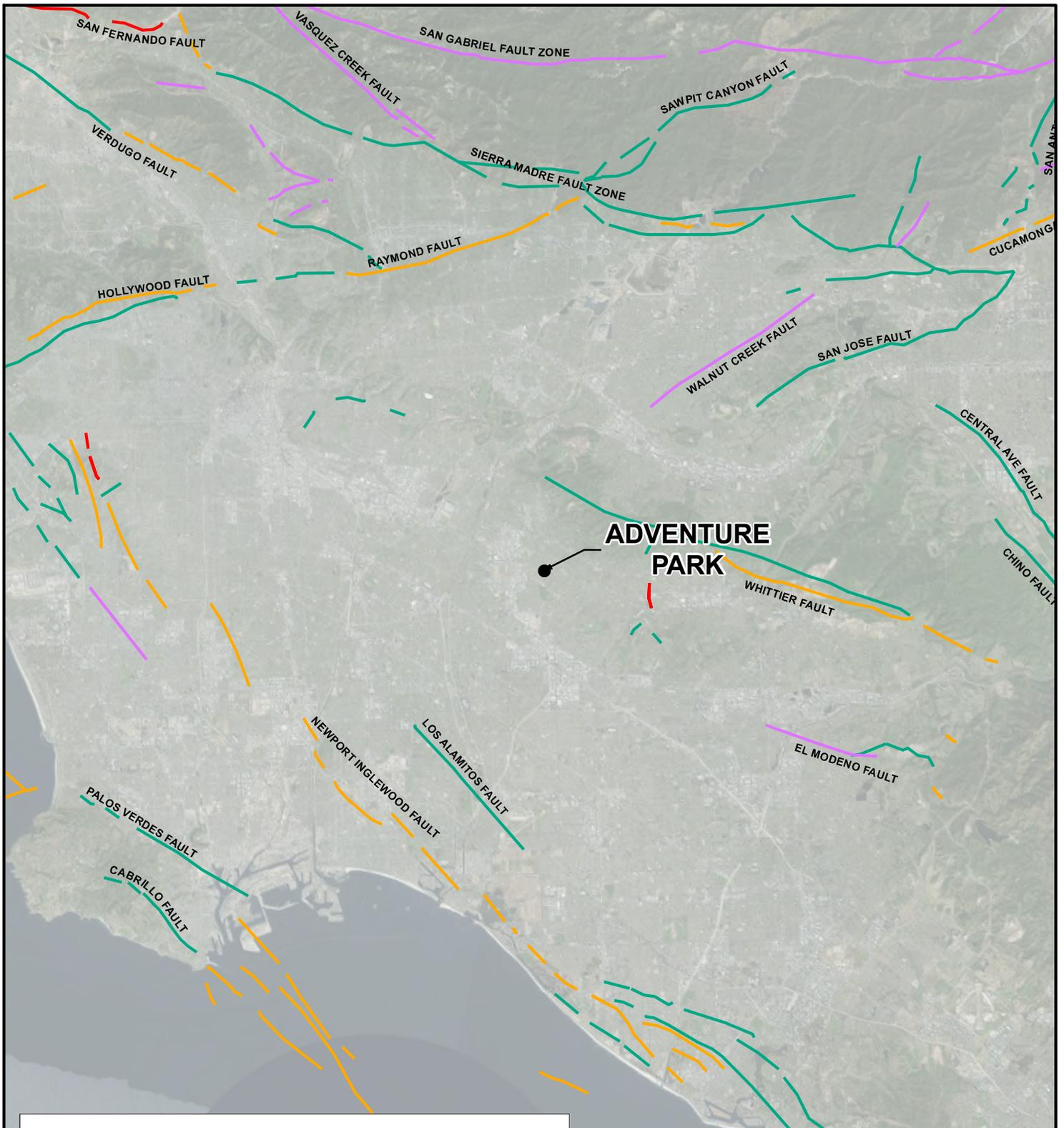
DATE

ADVENTURE PARK
UPPER SAN GABRIEL RIVER EWMP
LOS ANGELES COUNTY, CALIFORNIA

107900001

6/15

3



SOURCE: USGS, FAO, NPS, EPA, ESRI, DELORME, TANA, OTHER SUPPLIERS

LEGEND

CALIFORNIA FAULT ACTIVITY

- HISTORICALLY ACTIVE
- HOLOCENE ACTIVE
- LATE QUATERNARY (POTENTIALLY ACTIVE)
- QUATERNARY (POTENTIALLY ACTIVE)
- STATE/COUNTY BOUNDARY



NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

4_107900001_F_AP_08.mxd AOB

Ninyo & Moore		FAULT LOCATIONS	FIGURE
PROJECT NO.	DATE	ADVENTURE PARK UPPER SAN GABRIEL RIVER EWMP LOS ANGELES COUNTY, CALIFORNIA	4
107900001	6/15		

APPENDIX A

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 SPT sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1 $\frac{3}{8}$ 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 3.0 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.

BORING LOG EXPLANATION SHEET

DEPTH (feet)	Bulk Samples Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
0	■						Bulk sample.
	■						Modified split-barrel drive sampler.
	▲						2-inch inner diameter split-barrel drive sampler.
	X						No recovery with modified split-barrel drive sampler, or 2-inch inner diameter split-barrel drive sampler.
	■						Sample retained by others.
5	▲						Standard Penetration Test (SPT).
	X						No recovery with a SPT.
	X	XX/XX					Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
	X						No recovery with Shelby tube sampler.
	X						Continuous Push Sample.
10	X		∇				Seepage.
	X		∇				Groundwater encountered during drilling.
	X		∇				Groundwater measured after drilling.
	X				■	SM	<u>MAJOR MATERIAL TYPE (SOIL):</u> Solid line denotes unit change.
	X				- - -	CL	Dashed line denotes material change.
15	X				/ / /		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
20	X						The total depth line is a solid line that is drawn at the bottom of the boring.



BORING LOG

Explanation of Boring Log Symbols

PROJECT NO.	DATE	FIGURE
-------------	------	--------

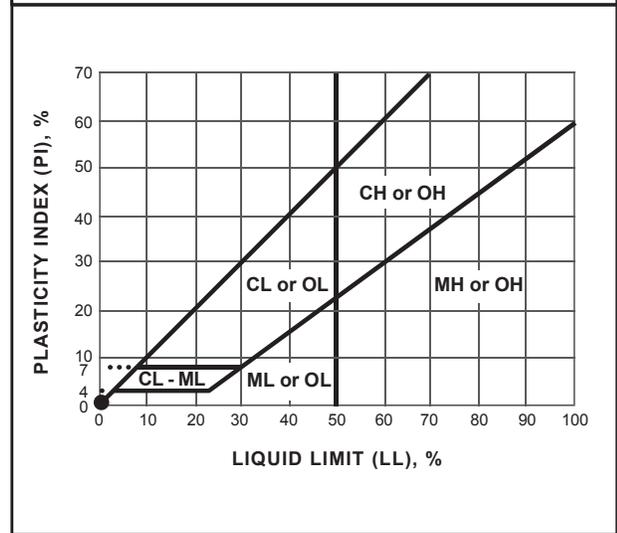
SOIL CLASSIFICATION CHART PER ASTM D 2488

PRIMARY DIVISIONS		SECONDARY DIVISIONS			
		GROUP SYMBOL	GROUP NAME		
COARSE-GRAINED SOILS more than 50% retained on No. 200 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
		SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines		SW
				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
				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

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

CONSISTENCY	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

Ninyo & Moore

USCS METHOD OF SOIL CLASSIFICATION

Explanation of USCS Method of Soil Classification

PROJECT NO.	DATE	FIGURE
-------------	------	--------

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>3/10/15</u> BORING NO. <u>B-1</u>	
	Bulk	Driven						GROUND ELEVATION <u>150' ± (MSL)</u>	SHEET <u>1</u> OF <u>2</u>
								METHOD OF DRILLING <u>8" Diameter Hollow-Stem Auger (CME 75) (Geoboden)</u>	
								DRIVE WEIGHT <u>140 lbs. (Auto-Trip Hammer)</u> DROP <u>30"</u>	
								SAMPLED BY <u>CAT</u> LOGGED BY <u>CAT</u> REVIEWED BY <u>GTF</u>	
DESCRIPTION/INTERPRETATION									
0							SM	FILL: Dark brown, moist, medium dense, silty fine to medium SAND; scattered roots and grass.	
							SM	ALLUVIUM: Light brown, moist, medium dense, silty, fine to medium SAND.	
							SC	Dark brown, moist, medium dense, clayey fine to medium SAND; scattered roots.	
			28				ML	Dark yellowish brown, moist, medium dense, fine sandy SILT; trace clay.	
10			15	19.2			CL-SC	Trace medium sand; scattered caliche. Grayish brown, moist, very stiff, silty CLAY with pockets of light brown, moist, medium dense, clayey fine to coarse SAND with gravel.	
			20	10.5			ML	Dark yellowish brown, moist, medium dense, fine sandy SILT; trace medium and coarse sand; some grayish brown mottling.	
20			35	1.7			SW-SM	Light brown, moist, dense to very dense, well graded SAND with silt; some fine gravel.	
			75	2.2	120.7			Scattered gravel up 1-inch in diameter.	
30			50	9.5				Scattered gravel up to 1-1/2-inch in diameter.	
								Wet.	
			23	15.8				Less gravel.	
				16.3			ML	Dark reddish brown, wet, hard, clayey SILT; some fine sand; micaceous.	
40									



BORING LOG

ADVENTURE PARK - UPPER SAN GABRIEL RIVER EWMP
LOS ANGELES COUNTY, CALIFORNIA

PROJECT NO. 107900001	DATE 6/15	FIGURE A-1
--------------------------	--------------	---------------

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.				
	Bulk	Driven						3/10/15	B-1				
								GROUND ELEVATION	SHEET	OF			
								METHOD OF DRILLING	8" Diameter Hollow-Stem Auger (CME 75) (Geoboden)				
								DRIVE WEIGHT	140 lbs. (Auto-Trip Hammer)	DROP	30"		
								SAMPLED BY	CAT	LOGGED BY	CAT	REVIEWED BY	GTF
								DESCRIPTION/INTERPRETATION					
40			18	21.3			ML	ALLUVIUM: (Continued) Reddish brown and grayish brown (mottled), wet, very stiff, clayey SILT; some fine sand.					
			26	32.8				Dense; silt with fine SAND; finely laminated; trace medium to coarse sand; no clay; gravel in shoe.					
								Total Depth = 46.5 feet. Groundwater encountered at approximately 32 feet during drilling and measured at approximately 31 feet 30 minutes after drilling Backfilled shortly after drilling on 3/10/15.					
50								<u>Notes:</u> 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.					
60													
70													
80													



BORING LOG

ADVENTURE PARK - UPPER SAN GABRIEL RIVER EWMP
LOS ANGELES COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107900001	6/15	A-2

APPENDIX B

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 A.

Moisture Content

The moisture content of samples obtained from the exploratory borings was evaluated in accordance with ASTM D 2216. The test results are presented on the logs of the exploratory borings in Appendix A.

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 A.

Gradation Analysis

Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D 422. The grain-size distribution curves are shown on Figures B-1 through B-4. These test results were utilized in evaluating the soil classifications in accordance with the USCS.

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 USCS. The test results and classification are shown on Figure B-5.

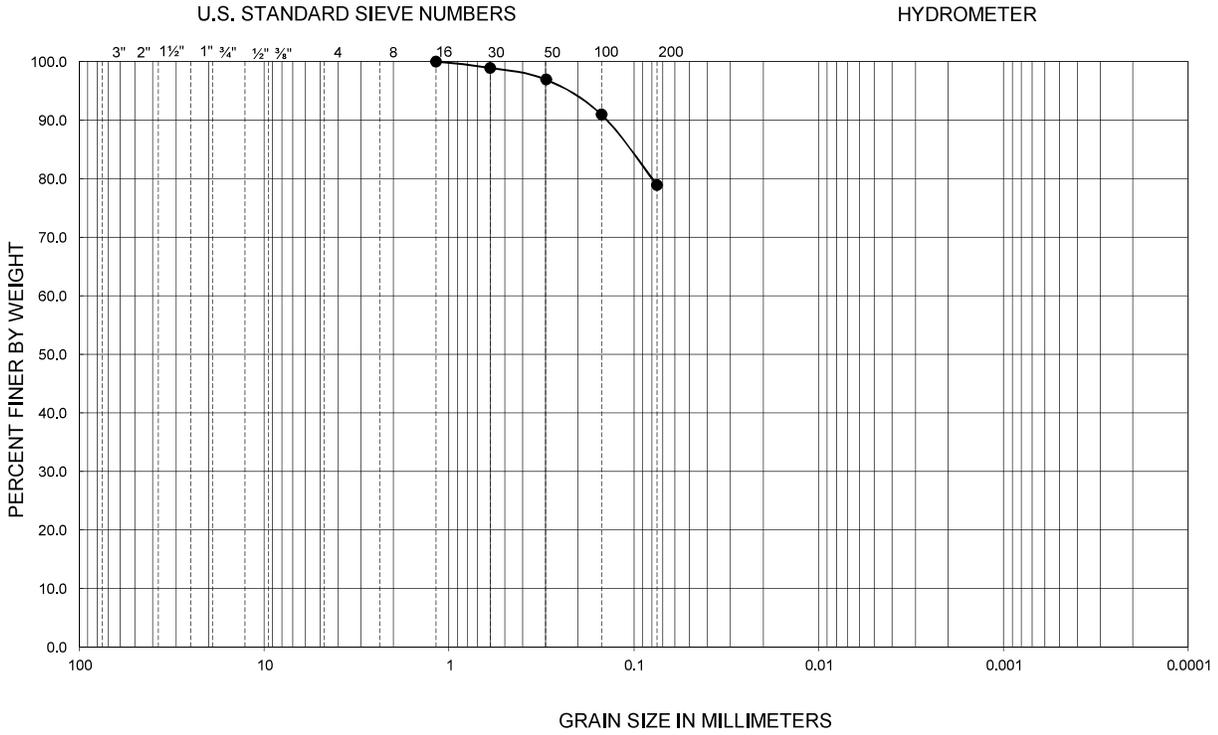
Direct Shear Tests

A direct shear test was performed on a relatively undisturbed sample in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of selected materials. The sample was inundated during shearing to represent adverse field conditions. The results are shown on Figure B-6.

Soil Corrosivity Tests

Soil pH, and resistivity tests were performed on a representative sample in general accordance with CT 643. The soluble sulfate and chloride content of selected sample were evaluated in general accordance with CT 417 and CT 422, respectively. The test results are presented on Figure B-7.

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

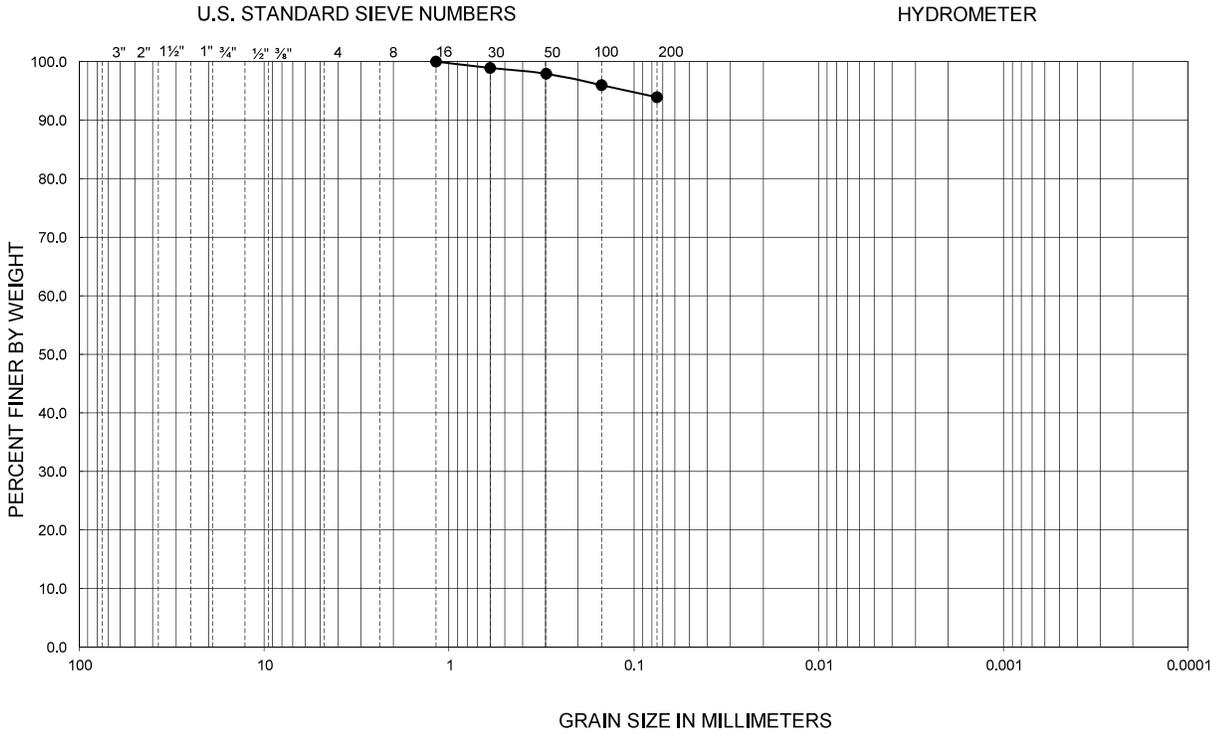


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	Passing No. 200 (%)	USCS
●	B-1	5.0-6.5	—	—	—	--	--	—	—	--	79	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore		GRADATION TEST RESULTS		FIGURE B-1
PROJECT NO.	DATE	ADVENTURE PARK UPPER SAN GABRIEL RIVER EWMP LOS ANGELES COUNTY, CALIFORNIA		
107900001	6/15			

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

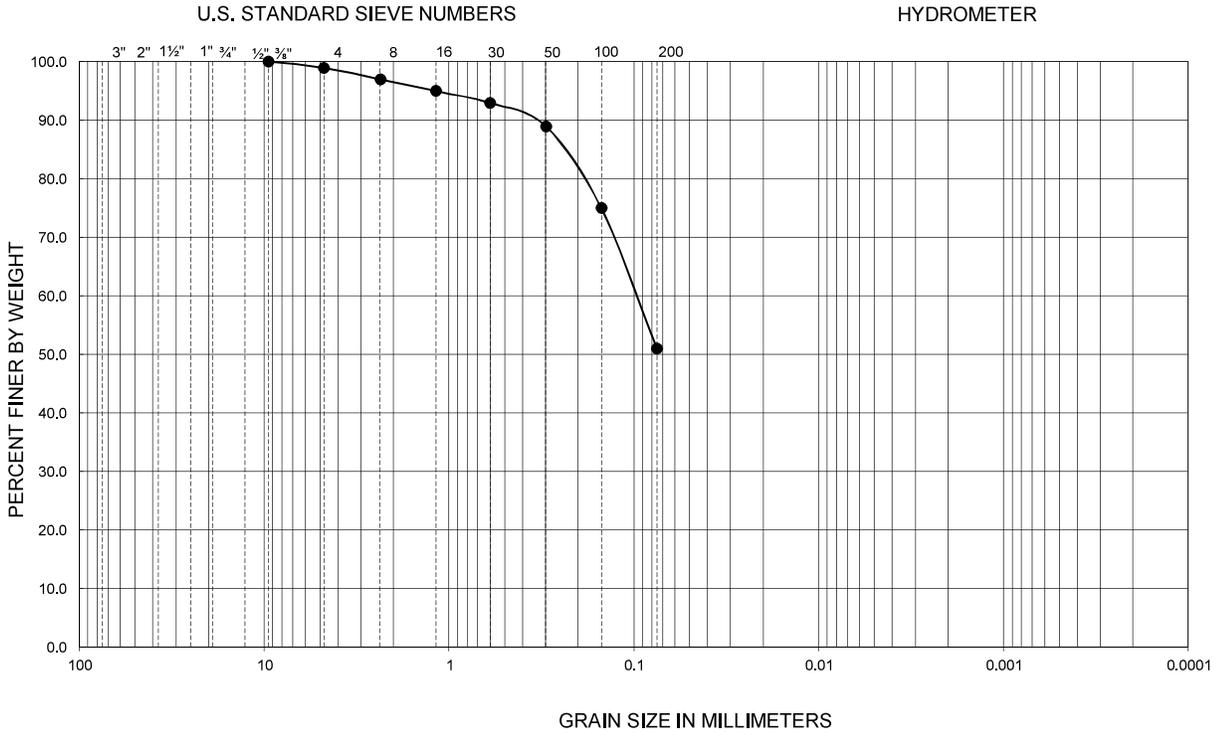


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	Passing No. 200 (%)	USCS
●	B-1	10.0-11.5	—	—	—	--	--	—	—	--	94	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore		GRADATION TEST RESULTS		FIGURE B-2
PROJECT NO.	DATE	ADVENTURE PARK		
107900001	6/15	UPPER SAN GABRIEL RIVER EWMP LOS ANGELES COUNTY, CALIFORNIA		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

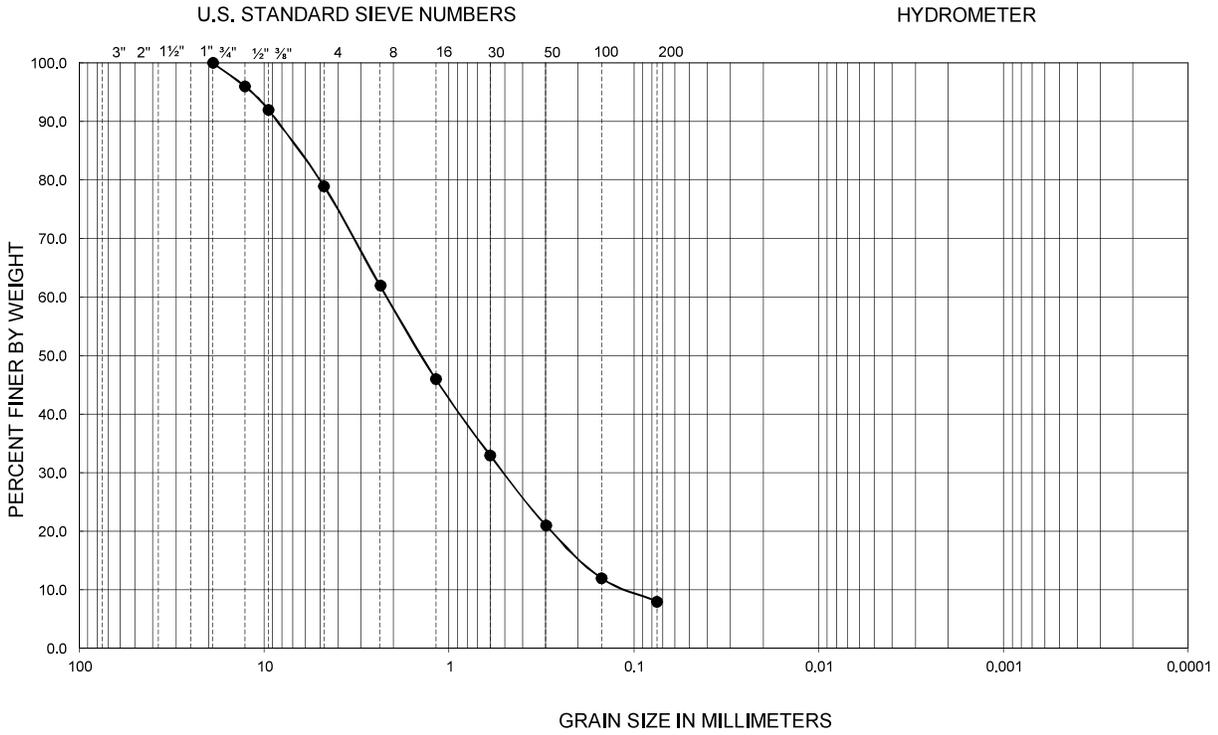


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	Passing No. 200 (%)	USCS
●	B-1	15.0-16.5	—	—	—	--	--	—	—	--	51	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore		GRADATION TEST RESULTS		FIGURE B-3
PROJECT NO.	DATE	ADVENTURE PARK		
107900001	6/15	UPPER SAN GABRIEL RIVER EWMP LOS ANGELES COUNTY, CALIFORNIA		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



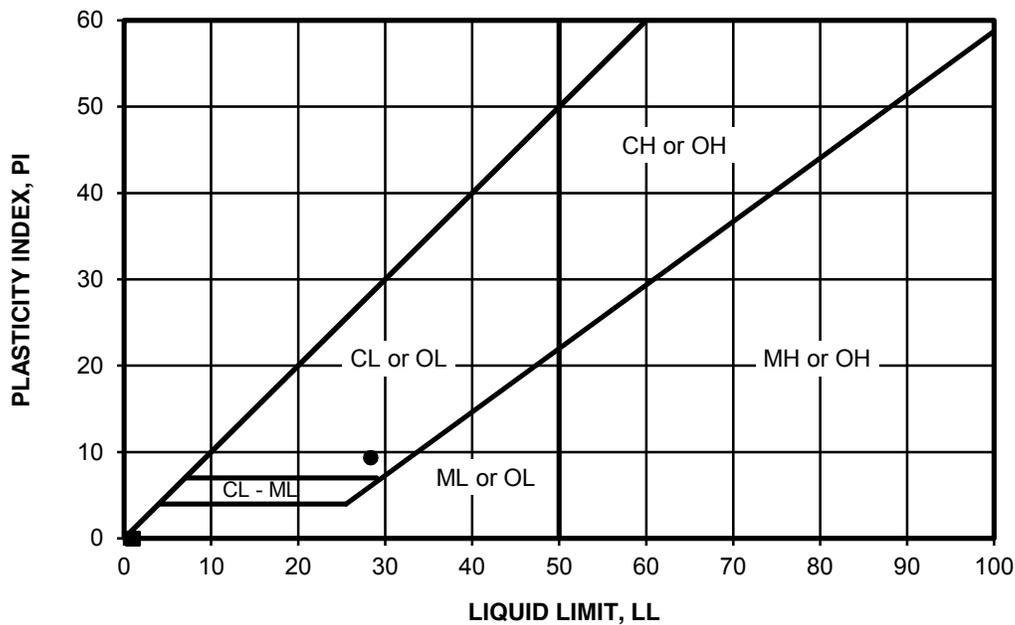
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	Passing No. 200 (%)	USCS
●	B-1	30.0-31.5	—	—	--	0.12	0.51	2.15	17.9	1.0	8	SW-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore		GRADATION TEST RESULTS	FIGURE B-4
PROJECT NO.	DATE		
107900001	6/15	ADVENTURE PARK UPPER SAN GABRIEL RIVER EWMP LOS ANGELES COUNTY, CALIFORNIA	

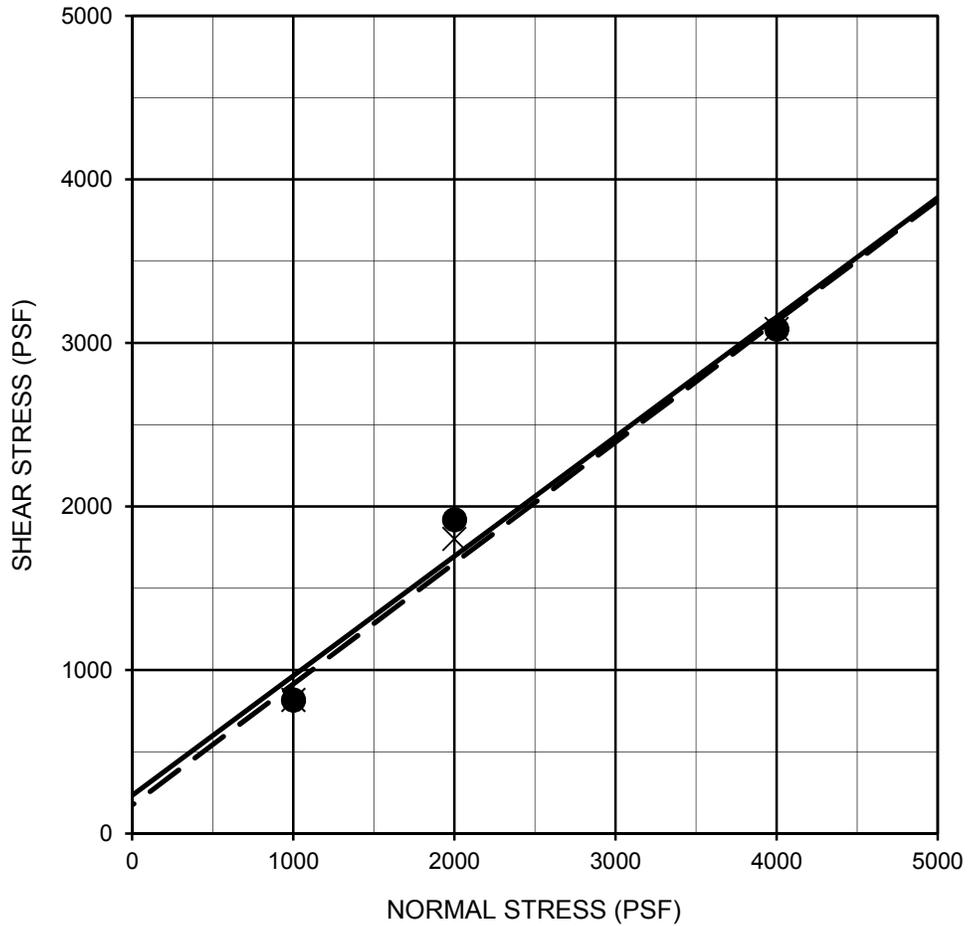
SYMBOL	LOCATION	DEPTH (FT)	LIQUID LIMIT, LL	PLASTIC LIMIT, PL	PLASTICITY INDEX, PI	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS (Entire Sample)
•	B-1	10.0-11.5	28	19	9	CL	CL

NP - INDICATES NON-PLASTIC



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

Ninyo & Moore		ATTERBERG LIMITS TEST RESULTS	FIGURE B-5
PROJECT NO. 107900001	DATE 6/15		



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Silty SAND	—●—	B-1	25.0-26.5	Peak	230	36	SM
Silty SAND	- - X - -	B-1	25.0-26.5	Ultimate	170	36	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

Ninyo & Moore		DIRECT SHEAR TEST RESULTS		FIGURE
PROJECT NO.	DATE	ADVENTURE PARK		B-6
107900001	6/15	UPPER SAN GABRIEL RIVER EWMP		
		LOS ANGELES COUNTY, CALIFORNIA		

SAMPLE LOCATION	SAMPLE DEPTH (FT)	pH ¹	RESISTIVITY ¹ (Ohm-cm)	SULFATE CONTENT ²		CHLORIDE CONTENT ³ (ppm)
				(ppm)	(%)	
B-1	6.0-10.0	7.0	950	220	0.022	155

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

Ninyo & Moore		CORROSIVITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	ADVENTURE PARK UPPER SAN GABRIEL RIVER EWMP LOS ANGELES COUNTY, CALIFORNIA	B-7
107900001	6/15		

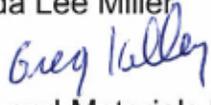
APPENDIX B

PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT

November 23, 2016

TO: Angela R. George
Watershed Management Division

Attention Linda Lee Miller

FROM: Greg Kelley 
Geotechnical and Materials Engineering Division

**PRELIMINARY ENVIRONMENTAL SITE SCREENING
ADVENTURE PARK MULTI-BENEFIT STORMWATER CAPTURE PROJECT
PROJECT NO. F218EWMP03**

In response to your request dated June 6, 2016, a Preliminary Environmental Site Screening (PESS) was completed for the project. Since it is our understanding that the project scope consists of the construction of a subsurface infiltration basin, we also included available lithologic information for the site.

Our PESS included a site reconnaissance, review of aerial photographs and maps, and searches of publicly available regulatory databases. Based on available information and the proposed scope of work, the results of our screening did not identify environmental concerns affecting the site. Further environmental assessment is not required at this time.

Lithologically, subsurface materials encountered in a soil boring completed at the site consisted of fill (surface to 1-foot depth), sand (1- to 5-foot depth, and 20- to 36-foot depth), silt (5- to 8.5-foot depth, 15- to 20-foot depth, and 36- to 41.5-foot depth), and clay (8.5- to 15-foot depth), with groundwater encountered at a depth of 32 feet. Note that the clay and silt layers may limit or reduce the ability for percolation at the site. Refer to the June 6, 2015, Ninyo and Moore report for additional information.

Please note that contamination may exist in soils at the site in areas that have not been identified as environmental concerns because: (1) data gaps exist in the referenced databases, historical photographs, or maps, (2) contamination releases may not have been reported to the authorities, or (3) contamination releases, such as pipeline releases, were not known to have occurred. There is also the possibility that site contamination may occur subsequent to our screening. If impacted soils are encountered during project construction, proper health and safety measures and appropriate contaminated material handling and disposal procedures should be implemented by the project contractor. Please contact us for an updated PESS if the scope of the project changes, or if more than 180 days pass since the date of this PESS.

Angela R. George
November 23, 2016
Page 2

If you have any questions regarding this matter, please contact Ricardo Lopez-Maldonado or Gerald Goodman at Extension 4923. To provide feedback on our services please access <http://dpw.lacounty.gov/go/gmedsurvey> to complete a Customer Service Survey.

RLM 9/9
RLM:GG:dm

GME-3p:\gmepub\secretarial\geoinv\pess\2016\adventure park_pess.doc

cc: Construction (Enriquez)
Programs Development (Rivas)

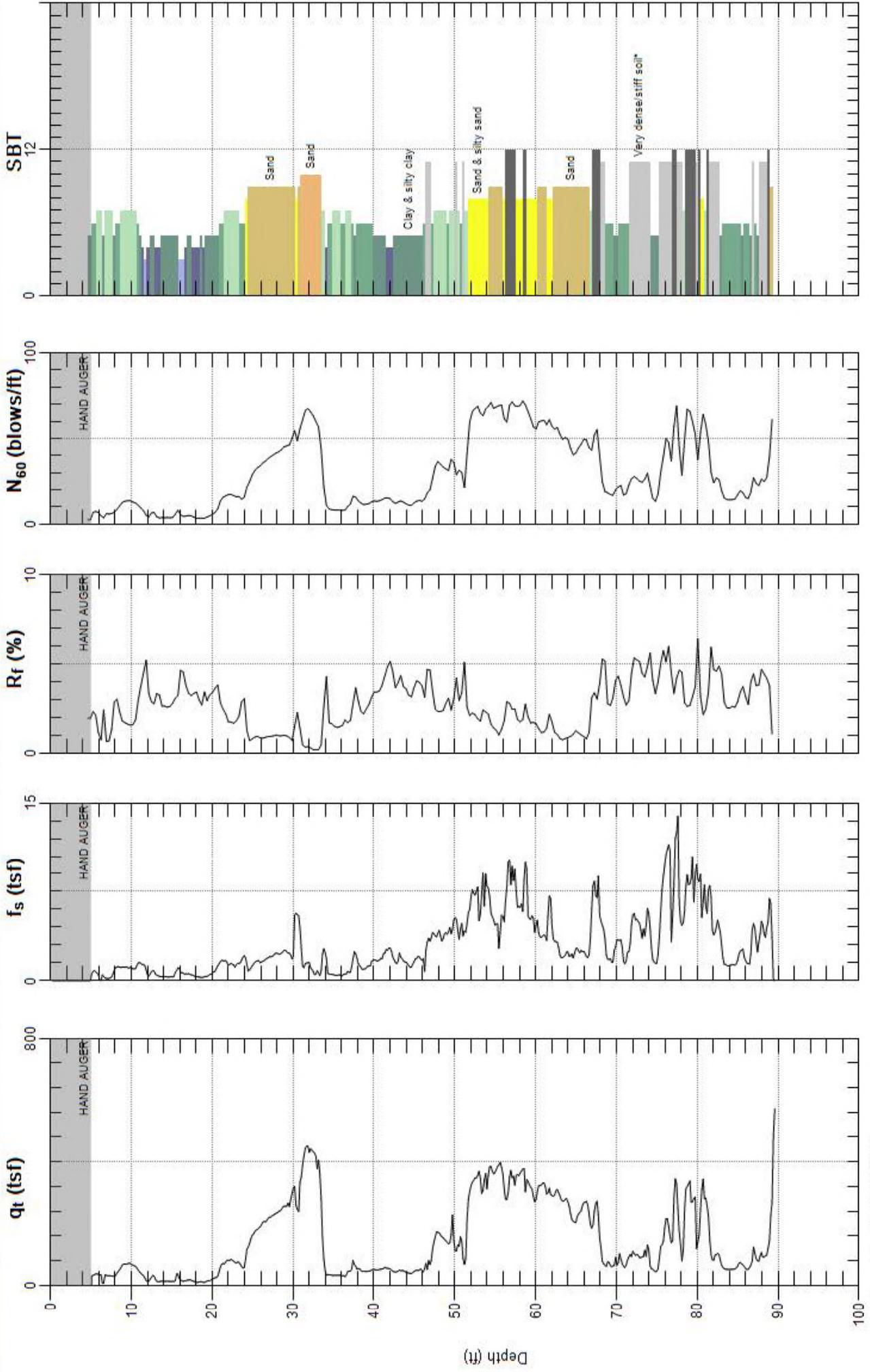
APPENDIX C
CONE PENETRATION TEST LOGS



LACDPW

Site: ADVENTURE PARK
Sounding: CPT-1

Engineer: K.MENDEZ
Date: 12/27/16 07:22



Max. Depth: 89.567 (ft)
Avg. Interval: 0.328 (ft)

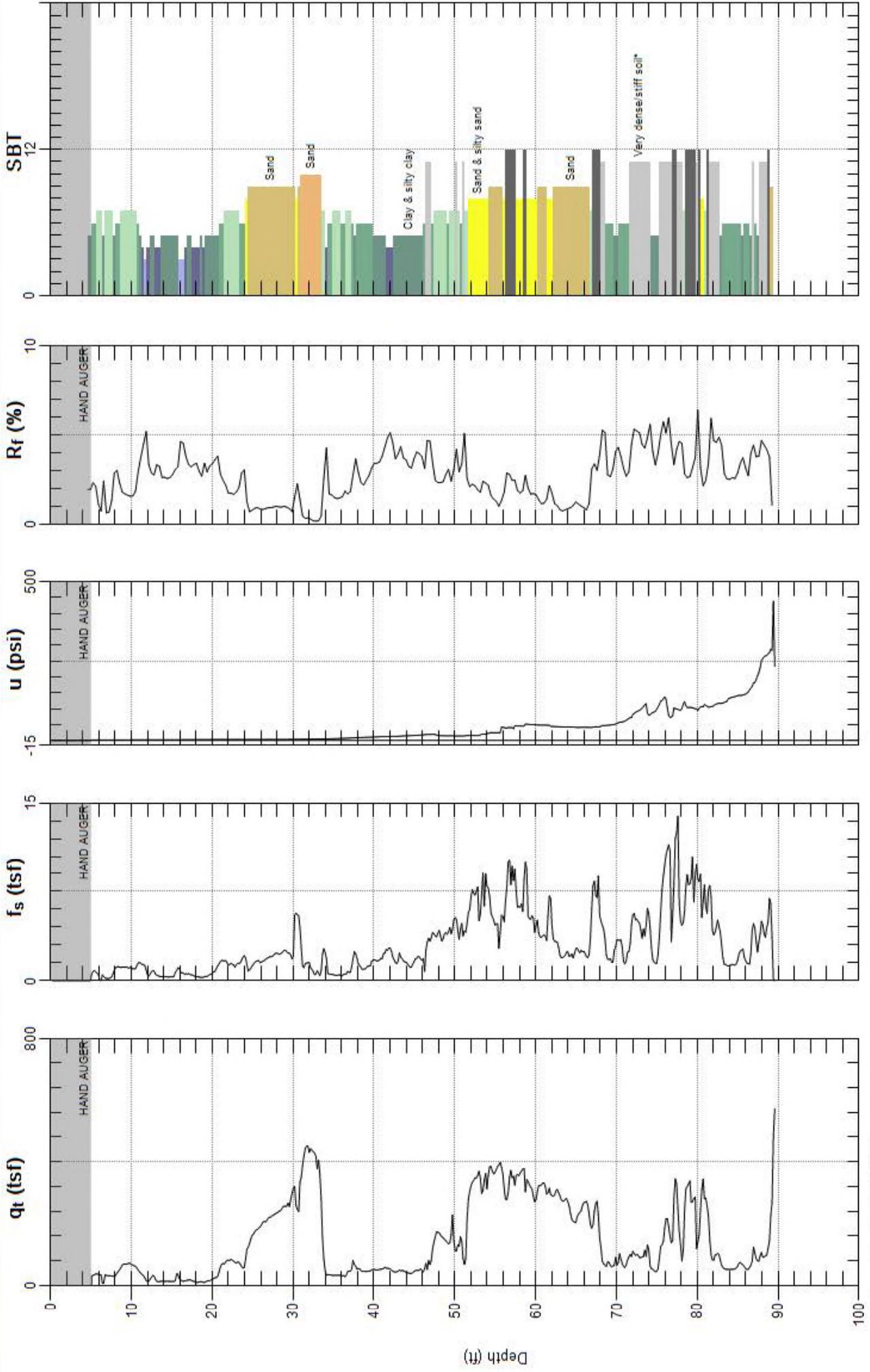
SBT: Soil Behavior Type (Robertson 1990)



LACDPW

Site: ADVENTURE PARK
Sounding: CPT-1

Engineer: K.MENDEZ
Date: 12/27/16 07:22



Max. Depth: 89.567 (ft)
Avg. Interval: 0.328 (ft)

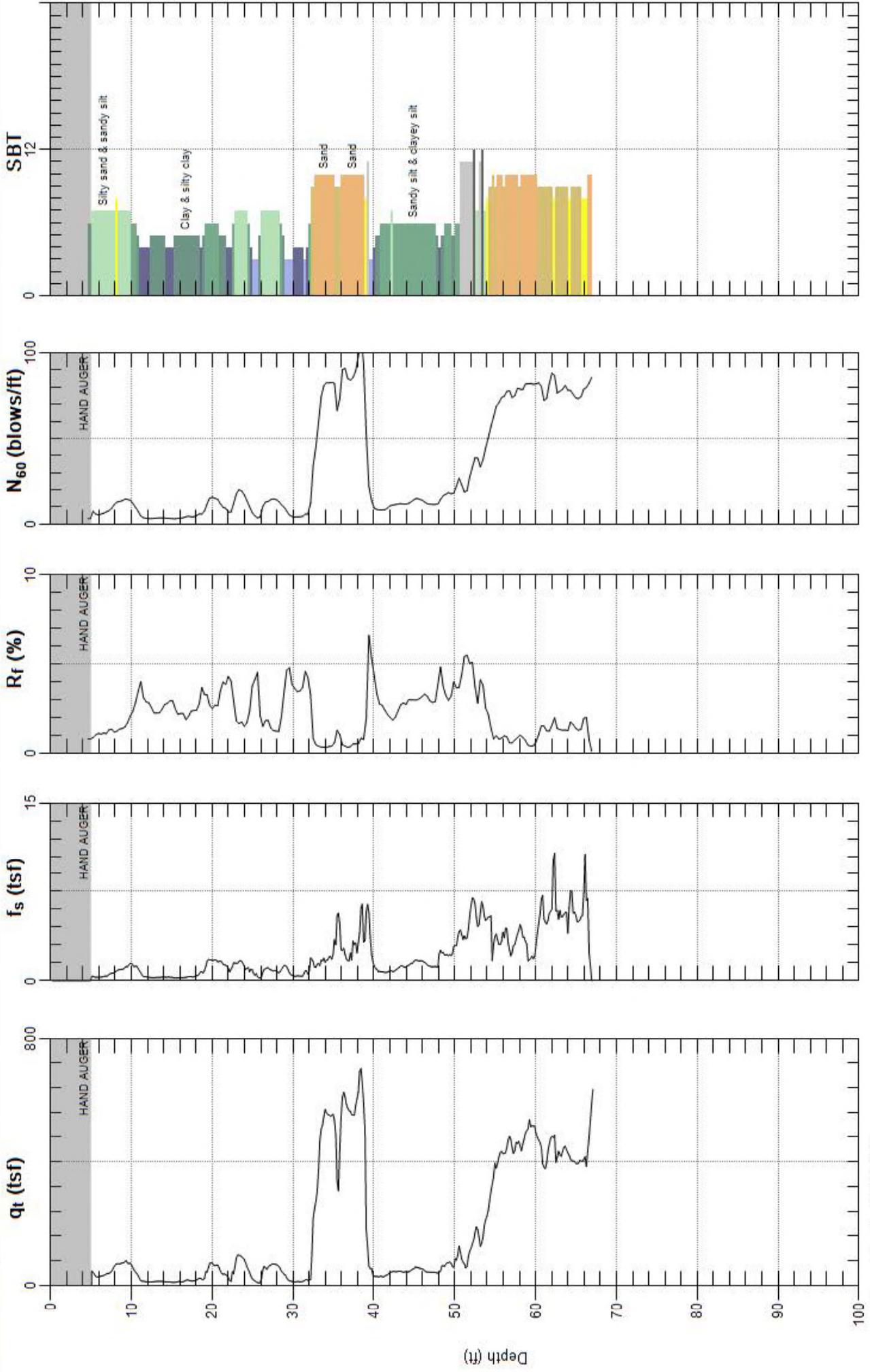
SBT: Soil Behavior Type (Robertson 1990)



LACDPW

Site: ADVENTURE PARK
Sounding: CPT-2

Engineer: K.MENDEZ
Date: 12/27/16 08:53



Max. Depth: 67.093 (ft)
Avg. Interval: 0.328 (ft)

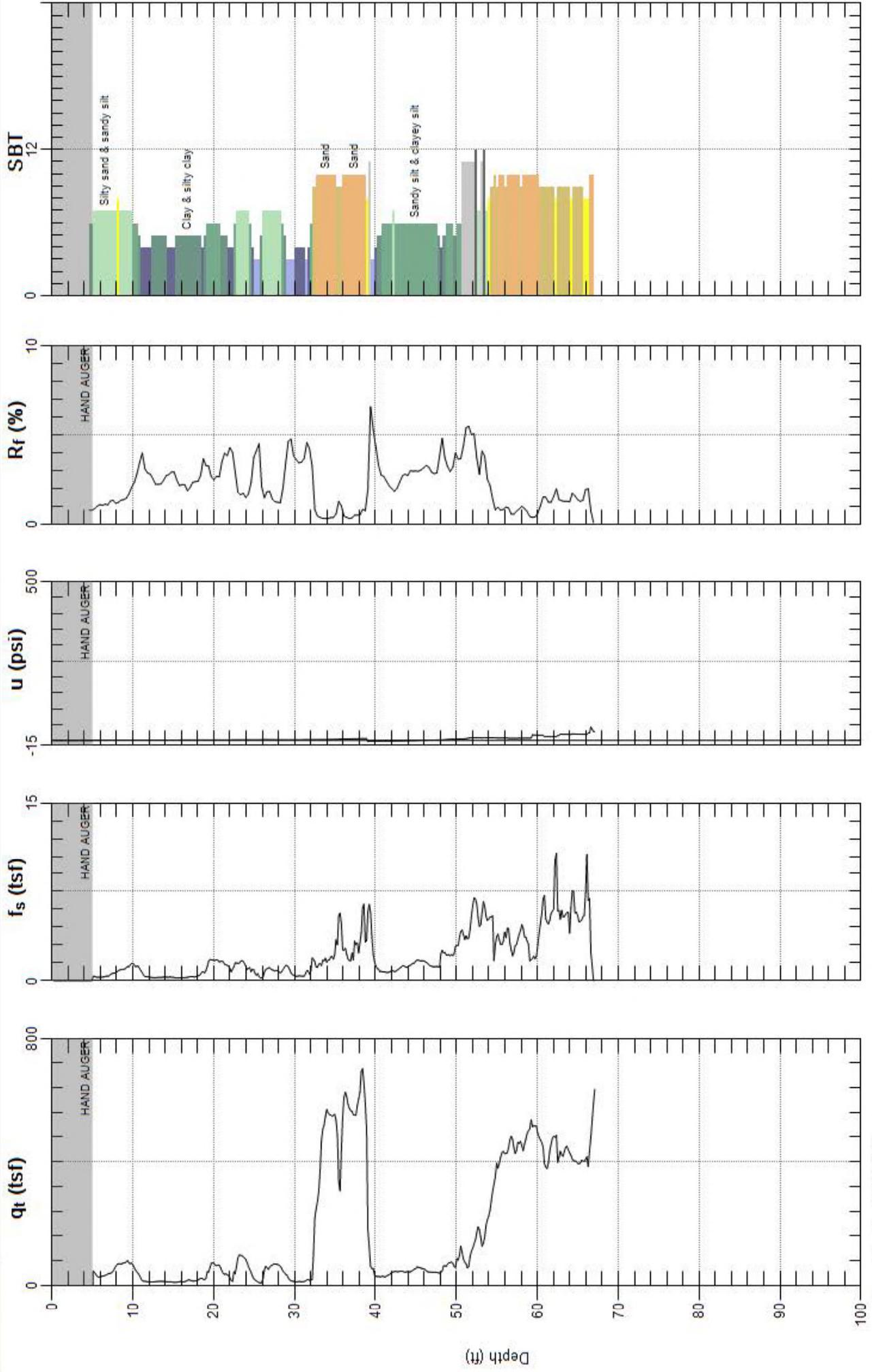
SBT: Soil Behavior Type (Robertson 1990)



LACDPW

Site: ADVENTURE PARK
Sounding: CPT-2

Engineer: K.MENDEZ
Date: 12/27/16 08:53



Max. Depth: 67.093 (ft)
Avg. Interval: 0.328 (ft)

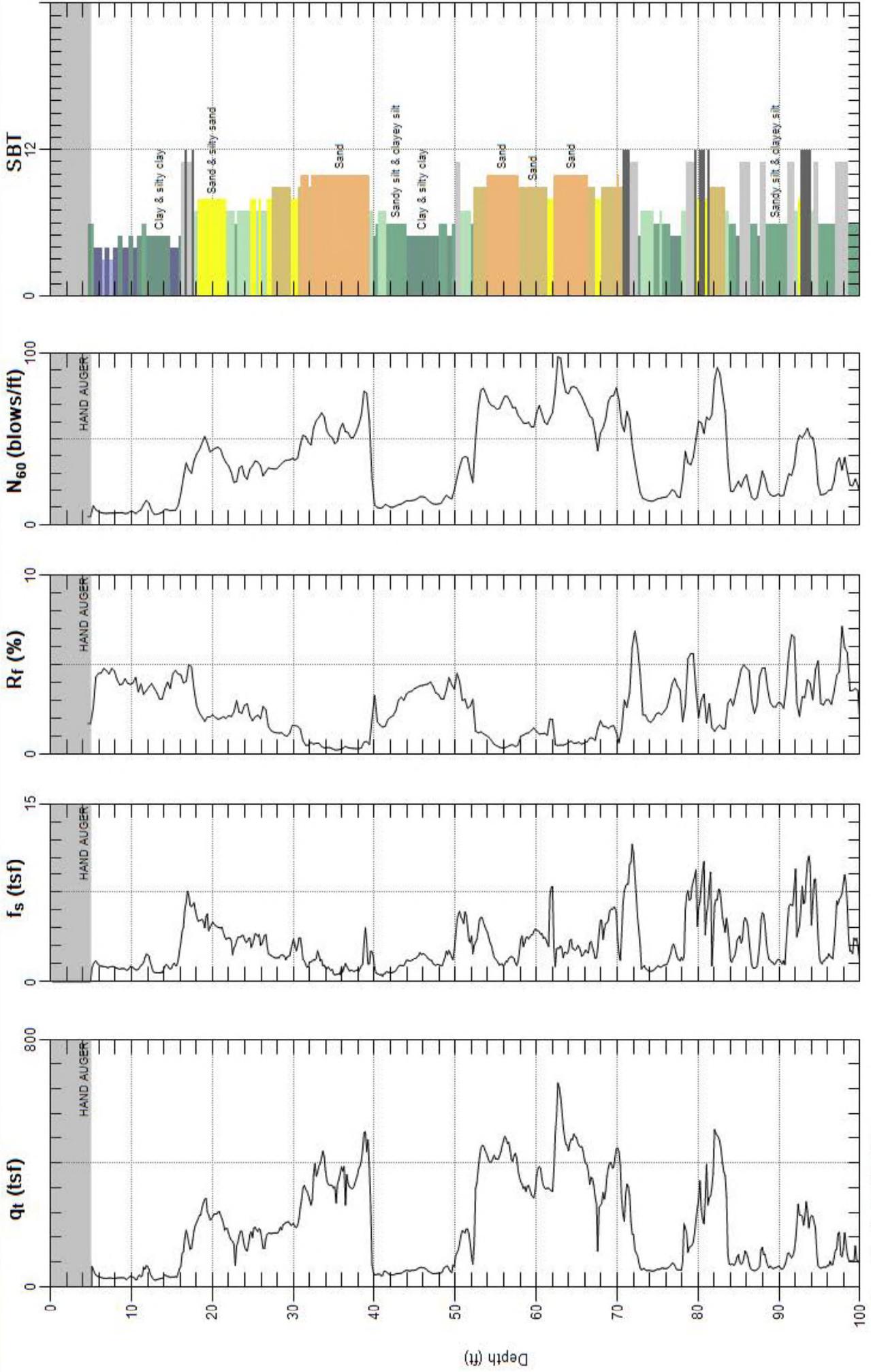
SBT: Soil Behavior Type (Robertson 1990)



LACDPW

Site: ADVENTURE PARK
Sounding: CPT-3

Engineer: K.MENDEZ
Date: 12/27/16 10:05



Max Depth: 100.230 (ft)
Avg. Interval: 0.328 (ft)

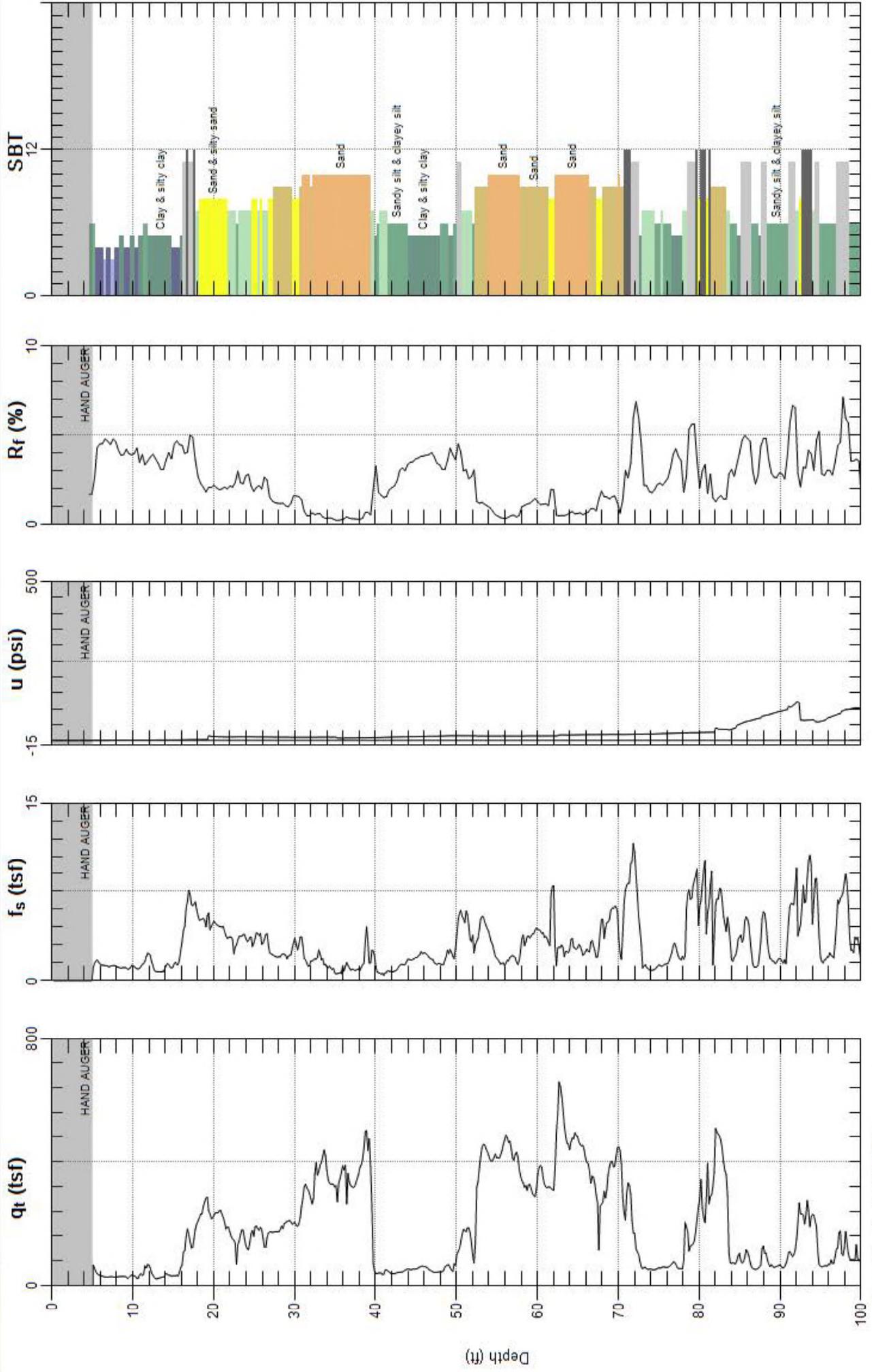
SBT: Soil Behavior Type (Robertson 1990)



LACDPW

Site: ADVENTURE PARK
Sounding: CPT-3

Engineer: K.MENDEZ
Date: 12/27/16 10:05



Max Depth: 100.230 (ft)
Avg. Interval: 0.328 (ft)

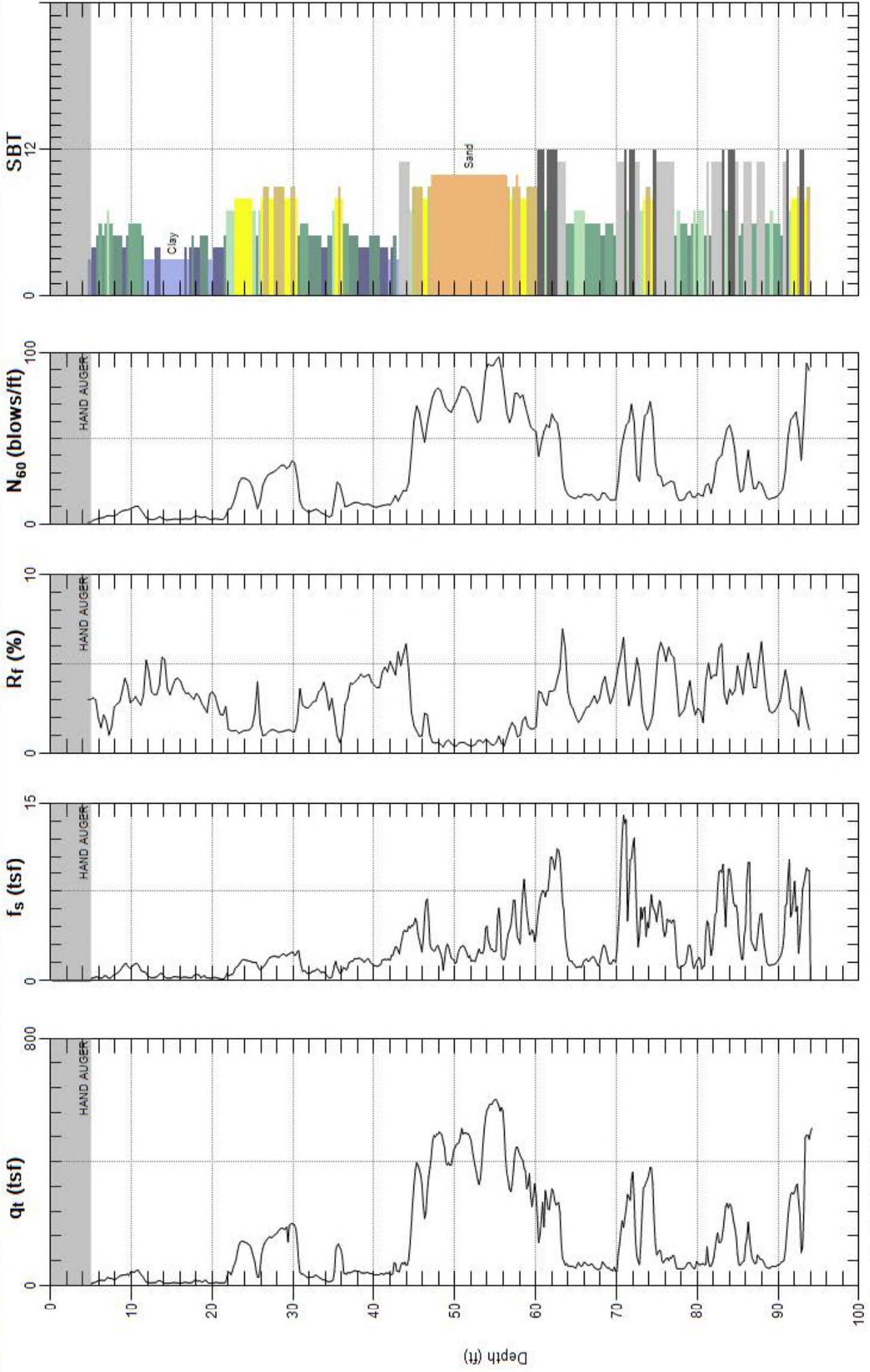
SBT: Soil Behavior Type (Robertson 1990)



LACDPW

Site: ADVENTURE PARK
Sounding: CPT-4

Engineer: K.MENDEZ
Date: 12/27/16 12:03



Max. Depth: 94.160 (ft)
Avg. Interval: 0.328 (ft)

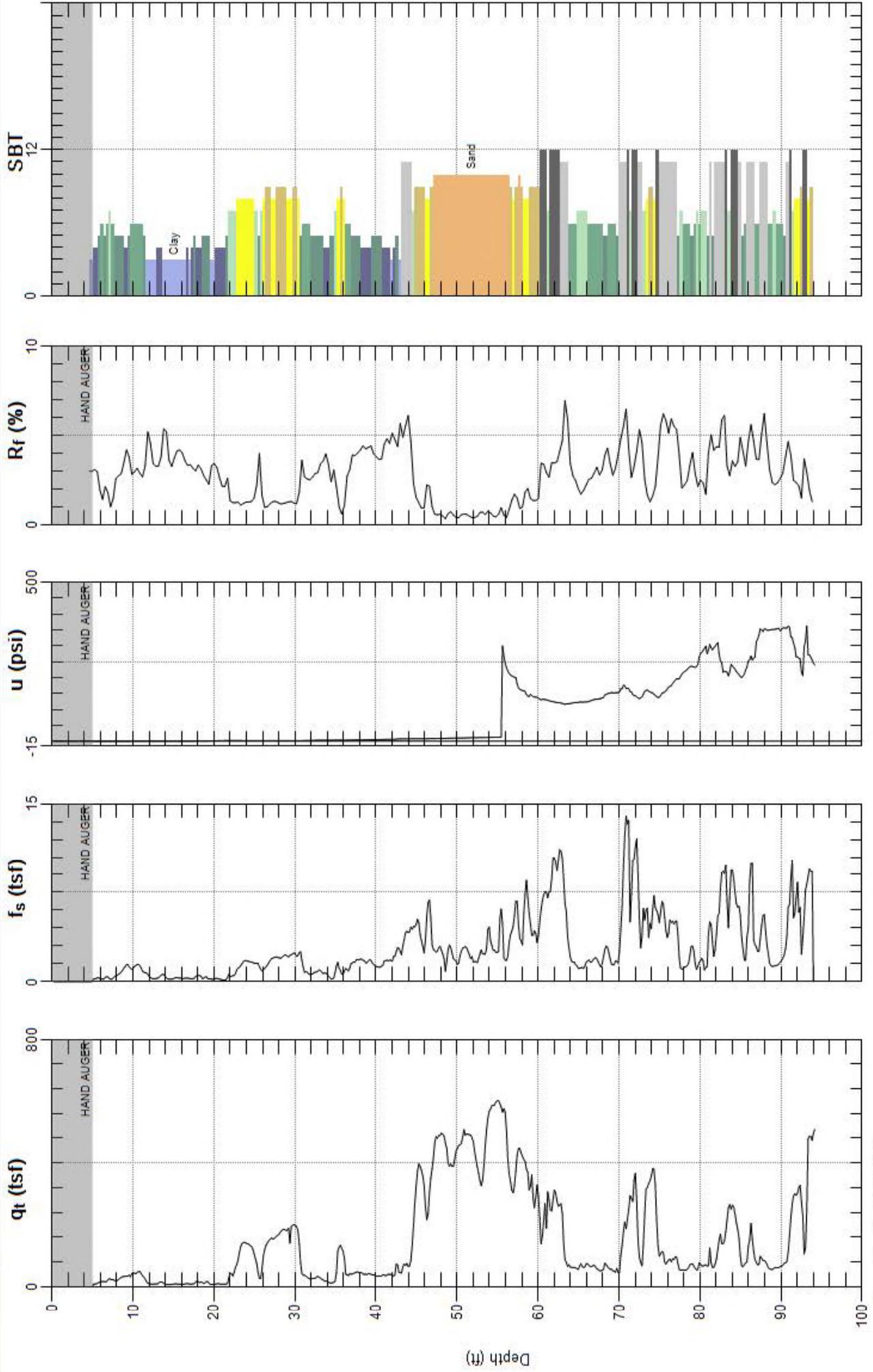
SBT: Soil Behavior Type (Robertson 1990)



LACDPW

Site: ADVENTURE PARK
Sounding: CPT-4

Engineer: K.MENDEZ
Date: 12/27/16 12:03



Max. Depth: 94.160 (ft)
Avg. Interval: 0.328 (ft)

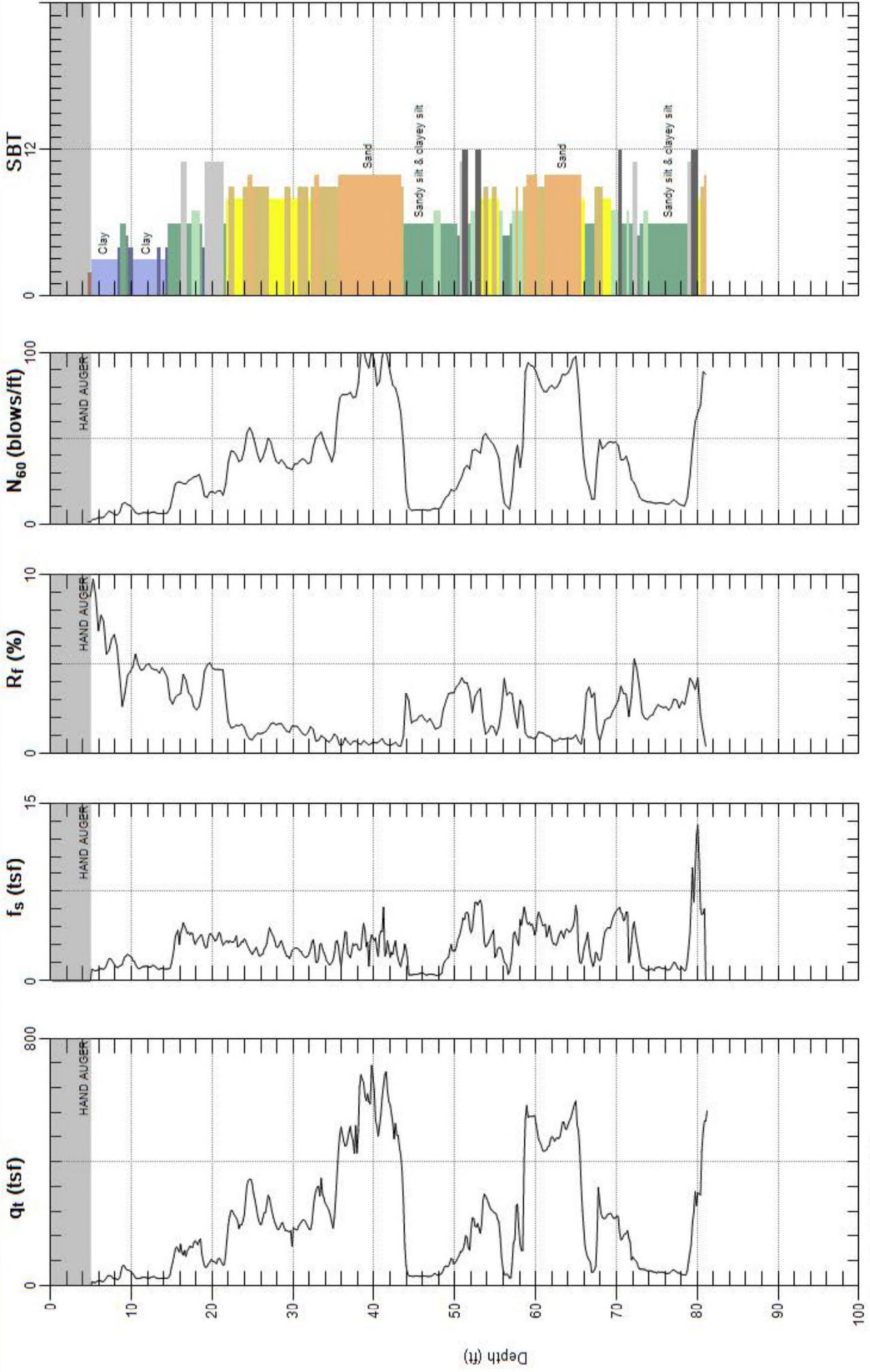
SBT: Soil Behavior Type (Robertson 1990)



LACDPW

Site: ADVENTURE PARK
Sounding: CPT-5

Engineer: K.MENDEZ
Date: 12/27/16 01:41



Max. Depth: 81.201 (ft)
Avg. Interval: 0.328 (ft)

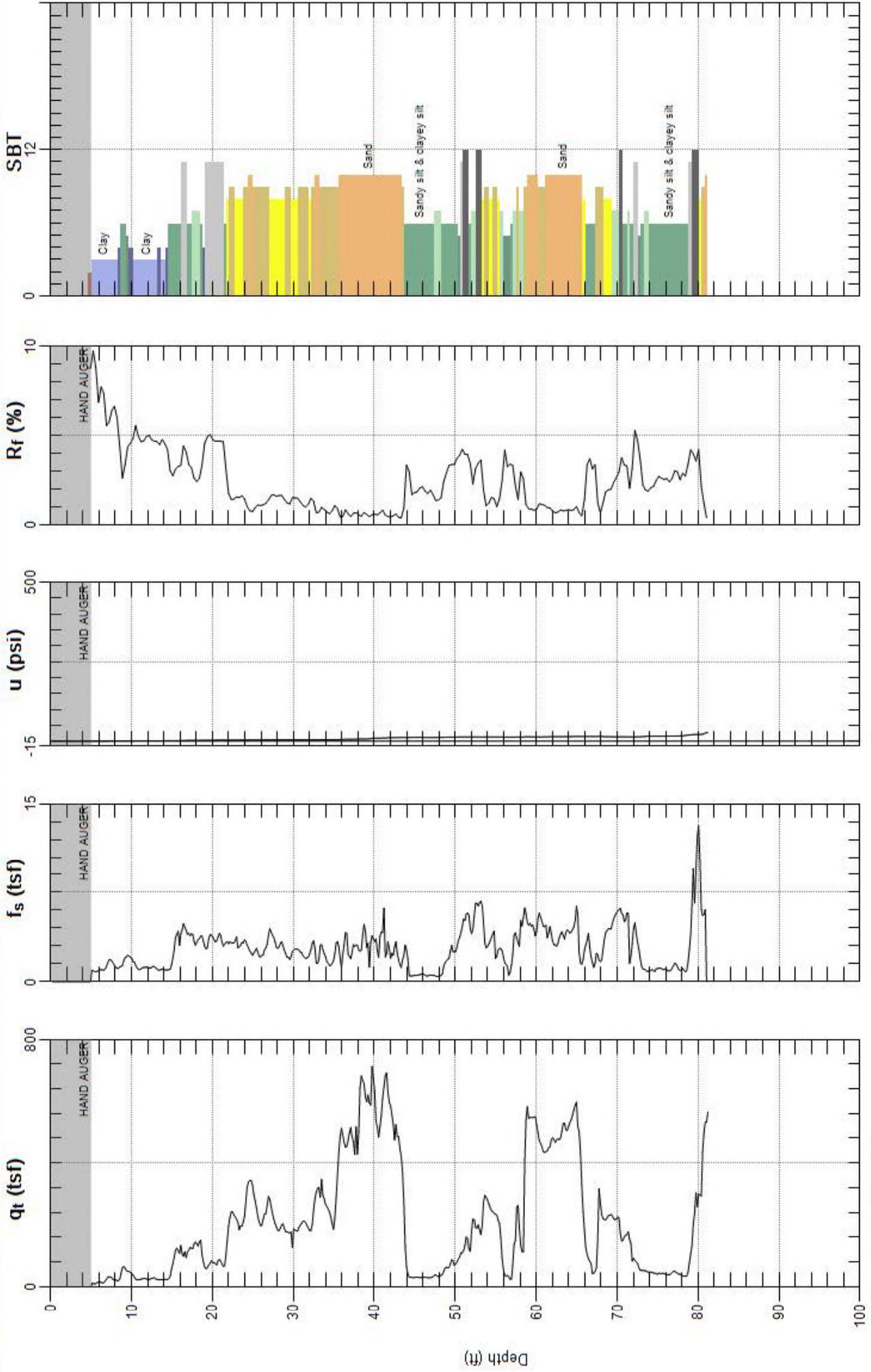
SBT: Soil Behavior Type (Robertson 1990)



LACDPW

Site: ADVENTURE PARK
Sounding: CPT-5

Engineer: K.MENDEZ
Date: 12/27/16 01:41



Max. Depth: 81.201 (ft)
Avg. Interval: 0.328 (ft)

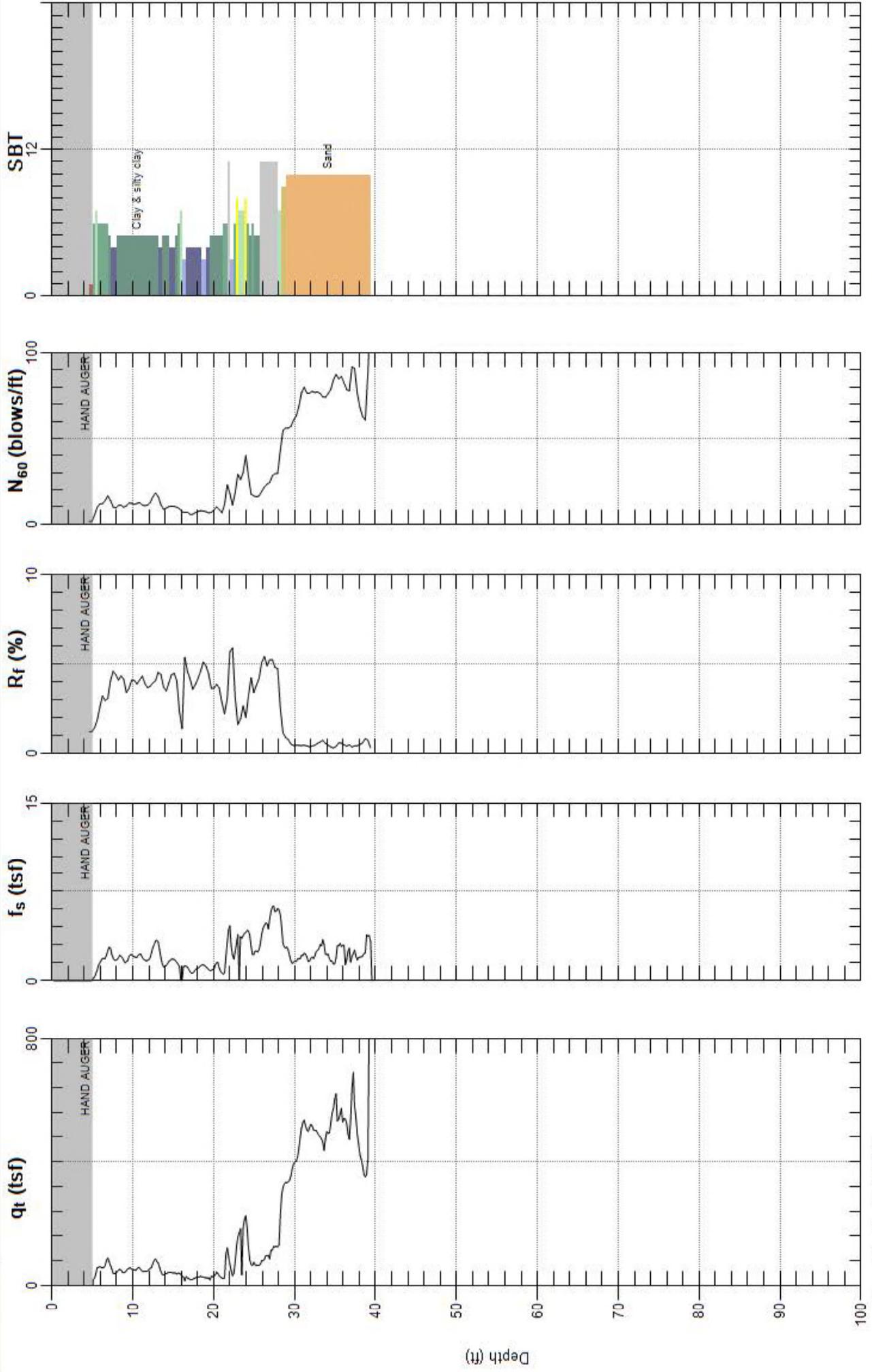
SBT: Soil Behavior Type (Robertson 1990)



LACDPW

Site: ADVENTURE PARK
Sounding: CPT-6

Engineer: K.MENDEZ
Date: 12/27/16 02:47



Max. Depth: 39.698 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)



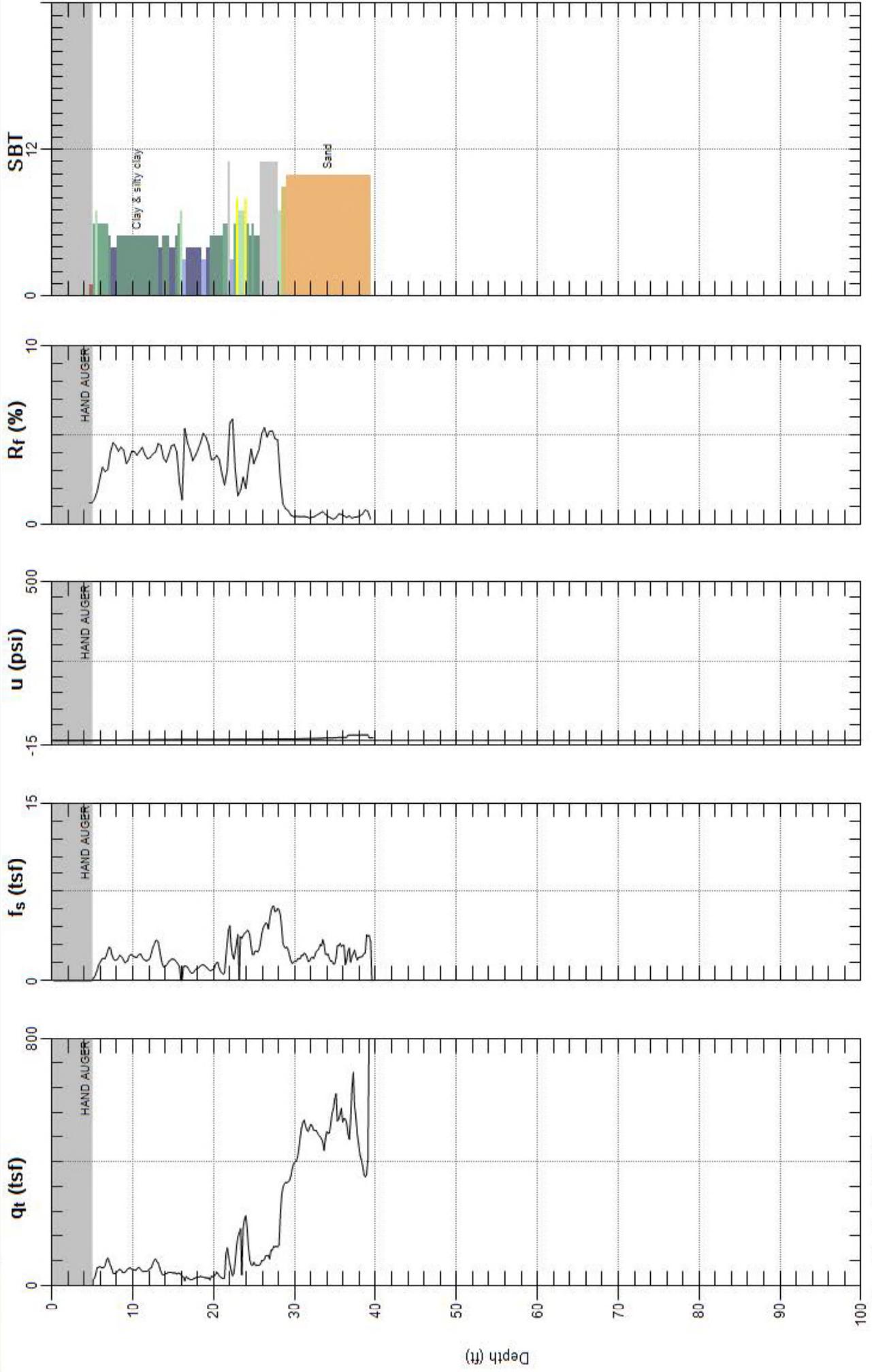
LACDPW

Site: ADVENTURE PARK

Engineer: K.MENDEZ

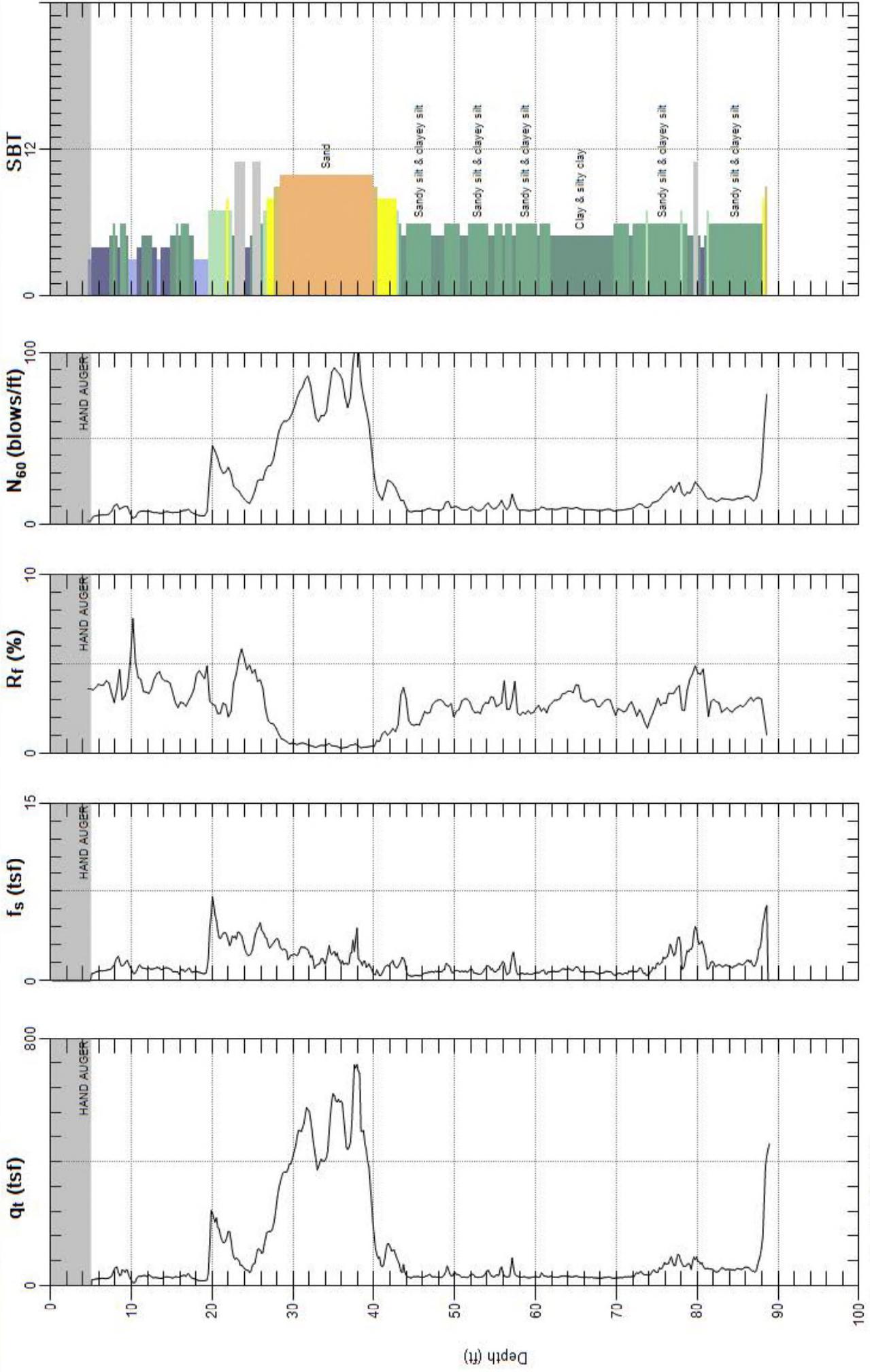
Sounding: CPT-6

Date: 12/27/16 02:47



Max. Depth: 39.698 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)



Max. Depth: 88.911 (ft)
Avg. Interval: 0.328 (ft)

APPENDIX D
LOGS OF BORING



CLIENT Stormwater Compliance Division **PROJECT NAME** Adventure Park Multi-Benefit Project
PROJECT NUMBER F21816i07 **PROJECT LOCATION** 10130 S. Gunn Ave, Whittier

Dates(s) Drilled	6/20/2017	Boring Location	33°56'33.44" N, 118°02'06.62" W	Logged By	KM	Checked By	WM
Drilling Contractor	LACDPW SWMD	Drill Bit Size	6	Approx. Surf. Elevation (ft)	139	Drilled Depth (ft)	31.5
Drilling Method	Hollow Stem Auger	Boring Diameter	6	Depth to Groundwater	22	Inclination/Bearing (°)	90
Drill Rig Type	CME 75	Hammer Description	Autohammer	Sample Type(s)			

Notes/Comments

DEPTH (ft)	GRAPHIC	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY (in)	BLOW COUNTS (N VALUE)	COMMENTS	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		1) USCS Class. 5) Percentage (Gravels,Sands,Fines) 2) Density/Stiff 6) Grain Size/Percent 3) Color 7) Other (Mineral Content, Discoloration, Odor, etc.) 4) Moisture				1) Rig Behavior 2) Air Monitoring 3) Pocket Pen/Torvane						
0-5		GRASS FILL: SILTY SAND (FILL) medium dense, dark brown, moist, medium to coarse grained, scattered roots ALLUVIUM: FAT CLAY (CH) medium dense, dark brown, moist, some silts										
5-10		SILTY CLAY medium dense, brown, moist pocket of SILTY SAND (SM), alternating dark and light brown @8': layer of SILTY CLAY, medium dense, brown	MC 1R	100	2-3-5 (8)							
10-15		CLAYEY SILT (ML) medium dense, dark brown, moist, interbedded brown to light brown SILTY SAND (SM) @13': layer of LEAN CLAY (CL) with some SILT (ML), dark brown	SPT 3S		1-2-2 (4)							
15-20		SILTY CLAY (CL-ML) medium stiff, brown, moist pocket of very fine grained SILTY SAND (SM), dark grey @20': very stiff	MC 4R	100	3-3-4 (7)		94.9	23.9			50	
20-25		SILTY SAND (SM) medium dense, brown, wet	SPT 5S		1-4-15 (19)							76.2
25-30		SILTY CLAY (CL-ML) CLEAN SAND (SP) medium dense, brown, wet	MC 7R	0	2-13-19 (32)		100.1	15.9				
30-31.5		FAT CLAY (CH) stiff, light brown to yellowish orange, very moist	SPT 8S		2-3-5 (8)							92
31.5		End of boring at 31.5 feet.										

VIVEK BHL - GINT STD US.GDT - 6/21/18 17:18 - P:\GMEPUB\SOILS INVESTIGATIONS\GINT\PROJECTS\ADVENTURE PARK - BL 6.7.18.GPJ



CLIENT Stormwater Compliance Division **PROJECT NAME** Adventure Park Multi-Benefit Project
PROJECT NUMBER F21816i07 **PROJECT LOCATION** 10130 S. Gunn Ave, Whittier

Dates(s) Drilled	6/21/2017	Boring Location	33°56'36.84" N, 118°02'05.34" W	Logged By	KM	Checked By	WM
Drilling Contractor	LACDPW SWMD	Drill Bit Size	6	Approx. Surf. Elevation (ft)	145	Drilled Depth (ft)	51.5
Drilling Method	Hollow Stem Auger	Boring Diameter	6	Depth to Groundwater	28.5	Inclination/Bearing (°)	90
Drill Rig Type	CME 75	Hammer Description	Autohammer	Sample Type(s)			

Notes/Comments

DEPTH (ft)	GRAPHIC	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY (in)	BLOW COUNTS (N VALUE)	COMMENTS	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		1) USCS Class. 5) Percentage (Gravels,Sands,Fines) 2) Density/Stiff 6) Grain Size/Percent 3) Color 7) Other (Mineral Content, Discoloration, Odor, etc.) 4) Moisture				1) Rig Behavior 2) Air Monitoring 3) Pocket Pen/Torvane						
0-3		3" ASPHALT, 7" BASE (Northeast Parking Lot)										
3-5		ALLUVIUM: SILT (ML) medium dense, black with orange veins, moist, little clay, little plasticity										
5		@5': dark brown @5.5': black to dark brown, some plasticity	MC 1R	100	1-6-10 (16)		103	18.1			84.5	
5-10		FAT CLAY (CH) stiff, brown, moist	SPT 2S		3-5-7 (12)		97.6	17.9			83.5	
10-15		@15': pocket of black FAT CLAY (CH)	MC 4R	100	4-7-9 (16)							
15-20												
20		@20': hard, light brown, dry, brittle	SPT 5S		2-36-29 (65)							
20-25		SANDY SILT (ML) dense, greyish brown, moist, very fine sand										
25			MC 6R	100	3-10-14 (24)		105.1	18.1			89.8	
25-30												
30		CLEAN SAND (SW) medium dense, light brown to brown and greyish brown, wet	SPT 7S		2-7-19 (26)							
30-35												
35											1	

VIVEK BHL - GINT STD US.GDT - 6/21/18 17:19 - P:\GMEPUB\SOILS INVESTIGATIONS\GINT\PROJECTS\ADVENTURE PARK - BL 6.7.18.GPJ



CLIENT Stormwater Compliance Division

PROJECT NAME Adventure Park Multi-Benefit Project

PROJECT NUMBER F21816107

PROJECT LOCATION 10130 S. Gunn Ave, Whittier

VIVEK BHL - GINT STD US.GDT - 6/21/18 17:19 - P:\GMEPUB\SOILS INVESTIGATION\GINT\PROJECTS\ADVENTURE PARK - BL 6.7.18.GPJ

DEPTH (ft)	GRAPHIC	MATERIAL DESCRIPTION 1) USCS Class. 2) Density/Stiff 3) Color 4) Moisture 5) Percentage (Gravels,Sands,Fines) 6) Grain Size/Percent 7) Other (Mineral Content, Discoloration, Odor, etc.)	SAMPLE TYPE NUMBER	RECOVERY (in)	BLOW COUNTS (N VALUE)	COMMENTS 1) Rig Behavior 2) Air Monitoring 3) Pocket Pen/Torvane	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
35		CLEAN SAND (SW) medium dense, light brown to brown and greyish brown, wet (<i>continued</i>) @35': some pea-sized gravel @36.5': small pocket of clay at tip of sampler	MC 8R	100	2-7-19 (26)		121.9	4.9				1.4
40		@40': brown to greyish brown	SPT 9S		6-11-9 (20)							0.2
45		@45': fine to coarse grained sand	MC 10R	100	12-33-38 (71)							1
50												0.2
		FAT CLAY (CH) stiff, brown, wet End of boring at 51.5 feet.	SPT 11S		7-10-14 (24)							0.2

APPENDIX E
LABORATORY DATA

PROJECT NAME: Adventure Park
 TECHNICIAN: GP, EH
 PCA: F21816i07



ENGINEER: K. Mendez
 DATE: 9/13/2017
 PAGE: 1 OF 1

update 3/27/2018

BORING/ SAMPLE	DEPTH (ft)	UNIFIED SOIL CLASSIFICATION				MOISTURE AND DRY DENSITY				DIRECT SHEAR				CHEMICAL				Expansion Index (EI/Potential)	
		Class.	LL	PI	#4 % Pass	#200 % Pass	γ_{field} pcf	m.c.-field %	γ_{bag} pcf	m.c.-"as recv." %	Φ_{ult} Degree	C_{ult} psf	Φ_{max} Degree	C_{max} psf	pH	Min. Resistivity (K ohm-cm)	Cl (ppm)		SO ₄ (ppm)
B1-2B	7.5-9																		
B1-4R	15-16.5	ML		non plastic	100.0	50.0	94.9	23.9											
B1-6B	21.5-23.5	CL	42	20	100.0	76.2									5.83	0.5	21	346	
B1-7R	25-26.5						100.1	15.9		29	94	31	182						
B1-8S	30-31.5				99.1	92.0													39 /low
B2-1R	5-6.5																		
B2-4S	20-21.5				99.7	71.9		* 83.6	19.9										
B2-5R	25-26.5																		
B2-6S	30-31.5				99.9	1.4													
B3-1R	5-6.5	CL	44	25	98.8	84.5	103.0	18.1											
B3-2S	10-11.5				99.8	83.5	106.2		17.9	24	353	25	700						42 /low
B3-4R	15-16.5																		
B3-5R	20-21.5																		
B3-6R	25-26.5				100.0	89.8	105.1	18.1		24	383	26	421						
B3-7R	30-31.5				95.0	1.0													
B3-8R	35-36.5	SP			95.2	1.4	121.9	4.9		31	0	38	0						
B3-9S	40-41.5	SW			96.8	0.2													
B3-10R	45-46.5				96.2	0.2	121.8	10.0											
B3-11S	50-51.5				99.9	0.2			* 102.4	15.5									

* Density - ASTM D1188

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

Material Engineering Division
Geotechnical Laboratory

Chemical / Resistivity Report

PROJECT NAME: Adventure Park
PCA: F21816I07
ENGINEER: K. Mendez

BORING-SAMPLE:	B1-2B	B1-6B	
DEPTH (ft):	7.5-9	21.5-23.5	
MINIMUM RESISTIVITY (K ohms-cm):	0.5	0.5	
PH :	5.77	5.83	
CHLORIDE CONTENT (ppm):	52	21	
SO4 (ppm):	55	346	

Remarks:

**DEPARTMENT OF PUBLIC WORKS, LOS ANGELES
GEOTECHNICAL & MATERIALS ENGINEERING**

Density Experiments (ASTM D1188)

Project: Adventure Park
PCA: F21816i07

Sample: B2-4S
Tech: G.P

Date: 8/23/17

Ring Density (moderate pounding)

#	ring wgt (lbs)	ring & wet sample (lbs)	field sample weight (lbs)	ring diameter (inch)	ring volume (ft3)	Wet Density (pcf)	Dry Density (pcf)	void ratio	deg. Satur.	Avg Dry Density (PCF)
1	0.1435	0.386	0.2425	2.375	0.003	94.6	79.3	1.0808	0.4740	83.6
2	0.1445	0.408	0.2635	2.375	0.003	102.8	86.1	0.9150	0.5599	
3	0.144	0.405	0.261	2.375	0.003	101.8	85.3	0.9333	0.5489	
4										
5										

Moisture Content (%)	
Tare:	74
Tare & Wet (gms):	124
Tare & Dry (gms):	115.9
	19.3%

NOTES:

**DEPARTMENT OF PUBLIC WORKS, LOS ANGELES
GEOTECHNICAL & MATERIALS ENGINEERING**

Density Experiments (ASTM D1188)

Project: Adventure Park
PCA: F21816i07

Sample: B3-2S
Tech: G.P

Date: 8/24/17

Ring Density (moderate pounding)

#	ring wgt (lbs)	ring & wet sample (lbs)	field sample weight (lbs)	ring diameter (inch)	ring volume (ft3)	Wet Density (pcf)	Dry Density (pcf)	void ratio	deg. Satur.	Avg Dry Density (PCF)
1	0.1435	0.423	0.2795	2.375	0.003	109.0	92.4	0.7841	0.6058	97.6
2	0.1435	0.447	0.3035	2.375	0.003	118.4	100.4	0.6430	0.7387	
3	0.1435	0.446	0.3025	2.375	0.003	118.0	100.1	0.6484	0.7326	
4										
5										

Moisture Content (%)

Tare:	73.9
Tare & Wet (gms):	123.9
Tare & Dry (gms):	116.3
	17.9%

NOTES:

**DEPARTMENT OF PUBLIC WORKS, LOS ANGELES
GEOTECHNICAL & MATERIALS ENGINEERING**

Density Experiments (ASTM D1188)

Project: Adventure Park
PCA: F21816i07

Sample: B3-11S
Tech: G.P

Date: 8/24/17

Ring Density (moderate pounding)

#	ring wgt (lbs)	ring & wet sample (lbs)	field sample weight (lbs)	ring diameter (inch)	ring volume (ft3)	Wet Density (pcf)	Dry Density (pcf)	void ratio	deg. Satur.	Avg Dry Density (PCF)
1	0.1435	0.443	0.2995	2.375	0.003	116.8	101.2	0.6303	0.6505	102.4
2	0.1435	0.44	0.2965	2.375	0.003	115.7	100.2	0.6468	0.6339	
3	0.1435	0.457	0.3135	2.375	0.003	122.3	105.9	0.5575	0.7355	
4										
5										

Moisture Content (%)

Tare:	73.8
Tare & Wet (gms):	123.8
Tare & Dry (gms):	117.1
	15.5%

NOTES:

**LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL & MATERIALS ENGINEERING DIVISION**

Expansion Index - ASTM D4829

PROJECT NAME:	Adventure Park	LAB #:	00122
PCA:	F21816i07	BORING/SAMPLE:	B1-8S
TESTED BY:	GP	DATE TESTED:	8/23/2017
CHECKED BY:	EH	DATE CHECKED:	9/11/2017

Field Moisture (%):		Dry Density (pcf):	n/a	Init. Ring	1.0
Optimum Moisture (%):	n/a	Specific Gravity (G):	2.65	HGT (inch):	
Ring Wt. (Lbs):	0.443	Final Saturated Moist. (%):	18.2	LL / PI:	n/a

Dry Den. of Compacted Soil: $d_c = 100W_g / [(100+M) \cdot 0.00727]$	
Void Ratio Value: $e = (G \cdot W / d_c) - 1$	$W = 62.4$ pcf and $d_c =$ Dry Den. of Soil
Degree of Saturation: $S = (G \cdot M / e)$	
Expansion Index = (Final thickness - Initial Thickness / Initial thickness) * 1000	

Test Number:	1	2	3	4	**
Molding Moisture Content (M) %:	12.1				
Wt. of Compacted Soil+Ring:	1.262				
Wt. of Compacted Soil (Ws):	0.82				
Dry Density (dc) pcf:	100.5				
Void Ratio Value (e):	0.645				
Degree of Saturation (S_{Meas}) %:	49.7				
Indicator Zero Reading:	0				
Indicator Intital Reading:	0.0001				
Indicator Final Reading:	0.0392				
El_{Meas}*	39.1				

** If the degree of saturation is not between 49 to 51, then the above E.I. _{Meas} is calculated for E.I.₅₀.

El₅₀ =

POTENTIAL EL:	low	39
POTENTIAL EI₅₀:		

NOTES: f. sandy silt w/ trace clays

Expansion Index | Potential Expansion

- 0-20 **Very Low**
- 21-50 **Low**
- 51-90 **Medium**
- 91-130 **High**
- Above 130 **Very High**

Depth of Interval | Weight Factor

- 0-1 **0.4**
- 1-2 **0.3**
- 2-3 **0.2**
- 3-4 **0.1**
- Below 4 **0**

**LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL & MATERIALS ENGINEERING DIVISION**

Expansion Index - ASTM D4829

PROJECT NAME:	Adventure Park	LAB #:	00131
PCA:	F21816i07	BORING/SAMPLE:	B3-4R
TESTED BY:	GP	DATE TESTED:	8/23/2017
CHECKED BY:	EH	DATE CHECKED:	9/11/2017

Field Moisture (%):		Dry Density (pcf):	n/a	Init. Ring	1.0
Optimum Moisture (%):	n/a	Specific Gravity (G):	2.65	HGT (inch):	
Ring Wt. (Lbs):	0.805	Final Saturated Moist. (%):	14.3	LL / PI:	n/a

Dry Den. of Compacted Soil: $d_c = 100W_g / [(100+M) \cdot 0.00727]$
 Void Ratio Value: $e = (G \cdot W / d_c) - 1$ W=62.4 pcf and d_c =Dry Den. of Soil
 Degree of Saturation: $S = (G \cdot M / e)$
 Expansion Index = (Final thickness-Initial Thickness/Initial thickness)*1000

Test Number:	1	2	3	4	**
Molding Moisture Content (M) %:	12.4				
Wt. of Compacted Soil+Ring:	1.6095				
Wt. of Compacted Soil (Ws):	0.80				
Dry Density (dc) pcf:	98.5				
Void Ratio Value (e):	0.680				
Degree of Saturation (S_{Meas}) %:	48.4				
Indicator Zero Reading:	0				
Indicator Intital Reading:	0.0002				
Indicator Final Reading:	0.0419				
El_{Meas}*	41.7				

** If the degree of saturation is not between 49 to 51, then the above E.I. _{Meas} is calculated for E.I.₅₀.

El₅₀ =

POTENTIAL EL:	low	42
POTENTIAL EI₅₀:		

NOTES: f. sandy silt w/ trace clays

Expansion Index	Potential Expansion	Depth of Interval	Weight Factor
0-20	Very Low	0-1	0.4
21-50	Low	1-2	0.3
51-90	Medium	2-3	0.2
91-130	High	3-4	0.1
Above 130	Very High	Below 4	0

**LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEO TECHNICAL AND MATERIALS ENGINEERING DIVISION**

Field Moisture and Density Data Sheet / ASTM D2216 & CTM 226

PROJECT NAME: Adventure Park
PCA: F21816107
PROJECT ENGINEER: K. Mendez

DATE TESTED: 9/2/2017
TECHNICIAN: GP
CHECKED BY: EH

	1	2	3	4	5	6	7	8
BORING NO./SAMPLE NO.	B3-1R	B3-6R	B3-8R	B3-10R				
LABORATORY NO.	129	133	135	136				
DEPTH (ft.)	5-6.5	25-26.5	35-36.5	45-46.5				
FIELD CLASSIFICATION	n/a	n/a	n/a	n/a				
SAMPLE SIZE (in.)	2.375	2.375	2.375	2.375				
NO. OF RINGS SAMPLED	10	12	9	10				
NO. OF RINGS TESTED	6	12	7	9				
VOLUME OF SOIL TESTED (ft ³)	0.01538	0.03076	0.01795	0.02307				
TARE + WET SOIL (lbs.)	2.77	5.62	3.34	4.44				
TARE (lbs.)	0.90	1.80	1.05	1.35				
WET SOIL (lbs.)	1.87	3.82	2.29	3.09				
WEIGHT OF #4 ROCK (lbs.)	0.01	0.01	0.93	0.11				
WEIGHT OF 3/4 ROCK (lbs.)	0.00	0.00	0.00	0.00				
WET FINES	1.86	3.81	1.37	2.98				
WET WEIGHT (gms.) FOR MOIST. CONTENT	50.0	163.0	166.1	50.0				
DRY WEIGHT FOR MOISTURE CONTENT (GMS)	42.3	137.9	153.1	45.3				
MOISTURE CONTENT OF FINES (%)	18.2	18.2	8.5	10.4				
DRY FINES	1.57	3.22	1.26	2.70				
TOTAL DRY SOIL (lbs.)	1.58	3.23	2.19	2.81				
TOTAL WATER (lbs.)	0.29	0.59	0.11	0.28				
COMPOSITE MOISTURE (%)	18.1	18.1	4.9	10.0				
% OF #4 ROCK	0.8	0.3	42.4	3.8				
% OF 3/4 ROCK	0.0	0.0	0.0	0.0				
COMPOSITE DRY DENSITY (pcf)	103.0	105.1	121.9	121.8				
Void Ratio:	0.61	0.57	0.36	0.36				
Degree of Saturation (%):	79.00	83.86	36.32	73.89				

**DEPARTMENT OF PUBLIC WORKS, LOS ANGELES
GEOTECHNICAL & MATERIALS ENGINEERING**

DIRECT SHEAR ASTM D3080

Project: Adventure Park

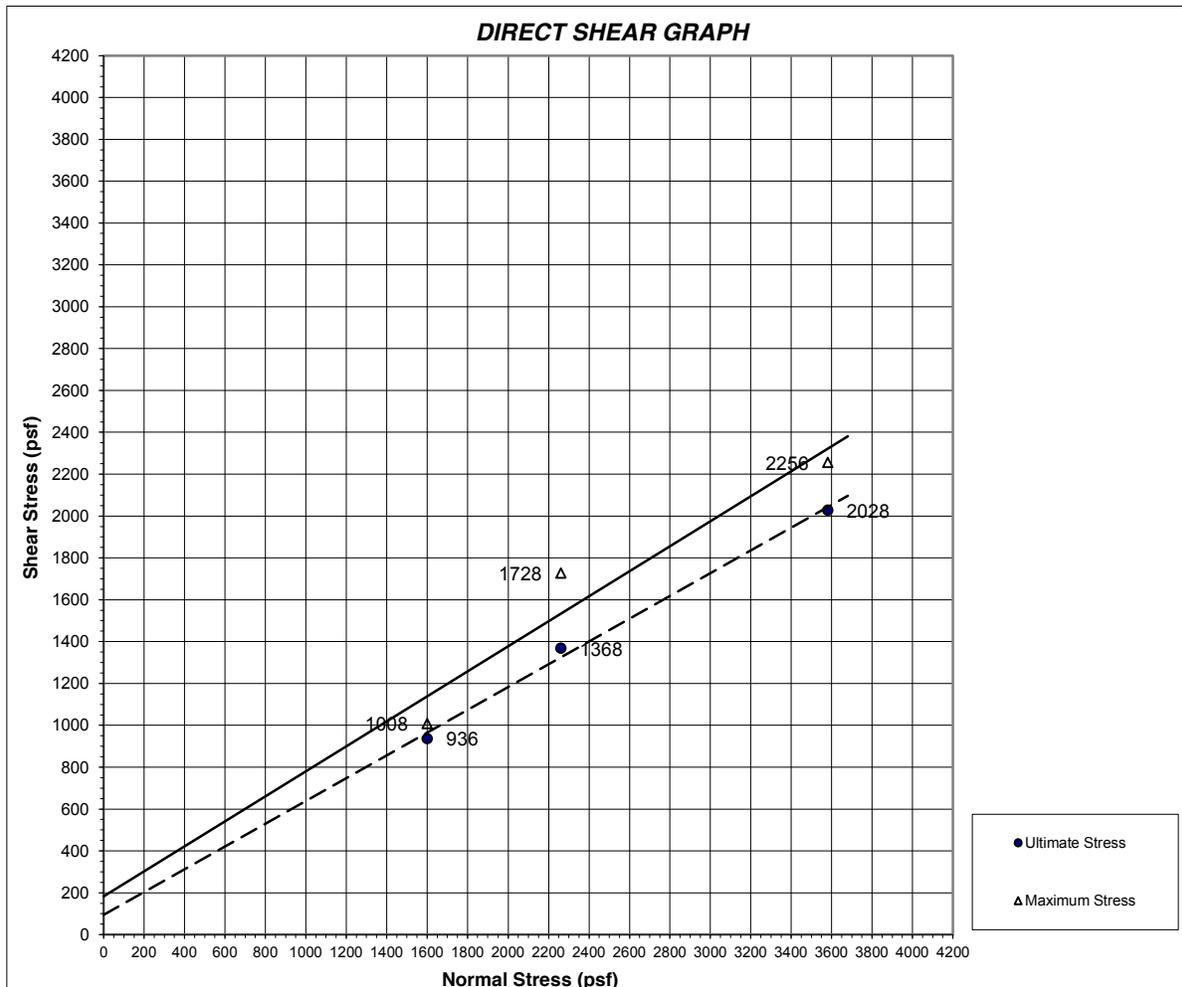
PCA: F21816i07 **USC:** n/a **% (-200):** n/a
Boring/Sample: B1-7R **LL:** n/a **PI:** n/a
Depth (ft): 25-26.5 **% ret. 3/4":** 0.0 **% ret. #4:** 0.0
Sample Condition: med. Den. **Composite Dry Density (pcf):** 100.1
Field Class.: n/a **Composite Moisture (%):** 15.9
Number of Rings: 5 **Initial (Field) Void Ratio:** 0.65
App. Soaking Time: 24 hrs **Initial (Field) Saturation (%):** 64.6

Notes: Lean clay, trace silt stone, v. moist, brown, homogenous

Normal Stress (psf)	Ultimate Stress (psf)	Maximum Stress (psf)	RATE (IN./MIN)
0	---	---	---
1600	936	1008	0.0015
2260	1368	1728	
3580	2028	2256	

ϕ Max 31
 ϕ Ult 29
 C_{max} 182
 C_{ult} 94

Max (-tan) 0.5974
 Ult (-tan) 0.5442



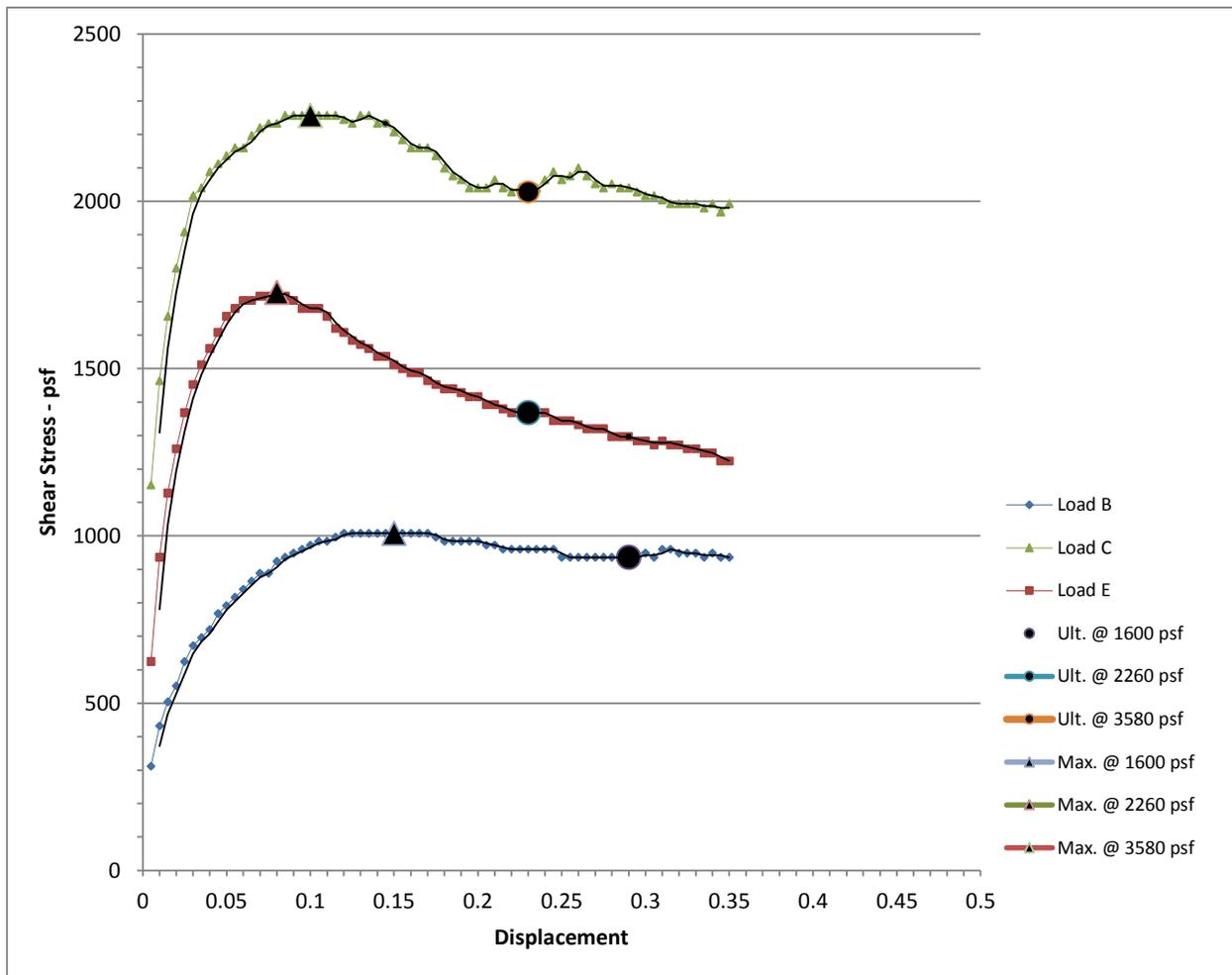
DEPARTMENT OF PUBLIC WORKS, LOS ANGELES
GEOTECHNICAL & MATERIALS ENGINEERING
 DIRECT SHEAR ASTM D3080

Multi Graph

Project Name: **Adventure Park**
 PCA: F21816i07
 Boring/Sample: **B1-7R**

	Normal Stress psf	Ult. Stress psf	Dist. inch	Max. Stress psf	Dist. inch
Load B	1600	936	0.29	1008	0.15
Load C	2260	1368	0.23	1728	0.08
Load E	3580	2028	0.23	2256	0.1

Ring WGT + Wet Soil lb.	Approx. Field Density psf
0.3935	82.0
0.3975	83.3
0.425	92.6



**DEPARTMENT OF PUBLIC WORKS, LOS ANGELES
GEOTECHNICAL & MATERIALS ENGINEERING**

DIRECT SHEAR ASTM D3080

Project: Adventure Park

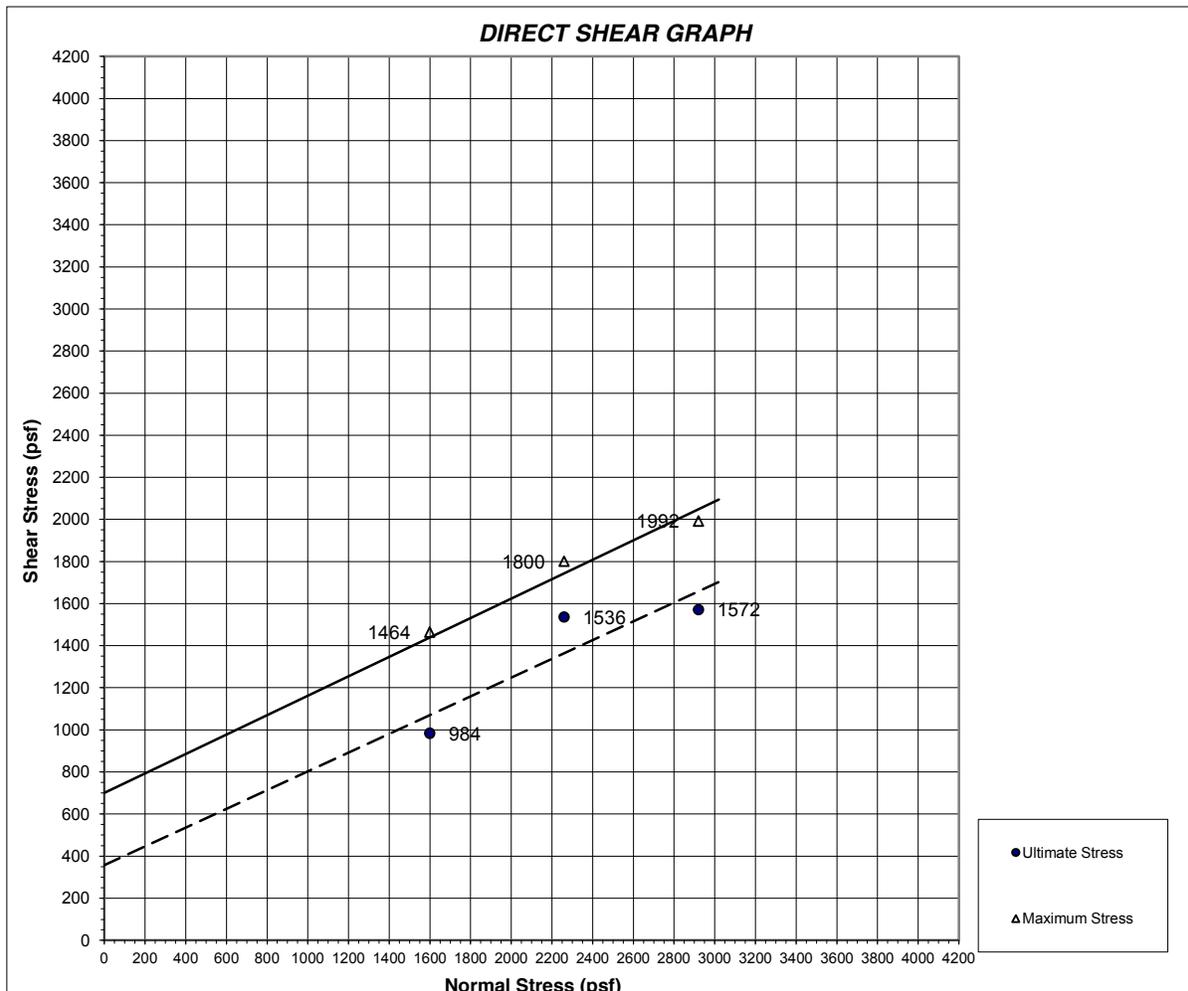
PCA: F21816i07	USC: n/a	% (-200): n/a
Boring/Sample: B3-4R	LL: n/a	PI: n/a
Depth (ft): 15-16.5	% ret. 3/4": 0.0	% ret. #4: 0.0
Sample Condition: v. dense	Composite Dry Density (pcf): 106.2	
Field Class.: N/A	Composite Moisture (%): 18.2	
Number of Rings: 11	Initial (Field) Void Ratio: 0.56	
App. Soaking Time: 72 hrs	Initial (Field) Saturation (%): 86.8	

Notes: wet, clay, top (light brown with dark spot), bottom (light brown with few med. coarse sand)

Ring Dia.:	2.375		
Normal Stress	Ultimate Stress	Maximum Stress	RATE
(psf)	(psf)	(psf)	IN./MIN
0	----	----	----
			0.003
1600	984	1464	
2260	1536	1800	
2920	1572	1992	

ϕ Max	25
ϕ Ult	24
C_{max}	700
C_{ult}	357

Max (-tan)	0.462
Ult (-tan)	0.4455

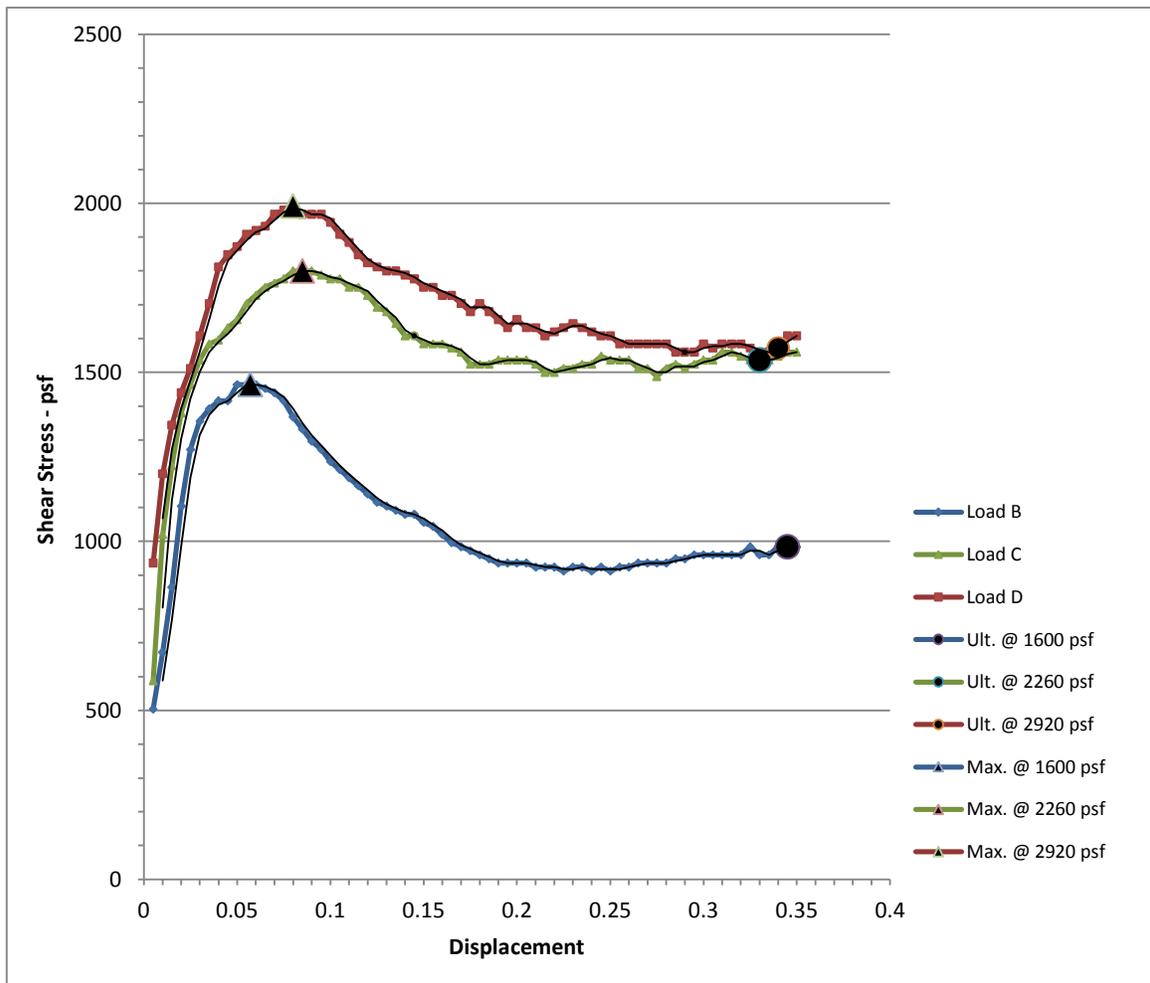


DEPARTMENT OF PUBLIC WORKS, LOS ANGELES
GEOTECHNICAL & MATERIALS ENGINEERING
 DIRECT SHEAR ASTM D3080

Multi Graph

Project Name: **Adventure Park**
 PCA: F21816i07
 Boring/Sample: **B3-4R**

	Normal Stress psf	Ult. Stress psf	Dist. inch	Max. Stress psf	Dist. inch	Ring WGT + Wet Soil lb.	Approx. Field Density psf
Load B	1600	984	0.345	1464	0.057	0.4680	104.9
Load C	2260	1536	0.33	1800	0.085	0.4700	105.6
Load D	2920	1572	0.34	1992	0.08	0.4575	101.5



DEPARTMENT OF PUBLIC WORKS, LOS ANGELES
 GEOTECHNICAL & MATERIALS ENGINEERING

DIRECT SHEAR ASTM D3080

Project: Adventure Park

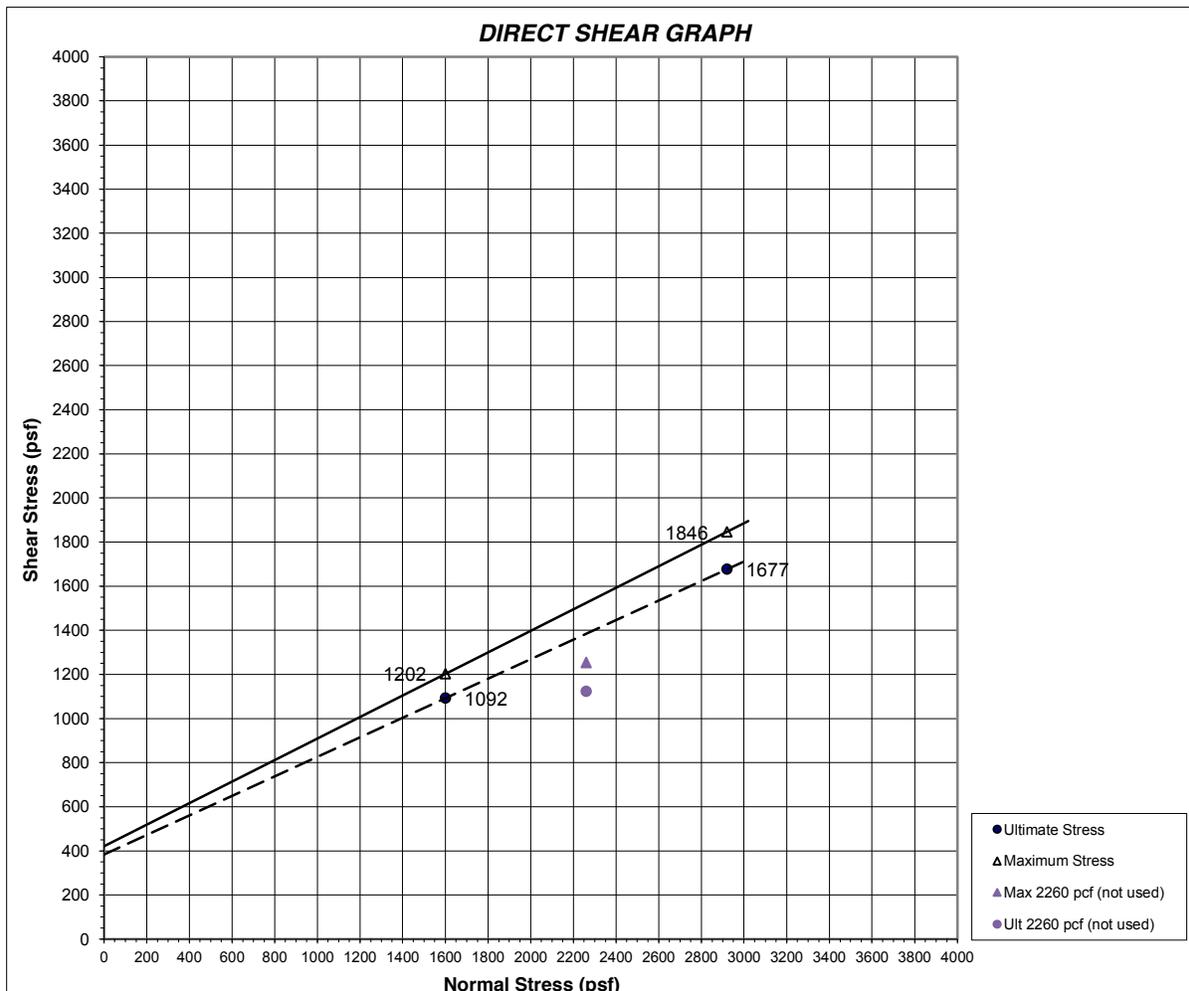
PCA: F21816i07 USC: n/a % (-200): 89.8
 Boring/Sample: B3-6R LL: n/a PI: n/a
 Depth (ft): 25-56.5 % ret. 3/4": 0.0 % ret. #4: 0.0
 Sample Condition: v. hard Composite Dry Density (pcf): 105.0
 Field Class.: N/A Composite Moisture (%): 18.2
 Number of Rings: 12 Initial (Field) Void Ratio: 0.57
 App. Soaking Time: 72 hrs Initial (Field) Saturation (%): 84.0

Notes: wet, light grey/brown, layers/pockets of f. sandy silt - silty clay

Ring Dia.:	2.375		
Normal Stress	Ultimate Stress	Maximum Stress	RATE
(psf)	(psf)	(psf)	IN./MIN
0	----	----	----
			0.008
1600	1092	1202	
2260	1124	1254	
2920	1677	1846	

ϕ Max 26
 ϕ Ult 24
 C_{max} 421
 C_{ult} 383

Max (-tan) 0.4879
 Ult (-tan) 0.4432



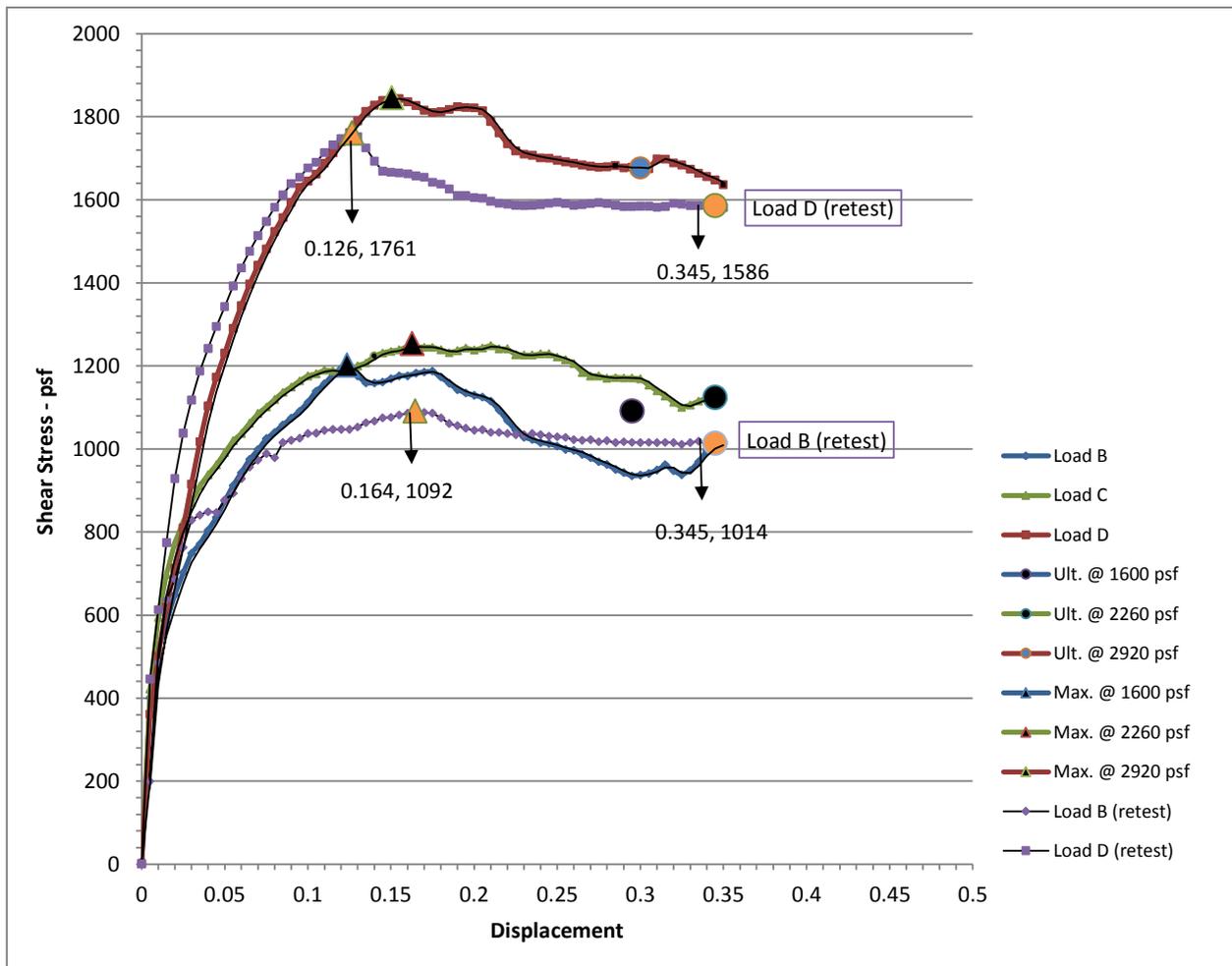
DEPARTMENT OF PUBLIC WORKS, LOS ANGELES
GEOTECHNICAL & MATERIALS ENGINEERING
 DIRECT SHEAR ASTM D3080

Multi Graph

Project Name: **Adventure Park**
 PCA: F21816i07
 Boring/Sample: **B3-6R**

	Normal Stress psf	Ult. Stress psf	Dist. inch	Max. Stress psf	Dist. inch
Load B	1600	1092	0.295	1202	0.1236
Load C	2260	1124	0.345	1254	0.1627
Load D	2920	1677	0.3	1846	0.1505

Ring WGT + Wet Soil lb.	Approx. Field Density psf
0.4670	104.6
0.4690	105.3
0.4700	105.6



**DEPARTMENT OF PUBLIC WORKS, LOS ANGELES
GEOTECHNICAL & MATERIALS ENGINEERING**

DIRECT SHEAR ASTM D3080

Project: Adventure Park

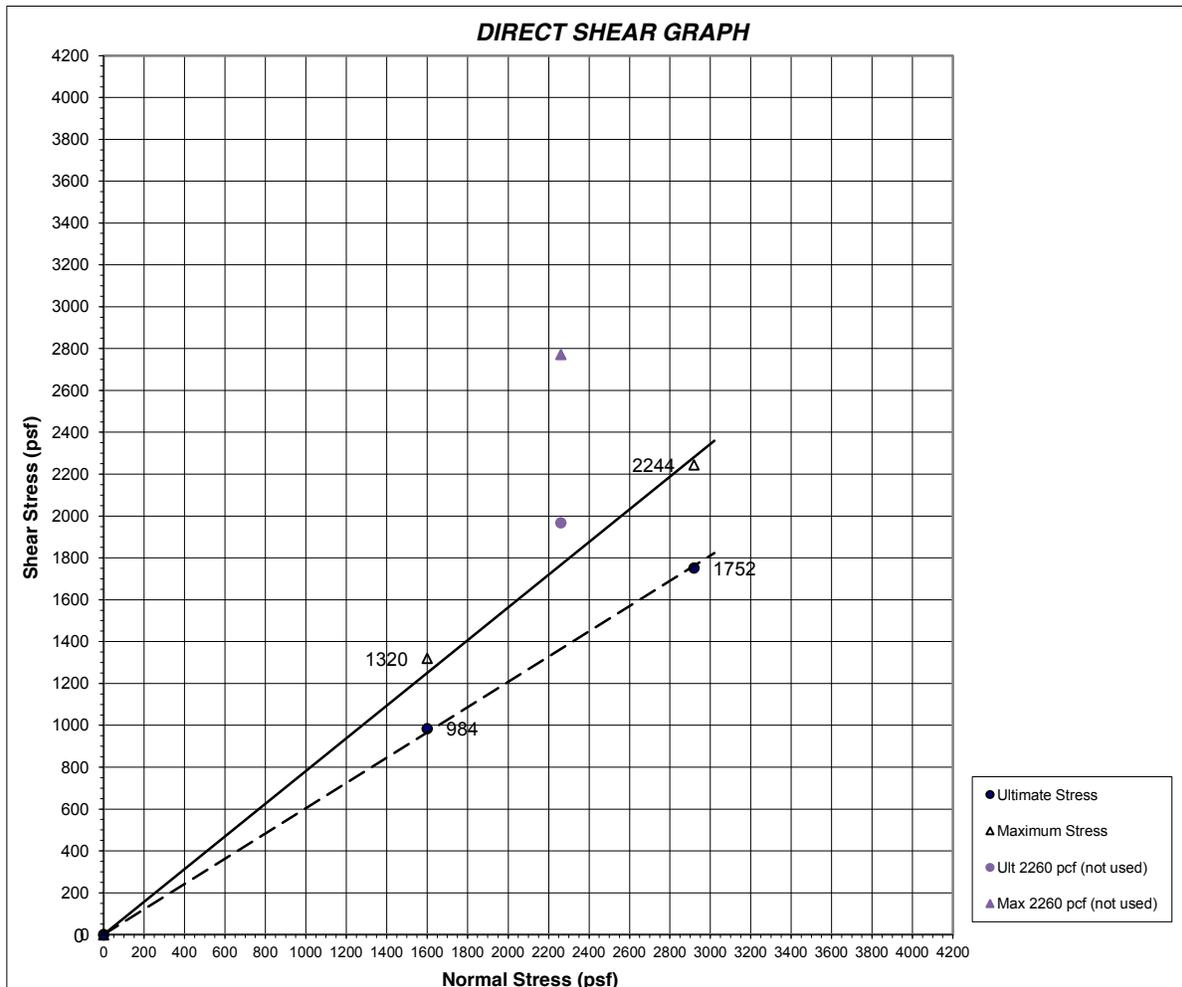
PCA: F21816i07	USC: SP	% (-200): 1.4
Boring/Sample: B3-8R	LL: n/a	PI: n/a
Depth (ft): 35-36.5	% ret. 3/4": 0.0	% ret. #4: 0.9
Sample Condition: loose	Composite Dry Density (pcf): 117.9	
Field Class.: N/A	Composite Moisture (%): 8.4	
Number of Rings: 9	Initial (Field) Void Ratio: 0.40	
App. Soaking Time: 24 hrs	Initial (Field) Saturation (%): 55.4	

Notes: Moist, loose sand, light brown, coarse sand, few gravels, classification is SP but close to SW

Ring Dia.:	2.375		
Normal Stress	Ultimate Stress	Maximum Stress	RATE
(psf)	(psf)	(psf)	IN./MIN
0	----	----	----
			0.008
1600	984	1320	
2260	1968	2771	
2920	1752	2244	

ϕ Max	38
ϕ Ult	31
C_{max}	0
C_{ult}	0

Max (-tan)	0.7815
Ult (-tan)	0.6035



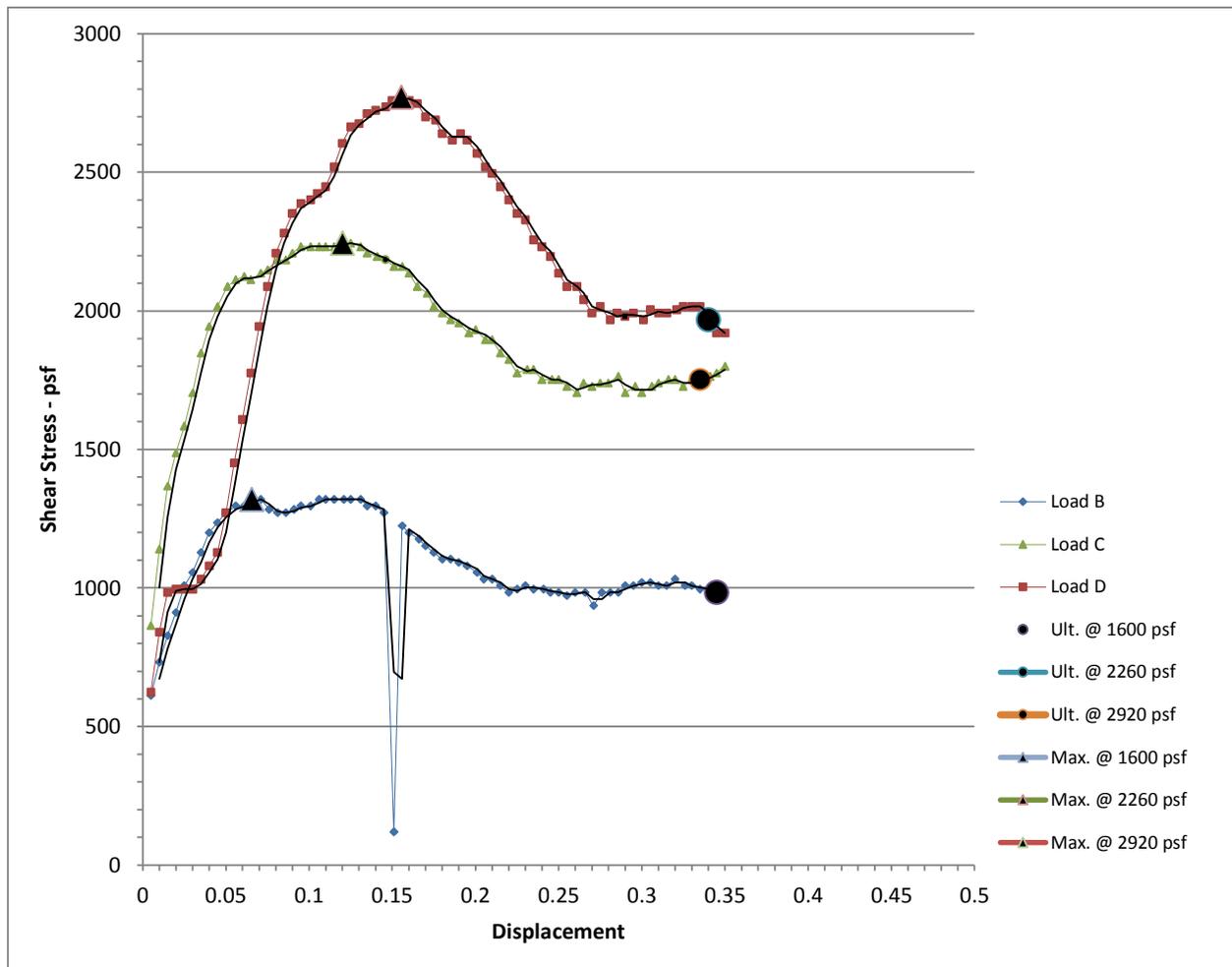
DEPARTMENT OF PUBLIC WORKS, LOS ANGELES
GEOTECHNICAL & MATERIALS ENGINEERING
 DIRECT SHEAR ASTM D3080

Multi Graph

Project Name: **Adventure Park**
 PCA: F21816i07
 Boring/Sample: **B3-8R**

	Normal Stress psf	Ult. Stress psf	Dist. inch	Max. Stress psf	Dist. inch
Load B	1600	984	0.345	1320	0.0655
Load C	2260	1968	0.34	2771	0.1555
Load D	2920	1752	0.335	2244	0.12

Ring WGT + Wet Soil lb.	Approx. Field Density psf
0.469	114.8
0.471	115.5
0.48	118.7



LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
LAB. ID: n/a
CLASSIFICATION: ML (SM)
TESTED BY: EH/TA
CHECKED BY: EH

PCA: F21816i07
BORING / SAMPLE: B1-R4
DEPTH (FT): 15-16.5
DATE TESTED: 9/28/17
DATE CHECKED: 10/4/17

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 > 50%, CLAY or SILT

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1					
3/8"	9.52				100.0	
No. 4	4.76	0.00	0.0	0.0	100.0	
PAN	0	0.27				
TOTAL FRACTIONS					MOISTURE CONTENT OF FINES	
					WET WEIGHT (gm)	1.25
OVEN-DRY FINES					DRY WEIGHT (gm)	1.01
* TOTAL OVEN-DRY					MOISTURE (%)	23.9

* Cobbles not included in total oven-dry weight

• If moisture was not taken from Course material a 1% moisture content will be assumed.

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

WET WEIGHT OF FINES USED FOR WASHING (gms)		363.20				
CALCULATED OVEN-DRY WEIGHT (gms)		293.06				
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):		293.19				
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
10	2	0.61	0.2	0.3	99.7	
20	0.85	1.61	0.5	0.8	99.2	
40	0.425	2.27	0.8	1.6	98.4	
60	.25	3.44	1.2	2.8	97.2	
140	0.106	23.71	8.1	10.8	89.2	
200	0.074	114.82	39.2	50.0	50.0	
PAN	0	14.62	5.0			
TOTAL FRACTIONS		161.08	54.9			
TOTAL DRY WEIGHT AFTER WET SEIVING		161.00	54.9			
SIEVE LOSS-GAIN		-0.08	0.0			

Atterberg Test	
Liquid Limit	n/a
Plastic Limit	n/a
Plastic Index	n/a

SOIL DESCRIP. / REMARKS: non plastic

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
LAB. ID: 00120
CLASSIFICATION: CL
TESTED BY: GP
CHECKED BY: EH

PCA: F21816i07
BORING / SAMPLE: B1-6B
DEPTH (FT): 21.5-23.5
DATE TESTED: 8/21/17
DATE CHECKED: 3/15/18

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 > 50%, CLAY or SILT

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1					
3/8"	9.52				100.0	
No. 4	4.76	0.01	0.0	0.0	100.0	
PAN	0	26.59				
TOTAL FRACTIONS		26.60			MOISTURE CONTENT OF FINES	
OVEN-DRY FINES		24.55			WET WEIGHT (gm)	300.00
* TOTAL OVEN-DRY		24.56			DRY WEIGHT (gm)	277.00
					MOISTURE (%)	8.3

* Cobbles not included in total oven-dry weight

• If moisture was not taken from Course material a 1% moisture content will be assumed.

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

WET WEIGHT OF FINES USED FOR WASHING (gms)				600.00		
CALCULATED OVEN-DRY WEIGHT (gms)				554.00		
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):				554.23		
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
10	2					
20	0.85					
40	0.425					
60	.25					
140	0.106					
200	0.074			23.8	76.2	
PAN	0					
TOTAL FRACTIONS		0.00	0.0		Atterberg Test	
TOTAL DRY WEIGHT AFTER WET SEIVING		131.90	23.8		Liquid Limit	42
SIEVE LOSS-GAIN		131.90			Plastic Limit	22
					Plastic Index	20

SOIL DESCRIP. / REMARKS: Field Moist.- 45.1%

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL & MATERIALS ENGINEERING DIVISION / Geotechnical Laboratory
LIQUID LIMIT AND PLASTICITY INDEX TESTS
 ASTM D4318 / CTM 204

PROJECT NAME:	Adventure Park	PCA:	F21816i07
LABORATORY ID:	00120	BOR./SAMP.:	B1-6B
TESTED BY:	GP	DATE TESTED:	8/10/2017
CHECKED BY:	EH	DATE CHECKED:	3/15/2018
CLASSIFICATION:	CL	- #(200):	76.2

LIQUID LIMIT

Container Number	G-21
Number of Blows (N)	26
Wet Sample + Tare (gms.)	17.6110
Dry Sample + Tare (gms.)	16.9290
Wt. of Water (gms.)	0.682
Wt. of Tare (gms.)	15.2990
Wt. of Dry Soil (gms.)	1.630
Moisture Content (% , W _n)	41.8

Liquid Limit **42**

LL = (W_n)(N/25)^{0.121}

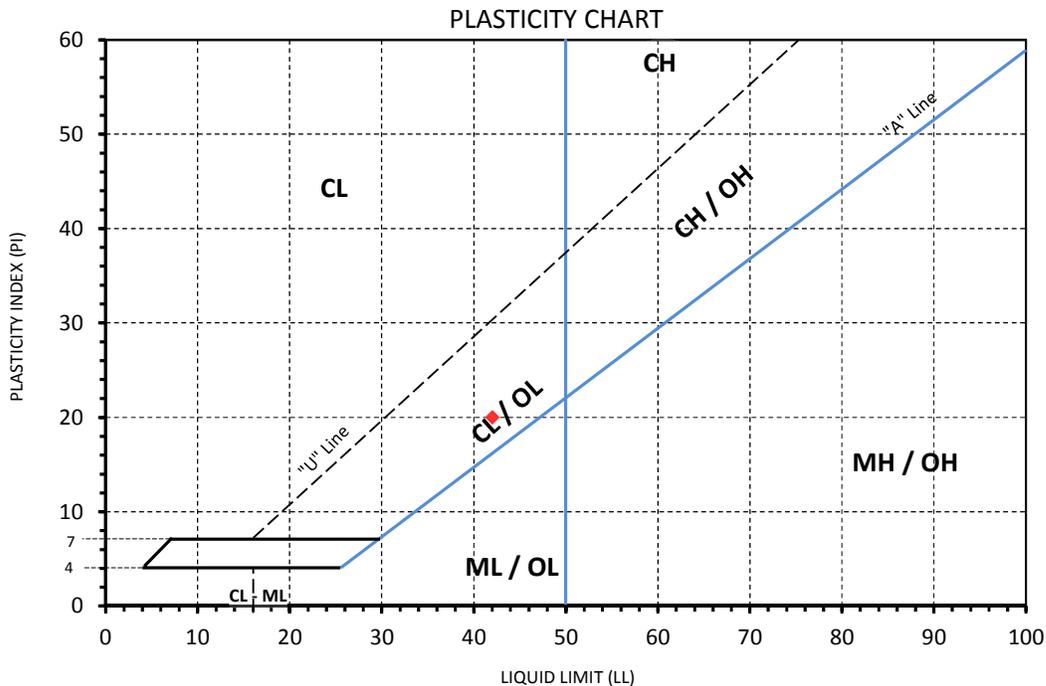
PLASTICITY INDEX

(LL-PL) = **20**

PLASTIC LIMIT

No. of Samples Tested	3		
Run Number	1	2	3
Container Number	G-30	G-37	G-38
Wet Sample + Tare (gms.)	17.2430	17.0200	17.0590
Dry Sample + Tare (gms.)	16.8980	16.6900	16.7030
Wt. of Water (gms.)	0.345	0.330	0.356
Wt. of Tare (gms.)	15.3640	15.2300	15.1000
Wt. of Dry Soil (gms.)	1.534	1.460	1.603
Moisture Content (%)	22.5	22.6	22.2

Plastic Limit (Avg. Value) **22**



LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
LAB. ID: 00122
CLASSIFICATION: n/a
TESTED BY: GP
CHECKED BY: EH

PCA: F21816i07
BORING / SAMPLE: B1-8S
DEPTH (FT): 30-31.5
DATE TESTED: 8/21/17
DATE CHECKED: 3/15/18

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 > 50%, CLAY or SILT

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1					
3/8"	9.52				100.0	
No. 4	4.76	0.01	0.9	0.9	99.1	
PAN	0	1.02				
TOTAL FRACTIONS		1.03			MOISTURE CONTENT OF FINES	
OVEN-DRY FINES		0.91			WET WEIGHT (gm)	50.00
* TOTAL OVEN-DRY		0.92			DRY WEIGHT (gm)	44.59
					MOISTURE (%)	12.1

* Cobbles not included in total oven-dry weight

• If moisture was not taken from Course material a 1% moisture content will be assumed.

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

WET WEIGHT OF FINES USED FOR WASHING (gms)				463.60		
CALCULATED OVEN-DRY WEIGHT (gms)				413.44		
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):				417.07		
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
10	2					
20	0.85					
40	0.425					
60	.25					
140	0.106					
200	0.074			8.0	92.0	
PAN	0					
TOTAL FRACTIONS		0.00	0.0		Atterberg Test	
TOTAL DRY WEIGHT AFTER WET SEIVING		29.70	7.1		Liquid Limit	n/a
SIEVE LOSS-GAIN		29.70			Plastic Limit	n/a
					Plastic Index	n/a

SOIL DESCRIP. / REMARKS:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
LAB. ID: 00123
CLASSIFICATION: n/a
TESTED BY: GP
CHECKED BY: EH

PCA: F21816i07
BORING / SAMPLE: B2-4S
DEPTH (FT): 20-21.5
DATE TESTED: 8/21/17
DATE CHECKED: 3/15/18

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 > 50%, CLAY or SILT

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1				100.0	
3/8"	9.52	0.00	0.3	0.3	99.7	
No. 4	4.76	0.00	0.1	0.3	99.7	
PAN	0	1.87				
TOTAL FRACTIONS		1.88			MOISTURE CONTENT OF FINES	
OVEN-DRY FINES		1.59			WET WEIGHT (gm)	50.00
* TOTAL OVEN-DRY		1.59			DRY WEIGHT (gm)	42.30
					MOISTURE (%)	18.2

* Cobbles not included in total oven-dry weight

• If moisture was not taken from Course material a 1% moisture content will be assumed.

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

WET WEIGHT OF FINES USED FOR WASHING (gms)				200.00		
CALCULATED OVEN-DRY WEIGHT (gms)				169.20		
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):				169.75		
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
8	2.38					
16	1.19					
30	0.59					
50	0.297					
100	0.149					
200	0.074			28.1	71.9	
PAN	0					
TOTAL FRACTIONS		0.00	0.0		Atterberg Test	
TOTAL DRY WEIGHT AFTER WET SEIVING		47.20	27.8		Liquid Limit	n/a
SIEVE LOSS-GAIN		47.20			Plastic Limit	n/a
					Plastic Index	n/a

SOIL DESCRIP. / REMARKS:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
 LAB. ID: 00125
 CLASSIFICATION: n/a
 TESTED BY: GP
 CHECKED BY: EH

PCA: F21816i07
 BORING / SAMPLE: B2-6S
 DEPTH (FT): 30-31.5
 DATE TESTED: 8/21/17
 DATE CHECKED: 3/15/18

Cu / Cc: 8.3 0.3

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 < 50%, SILT, SAND or DUAL

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1					
3/8"	9.52				100.0	
No. 4	4.76	0.00	0.1	0.1	99.9	
PAN	0	2.06				
TOTAL FRACTIONS		2.07				
OVEN-DRY FINES		1.69				
* TOTAL OVEN-DRY		1.70				
					MOISTURE CONTENT OF FINES	
					WET WEIGHT (gm)	916.90
					DRY WEIGHT (gm)	752.60
					MOISTURE (%)	21.8

* Cobbles not included in total oven-dry weight

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

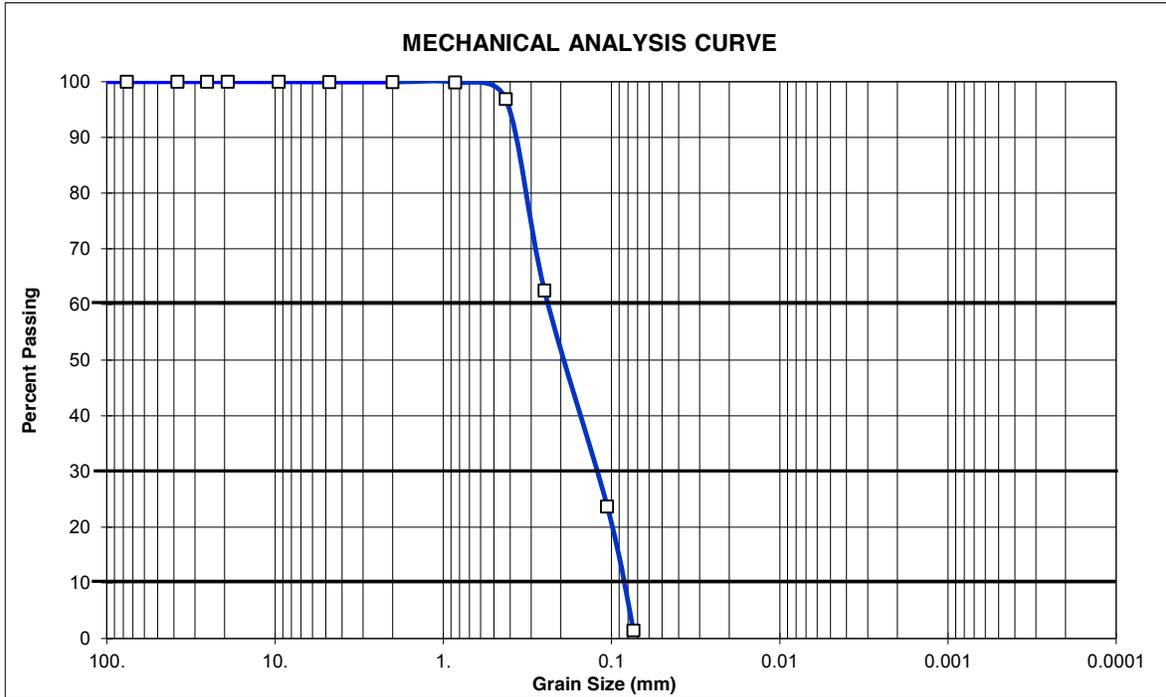
WET WEIGHT OF FINES USED FOR WASHING (gms)				610.00				
CALCULATED OVEN-DRY WEIGHT (gms)				500.69				
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):				500.99				
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING			
					ACTUAL	SPEC. REQ.		
8	2.38	0.02	0.0	0.1	99.9			
16	1.19	0.29	0.1	0.1	99.9			
30	0.59	15.09	3.0	3.1	96.9			
50	0.297	172.23	34.4	37.5	62.5			
100	0.149	194.33	38.8	76.3	23.7			
200	0.074	111.69	22.3	98.6	1.4			
PAN	0	6.36	1.3					
TOTAL FRACTIONS		500.01	99.8					
TOTAL DRY WEIGHT AFTER WET SEIVING		500.20	99.8					
SIEVE LOSS-GAIN		0.19	0.0					
							Atterberg Test	
							Liquid Limit	n/a
							Plastic Limit	n/a
							Plastic Index	n/a

SOIL DESCRIP. / REMARKS:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
MATERIALS ENGINEERING DIVISION
Geotechnical Laboratory
PARTICLE SIZE DISTRIBUTION REPORT

PROJECT NAME: Adventure Park
CLASSIFICATION: n/a

PCA: F21816i07
BORING/SAMPLE: B2-6S



	% COBBLES	% GRAVEL		% SAND			% FINES	
		coarse	fine	coarse	medium	fine	silt + clay	
(mm)*	(300-75)	(75-19)	(19-4.75)	(4.75-2)	(2-.425)	(.425-.075)	(-.075)	(-.005)
(%)	0.0	0.0	0.1	0.0	3.1	95.5	1.4	
TOTAL	-	= 0.1		= 98.5			#N/A	#N/A

*sieve# (12" - 3") | (3" - 3/4") | (3/4" - #4) | (#4 - #10) | (#10 - #40) | (#40 - #200) | pass#200 | pass#270

1st# passing	2nd# retaining	Avg. Organic Content n/a %	SAND EQUIVALENT / ASTM D2419		
			Sand		
		Clay	Cylind. 1	Cylind. 2	VALUE

% Retained #200 =	98.6	D ₁₀ =	0.09	C _u = D ₆₀ / D ₁₀ =	8.33
% Retained # 4 =	0.1	D ₃₀ =	0.13	C _c = D ₃₀ ² / (D ₁₀ *D ₆₀) =	0.25037
% #4 / % #200 =	0.1	D ₆₀ =	0.75		

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
 LAB. ID: 00129
 CLASSIFICATION: CL
 TESTED BY: GP
 CHECKED BY: EH

PCA: F21816i07
 BORING / SAMPLE: B3-1R
 DEPTH (FT): 5-6.5
 DATE TESTED: 8/21/17
 DATE CHECKED: 3/15/18

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 > 50%, CLAY or SILT

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1					
3/8"	9.52				100.0	
No. 4	4.76	0.03	1.2	1.2	98.8	
PAN	0	2.94				
TOTAL FRACTIONS		2.97			MOISTURE CONTENT OF FINES	
OVEN-DRY FINES		2.46			WET WEIGHT (gm)	300.00
* TOTAL OVEN-DRY		2.49			DRY WEIGHT (gm)	251.20
					MOISTURE (%)	19.4

* Cobbles not included in total oven-dry weight

• If moisture was not taken from Course material a 1% moisture content will be assumed.

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

WET WEIGHT OF FINES USED FOR WASHING (gms)				600.00		
CALCULATED OVEN-DRY WEIGHT (gms)				502.40		
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):				508.52		
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
10	2					
20	0.85					
40	0.425					
60	.25					
140	0.106					
200	0.074			15.5	84.5	
PAN	0					
TOTAL FRACTIONS		0.00	0.0		Atterberg Test	
TOTAL DRY WEIGHT AFTER WET SEIVING		72.80	14.3		Liquid Limit	44
SIEVE LOSS-GAIN		72.80			Plastic Limit	19
					Plastic Index	25

SOIL DESCRIP. / REMARKS:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL & MATERIALS ENGINEERING DIVISION / Geotechnical Laboratory
LIQUID LIMIT AND PLASTICITY INDEX TESTS
 ASTM D4318 / CTM 204

PROJECT NAME:	Adventure Park	PCA:	F21816i07
LABORATORY ID:	00129	BOR./SAMP.:	B3-1R
TESTED BY:	GP	DATE TESTED:	8/17/2017
CHECKED BY:	EH	DATE CHECKED:	3/15/2018
CLASSIFICATION:	CL	- #(200):	84.5

LIQUID LIMIT

Container Number	G-21
Number of Blows (N)	29
Wet Sample + Tare (gms.)	18.6100
Dry Sample + Tare (gms.)	17.6190
Wt. of Water (gms.)	0.991
Wt. of Tare (gms.)	15.3010
Wt. of Dry Soil (gms.)	2.318
Moisture Content (% W_n)	42.8

Liquid Limit

44

LL = $(W_n)(N/25)^{0.121}$

PLASTICITY INDEX

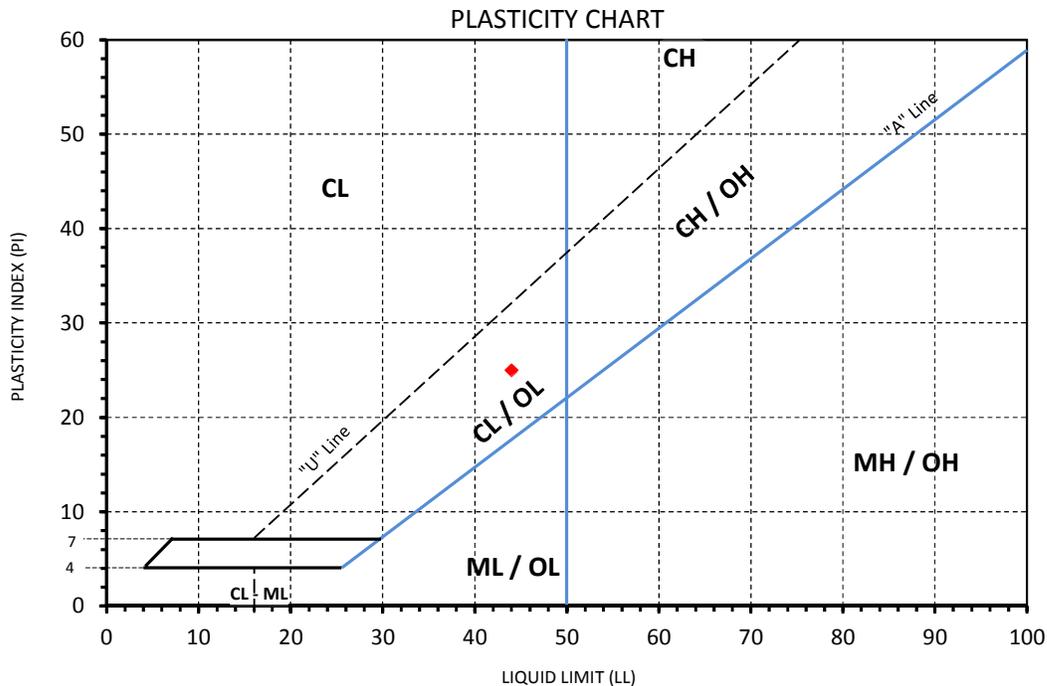
(LL-PL) = **25**

PLASTIC LIMIT

No. of Samples Tested	3		
Run Number	1	2	3
Container Number	G-30	G-37	G-38
Wet Sample + Tare (gms.)	17.1340	17.2960	17.0420
Dry Sample + Tare (gms.)	16.8560	16.9730	16.7340
Wt. of Water (gms.)	0.278	0.323	0.308
Wt. of Tare (gms.)	15.3650	15.2300	15.0990
Wt. of Dry Soil (gms.)	1.491	1.743	1.635
Moisture Content (%)	18.6	18.5	18.8

Plastic Limit (Avg. Value)

19



LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
LAB. ID: 00130
CLASSIFICATION: n/a
TESTED BY: GP
CHECKED BY: EH

PCA: F21816i07
BORING / SAMPLE: B3-2S
DEPTH (FT): 10-11.5
DATE TESTED: 8/21/17
DATE CHECKED: 9/11/17

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 > 50%, CLAY or SILT

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1					
3/8"	9.52				100.0	
No. 4	4.76	0.00	0.2	0.2	99.8	
PAN	0	1.86				
TOTAL FRACTIONS		1.86			MOISTURE CONTENT OF FINES	
OVEN-DRY FINES		1.57			WET WEIGHT (gm)	50.00
* TOTAL OVEN-DRY		1.58			DRY WEIGHT (gm)	42.40
					MOISTURE (%)	17.9

* Cobbles not included in total oven-dry weight

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

WET WEIGHT OF FINES USED FOR WASHING (gms)				600.00		
CALCULATED OVEN-DRY WEIGHT (gms)				508.80		
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):				509.77		
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
10	2					
20	0.85					
40	0.425					
60	.25					
140	0.106					
200	0.074			16.5	83.5	
PAN	0					
TOTAL FRACTIONS		0.00	0.0		Atterberg Test	
TOTAL DRY WEIGHT AFTER WET SEIVING		83.30	16.3		Liquid Limit	n/a
SIEVE LOSS-GAIN		83.30			Plastic Limit	n/a
					Plastic Index	n/a

SOIL DESCRIP. / REMARKS:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
 LAB. ID: 00133
 CLASSIFICATION: n/a
 TESTED BY: GP
 CHECKED BY: EH

PCA: F21816i07
 BORING / SAMPLE: B3-6R
 DEPTH (FT): 25-26.5
 DATE TESTED: 8/21/17
 DATE CHECKED: 3/15/18

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 > 50%, CLAY or SILT

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1					
3/8"	9.52				100.0	
No. 4	4.76	0.00	0.0	0.0	100.0	
PAN	0	5.87				
TOTAL FRACTIONS		5.87			MOISTURE CONTENT OF FINES	
OVEN-DRY FINES		5.57			WET WEIGHT (gm)	137.10
* TOTAL OVEN-DRY		5.57			DRY WEIGHT (gm)	130.20
					MOISTURE (%)	5.3

* Cobbles not included in total oven-dry weight

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

WET WEIGHT OF FINES USED FOR WASHING (gms)				600.00		
CALCULATED OVEN-DRY WEIGHT (gms)				569.80		
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):				570.01		
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
8	2.38					
16	1.19					
30	0.59					
50	0.297					
100	0.149					
200	0.074			10.2	89.8	
PAN	0					
TOTAL FRACTIONS		0.00	0.0		Atterberg Test	
TOTAL DRY WEIGHT AFTER WET SEIVING		57.70	10.1		Liquid Limit	n/a
SIEVE LOSS-GAIN		57.70			Plastic Limit	n/a
					Plastic Index	n/a

SOIL DESCRIP. / REMARKS:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
LAB. ID: 00134
CLASSIFICATION: n/a
TESTED BY: GP
CHECKED BY: EH
Cu / Cc: 2.6 0.8

PCA: F21816i07
BORING / SAMPLE: B3-7R
DEPTH (FT): 30-31.5
DATE TESTED: 8/21/17
DATE CHECKED: 3/15/18

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 < 50%, SILT, SAND or DUAL

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1				100.0	
3/8"	9.52	0.03	1.7	1.7	98.3	
No. 4	4.76	0.06	3.3	5.0	95.0	
PAN	0	1.95				
TOTAL FRACTIONS		2.04			MOISTURE CONTENT OF FINES	
OVEN-DRY FINES		1.71			WET WEIGHT (gm)	919.80
* TOTAL OVEN-DRY		1.80			DRY WEIGHT (gm)	806.90
					MOISTURE (%)	14.0

* Cobbles not included in total oven-dry weight
 • If moisture was not taken from Course material a 1% moisture content will be assumed.

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

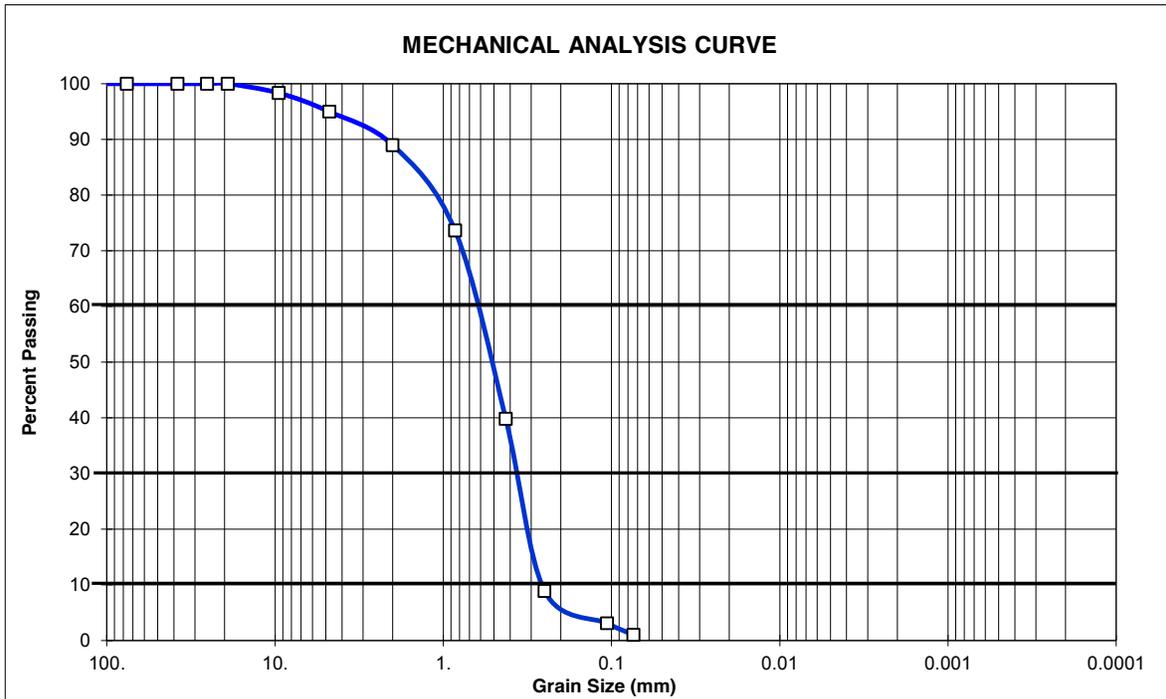
WET WEIGHT OF FINES USED FOR WASHING (gms)					675.00	
CALCULATED OVEN-DRY WEIGHT (gms)					592.15	
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):					623.32	
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
8	2.38	37.45	6.0	11.0	89.0	
16	1.19	95.85	15.4	26.4	73.6	
30	0.59	210.51	33.8	60.2	39.8	
50	0.297	192.69	30.9	91.1	8.9	
100	0.149	36.36	5.8	96.9	3.1	
200	0.074	12.98	2.1	99.0	1.0	
PAN	0	0.08	0.0			
TOTAL FRACTIONS		585.92	94.0		Atterberg Test	
TOTAL DRY WEIGHT AFTER WET SEIVING		585.90	94.0		Liquid Limit	n/a
SIEVE LOSS-GAIN		-0.02	0.0		Plastic Limit	n/a
					Plastic Index	n/a

SOIL DESCRIP. / REMARKS:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
MATERIALS ENGINEERING DIVISION
Geotechnical Laboratory
PARTICLE SIZE DISTRIBUTION REPORT

PROJECT NAME: Adventure Park
CLASSIFICATION: n/a

PCA: F21816i07
BORING/SAMPLE: B3-7R



(mm)*	% COBBLES (300-75)	% GRAVEL		% SAND			% FINES	
		coarse (75-19)	fine (19-4.75)	coarse (4.75-2)	medium (2-.425)	fine (.425-.075)	silt (-.075)	+ clay (-.005)
(%)	0.0	0.0	5.0	6.0	49.1	38.8	1.0	
TOTAL	-	= 5.0		= 94.0			#N/A	#N/A

*sieve# | (12" - 3") | (3" - 3/4") | (3/4" - #4) | (#4 - #10) | (#10 - #40) | (#40 - #200) | pass#200 | pass#270

1st# passing | 2nd# retaining

Avg. Organic Content
n/a %

SAND EQUIVALENT / ASTM D2419

Sand			n/a
Clay	Cylind. 1	Cylind. 2	
			VALUE

% Retained #200 =	99.0	D ₁₀ =	0.25 (mm)	C _u = D ₆₀ / D ₁₀ =	2.60
% Retained # 4 =	5.0	D ₃₀ =	0.36	C _c = D ₃₀ ² / (D ₁₀ *D ₆₀) =	0.79754
% #4 / % #200 =	5.1	D ₆₀ =	0.65		

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
 LAB. ID: 00135
 CLASSIFICATION: SP (close to SW)
 TESTED BY: GP
 CHECKED BY: EH

PCA: F21816i07
 BORING / SAMPLE: B3-8R
 DEPTH (FT): 35-36.5
 DATE TESTED: 8/21/17
 DATE CHECKED: 3/15/18

Cu / Cc: 22.5 3.1

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 < 50%, SILT, SAND or DUAL

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1				100.0	
3/8"	9.52	0.09	3.3	3.3	96.7	
No. 4	4.76	0.04	1.5	4.8	95.2	
PAN	0	2.67				
TOTAL FRACTIONS		2.79				
OVEN-DRY FINES		2.46				
* TOTAL OVEN-DRY		2.59				
					MOISTURE CONTENT OF FINES	
					WET WEIGHT (gm)	549.60
					DRY WEIGHT (gm)	507.80
					MOISTURE (%)	8.2

* Cobbles not included in total oven-dry weight

• If moisture was not taken from Course material a 1% moisture content will be assumed.

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

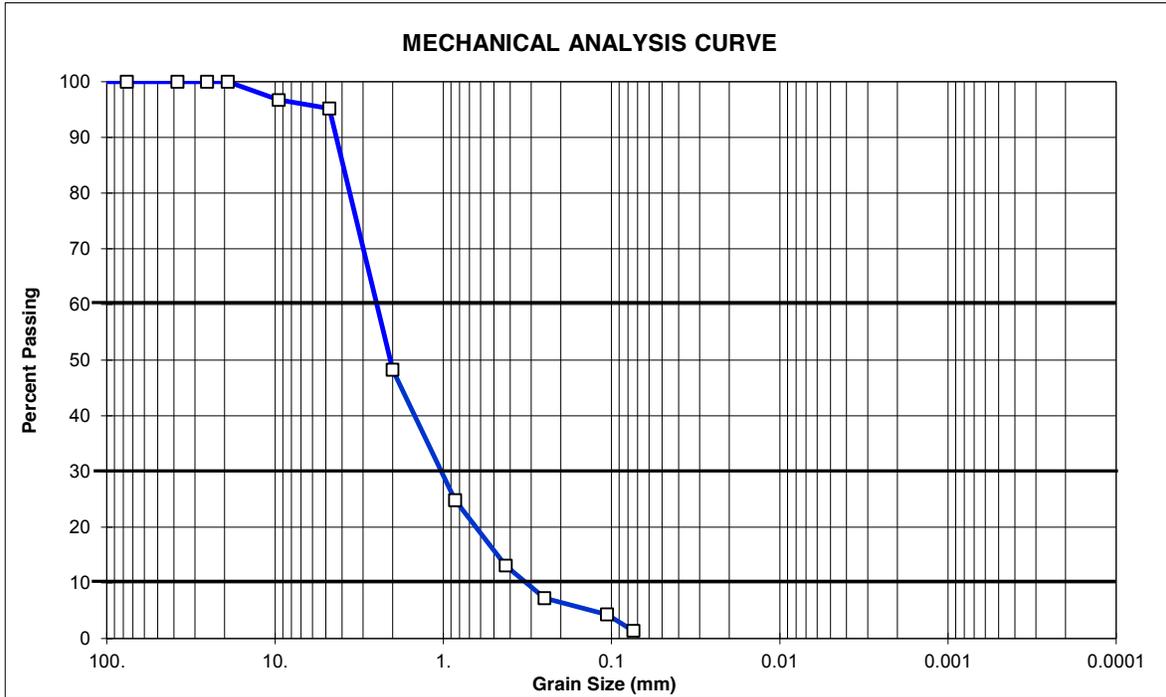
WET WEIGHT OF FINES USED FOR WASHING (gms)				507.80		
CALCULATED OVEN-DRY WEIGHT (gms)				469.18		
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):				492.81		
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	SPEC. REQ.
10	2					
20	0.85					
40	0.425					
60	.25					
140	0.106					
200	0.074			98.6	1.4	
PAN	0					
TOTAL FRACTIONS		0.00	0.0			
TOTAL DRY WEIGHT AFTER WET SEIVING		462.40	93.8			
SIEVE LOSS-GAIN		462.40				
Atterberg Test						
Liquid Limit					n/a	
Plastic Limit					n/a	
Plastic Index					n/a	

SOIL DESCRIP. / REMARKS: non plastic

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
MATERIALS ENGINEERING DIVISION
Geotechnical Laboratory
PARTICLE SIZE DISTRIBUTION REPORT

PROJECT NAME: Adventure Park
CLASSIFICATION: **SP (close to SW)**

PCA: F21816i07
BORING/SAMPLE: B3-8R



(mm)*	% COBBLES (300-75)	% GRAVEL		% SAND			% FINES	
		coarse (75-19)	fine (19-4.75)	coarse (4.75-2)	medium (2-.425)	fine (.425-.075)	silt (-.075)	+ clay (-.005)
(%)	0.0	0.0	4.8	0.0	0.0	0.0	0.0	
TOTAL	-	= 4.8		= 0.0			#N/A	#N/A

*sieve# | (12" - 3") | (3" - 3/4") | (3/4" - #4) | (#4 - #10) | (#10 - #40) | (#40 - #200) | pass#200 | pass#270

1st# passing | 2nd# retaining

Avg. Organic Content
n/a %

SAND EQUIVALENT / ASTM D2419

Sand			n/a
Clay	Cylind. 1	Cylind. 2	
			VALUE

% Retained #200 =	98.6	D ₁₀ =	0.12	C _u = D ₆₀ / D ₁₀ =	22.50
% Retained # 4 =	4.8	D ₃₀ =	1.00	C _c = D ₃₀ ² / (D ₁₀ *D ₆₀) =	3.08642
% #4 / % #200 =	4.9	D ₆₀ =	2.70		

No wash grading was performed points on the distribution curve from the #8 - #100 sieves were averaged using data from the % Accu. Pass. #4 & #200 sieves – Data should not be used as actual test results but only referred to as a reference

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
LAB. ID: 00138
CLASSIFICATION: SW
TESTED BY: GP
CHECKED BY: EH

PCA: F21816i07
BORING / SAMPLE: B3-9S
DEPTH (FT): 40-41.5
DATE TESTED: 8/21/17
DATE CHECKED: 3/15/18

Cu / Cc: 3.4 1.6

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 < 50%, SILT, SAND or DUAL

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1					
3/8"	9.52				100.0	
No. 4	4.76	0.05	3.2	3.2	96.8	
PAN	0	1.79				
TOTAL FRACTIONS		1.84			MOISTURE CONTENT OF FINES	
OVEN-DRY FINES		1.54			WET WEIGHT (gm)	838.70
* TOTAL OVEN-DRY		1.58			DRY WEIGHT (gm)	719.30
					MOISTURE (%)	16.6

* Cobbles not included in total oven-dry weight

• If moisture was not taken from Course material a 1% moisture content will be assumed.

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

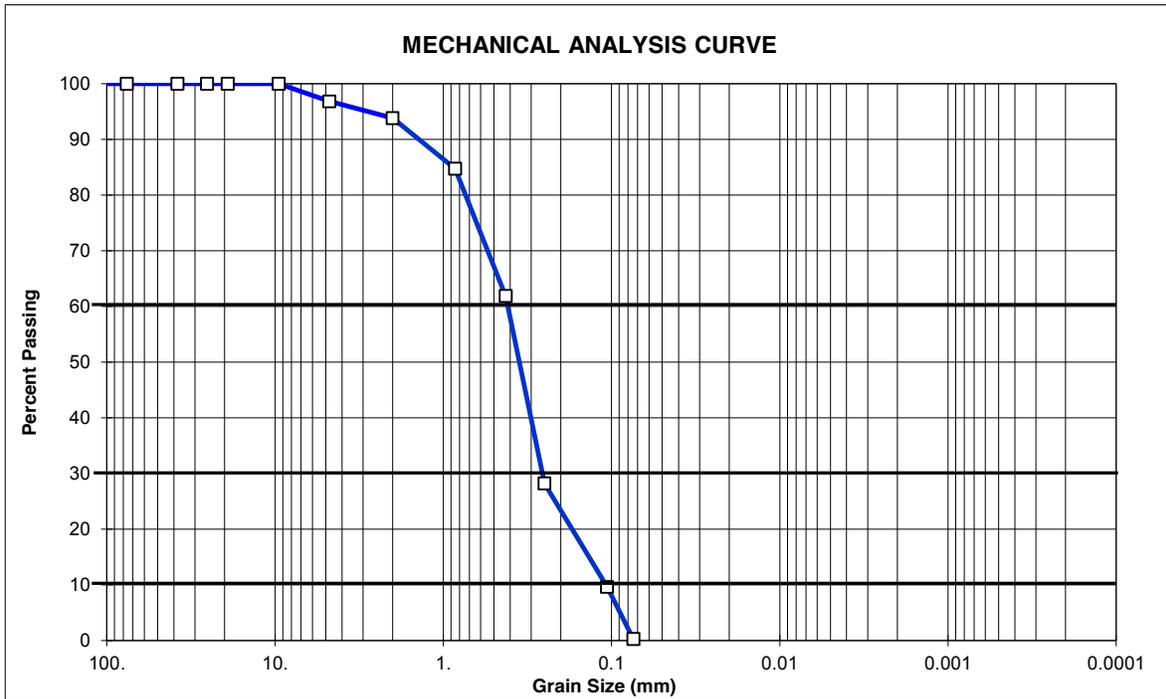
WET WEIGHT OF FINES USED FOR WASHING (gms)				605.00		
CALCULATED OVEN-DRY WEIGHT (gms)				518.87		
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):				535.78		
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
8	2.38	16.10	3.0	6.2	93.8	
16	1.19	48.83	9.1	15.3	84.7	
30	0.59	122.62	22.9	38.2	61.8	
50	0.297	180.24	33.6	71.8	28.2	
100	0.149	99.77	18.6	90.4	9.6	
200	0.074	50.09	9.3	99.8	0.2	
PAN	0	1.23	0.2			
TOTAL FRACTIONS		518.88	96.8		Atterberg Test	
TOTAL DRY WEIGHT AFTER WET SEIVING		518.80	96.8		Liquid Limit	n/a
SIEVE LOSS-GAIN		-0.08	0.0		Plastic Limit	n/a
					Plastic Index	n/a

SOIL DESCRIP. / REMARKS:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
MATERIALS ENGINEERING DIVISION
Geotechnical Laboratory
PARTICLE SIZE DISTRIBUTION REPORT

PROJECT NAME: Adventure Park
CLASSIFICATION: **SW**

PCA: F21816i07
BORING/SAMPLE: B3-9S



(mm)*	% COBBLES (300-75)	% GRAVEL		% SAND			% FINES	
		coarse (75-19)	fine (19-4.75)	coarse (4.75-2)	medium (2-.425)	fine (.425-.075)	silt (-.075)	+ clay (-.005)
(%)	0.0	0.0	3.2	3.0	32.0	61.6	0.2	
TOTAL	-	= 3.2		= 96.6			#N/A	#N/A

*sieve# (12" - 3") | (3" - 3/4") | (3/4" - #4) | (#4 - #10) | (#10 - #40) | (#40 - #200) | pass#200 | pass#270

1st# passing	2nd# retaining	Avg. Organic Content n/a %	SAND EQUIVALENT / ASTM D2419		
			Sand		
		Clay	Cylind. 1	Cylind. 2	VALUE

% Retained #200 =	99.8	D ₁₀ =	0.12	C _u = D ₆₀ / D ₁₀ =	3.42
% Retained # 4 =	3.2	D ₃₀ =	0.28	C _c = D ₃₀ ² / (D ₁₀ *D ₆₀) =	1.5935
% #4 / % #200 =	3.2	D ₆₀ =	0.41		

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
LAB. ID: 00136
CLASSIFICATION: n/a
TESTED BY: GP
CHECKED BY: EH
Cu / Cc: 4.2 1.3

PCA: F21816i07
BORING / SAMPLE: B3-10R
DEPTH (FT): 45-46.5
DATE TESTED: 8/21/17
DATE CHECKED: 3/15/18

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 < 50%, SILT, SAND or DUAL

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1					
3/8"	9.52				100.0	
No. 4	4.76	0.11	3.8	3.8	96.2	
PAN	0	3.11				
TOTAL FRACTIONS		3.22			MOISTURE CONTENT OF FINES	
OVEN-DRY FINES		2.78			WET WEIGHT (gm)	1407.60
* TOTAL OVEN-DRY		2.89			DRY WEIGHT (gm)	1260.70
					MOISTURE (%)	11.7

* Cobbles not included in total oven-dry weight
 • If moisture was not taken from Course material a 1% moisture content will be assumed.

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

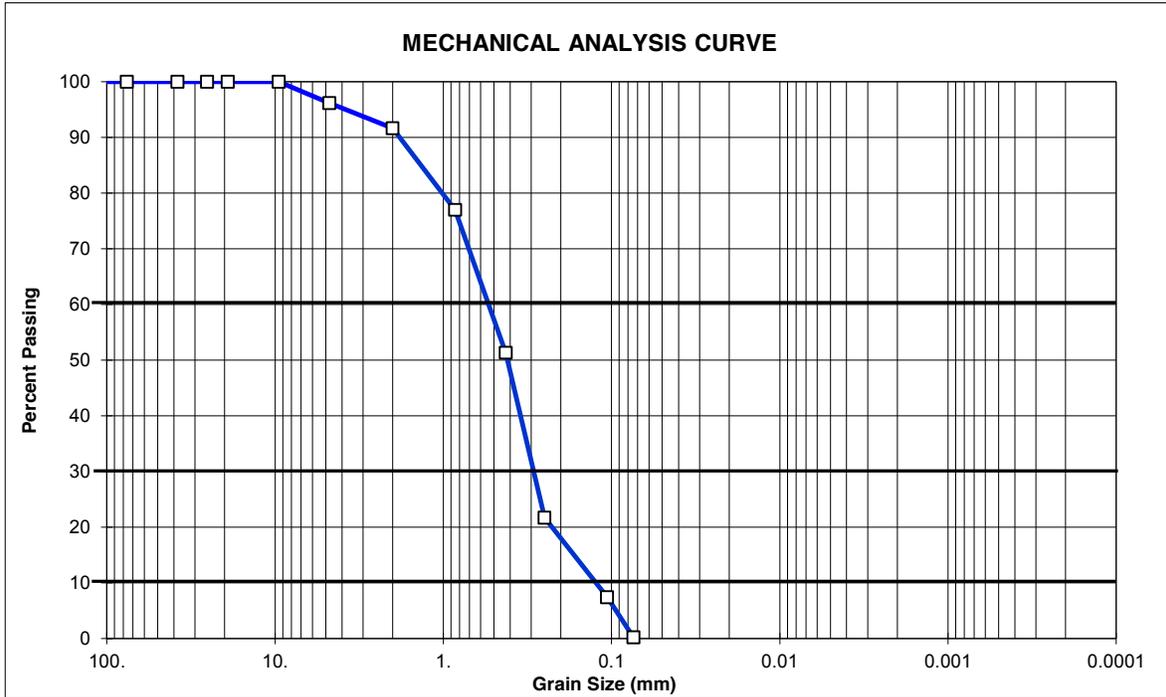
WET WEIGHT OF FINES USED FOR WASHING (gms)	600.00					
CALCULATED OVEN-DRY WEIGHT (gms)	537.38					
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):	558.62					
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
10	2	25.27	4.5	8.3	91.7	
20	0.85	82.07	14.7	23.0	77.0	
40	0.425	143.32	25.7	48.7	51.3	
60	.25	165.40	29.6	78.3	21.7	
140	0.106	79.94	14.3	92.6	7.4	
200	0.074	40.21	7.2	99.8	0.2	
PAN	0	0.99	0.2			
TOTAL FRACTIONS		537.20	96.2		Atterberg Test	
TOTAL DRY WEIGHT AFTER WET SEIVING		537.19	96.2		Liquid Limit	n/a
SIEVE LOSS-GAIN		-0.01	0.0		Plastic Limit	n/a
					Plastic Index	n/a

SOIL DESCRIP. / REMARKS:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
MATERIALS ENGINEERING DIVISION
Geotechnical Laboratory
PARTICLE SIZE DISTRIBUTION REPORT

PROJECT NAME: Adventure Park
CLASSIFICATION: n/a

PCA: F21816i07
BORING/SAMPLE: B3-10R



	% COBBLES	% GRAVEL		% SAND			% FINES	
		coarse	fine	coarse	medium	fine	silt + clay	
(mm)*	(300-75)	(75-19)	(19-4.75)	(4.75-2)	(2-.425)	(.425-.075)	(-.075)	(-.005)
(%)	0.0	0.0	3.8	4.5	40.3	51.1	0.2	
TOTAL	-	= 3.8		= 96.0			#N/A	#N/A

*sieve# (12" - 3") | (3" - 3/4") | (3/4" - #4) | (#4 - #10) | (#10 - #40) | (#40 - #200) | pass#200 | pass#270

1st# passing
 2nd# retaining

Avg. Organic Content
 n/a %

SAND EQUIVALENT / ASTM D2419

Sand			n/a
Clay	Cylind. 1	Cylind. 2	
			VALUE

% Retained #200 =	99.8	D ₁₀ =	0.13	C _u = D ₆₀ / D ₁₀ =	4.23
% Retained # 4 =	3.8	D ₃₀ =	0.30	C _c = D ₃₀ ² / (D ₁₀ *D ₆₀) =	1.25874
% #4 / % #200 =	3.8	D ₆₀ =	0.55		

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Laboratory - ASTM D2487, D6913, C117, C136

SIEVE ANALYSIS WORKSHEET

PROJECT NAME: Adventure Park
LAB. ID: 00137
CLASSIFICATION: n/a
TESTED BY: GP
CHECKED BY: EH
Cu / Cc: 2.5 1.1

PCA: F21816i07
BORING / SAMPLE: B3-11S
DEPTH (FT): 50-51.5
DATE TESTED: 8/21/17
DATE CHECKED: 3/15/18

If % Accum. Ret. #4 / % Accum. Ret. #200 > 50%, then Gravel
 If % Passing #200 < 50%, SILT, SAND or DUAL

COARSE (Plus no. 4)

ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (lb)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
6"	152.4					
3"	76.2					
1 1/2"	38.1					
1"	25.4					
3/4"	19.1					
3/8"	9.52				100.0	
No. 4	4.76	0.00	0.1	0.1	99.9	
PAN	0	1.68				
TOTAL FRACTIONS		1.68				
OVEN-DRY FINES		1.47				
* TOTAL OVEN-DRY		1.47				
					MOISTURE CONTENT OF FINES	
					WET WEIGHT (gm)	664.80
					DRY WEIGHT (gm)	583.30
					MOISTURE (%)	14.0

* Cobbles not included in total oven-dry weight

MOISTURE CONTENT OF COURSE	
Wet WGT. (gm)	0.00
Dry WGT. (gm)	0.00
MOISTURE (%)	0.01

FINES (Minus no. 4)

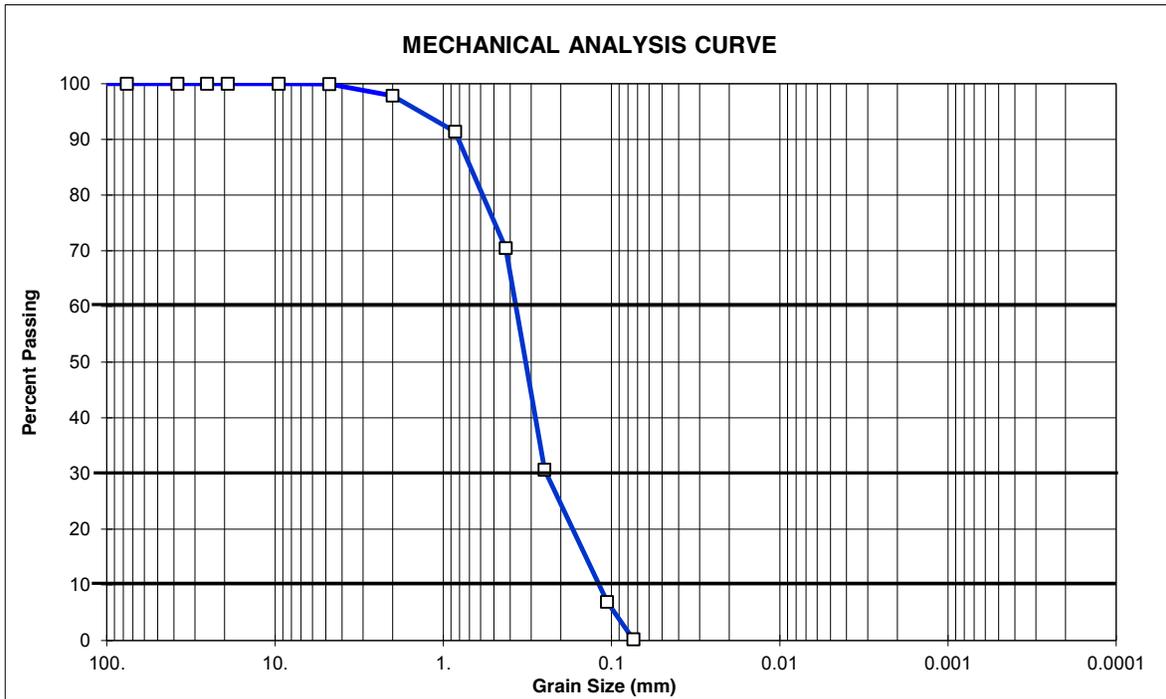
WET WEIGHT OF FINES USED FOR WASHING (gms)		618.00				
CALCULATED OVEN-DRY WEIGHT (gms)		542.24				
WT. OF TOTAL SAMPLE REPRESENTED BY FINES, OVEN-DRY (gms):		542.61				
ASTM SIEVE NUMBER	SIZE (mm)	RETAINED (gms)	% OF TOTAL OVEN DRY RETAINED	ACCUM. % RETAINED	ACCUM. % PASSING	
					ACTUAL	SPEC. REQ.
10	2	11.41	2.1	2.2	97.8	
20	0.85	34.89	6.4	8.6	91.4	
40	0.425	113.69	21.0	29.6	70.4	
60	0.25	215.76	39.8	69.3	30.7	
140	0.106	128.88	23.8	93.1	6.9	
200	0.074	36.54	6.7	99.8	0.2	
PAN	0	1.46	0.3			
TOTAL FRACTIONS		542.63	100.0			
TOTAL DRY WEIGHT AFTER WET SEIVING		542.60	100.0			
SIEVE LOSS-GAIN		-0.03	0.0			
					Atterberg Test	
					Liquid Limit	n/a
					Plastic Limit	n/a
					Plastic Index	n/a

SOIL DESCRIP. / REMARKS: Field Moist. - 15.5%

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
MATERIALS ENGINEERING DIVISION
Geotechnical Laboratory
PARTICLE SIZE DISTRIBUTION REPORT

PROJECT NAME: Adventure Park
CLASSIFICATION: n/a

PCA: F21816i07
BORING/SAMPLE: B3-11S



	% COBBLES	% GRAVEL		% SAND			% FINES	
		coarse	fine	coarse	medium	fine	silt + clay	
(mm)*	(300-75)	(75-19)	(19-4.75)	(4.75-2)	(2-.425)	(.425-.075)	(-.075)	(-.005)
(%)	0.0	0.0	0.1	2.1	27.4	70.2	0.2	
TOTAL	-	= 0.1		= 99.7			#N/A	#N/A

*sieve# (12" - 3") | (3" - 3/4") | (3/4" - #4) | (#4 - #10) | (#10 - #40) | (#40 - #200) | pass#200 | pass#270

1st# passing	2nd# retaining	Avg. Organic Content n/a %	SAND EQUIVALENT / ASTM D2419		
			Sand		
		Clay	Cylind. 1	Cylind. 2	VALUE

% Retained #200 =	99.8	D ₁₀ =	0.16	C _u = D ₆₀ / D ₁₀ =	2.50
% Retained # 4 =	0.1	D ₃₀ =	0.27	C _c = D ₃₀ ² / (D ₁₀ *D ₆₀) =	1.13906
% #4 / % #200 =	0.1	D ₆₀ =	0.40		

APPENDIX F
NON-HAZARDOUS WASTE MANIFEST

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number

N/A

2. Page 1 of

3. Emergency Response Phone

800-368-2663

4. Waste Tracking Number

~~38335~~ PW40094

5. Generator's Name and Mailing Address

LACDPW - GEOTECHNICAL
900 S. FREMONT AVE
ALHAMBRA, CA 91803 (626)458-4119

Generator's Site Address (if different than mailing address)

EATON YARD

Generator's Phone:

6. Transporter 1 Company Name

U.S. EPA ID Number

CA0382700257

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

CROSSROADS RECYCLING
1830 HATHAWAY STREET
LONG BEACH, CA 90801-3045

U.S. EPA ID Number

CA0028402014

Facility's Phone:

9. Waste Shipping Name and Description

10. Containers

11. Total Quantity

12. Unit Wt./Vol.

No.

Type

1. NON-HAZARDOUS SOLID WASTE

008

DM

4400

P

2.

3.

4.

13. Special Handling Instructions and Additional Information

31, DRILL CUTTINGS

WEAR PROPER PPE WHILE HANDLING
EMERGENCY CONTACT: ED LONG

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offero's Printed/Typed Name

Ernesto R. Vasquez

Signature

[Signature]

Month Day Year

08 08 17

15. International Shipments

Import to U.S.

Export from U.S.

Port of entry/exit:

Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Edward A. Long

Signature

[Signature]

Month Day Year

08 08 17

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space

Quantity

Type

Residue

Partial Rejection

Full Rejection

Manifest Reference Number:

U.S. EPA ID Number

17b. Alternate Facility (or Generator)

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name

Edmund Lopez

Signature

[Signature]

Month Day Year

8 10 17

APPENDIX G

**ENVIRONMENTAL TEST RESULTS
AMERICAN ENVIRONMENTAL TESTING LABORATORY, INC.**

SPT CAL

SPT HAMMER
ENERGY
MEASUREMENTS

Prepared by;

SPT CAL
5512 Belem Dr
Chino Hills, CA 91709

909-730-2161
bc@sptcal.com

Prepared for;
Plumbers Depot Inc.
3921 West 139th St.
Hawthorne, CA 90250

866-422-2156

Attn: Juan Martin

Date: 11/29/17

Project Title: LA County CME 75 Vehicle # 26-053

Project Description: Rig #136

Energy Transfer Ratio = 94.7% at 55.2 blows per minute

Testing was performed on November 29, 2017 in Pasadena, California

Hammer Energy Measurements performed in accordance to ASTM D4633 using an approved and calibrated SPT Analyzer from Pile Dynamics, Inc.

PRESENTATION OF SPT ANALYZER TEST DATA

1. Introduction

This report presents the results of SPT Hammer Energy Measurements recorded with an SPT Analyzer from Pile Dynamics carried out on November 29, 2017 in Pasadena, California.

2. Field Equipment and Procedures

The drill used is a CME 75. It is LA County Vehicle # 26-053. It has an attached CME Automatic Hammer..

The CME Automatic Hammer uses a 140 lb. weight dropped 30" on to an anvil above the bore hole. The drill rod connects the anvil to a split spoon type soil sampler inside an 8" o.d. hollow stem auger at the designated sample depth. After a seeding blow the sampler is driven 18". The number of blows required to penetrate the last 12" is referred to as the "N value", which is related to soil strength.

The first recording was taken at 10' below ground surface and then every 5' to final recording at 35'.

3. Instrumentation

An SPT Analyzer from Pile Dynamics was used to record and the process the data. The raw data was stored directly in the SPT Analyzer computer with subsequent analysis in the office with PDA-W and PDIPlot software. The measurements and analysis were conducted in general accordance with ASTM D4945 and ASTM D6066 test standards.

The SPT Analyzer is fully compliant with the minimum digital sampling frequency requirements of ASTM D4633-05 (50 kHz) and EN ISO 22476-3:2005 (100 kHz), as well as with the low pass filter, (cutoff frequency of 5000 Hz instead of 3000 Hz) requirements of ASTM D4633-05. All equipment and analysis also conform to ASTM D6066.

A 2' instrumented section of NWJ rod, with two sets of accelerometers and strain transducers mounted on opposite sides of the drill rod, was placed below the anvil. It measured strain and acceleration of every hammer blow. The SPT Analyzer then calculates the amount of energy transferred to the rod by force and velocity measurements.



4. Observations

The drill rig motor is diesel fueled. The drill and sample equipment looked to be well operated and maintained.

5. Results

Results from the SPT Hammer Energy Measurements are summarized below. It shows the Energy Transfer Ratio (ETR) at each sampling depth. ETR is the ratio of the measured maximum transferred energy to rated energy of the hammer which is the product of the weight of the hammer times the height of the fall. $140 \text{ lb} \times 30'' = 4200 \text{ lb-in} = 0.350 \text{ kip-ft}$.

Energy Transfer Ratio = 94.7% at 55.2 blows per minute

$$N_{60} = (ETR/60)N$$

Depth	ETR%	BPM
5	97.5	56.1
10	96.4	55.7
20	93.5	55.4
25	93.4	54.7
30	92.8	54.3
35	93.0	53.9
Average	94.7	55.2

If you have any questions please do not hesitate to call or email.

Thank you,

Brian Serl
Calibration Engineer
SPT CAL
909-730-2161
bc@sptcal.com



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

Ordered By

LA County Dept. of Public Works
GMED Materials Lab 900 S. Fremont Ave,
4th Floor
Alhambra, CA 91803-

Telephone: (626)458-5100
Attention: Ricardo Lopez

Number of Pages 19
Date Received 06/20/2017
Date Reported 06/26/2017

Job Number	Order Date	Client
88231	06/20/2017	LACDPW

Project ID: F21816I07
Project Name: Adventure Park
Site: Adventure Park
Near the Channel

Enclosed please find results of analyses of 6 soil samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____

Approved By: _____

Cyrus Razmara, Ph.D.
Laboratory Director



American Environmental Testing Laboratory Inc.

2834 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

COOLER RECEIPT FORM

Client Name: <i>LACDPW GMED</i>			
Project Name: <i>Adventure Park</i>			
AETL Job Number: <i>88231</i>			
Date Received: <i>06/20/17</i> Received by: <i>Jean Claude</i>			
Carrier: <input checked="" type="checkbox"/> AETL Courier <input type="checkbox"/> Client <input type="checkbox"/> GSO <input type="checkbox"/> FedEx <input type="checkbox"/> UPS			
<input type="checkbox"/> Others:			
Samples were received in: <input checked="" type="checkbox"/> Cooler (<i>1</i>) <input type="checkbox"/> Other (Specify):			
Inside temperature of shipping container No 1: <i>3.4°C</i> , No 2: _____, No 3: _____			
Type of sample containers: <input checked="" type="checkbox"/> VOA, <input type="checkbox"/> Glass bottles, <input checked="" type="checkbox"/> Wide mouth jars, <input type="checkbox"/> HDPE bottles, <input type="checkbox"/> Metal sleeves, <input checked="" type="checkbox"/> Others (Specify): <i>5035 kits</i>			
How are samples preserved: <input type="checkbox"/> None, <input checked="" type="checkbox"/> Ice, <input type="checkbox"/> Blue Ice, <input type="checkbox"/> Dry Ice			
None, <i>HNO₃</i> , <i>NaOH</i> , <i>ZnOAc</i> , <i>HCl</i> , <i>Na₂S₂O₃</i> , <input checked="" type="checkbox"/> <i>MeOH</i>			
<input checked="" type="checkbox"/> Other (Specify): <i>NaHSO₄H₂O</i>			
<i>* 5035 kits preserved into the field</i>			
	Yes	No, explain below	Name, if client was notified
1. Are the COCs Correct?	<i>X</i>		
2. Are the Sample labels legible?	<i>X</i>		
3. Do samples match the COC?	<i>X</i>		
4. Are the required analyses clear?	<i>X</i>		
5. Is there enough samples for required analysis?	<i>X</i>		
6. Are samples sealed with evidence tape?	<i>NA</i>		
7. Are sample containers in good condition?	<i>X</i>		
8. Are samples preserved?	<i>X</i>		
9. Are samples preserved properly for the intended analysis?	<i>X</i>		
10. Are the VOAs free of headspace?	<i>NA</i>		
11. Are the jars free of headspace?	<i>J</i>		

Explain all "No" answers for above questions:



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181

Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

Page: 1 A

Ordered By

LA County Dept. of Public Works
GMED Materials Lab 900 S. Fremont Ave,
4th Floor
Alhambra, CA 91803-

Project ID: F21816I07
Date Received 06/20/2017
Date Reported 06/26/2017

Telephone: (626) 458-5100
Attention: Ricardo Lopez

Job Number	Order Date	Client
88231	06/20/2017	LACDPW

CERTIFICATE OF ANALYSIS CASE NARRATIVE

AETL received 6 samples with the following specification on 06/20/2017.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
88231.01	B1-3	06/20/2017	Soil	5
88231.02	B1-7	06/20/2017	Soil	5
88231.03	B1-13	06/20/2017	Soil	5
88231.04	B2-3	06/20/2017	Soil	5
88231.05	B2-7	06/20/2017	Soil	5
88231.06	B2-13	06/20/2017	Soil	5

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010B/7000CAM)	06/27/2017	2	Normal	mg/Kg
(8260B) ^ +OXY5035	06/27/2017	2	Normal	ug/Kg
(M8015D) ^ C13-C40	06/27/2017	2	Normal	mg/Kg
(M8015G)	06/27/2017	2	Normal	mg/Kg

The samples were analyzed as specified on the enclosed chain of custody. Analytical non-conformances have been noted on the report.

Unless otherwise noted, all results of soil and solid samples are based on wet weight.

Checked By: 

Approved By: 

Cyrus Razmara, Ph.D.
Laboratory Director



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Near the Channel

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 2

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A1

Our Lab I.D.			Method Blank	88231.01	88231.02	88231.03	88231.04
Client Sample I.D.				B1-3	B1-7	B1-13	B2-3
Date Sampled				06/20/2017	06/20/2017	06/20/2017	06/20/2017
Date Prepared			06/22/2017	06/20/2017	06/20/2017	06/20/2017	06/20/2017
Preparation Method			5030	5035A	5035A	5035A	5035A
Date Analyzed			06/22/2017	06/22/2017	06/22/2017	06/22/2017	06/22/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	MDL	PQL	Results	Results	Results	Results	Results
Acetone	25	50	ND	ND	ND	ND	ND
Benzene	1.0	10.0	ND	4.03J	ND	ND	ND
Bromobenzene (Phenyl bromide)	5.0	10.0	ND	ND	ND	ND	ND
Bromochloromethane	5.0	10.0	ND	ND	ND	ND	ND
Bromodichloromethane	5.0	10.0	ND	ND	ND	ND	ND
Bromoform (Tribromomethane)	25	50	ND	ND	ND	ND	ND
Bromomethane (Methyl bromide)	15	30	ND	ND	ND	ND	ND
2-Butanone (MEK)	25	50	ND	ND	ND	ND	ND
n-Butylbenzene	5.0	10.0	ND	ND	ND	ND	ND
sec-Butylbenzene	5.0	10.0	ND	ND	ND	ND	ND
tert-Butylbenzene	5.0	10.0	ND	ND	ND	ND	ND
Carbon Disulfide	25	50	ND	ND	ND	ND	ND
Carbon tetrachloride	5.0	10.0	ND	ND	ND	ND	ND
Chlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
Chloroethane	15	30	ND	ND	ND	ND	ND
2-Chloroethyl vinyl ether	50	50	ND	ND	ND	ND	ND
Chloroform (Trichloromethane)	5.0	10.0	ND	ND	ND	ND	ND
Chloromethane (Methyl chloride)	15	30	ND	ND	ND	ND	ND
2-Chlorotoluene	5.0	10.0	ND	ND	ND	ND	ND
4-Chlorotoluene	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	25	50	ND	ND	ND	ND	ND
Dibromochloromethane	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	5.0	10.0	ND	ND	ND	ND	ND
Dibromomethane	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Page: 3

Project ID: F21816I07
 Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A1

Our Lab I.D.		Method Blank	88231.01	88231.02	88231.03	88231.04	
Client Sample I.D.			B1-3	B1-7	B1-13	B2-3	
Date Sampled			06/20/2017	06/20/2017	06/20/2017	06/20/2017	
Date Prepared		06/22/2017	06/20/2017	06/20/2017	06/20/2017	06/20/2017	
Preparation Method		5030	5035A	5035A	5035A	5035A	
Date Analyzed		06/22/2017	06/22/2017	06/22/2017	06/22/2017	06/22/2017	
Matrix		Soil	Soil	Soil	Soil	Soil	
Units		ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	
Dilution Factor		1	1	1	1	1	
Analytes	MDL	PQL	Results	Results	Results	Results	Results
Dichlorodifluoromethane	15	30	ND	ND	ND	ND	ND
1,1-Dichloroethane	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dichloroethane (EDC)	5.0	10.0	ND	ND	ND	ND	ND
1,1-Dichloroethene	5.0	10.0	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	10.0	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dichloropropane	5.0	10.0	ND	ND	ND	ND	ND
1,3-Dichloropropane	5.0	10.0	ND	ND	ND	ND	ND
2,2-Dichloropropane	5.0	10.0	ND	ND	ND	ND	ND
1,1-Dichloropropene	5.0	10.0	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	5.0	10.0	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	5.0	10.0	ND	ND	ND	ND	ND
Ethylbenzene	1.0	10.0	ND	ND	ND	ND	ND
Hexachlorobutadiene	15	30	ND	ND	ND	ND	ND
2-Hexanone	25	50	ND	ND	ND	ND	ND
Isopropylbenzene	5.0	10.0	ND	ND	ND	ND	ND
p-Isopropyltoluene	5.0	10.0	ND	ND	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	25	50	ND	ND	ND	ND	ND
Methylene chloride (DCM)	25	50	ND	ND	ND	ND	ND
Naphthalene	5.0	10.0	ND	ND	ND	ND	ND
n-Propylbenzene	5.0	10.0	ND	ND	ND	ND	ND
Styrene	5.0	10.0	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	5.0	10.0	ND	ND	ND	ND	ND
1,1,1,2,2-Tetrachloroethane	5.0	10.0	ND	ND	ND	ND	ND
Tetrachloroethene	2.0	10.0	ND	ND	ND	ND	ND
Toluene (Methyl benzene)	1.0	10.0	ND	4.16J	ND	ND	ND
1,2,3-Trichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5.0	10.0	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	10.0	ND	ND	ND	ND	ND
Trichloroethene	1.5	10.0	ND	ND	ND	ND	ND
Trichlorofluoromethane	5.0	10.0	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	5.0	10.0	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	5.0	10.0	ND	ND	ND	ND	ND



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Page: 4

Project ID: F21816I07
 Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A1

Our Lab I.D.		Method Blank	88231.01	88231.02	88231.03	88231.04	
Client Sample I.D.			B1-3	B1-7	B1-13	B2-3	
Date Sampled			06/20/2017	06/20/2017	06/20/2017	06/20/2017	
Date Prepared		06/22/2017	06/20/2017	06/20/2017	06/20/2017	06/20/2017	
Preparation Method		5030	5035A	5035A	5035A	5035A	
Date Analyzed		06/22/2017	06/22/2017	06/22/2017	06/22/2017	06/22/2017	
Matrix		Soil	Soil	Soil	Soil	Soil	
Units		ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	
Dilution Factor		1	1	1	1	1	
Analytes	MDL	PQL	Results	Results	Results	Results	Results
1,3,5-Trimethylbenzene	5.0	10.0	ND	ND	ND	ND	ND
Vinyl Acetate	25	50	ND	ND	ND	ND	ND
Vinyl chloride (Chloroethene)	5.0	10.0	ND	ND	ND	ND	ND
o-Xylene	1.0	10.0	ND	ND	ND	ND	ND
m,p-Xylenes	1.0	20.0	ND	ND	ND	ND	ND
tert-Butyl alcohol (TBA)	20	500	ND	ND	ND	ND	ND
Diisopropyl ether (DIPE)	2.0	10.0	ND	ND	ND	ND	ND
Ethyl alcohol (Ethanol)	100	500	ND	ND	ND	ND	ND
Ethyl-tert-butyl ether (ETBE)	2.0	10.0	ND	ND	ND	ND	ND
Methyl-tert-butyl ether (MTBE)	2.0	10.0	ND	ND	ND	ND	ND
tert-Amyl methyl ether (TAME)	2.0	10.0	ND	ND	ND	ND	ND
Our Lab I.D.		Method Blank	88231.01	88231.02	88231.03	88231.04	
Surrogates	%Rec.Limit	% Rec.	% Rec.	% Rec.	% Rec.	% Rec.	
Bromofluorobenzene	75-125	79.8	81.4	82.8	80.3	84.5	
Dibromofluoromethane	75-125	91.4	94.3	94.8	93.9	93.0	
Toluene-d8	75-125	91.9	89.6	89.0	88.8	89.6	



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Near the Channel

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 5

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A1

Our Lab I.D.			88231.05	88231.06			
Client Sample I.D.			B2-7	B2-13			
Date Sampled			06/20/2017	06/20/2017			
Date Prepared			06/20/2017	06/20/2017			
Preparation Method			5035A	5035A			
Date Analyzed			06/22/2017	06/22/2017			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	MDL	PQL	Results	Results			
Acetone	25	50	ND	ND			
Benzene	1.0	10.0	ND	ND			
Bromobenzene (Phenyl bromide)	5.0	10.0	ND	ND			
Bromochloromethane	5.0	10.0	ND	ND			
Bromodichloromethane	5.0	10.0	ND	ND			
Bromoform (Tribromomethane)	25	50	ND	ND			
Bromomethane (Methyl bromide)	15	30	ND	ND			
2-Butanone (MEK)	25	50	ND	ND			
n-Butylbenzene	5.0	10.0	ND	ND			
sec-Butylbenzene	5.0	10.0	ND	ND			
tert-Butylbenzene	5.0	10.0	ND	ND			
Carbon Disulfide	25	50	ND	ND			
Carbon tetrachloride	5.0	10.0	ND	ND			
Chlorobenzene	5.0	10.0	ND	ND			
Chloroethane	15	30	ND	ND			
2-Chloroethyl vinyl ether	50	50	ND	ND			
Chloroform (Trichloromethane)	5.0	10.0	ND	ND			
Chloromethane (Methyl chloride)	15	30	ND	ND			
2-Chlorotoluene	5.0	10.0	ND	ND			
4-Chlorotoluene	5.0	10.0	ND	ND			
1,2-Dibromo-3-chloropropane (DBCP)	25	50	ND	ND			
Dibromochloromethane	5.0	10.0	ND	ND			
1,2-Dibromoethane (EDB)	5.0	10.0	ND	ND			
Dibromomethane	5.0	10.0	ND	ND			
1,2-Dichlorobenzene	5.0	10.0	ND	ND			
1,3-Dichlorobenzene	5.0	10.0	ND	ND			
1,4-Dichlorobenzene	5.0	10.0	ND	ND			



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Page: 6

Project ID: F21816I07
 Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A1

Our Lab I.D.			88231.05	88231.06			
Client Sample I.D.			B2-7	B2-13			
Date Sampled			06/20/2017	06/20/2017			
Date Prepared			06/20/2017	06/20/2017			
Preparation Method			5035A	5035A			
Date Analyzed			06/22/2017	06/22/2017			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	MDL	PQL	Results	Results			
Dichlorodifluoromethane	15	30	ND	ND			
1,1-Dichloroethane	5.0	10.0	ND	ND			
1,2-Dichloroethane (EDC)	5.0	10.0	ND	ND			
1,1-Dichloroethene	5.0	10.0	ND	ND			
cis-1,2-Dichloroethene	5.0	10.0	ND	ND			
trans-1,2-Dichloroethene	5.0	10.0	ND	ND			
1,2-Dichloropropane	5.0	10.0	ND	ND			
1,3-Dichloropropane	5.0	10.0	ND	ND			
2,2-Dichloropropane	5.0	10.0	ND	ND			
1,1-Dichloropropene	5.0	10.0	ND	ND			
cis-1,3-Dichloropropene	5.0	10.0	ND	ND			
trans-1,3-Dichloropropene	5.0	10.0	ND	ND			
Ethylbenzene	1.0	10.0	ND	ND			
Hexachlorobutadiene	15	30	ND	ND			
2-Hexanone	25	50	ND	ND			
Isopropylbenzene	5.0	10.0	ND	ND			
p-Isopropyltoluene	5.0	10.0	ND	ND			
4-Methyl-2-pentanone (MIBK)	25	50	ND	ND			
Methylene chloride (DCM)	25	50	ND	ND			
Naphthalene	5.0	10.0	ND	ND			
n-Propylbenzene	5.0	10.0	ND	ND			
Styrene	5.0	10.0	ND	ND			
1,1,1,2-Tetrachloroethane	5.0	10.0	ND	ND			
1,1,2,2-Tetrachloroethane	5.0	10.0	ND	ND			
Tetrachloroethene	2.0	10.0	ND	ND			
Toluene (Methyl benzene)	1.0	10.0	ND	ND			
1,2,3-Trichlorobenzene	5.0	10.0	ND	ND			
1,2,4-Trichlorobenzene	5.0	10.0	ND	ND			
1,1,1-Trichloroethane	5.0	10.0	ND	ND			
1,1,2-Trichloroethane	5.0	10.0	ND	ND			
Trichloroethene	1.5	10.0	ND	ND			
Trichlorofluoromethane	5.0	10.0	ND	ND			
1,2,3-Trichloropropane	5.0	10.0	ND	ND			
1,2,4-Trimethylbenzene	5.0	10.0	ND	ND			



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Page: 7

Project ID: F21816I07
 Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A1

Our Lab I.D.			88231.05	88231.06			
Client Sample I.D.			B2-7	B2-13			
Date Sampled			06/20/2017	06/20/2017			
Date Prepared			06/20/2017	06/20/2017			
Preparation Method			5035A	5035A			
Date Analyzed			06/22/2017	06/22/2017			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	MDL	PQL	Results	Results			
1,3,5-Trimethylbenzene	5.0	10.0	ND	ND			
Vinyl Acetate	25	50	ND	ND			
Vinyl chloride (Chloroethene)	5.0	10.0	ND	ND			
o-Xylene	1.0	10.0	ND	ND			
m,p-Xylenes	1.0	20.0	ND	ND			
tert-Butyl alcohol (TBA)	20	500	ND	ND			
Diisopropyl ether (DIPE)	2.0	10.0	ND	ND			
Ethyl alcohol (Ethanol)	100	500	ND	ND			
Ethyl-tert-butyl ether (ETBE)	2.0	10.0	ND	ND			
Methyl-tert-butyl ether (MTBE)	2.0	10.0	ND	ND			
tert-Amyl methyl ether (TAME)	2.0	10.0	ND	ND			
Our Lab I.D.			88231.05	88231.06			
Surrogates	%Rec.Limit		% Rec.	% Rec.			
Bromofluorobenzene	75-125		81.2	79.9			
Dibromofluoromethane	75-125		95.7	93.0			
Toluene-d8	75-125		89.0	89.8			



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Near the Channel

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 8

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (M8015G), TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 062117OB1

Our Lab I.D.		Method Blank	88231.01	88231.02	88231.03	88231.04	
Client Sample I.D.			B1-3	B1-7	B1-13	B2-3	
Date Sampled			06/20/2017	06/20/2017	06/20/2017	06/20/2017	
Date Prepared		06/21/2017	06/20/2017	06/20/2017	06/20/2017	06/20/2017	
Preparation Method		5030	5035A	5035A	5035A	5035A	
Date Analyzed		06/21/2017	06/21/2017	06/21/2017	06/21/2017	06/21/2017	
Matrix		Soil	Soil	Soil	Soil	Soil	
Units		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	
Dilution Factor		1	1	1	1	1	
Analytes	MDL	PQL	Results	Results	Results	Results	Results
TPH as Gasoline and Light HC. (C4-C12)	0.100	1.000	ND	ND	ND	ND	ND
Our Lab I.D.		Method Blank	88231.01	88231.02	88231.03	88231.04	
Surrogates	%Rec.Limit	% Rec.	% Rec.	% Rec.	% Rec.	% Rec.	
Bromofluorobenzene	75-125	91.4	98.4	96.2	95.8	94.8	



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Near the Channel

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 9

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (M8015G), TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 062117OB1

Our Lab I.D.			88231.05	88231.06		
Client Sample I.D.			B2-7	B2-13		
Date Sampled			06/20/2017	06/20/2017		
Date Prepared			06/20/2017	06/20/2017		
Preparation Method			5035A	5035A		
Date Analyzed			06/21/2017	06/22/2017		
Matrix			Soil	Soil		
Units			mg/Kg	mg/Kg		
Dilution Factor			1	1		
Analytes	MDL	PQL	Results	Results		
TPH as Gasoline and Light HC. (C4-C12)	0.100	1.000	ND	ND		
Our Lab I.D.			88231.05	88231.06		
Surrogates	%Rec.Limit		% Rec.	% Rec.		
Bromofluorobenzene	75-125		93.4	93.6		



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Near the Channel

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 10

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 062117PB1

Our Lab I.D.			Method Blank	88231.01	88231.02	88231.03	88231.04
Client Sample I.D.				B1-3	B1-7	B1-13	B2-3
Date Sampled				06/20/2017	06/20/2017	06/20/2017	06/20/2017
Date Prepared			06/21/2017	06/21/2017	06/21/2017	06/21/2017	06/21/2017
Preparation Method			3550B	3550B	3550B	3550B	3550B
Date Analyzed			06/21/2017	06/21/2017	06/21/2017	06/21/2017	06/21/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	MDL	PQL	Results	Results	Results	Results	Results
TPH as Diesel (C13-C22)	1.0	5.0	ND	ND	ND	ND	ND
TPH as Heavy Hydrocarbons (C23-C40)	1.0	5.0	ND	8.40	ND	ND	ND
TPH Total as Diesel and Heavy HC.C13-C40	1.0	5.0	ND	8.40	ND	ND	ND
Our Lab I.D.			Method Blank	88231.01	88231.02	88231.03	88231.04
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Chlorobenzene	75-125		103	95.1	98.9	105	104



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Near the Channel

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 11

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 062117PB1

Our Lab I.D.			88231.05	88231.06		
Client Sample I.D.			B2-7	B2-13		
Date Sampled			06/20/2017	06/20/2017		
Date Prepared			06/21/2017	06/21/2017		
Preparation Method			3550B	3550B		
Date Analyzed			06/21/2017	06/21/2017		
Matrix			Soil	Soil		
Units			mg/Kg	mg/Kg		
Dilution Factor			1	1		
Analytes	MDL	PQL	Results	Results		
TPH as Diesel (C13-C22)	1.0	5.0	ND	ND		
TPH as Heavy Hydrocarbons (C23-C40)	1.0	5.0	ND	ND		
TPH Total as Diesel and Heavy HC.C13-C40	1.0	5.0	ND	ND		
Our Lab I.D.			88231.05	88231.06		
Surrogates	%Rec.Limit		% Rec.	% Rec.		
Chlorobenzene	75-125		106	104		



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Near the Channel

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 12

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (6010B/7000CAM), Title 22 Metals (SW-846)

QC Batch No: 0621172C5

Our Lab I.D.			Method Blank	88231.01	88231.02	88231.03	88231.04
Client Sample I.D.				B1-3	B1-7	B1-13	B2-3
Date Sampled				06/20/2017	06/20/2017	06/20/2017	06/20/2017
Date Prepared			06/21/2017	06/21/2017	06/21/2017	06/21/2017	06/21/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			06/22/2017	06/22/2017	06/22/2017	06/22/2017	06/22/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	MDL	PQL	Results	Results	Results	Results	Results
Antimony	1.0	5.0	ND	ND	ND	ND	ND
Arsenic	1.0	5.0	ND	ND	ND	ND	ND
Barium	2.5	5.0	ND	166	130	84.0	144
Beryllium	1.3	2.5	ND	ND	ND	ND	ND
Cadmium	1.3	2.5	ND	ND	ND	ND	ND
Chromium	2.5	5.0	ND	21.7	21.8	11.4	23.8
Cobalt	2.5	5.0	ND	7.43	7.35	4.74J	8.09
Copper	2.5	5.0	ND	24.8	20.8	10.3	19.8
Lead	2.5	5.0	ND	8.63	2.67J	ND	3.38J
Mercury (By EPA 7471)	0.1	0.2	ND	0.104J	ND	ND	ND
Molybdenum	2.5	5.0	ND	4.16J	ND	ND	2.97J
Nickel	2.5	5.0	ND	19.5	16.9	9.34	19.1
Selenium	1.0	5.0	ND	ND	ND	ND	ND
Silver	2.5	5.0	ND	ND	ND	ND	ND
Thallium	1.0	5.0	ND	ND	ND	ND	ND
Vanadium	2.5	5.0	ND	45.0	38.9	28.5	47.9
Zinc	2.5	5.0	ND	59.4	43.7	26.7	52.6



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Near the Channel

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 13

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (6010B/7000CAM), Title 22 Metals (SW-846)

QC Batch No: 0621172C5

Our Lab I.D.			88231.05	88231.06		
Client Sample I.D.			B2-7	B2-13		
Date Sampled			06/20/2017	06/20/2017		
Date Prepared			06/21/2017	06/21/2017		
Preparation Method			3050B	3050B		
Date Analyzed			06/22/2017	06/22/2017		
Matrix			Soil	Soil		
Units			mg/Kg	mg/Kg		
Dilution Factor			1	1		
Analytes	MDL	PQL	Results	Results		
Antimony	1.0	5.0	ND	ND		
Arsenic	1.0	5.0	ND	ND		
Barium	2.5	5.0	91.8	67.8		
Beryllium	1.3	2.5	ND	ND		
Cadmium	1.3	2.5	ND	ND		
Chromium	2.5	5.0	22.0	24.3		
Cobalt	2.5	5.0	6.02	9.81		
Copper	2.5	5.0	12.8	17.3		
Lead	2.5	5.0	ND	3.49J		
Mercury (By EPA 7471)	0.1	0.2	ND	ND		
Molybdenum	2.5	5.0	ND	ND		
Nickel	2.5	5.0	12.7	20.6		
Selenium	1.0	5.0	ND	ND		
Silver	2.5	5.0	ND	ND		
Thallium	1.0	5.0	ND	ND		
Vanadium	2.5	5.0	37.7	47.0		
Zinc	2.5	5.0	42.4	56.7		



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Near the Channel

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 14

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (6010B/7000CAM), Title 22 Metals (SW-846)

QC Batch No: 0621172C5; Dup or Spiked Sample: 88230.01; LCS: Clean Sand; QC Prepared: 06/21/2017; QC Analyzed: 06/22/2017;
 Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Antimony	0.00	50.0	49.1	98.2	50.0	49.3	98.6	<1	75-125	<15
Arsenic	0.00	50.0	46.7	93.4	50.0	46.3	92.6	<1	75-125	<15
Barium	70.8	50.0	127	112	50.0	126	110	1.8	75-125	<15
Beryllium	0.00	50.0	53.0	106	50.0	52.5	105	<1	75-125	<15
Cadmium	0.00	50.0	49.9	99.8	50.0	49.4	98.8	1.0	75-125	<15
Chromium	23.1	50.0	72.4	98.6	50.0	71.6	97.0	1.6	75-125	<15
Cobalt	7.66	50.0	55.8	96.3	50.0	55.3	95.3	1.0	75-125	<15
Copper	15.5	50.0	69.5	108	50.0	69.5	108	<1	75-125	<15
Lead	3.96	50.0	47.3	86.7	50.0	47.2	86.5	<1	75-125	<15
Mercury (By EPA 7471)	0.00	0.500	0.640#	128	0.500	0.680#	136	6.1	75-125	<15
Molybdenum	0.00	50.0	49.5	99.0	50.0	48.9	97.8	1.2	75-125	<15
Nickel	9.88	50.0	56.6	93.4	50.0	56.0	92.2	1.3	75-125	<15
Selenium	0.00	50.0	38.2	76.4	50.0	37.8	75.6	1.1	75-125	<15
Silver	0.00	50.0	48.9	97.8	50.0	48.7	97.4	<1	75-125	<15
Thallium	0.00	50.0	40.7	81.4	50.0	40.8	81.6	<1	75-125	<15
Vanadium	31.9	50.0	85.4	107	50.0	84.9	106	<1	75-125	<15
Zinc	37.1	50.0	85.1	96.0	50.0	84.7	95.2	<1	75-125	<15

QC Batch No: 0621172C5; Dup or Spiked Sample: 88230.01; LCS: Clean Sand; QC Prepared: 06/21/2017; QC Analyzed: 06/22/2017;
 Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit
Antimony	50.0	50.5	101	50.0	51.0	102	<1	75-125	<15
Arsenic	50.0	49.6	99.2	50.0	50.5	101	1.8	75-125	<15
Barium	50.0	51.0	102	50.0	51.0	102	<1	75-125	<15
Beryllium	50.0	53.5	107	50.0	54.0	108	<1	75-125	<15
Cadmium	50.0	51.0	102	50.0	50.5	101	<1	75-125	<15
Chromium	50.0	49.9	99.8	50.0	49.6	99.2	<1	75-125	<15
Cobalt	50.0	50.5	101	50.0	50.5	101	<1	75-125	<15
Copper	50.0	52.0	104	50.0	51.5	103	<1	75-125	<15



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Page: 15

Project ID: F21816I07
Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (6010B/7000CAM), Title 22 Metals (SW-846)

QC Batch No: 0621172C5; Dup or Spiked Sample: 88230.01; LCS: Clean Sand; QC Prepared: 06/21/2017; QC Analyzed: 06/22/2017;
Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Lead	50.0	49.2	98.4	50.0	49.1	98.2	<1	75-125	<15	
Mercury (By EPA 7471)	0.500	0.565	113	0.500	0.560	112	<1	75-125	<15	
Molybdenum	50.0	49.6	99.2	50.0	50.0	100	<1	75-125	<15	
Nickel	50.0	49.5	99.0	50.0	49.3	98.6	<1	75-125	<15	
Selenium	50.0	50.5	101	50.0	51.0	102	<1	75-125	<15	
Silver	50.0	51.0	102	50.0	51.0	102	<1	75-125	<15	
Thallium	50.0	51.5	103	50.0	51.5	103	<1	75-125	<15	
Vanadium	50.0	51.0	102	50.0	50.5	101	<1	75-125	<15	
Zinc	50.0	51.5	103	50.0	51.5	103	<1	75-125	<15	



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Near the Channel

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 16

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A1; Dup or Spiked Sample: 88231.01; LCS: Clean Sand; QC Prepared: 06/22/2017; QC Analyzed: 06/22/2017;
 Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Benzene	4.02	50.0	36.7 #	65.4	50.0	36.0 #	64.0	2.2	75-125	<20
Chlorobenzene	0.00	50.0	46.6	93.2	50.0	47.4	94.8	1.7	75-125	<20
1,1-Dichloroethene	0.00	50.0	36.0 #	72.0	50.0	36.4 #	72.8	1.1	75-125	<20
Toluene (Methyl benzene)	4.33	50.0	40.7 #	72.7	50.0	41.4 #	74.1	1.9	75-125	<20
Trichloroethene	0.00	50.0	45.7	91.4	50.0	46.1	92.2	<1	75-125	<20
Methyl-tert-butyl ether (MTBE)	0.00	50.0	35.5 #	71.0	50.0	35.8 #	71.6	<1	75-125	<20
Surrogates										
Bromofluorobenzene	0.00	50.0	37.7	75.4	50.0	39.2	78.4	3.9	75-125	<20
Dibromofluoromethane	0.00	50.0	40.1	80.2	50.0	38.4	76.7	4.5	75-125	<20
Toluene-d8	0.00	50.0	43.6	87.1	50.0	45.1	90.2	3.5	75-125	<20

QC Batch No: 0622172A1; Dup or Spiked Sample: 88231.01; LCS: Clean Sand; QC Prepared: 06/22/2017; QC Analyzed: 06/22/2017;
 Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit
Benzene	50.0	40.8	81.6	50.0	41.5	83.0	1.7	75-125	<20
Chlorobenzene	50.0	57.0	114	50.0	57.0	114	<1	75-125	<20
1,1-Dichloroethene	50.0	39.9	79.8	50.0	39.5	79.0	1.0	75-125	<20
Toluene (Methyl benzene)	50.0	47.4	94.8	50.0	48.0	96.0	1.3	75-125	<20
Trichloroethene	50.0	49.7	99.4	50.0	50.5	101	1.6	75-125	<20
Methyl-tert-butyl ether (MTBE)	50.0	44.2	88.4	50.0	43.5	87.0	1.6	75-125	<20
LCS									
Chloroform (Trichloromethane)	50.0	42.7	85.4	50.0	43.0	86.0	<1	75-125	<20
Ethylbenzene	50.0	48.4	96.8	50.0	49.0	98.0	1.2	75-125	<20
1,1,1-Trichloroethane	50.0	48.6	97.2	50.0	48.5	97.0	<1	75-125	<20
o-Xylene	50.0	54.5	109	50.0	53.5	107	1.9	75-125	<20
m,p-Xylenes	100	95.5	95.5	100	95.0	95.0	<1	75-125	<20
Surrogates									
Bromofluorobenzene	50.0	38.8	77.5	50.0	45.4	90.8	15.8	75-125	<20
Dibromofluoromethane	50.0	39.7	79.3	50.0	39.1	78.1	1.5	75-125	<20



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Page: 17

Project ID: F21816I07
Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A1; Dup or Spiked Sample: 88231.01; LCS: Clean Sand; QC Prepared: 06/22/2017; QC Analyzed: 06/22/2017;
Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Toluene-d8	50.0	44.3	88.6	50.0	43.6	87.1	1.7	75-125	<20	



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Near the Channel

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 18

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 062117PB1; Dup or Spiked Sample: 88231.06; LCS: Clean Sand; QC Prepared: 06/21/2017; QC Analyzed: 06/21/2017;
 Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
TPH as Diesel (C13-C22)	0.00	500	494	98.8	500	498	99.6	<1	75-125	<20
Surrogates										
Chlorobenzene	0.00	100	98.5	98.5	100	99.8	99.8	1.3	75-125	<20

QC Batch No: 062117PB1; Dup or Spiked Sample: 88231.06; LCS: Clean Sand; QC Prepared: 06/21/2017; QC Analyzed: 06/21/2017;
 Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit
TPH as Diesel (C13-C22)	500	493	98.6	500	486	97.2	1.4	75-125	<20
Surrogates									
Chlorobenzene	100	102	102	100	102	102	<1	75-125	<20



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Near the Channel

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 19

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88231	06/20/2017	LACDPW

Method: (M8015G), TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 062117OB1; Dup or Spiked Sample: 88231.01AGA; LCS: Clean Sand; QC Prepared: 06/21/2017; MS Analyzed: 06/22/2017;
 LCS Analyzed: 06/21/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
TPH as Gasoline and Light HC. (C4-C12)	0.00	1.00	0.859	85.9	1.00	0.812	81.2	5.6	75-125	<20
Surrogates										
Bromofluorobenzene	0.00	0.0500	0.0461	92.2	0.0500	0.0457	91.4	<1	75-125	<20

QC Batch No: 062117OB1; Dup or Spiked Sample: 88231.01AGA; LCS: Clean Sand; QC Prepared: 06/21/2017; MS Analyzed: 06/22/2017;
 LCS Analyzed: 06/21/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit
TPH as Gasoline and Light HC. (C4-C12)	1.00	0.928	92.8	1.00	0.925	92.5	<1	75-125	<20
Surrogates									
Bromofluorobenzene	0.0500	0.0437	87.4	0.0500	0.0438	87.6	<1	75-125	<20



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street, Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

Data Qualifiers and Descriptors

Data Qualifier:

- #: Recovery is not within acceptable control limits.
- *: In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
- B: Analyte was present in the Method Blank.
- D: Result is from a diluted analysis.
- E: Result is beyond calibration limits and is estimated.
- H: Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
- J: Analyte was detected. However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
- M: Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
- MCL: Maximum Contaminant Level
- NS: No Standard Available
- S6: Surrogate recovery is outside control limits due to matrix interference.
- S8: The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
- X: Results represent LCS and LCSD data.

Definition:

- %Limi: Percent acceptable limits.
- %REC: Percent recovery.
- Con.L: Acceptable Control Limits
- Conce: Added concentration to the sample.
- LCS: Laboratory Control Sample
- MDL: Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street, Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

Ordered By

LA County Dept. of Public Works
GMED Materials Lab 900 S. Fremont Ave,
4th Floor
Alhambra, CA 91803-

Telephone: (626)458-5100
Attention: Ricardo Lopez

Number of Pages 19
Date Received 06/21/2017
Date Reported 06/28/2017

Job Number	Order Date	Client
88256	06/21/2017	LACDPW

Project ID: F21816I07
Project Name: Adventure Park
Site: Adventure Park
Parking Lot

Enclosed please find results of analyses of 6 soil samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____

Approved By: _____

Cyrus Razmara, Ph.D.
Laboratory Director



American Environmental Testing Laboratory Inc.

2834 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

COOLER RECEIPT FORM

Client Name: <u>LACDPW GMEI</u>			
Project Name: <u>Adventure park</u>			
AETL Job Number: <u>88256</u>			
Date Received: <u>06/21/17</u> Received by: <u>Sean Clanch</u>			
Carrier: <input checked="" type="checkbox"/> AETL Courier <input type="checkbox"/> Client <input type="checkbox"/> GSO <input type="checkbox"/> FedEx <input type="checkbox"/> UPS			
<input type="checkbox"/> Others:			
Samples were received in: <input checked="" type="checkbox"/> Cooler (<u>1</u>) <input type="checkbox"/> Other (Specify):			
Inside temperature of shipping container No 1: <u>3.4°</u> , No 2: _____, No 3: _____			
Type of sample containers: <input checked="" type="checkbox"/> VOA, <input type="checkbox"/> Glass bottles, <input checked="" type="checkbox"/> Wide mouth jars, <input type="checkbox"/> HDPE bottles, <input type="checkbox"/> Metal sleeves, <input checked="" type="checkbox"/> Others (Specify): <u>5035 kits</u>			
How are samples preserved: <input type="checkbox"/> None, <input checked="" type="checkbox"/> Ice, <input type="checkbox"/> Blue Ice, <input type="checkbox"/> Dry Ice			
None, <u>HNO₃</u> , <u>NaOH</u> , <u>ZnOAc</u> , <u>HCl</u> , <u>Na₂S₂O₃</u> , <input checked="" type="checkbox"/> MeOH			
<input checked="" type="checkbox"/> Other (Specify): <u>NAHCO₃HO</u>			
<input checked="" type="checkbox"/> <u>5035 kits preserved into the field</u>			
	Yes	No, explain below	Name, if client was notified.
1. Are the COCs Correct?	<input checked="" type="checkbox"/>		
2. Are the Sample labels legible?	<input checked="" type="checkbox"/>		
3. Do samples match the COC?	<input checked="" type="checkbox"/>		
4. Are the required analyses clear?	<input checked="" type="checkbox"/>		
5. Is there enough samples for required analysis?	<input checked="" type="checkbox"/>		
6. Are samples sealed with evidence tape?	<u>NA</u>		
7. Are sample containers in good condition?	<input checked="" type="checkbox"/>		
8. Are samples preserved?	<input checked="" type="checkbox"/>		
9. Are samples preserved properly for the intended analysis?	<input checked="" type="checkbox"/>		
10. Are the VOAs free of headspace?	<u>NA</u>		
11. Are the jars free of headspace?	<input checked="" type="checkbox"/>		

Explain all "No" answers for above questions:



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181

Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

Page: 1 A

Ordered By

LA County Dept. of Public Works
GMED Materials Lab 900 S. Fremont Ave,
4th Floor
Alhambra, CA 91803-

Telephone: (626) 458-5100
Attention: Ricardo Lopez

Project ID: F21816I07
Date Received 06/21/2017
Date Reported 06/28/2017

Job Number	Order Date	Client
88256	06/21/2017	LACDPW

CERTIFICATE OF ANALYSIS CASE NARRATIVE

AETL received 6 samples with the following specification on 06/21/2017.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
88256.01	B3-3	06/21/2017	Soil	5
88256.02	B3-7	06/21/2017	Soil	5
88256.03	B3-13	06/21/2017	Soil	5
88256.04	B3-17	06/21/2017	Soil	5
88256.05	B3-23	06/21/2017	Soil	5
88256.06	B3-33	06/21/2017	Soil	5

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010B/7000CAM)	06/28/2017	2	Normal	mg/Kg
(8260B) ^+OXY5035	06/28/2017	2	Normal	ug/Kg
(M8015D) ^ C13-C40	06/28/2017	2	Normal	mg/Kg
(M8015G)	06/28/2017	2	Normal	mg/Kg

The samples were analyzed as specified on the enclosed chain of custody. Analytical non-conformances have been noted on the report.

Unless otherwise noted, all results of soil and solid samples are based on wet weight.

Checked By: 

Approved By: 

Cyrus Razmara, Ph.D.
Laboratory Director



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Parking Lot

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 2

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A2

Our Lab I.D.			Method Blank	88256.01	88256.02	88256.03	88256.04
Client Sample I.D.				B3-3	B3-7	B3-13	B3-17
Date Sampled				06/21/2017	06/21/2017	06/21/2017	06/21/2017
Date Prepared			06/22/2017	06/21/2017	06/21/2017	06/21/2017	06/21/2017
Preparation Method			5030	5035A	5035A	5035A	5035A
Date Analyzed			06/23/2017	06/23/2017	06/23/2017	06/23/2017	06/23/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Dilution Factor			1	1	1	1	1
Analytes	MDL	PQL	Results	Results	Results	Results	Results
Acetone	25	50	ND	ND	ND	ND	ND
Benzene	1.0	10.0	ND	ND	ND	ND	ND
Bromobenzene (Phenyl bromide)	5.0	10.0	ND	ND	ND	ND	ND
Bromochloromethane	5.0	10.0	ND	ND	ND	ND	ND
Bromodichloromethane	5.0	10.0	ND	ND	ND	ND	ND
Bromoform (Tribromomethane)	25	50	ND	ND	ND	ND	ND
Bromomethane (Methyl bromide)	15	30	ND	ND	ND	ND	ND
2-Butanone (MEK)	25	50	ND	ND	ND	ND	ND
n-Butylbenzene	5.0	10.0	ND	ND	ND	ND	ND
sec-Butylbenzene	5.0	10.0	ND	ND	ND	ND	ND
tert-Butylbenzene	5.0	10.0	ND	ND	ND	ND	ND
Carbon Disulfide	25	50	ND	ND	ND	ND	ND
Carbon tetrachloride	5.0	10.0	ND	ND	ND	ND	ND
Chlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
Chloroethane	15	30	ND	ND	ND	ND	ND
2-Chloroethyl vinyl ether	50	50	ND	ND	ND	ND	ND
Chloroform (Trichloromethane)	5.0	10.0	ND	ND	ND	ND	ND
Chloromethane (Methyl chloride)	15	30	ND	ND	ND	ND	ND
2-Chlorotoluene	5.0	10.0	ND	ND	ND	ND	ND
4-Chlorotoluene	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	25	50	ND	ND	ND	ND	ND
Dibromochloromethane	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	5.0	10.0	ND	ND	ND	ND	ND
Dibromomethane	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Page: 3

Project ID: F21816I07
 Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A2

Our Lab I.D.		Method Blank	88256.01	88256.02	88256.03	88256.04	
Client Sample I.D.			B3-3	B3-7	B3-13	B3-17	
Date Sampled			06/21/2017	06/21/2017	06/21/2017	06/21/2017	
Date Prepared		06/22/2017	06/21/2017	06/21/2017	06/21/2017	06/21/2017	
Preparation Method		5030	5035A	5035A	5035A	5035A	
Date Analyzed		06/23/2017	06/23/2017	06/23/2017	06/23/2017	06/23/2017	
Matrix		Soil	Soil	Soil	Soil	Soil	
Units		ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	
Dilution Factor		1	1	1	1	1	
Analytes	MDL	PQL	Results	Results	Results	Results	Results
Dichlorodifluoromethane	15	30	ND	ND	ND	ND	ND
1,1-Dichloroethane	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dichloroethane (EDC)	5.0	10.0	ND	ND	ND	ND	ND
1,1-Dichloroethene	5.0	10.0	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	10.0	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	5.0	10.0	ND	ND	ND	ND	ND
1,2-Dichloropropane	5.0	10.0	ND	ND	ND	ND	ND
1,3-Dichloropropane	5.0	10.0	ND	ND	ND	ND	ND
2,2-Dichloropropane	5.0	10.0	ND	ND	ND	ND	ND
1,1-Dichloropropene	5.0	10.0	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	5.0	10.0	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	5.0	10.0	ND	ND	ND	ND	ND
Ethylbenzene	1.0	10.0	ND	ND	ND	ND	ND
Hexachlorobutadiene	15	30	ND	ND	ND	ND	ND
2-Hexanone	25	50	ND	ND	ND	ND	ND
Isopropylbenzene	5.0	10.0	ND	ND	ND	ND	ND
p-Isopropyltoluene	5.0	10.0	ND	ND	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	25	50	ND	ND	ND	ND	ND
Methylene chloride (DCM)	25	50	ND	ND	ND	ND	ND
Naphthalene	5.0	10.0	ND	ND	ND	ND	ND
n-Propylbenzene	5.0	10.0	ND	ND	ND	ND	ND
Styrene	5.0	10.0	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	5.0	10.0	ND	ND	ND	ND	ND
1,1,1,2,2-Tetrachloroethane	5.0	10.0	ND	ND	ND	ND	ND
Tetrachloroethene	2.0	10.0	ND	ND	ND	ND	ND
Toluene (Methyl benzene)	1.0	10.0	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	5.0	10.0	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5.0	10.0	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	10.0	ND	ND	ND	ND	ND
Trichloroethene	1.5	10.0	ND	ND	ND	ND	ND
Trichlorofluoromethane	5.0	10.0	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	5.0	10.0	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	5.0	10.0	ND	ND	ND	ND	ND



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Page: 4

Project ID: F21816I07
 Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A2

Our Lab I.D.		Method Blank	88256.01	88256.02	88256.03	88256.04	
Client Sample I.D.			B3-3	B3-7	B3-13	B3-17	
Date Sampled			06/21/2017	06/21/2017	06/21/2017	06/21/2017	
Date Prepared		06/22/2017	06/21/2017	06/21/2017	06/21/2017	06/21/2017	
Preparation Method		5030	5035A	5035A	5035A	5035A	
Date Analyzed		06/23/2017	06/23/2017	06/23/2017	06/23/2017	06/23/2017	
Matrix		Soil	Soil	Soil	Soil	Soil	
Units		ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	
Dilution Factor		1	1	1	1	1	
Analytes	MDL	PQL	Results	Results	Results	Results	Results
1,3,5-Trimethylbenzene	5.0	10.0	ND	ND	ND	ND	ND
Vinyl Acetate	25	50	ND	ND	ND	ND	ND
Vinyl chloride (Chloroethene)	5.0	10.0	ND	ND	ND	ND	ND
o-Xylene	1.0	10.0	ND	ND	ND	ND	ND
m,p-Xylenes	1.0	20.0	ND	ND	ND	ND	ND
tert-Butyl alcohol (TBA)	20	500	ND	ND	ND	ND	ND
Diisopropyl ether (DIPE)	2.0	10.0	ND	ND	ND	ND	ND
Ethyl alcohol (Ethanol)	100	500	ND	ND	ND	ND	ND
Ethyl-tert-butyl ether (ETBE)	2.0	10.0	ND	ND	ND	ND	ND
Methyl-tert-butyl ether (MTBE)	2.0	10.0	ND	ND	ND	ND	ND
tert-Amyl methyl ether (TAME)	2.0	10.0	ND	ND	ND	ND	ND
Our Lab I.D.		Method Blank	88256.01	88256.02	88256.03	88256.04	
Surrogates	%Rec.Limit	% Rec.	% Rec.	% Rec.	% Rec.	% Rec.	
Bromofluorobenzene	75-125	82.0	80.5	77.7	79.1	80.6	
Dibromofluoromethane	75-125	90.5	93.7	92.9	92.6	95.3	
Toluene-d8	75-125	90.3	88.0	86.5	88.4	87.1	



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
GMED Materials Lab
900 S. Fremont Ave, 4th Floor
Alhambra, CA 91803-

Site

Adventure Park
Parking Lot

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 5

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A2

Our Lab I.D.			88256.05	88256.06			
Client Sample I.D.			B3-23	B3-33			
Date Sampled			06/21/2017	06/21/2017			
Date Prepared			06/21/2017	06/21/2017			
Preparation Method			5035A	5035A			
Date Analyzed			06/23/2017	06/23/2017			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	MDL	PQL	Results	Results			
Acetone	25	50	ND	ND			
Benzene	1.0	10.0	1.07J	ND			
Bromobenzene (Phenyl bromide)	5.0	10.0	ND	ND			
Bromochloromethane	5.0	10.0	ND	ND			
Bromodichloromethane	5.0	10.0	ND	ND			
Bromoform (Tribromomethane)	25	50	ND	ND			
Bromomethane (Methyl bromide)	15	30	ND	ND			
2-Butanone (MEK)	25	50	ND	ND			
n-Butylbenzene	5.0	10.0	ND	ND			
sec-Butylbenzene	5.0	10.0	ND	ND			
tert-Butylbenzene	5.0	10.0	ND	ND			
Carbon Disulfide	25	50	ND	ND			
Carbon tetrachloride	5.0	10.0	ND	ND			
Chlorobenzene	5.0	10.0	ND	ND			
Chloroethane	15	30	ND	ND			
2-Chloroethyl vinyl ether	50	50	ND	ND			
Chloroform (Trichloromethane)	5.0	10.0	ND	ND			
Chloromethane (Methyl chloride)	15	30	ND	ND			
2-Chlorotoluene	5.0	10.0	ND	ND			
4-Chlorotoluene	5.0	10.0	ND	ND			
1,2-Dibromo-3-chloropropane (DBCP)	25	50	ND	ND			
Dibromochloromethane	5.0	10.0	ND	ND			
1,2-Dibromoethane (EDB)	5.0	10.0	ND	ND			
Dibromomethane	5.0	10.0	ND	ND			
1,2-Dichlorobenzene	5.0	10.0	ND	ND			
1,3-Dichlorobenzene	5.0	10.0	ND	ND			
1,4-Dichlorobenzene	5.0	10.0	ND	ND			



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Page: 6

Project ID: F21816I07
 Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A2

Our Lab I.D.			88256.05	88256.06			
Client Sample I.D.			B3-23	B3-33			
Date Sampled			06/21/2017	06/21/2017			
Date Prepared			06/21/2017	06/21/2017			
Preparation Method			5035A	5035A			
Date Analyzed			06/23/2017	06/23/2017			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	MDL	PQL	Results	Results			
Dichlorodifluoromethane	15	30	ND	ND			
1,1-Dichloroethane	5.0	10.0	ND	ND			
1,2-Dichloroethane (EDC)	5.0	10.0	ND	ND			
1,1-Dichloroethene	5.0	10.0	ND	ND			
cis-1,2-Dichloroethene	5.0	10.0	ND	ND			
trans-1,2-Dichloroethene	5.0	10.0	ND	ND			
1,2-Dichloropropane	5.0	10.0	ND	ND			
1,3-Dichloropropane	5.0	10.0	ND	ND			
2,2-Dichloropropane	5.0	10.0	ND	ND			
1,1-Dichloropropene	5.0	10.0	ND	ND			
cis-1,3-Dichloropropene	5.0	10.0	ND	ND			
trans-1,3-Dichloropropene	5.0	10.0	ND	ND			
Ethylbenzene	1.0	10.0	ND	ND			
Hexachlorobutadiene	15	30	ND	ND			
2-Hexanone	25	50	ND	ND			
Isopropylbenzene	5.0	10.0	ND	ND			
p-Isopropyltoluene	5.0	10.0	ND	ND			
4-Methyl-2-pentanone (MIBK)	25	50	ND	ND			
Methylene chloride (DCM)	25	50	ND	ND			
Naphthalene	5.0	10.0	ND	ND			
n-Propylbenzene	5.0	10.0	ND	ND			
Styrene	5.0	10.0	ND	ND			
1,1,1,2-Tetrachloroethane	5.0	10.0	ND	ND			
1,1,2,2-Tetrachloroethane	5.0	10.0	ND	ND			
Tetrachloroethene	2.0	10.0	ND	ND			
Toluene (Methyl benzene)	1.0	10.0	ND	ND			
1,2,3-Trichlorobenzene	5.0	10.0	ND	ND			
1,2,4-Trichlorobenzene	5.0	10.0	ND	ND			
1,1,1-Trichloroethane	5.0	10.0	ND	ND			
1,1,2-Trichloroethane	5.0	10.0	ND	ND			
Trichloroethene	1.5	10.0	ND	ND			
Trichlorofluoromethane	5.0	10.0	ND	ND			
1,2,3-Trichloropropane	5.0	10.0	ND	ND			
1,2,4-Trimethylbenzene	5.0	10.0	ND	ND			



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Page: 7

Project ID: F21816I07
 Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A2

Our Lab I.D.			88256.05	88256.06			
Client Sample I.D.			B3-23	B3-33			
Date Sampled			06/21/2017	06/21/2017			
Date Prepared			06/21/2017	06/21/2017			
Preparation Method			5035A	5035A			
Date Analyzed			06/23/2017	06/23/2017			
Matrix			Soil	Soil			
Units			ug/Kg	ug/Kg			
Dilution Factor			1	1			
Analytes	MDL	PQL	Results	Results			
1,3,5-Trimethylbenzene	5.0	10.0	ND	ND			
Vinyl Acetate	25	50	ND	ND			
Vinyl chloride (Chloroethene)	5.0	10.0	ND	ND			
o-Xylene	1.0	10.0	ND	ND			
m,p-Xylenes	1.0	20.0	ND	ND			
tert-Butyl alcohol (TBA)	20	500	ND	ND			
Diisopropyl ether (DIPE)	2.0	10.0	ND	ND			
Ethyl alcohol (Ethanol)	100	500	ND	ND			
Ethyl-tert-butyl ether (ETBE)	2.0	10.0	ND	ND			
Methyl-tert-butyl ether (MTBE)	2.0	10.0	ND	ND			
tert-Amyl methyl ether (TAME)	2.0	10.0	ND	ND			
Our Lab I.D.			88256.05	88256.06			
Surrogates	%Rec.Limit		% Rec.	% Rec.			
Bromofluorobenzene	75-125		79.4	79.5			
Dibromofluoromethane	75-125		91.4	89.5			
Toluene-d8	75-125		88.8	87.2			



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Parking Lot

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 8

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (M8015G), TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 062217OB1

Our Lab I.D.			Method Blank	88256.01	88256.02	88256.03	88256.04
Client Sample I.D.				B3-3	B3-7	B3-13	B3-17
Date Sampled				06/21/2017	06/21/2017	06/21/2017	06/21/2017
Date Prepared			06/22/2017	06/21/2017	06/21/2017	06/21/2017	06/21/2017
Preparation Method			5030	5035A	5035A	5035A	5035A
Date Analyzed			06/22/2017	06/22/2017	06/22/2017	06/22/2017	06/22/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	MDL	PQL	Results	Results	Results	Results	Results
TPH as Gasoline and Light HC. (C4-C12)	0.100	1.000	ND	ND	ND	ND	ND
Our Lab I.D.			Method Blank	88256.01	88256.02	88256.03	88256.04
Surrogates	%Rec.Limit		% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Bromofluorobenzene	75-125		91.8	92.8	90.6	91.4	94.0



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Parking Lot

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 9

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (M8015G), TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 062217OB1

Our Lab I.D.			88256.05	88256.06		
Client Sample I.D.			B3-23	B3-33		
Date Sampled			06/21/2017	06/21/2017		
Date Prepared			06/21/2017	06/21/2017		
Preparation Method			5035A	5035A		
Date Analyzed			06/22/2017	06/22/2017		
Matrix			Soil	Soil		
Units			mg/Kg	mg/Kg		
Dilution Factor			1	1		
Analytes	MDL	PQL	Results	Results		
TPH as Gasoline and Light HC. (C4-C12)	0.100	1.000	ND	ND		
Our Lab I.D.			88256.05	88256.06		
Surrogates	%Rec.Limit		% Rec.	% Rec.		
Bromofluorobenzene	75-125		91.0	91.0		



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Parking Lot

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 10

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 062217DB1

Our Lab I.D.		Method Blank	88256.01	88256.02	88256.03	88256.04	
Client Sample I.D.			B3-3	B3-7	B3-13	B3-17	
Date Sampled			06/21/2017	06/21/2017	06/21/2017	06/21/2017	
Date Prepared		06/22/2017	06/22/2017	06/22/2017	06/22/2017	06/22/2017	
Preparation Method		3550B	3550B	3550B	3550B	3550B	
Date Analyzed		06/22/2017	06/22/2017	06/22/2017	06/22/2017	06/22/2017	
Matrix		Soil	Soil	Soil	Soil	Soil	
Units		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	
Dilution Factor		1	1	1	1	1	
Analytes	MDL	PQL	Results	Results	Results	Results	Results
TPH as Diesel (C13-C22)	1.0	5.0	ND	ND	ND	ND	ND
TPH as Heavy Hydrocarbons (C23-C40)	1.0	5.0	ND	ND	ND	ND	ND
TPH Total as Diesel and Heavy HC.C13-C40	1.0	5.0	ND	ND	ND	ND	ND
Our Lab I.D.		Method Blank	88256.01	88256.02	88256.03	88256.04	
Surrogates	%Rec.Limit	% Rec.	% Rec.	% Rec.	% Rec.	% Rec.	
Chlorobenzene	75-125	97.4	101	93.1	88.6	89.4	



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Parking Lot

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 11

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 062217DB1

Our Lab I.D.			88256.05	88256.06		
Client Sample I.D.			B3-23	B3-33		
Date Sampled			06/21/2017	06/21/2017		
Date Prepared			06/22/2017	06/22/2017		
Preparation Method			3550B	3550B		
Date Analyzed			06/22/2017	06/22/2017		
Matrix			Soil	Soil		
Units			mg/Kg	mg/Kg		
Dilution Factor			1	1		
Analytes	MDL	PQL	Results	Results		
TPH as Diesel (C13-C22)	1.0	5.0	ND	ND		
TPH as Heavy Hydrocarbons (C23-C40)	1.0	5.0	ND	ND		
TPH Total as Diesel and Heavy HC.C13-C40	1.0	5.0	ND	ND		
Our Lab I.D.			88256.05	88256.06		
Surrogates	%Rec.Limit		% Rec.	% Rec.		
Chlorobenzene	75-125		98.7	89.2		



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Parking Lot

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 12

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (6010B/7000CAM), Title 22 Metals (SW-846)

QC Batch No: 0622172C3

Our Lab I.D.		Method Blank	88256.01	88256.02	88256.03	88256.04	
Client Sample I.D.			B3-3	B3-7	B3-13	B3-17	
Date Sampled			06/21/2017	06/21/2017	06/21/2017	06/21/2017	
Date Prepared		06/22/2017	06/22/2017	06/22/2017	06/22/2017	06/22/2017	
Preparation Method		3050B	3050B	3050B	3050B	3050B	
Date Analyzed		06/23/2017	06/23/2017	06/23/2017	06/23/2017	06/23/2017	
Matrix		Soil	Soil	Soil	Soil	Soil	
Units		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	
Dilution Factor		1	1	1	1	1	
Analytes	MDL	PQL	Results	Results	Results	Results	Results
Antimony	1.0	5.0	ND	ND	ND	ND	ND
Arsenic	1.0	5.0	ND	ND	ND	ND	ND
Barium	2.5	5.0	ND	106	50.3	57.3	120
Beryllium	1.3	2.5	ND	ND	ND	ND	ND
Cadmium	1.3	2.5	ND	ND	ND	ND	ND
Chromium	2.5	5.0	ND	13.8	11.2	20.8	20.6
Cobalt	2.5	5.0	ND	5.74	5.58	7.33	7.34
Copper	2.5	5.0	ND	12.9	7.90	14.7	15.9
Lead	2.5	5.0	ND	ND	ND	ND	ND
Mercury (By EPA 7471)	0.1	0.2	ND	ND	ND	ND	ND
Molybdenum	2.5	5.0	ND	ND	ND	ND	ND
Nickel	2.5	5.0	ND	12.0	12.9	15.3	16.6
Selenium	1.0	5.0	ND	ND	ND	ND	ND
Silver	2.5	5.0	ND	ND	ND	ND	ND
Thallium	1.0	5.0	ND	ND	ND	ND	ND
Vanadium	2.5	5.0	ND	28.0	25.9	33.3	38.4
Zinc	2.5	5.0	ND	37.4	24.7	46.3	51.8



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Parking Lot

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 13

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (6010B/7000CAM), Title 22 Metals (SW-846)

QC Batch No: 0622172C3

Our Lab I.D.			88256.05	88256.06			
Client Sample I.D.			B3-23	B3-33			
Date Sampled			06/21/2017	06/21/2017			
Date Prepared			06/22/2017	06/22/2017			
Preparation Method			3050B	3050B			
Date Analyzed			06/23/2017	06/23/2017			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	MDL	PQL	Results	Results			
Antimony	1.0	5.0	ND	ND			
Arsenic	1.0	5.0	15.4	ND			
Barium	2.5	5.0	73.2	23.4			
Beryllium	1.3	2.5	ND	ND			
Cadmium	1.3	2.5	ND	ND			
Chromium	2.5	5.0	21.2	6.63			
Cobalt	2.5	5.0	9.97	2.99J			
Copper	2.5	5.0	22.6	6.63			
Lead	2.5	5.0	3.78J	ND			
Mercury (By EPA 7471)	0.1	0.2	0.129J	ND			
Molybdenum	2.5	5.0	ND	ND			
Nickel	2.5	5.0	15.5	4.74J			
Selenium	1.0	5.0	ND	ND			
Silver	2.5	5.0	ND	ND			
Thallium	1.0	5.0	ND	ND			
Vanadium	2.5	5.0	33.0	11.6			
Zinc	2.5	5.0	51.2	19.4			



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Parking Lot

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 14

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (6010B/7000CAM), Title 22 Metals (SW-846)

QC Batch No: 0622172C3; Dup or Spiked Sample: 88255.01; LCS: Clean Sand; QC Prepared: 06/22/2017; QC Analyzed: 06/23/2017;
 Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Antimony	0.00	50.0	48.8	97.6	50.0	48.1	96.2	1.4	75-125	<15
Arsenic	0.00	50.0	45.4	90.8	50.0	45.0	90.0	<1	75-125	<15
Barium	87.3	50.0	133	91.4	50.0	132	89.4	2.2	75-125	<15
Beryllium	0.00	50.0	52.5	105	50.0	52.5	105	<1	75-125	<15
Cadmium	0.00	50.0	47.7	95.4	50.0	47.1	94.2	1.3	75-125	<15
Chromium	25.7	50.0	73.2	95.0	50.0	72.3	93.2	1.9	75-125	<15
Cobalt	8.97	50.0	54.5	91.1	50.0	53.7	89.5	1.8	75-125	<15
Copper	14.6	50.0	63.9	98.6	50.0	63.9	98.6	<1	75-125	<15
Lead	3.18	50.0	44.9	83.4	50.0	44.2	82.0	1.7	75-125	<15
Mercury (By EPA 7471)	0.00	0.500	0.645#	129	0.500	0.650#	130	<1	75-125	<15
Molybdenum	0.00	50.0	47.0	94.0	50.0	46.5	93.0	1.1	75-125	<15
Nickel	11.6	50.0	55.0	86.8	50.0	54.2	85.2	1.9	75-125	<15
Selenium	0.00	50.0	37.4 #	74.8	50.0	36.6 #	73.2	2.2	75-125	<15
Silver	0.00	50.0	46.0	92.0	50.0	46.0	92.0	<1	75-125	<15
Thallium	0.00	50.0	38.0	76.0	50.0	37.8	75.6	<1	75-125	<15
Vanadium	36.5	50.0	83.2	93.4	50.0	82.6	92.2	1.3	75-125	<15
Zinc	45.9	50.0	86.6	81.4	50.0	86.2	80.6	<1	75-125	<15

QC Batch No: 0622172C3; Dup or Spiked Sample: 88255.01; LCS: Clean Sand; QC Prepared: 06/22/2017; QC Analyzed: 06/23/2017;
 Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit
Antimony	50.0	47.2	94.4	50.0	47.3	94.6	<1	75-125	<15
Arsenic	50.0	48.2	96.4	50.0	47.5	95.0	1.5	75-125	<15
Barium	50.0	46.3	92.6	50.0	47.1	94.2	1.7	75-125	<15
Beryllium	50.0	52.5	105	50.0	53.5	107	1.9	75-125	<15
Cadmium	50.0	46.2	92.4	50.0	47.0	94.0	1.7	75-125	<15
Chromium	50.0	46.3	92.6	50.0	47.0	94.0	1.5	75-125	<15
Cobalt	50.0	44.1	88.2	50.0	44.7	89.4	1.4	75-125	<15
Copper	50.0	44.5	89.0	50.0	45.0	90.0	1.1	75-125	<15



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Page: 15

Project ID: F21816I07
Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (6010B/7000CAM), Title 22 Metals (SW-846)

QC Batch No: 0622172C3; Dup or Spiked Sample: 88255.01; LCS: Clean Sand; QC Prepared: 06/22/2017; QC Analyzed: 06/23/2017;
Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Lead	50.0	44.0	88.0	50.0	43.9	87.8	<1	75-125	<15	
Mercury (By EPA 7471)	0.500	0.500	100	0.500	0.505	101	<1	75-125	<15	
Molybdenum	50.0	46.7	93.4	50.0	46.8	93.6	<1	75-125	<15	
Nickel	50.0	43.4	86.8	50.0	44.0	88.0	1.4	75-125	<15	
Selenium	50.0	48.7	97.4	50.0	47.0	94.0	3.6	75-125	<15	
Silver	50.0	47.4	94.8	50.0	48.1	96.2	1.5	75-125	<15	
Thallium	50.0	44.5	89.0	50.0	44.4	88.8	<1	75-125	<15	
Vanadium	50.0	47.0	94.0	50.0	47.6	95.2	1.3	75-125	<15	
Zinc	50.0	48.3	96.6	50.0	48.9	97.8	1.2	75-125	<15	



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Parking Lot

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 16

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A2; Dup or Spiked Sample: 88256.02; LCS: Clean Sand; QC Prepared: 06/22/2017; QC Analyzed: 06/23/2017;
 Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Benzene	0.00	50.0	37.0 #	74.0	50.0	37.3 #	74.6	<1	75-125	<20
Chlorobenzene	0.00	50.0	49.5	99.0	50.0	50.5	101	2.0	75-125	<20
1,1-Dichloroethene	0.00	50.0	36.2 #	72.4	50.0	38.0	76.0	4.9	75-125	<20
Toluene (Methyl benzene)	0.00	50.0	43.1	86.2	50.0	43.5	86.9	<1	75-125	<20
Trichloroethene	0.00	50.0	48.0	96.0	50.0	47.8	95.6	<1	75-125	<20
Methyl-tert-butyl ether (MTBE)	0.00	50.0	33.5 #	67.0	50.0	35.0 #	70.0	4.4	75-125	<20
Surrogates										
Bromofluorobenzene	0.00	50.0	38.5	77.0	50.0	38.2	76.3	<1	75-125	<20
Dibromofluoromethane	0.00	50.0	38.8	77.6	50.0	38.3	76.5	1.4	75-125	<20
Toluene-d8	0.00	50.0	43.8	87.6	50.0	43.9	87.8	<1	75-125	<20

QC Batch No: 0622172A2; Dup or Spiked Sample: 88256.02; LCS: Clean Sand; QC Prepared: 06/22/2017; QC Analyzed: 06/23/2017;
 Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit
Benzene	50.0	39.9	79.8	50.0	39.5	79.0	1.0	75-125	<20
Chlorobenzene	50.0	55.0	110	50.0	54.5	109	<1	75-125	<20
1,1-Dichloroethene	50.0	40.8	81.6	50.0	38.5	77.0	5.8	75-125	<20
Toluene (Methyl benzene)	50.0	45.8	91.6	50.0	46.0	92.0	<1	75-125	<20
Trichloroethene	50.0	48.8	97.6	50.0	47.0	94.0	3.8	75-125	<20
Methyl-tert-butyl ether (MTBE)	50.0	42.7	85.4	50.0	44.0	88.0	3.0	75-125	<20
LCS									
Chloroform (Trichloromethane)	50.0	41.5	83.0	50.0	41.0	82.0	1.2	75-125	<20
Ethylbenzene	50.0	46.7	93.4	50.0	46.5	93.0	<1	75-125	<20
1,1,1-Trichloroethane	50.0	46.2	92.4	50.0	47.0	94.0	1.7	75-125	<20
o-Xylene	50.0	53.0	106	50.0	51.5	103	2.9	75-125	<20
m,p-Xylenes	100	91.2	91.2	100	91.1	91.1	<1	75-125	<20
Surrogates									
Bromofluorobenzene	50.0	37.7	75.4	50.0	38.9	77.8	3.1	75-125	<20
Dibromofluoromethane	50.0	39.8	79.6	50.0	39.1	78.1	1.9	75-125	<20



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Page: 17

Project ID: F21816I07
Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (8260B), Volatile Organic Compounds by GC/MS (SW846)

QC Batch No: 0622172A2; Dup or Spiked Sample: 88256.02; LCS: Clean Sand; QC Prepared: 06/22/2017; QC Analyzed: 06/23/2017;
Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Toluene-d8	50.0	43.9	87.8	50.0	44.1	88.1	<1	75-125	<20	



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Parking Lot

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 18

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (M8015D), TPH as Diesel and Heavy Hydrocarbons Using GC/FID

QC Batch No: 062217DB1; Dup or Spiked Sample: 88255.04; LCS: Clean Sand; QC Prepared: 06/22/2017; QC Analyzed: 06/22/2017;
 Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
TPH as Diesel (C13-C22)	0.00	500	480	96.0	500	519	104	8.00	75-125	<20
Surrogates										
Chlorobenzene	0.00	100	81.2	81.2	100	87.5	87.5	7.76	75-125	<20

QC Batch No: 062217DB1; Dup or Spiked Sample: 88255.04; LCS: Clean Sand; QC Prepared: 06/22/2017; QC Analyzed: 06/22/2017;
 Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit
TPH as Diesel (C13-C22)	500	488	97.6	500	525	105	7.31	75-125	<20
Surrogates									
Chlorobenzene	100	85.0	85.0	100	87.0	87.0	2.35	75-125	<20



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
 Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

QUALITY CONTROL RESULTS

Ordered By

LA County Dept. of Public Works
 GMED Materials Lab
 900 S. Fremont Ave, 4th Floor
 Alhambra, CA 91803-

Site

Adventure Park
 Parking Lot

Telephone: (626)458-5100

Attn: Ricardo Lopez

Page: 19

Project ID: F21816I07

Project Name: Adventure Park

AETL Job Number	Submitted	Client
88256	06/21/2017	LACDPW

Method: (M8015G), TPH as Gasoline and Light Hydrocarbons Using GC/FID

QC Batch No: 062217OB1; Dup or Spiked Sample: 88256.02AGA; LCS: Clean Sand; QC Prepared: 06/22/2017; MS Analyzed: 06/23/2017;
 LCS Analyzed: 06/22/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
TPH as Gasoline and Light HC. (C4-C12)	0.00	1.00	0.837	83.7	1.00	0.837	83.7	<1	75-125	<20
Surrogates										
Bromofluorobenzene	0.00	0.0500	0.0445	89.0	0.0500	0.0431	86.2	3.15	75-125	<20

QC Batch No: 062217OB1; Dup or Spiked Sample: 88256.02AGA; LCS: Clean Sand; QC Prepared: 06/22/2017; MS Analyzed: 06/23/2017;
 LCS Analyzed: 06/22/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit
TPH as Gasoline and Light HC. (C4-C12)	1.00	0.962	96.2	1.00	0.926	92.6	3.81	75-125	<20
Surrogates									
Bromofluorobenzene	0.0500	0.0452	90.4	0.0500	0.0443	88.6	1.99	75-125	<20



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street, Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

Data Qualifiers and Descriptors

Data Qualifier:

- #: Recovery is not within acceptable control limits.
- *: In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
- B: Analyte was present in the Method Blank.
- D: Result is from a diluted analysis.
- E: Result is beyond calibration limits and is estimated.
- H: Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
- J: Analyte was detected. However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
- M: Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
- MCL: Maximum Contaminant Level
- NS: No Standard Available
- S6: Surrogate recovery is outside control limits due to matrix interference.
- S8: The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
- X: Results represent LCS and LCSD data.

Definition:

- %Limi: Percent acceptable limits.
- %REC: Percent recovery.
- Con.L: Acceptable Control Limits
- Conce: Added concentration to the sample.
- LCS: Laboratory Control Sample
- MDL: Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.



American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street, Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

APPENDIX H
SEISMIC PARAMETERS


Design Maps Detailed Report

ASCE 7-10 Standard (33.943°N, 118.03496°W)

Site Class D – “Stiff Soil”, Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_s) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From [Figure 22-1](#) ^[1]

$S_s = 2.109 \text{ g}$

From [Figure 22-2](#) ^[2]

$S_1 = 0.754 \text{ g}$

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3-1 Site Classification

Site Class	\bar{v}_s	\bar{N} or \bar{N}_{ch}	\bar{s}_u
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
Any profile with more than 10 ft of soil having the characteristics:			
<ul style="list-style-type: none"> • Plasticity index $PI > 20$, • Moisture content $w \geq 40\%$, and • Undrained shear strength $\bar{s}_u < 500$ psf 			
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk-Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4-1: Site Coefficient F_a

Site Class	Mapped MCE _R Spectral Response Acceleration Parameter at Short Period				
	$S_s \leq 0.25$	$S_s = 0.50$	$S_s = 0.75$	$S_s = 1.00$	$S_s \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_s

For Site Class = D and $S_s = 2.109$ g, $F_a = 1.000$

Table 11.4-2: Site Coefficient F_v

Site Class	Mapped MCE _R Spectral Response Acceleration Parameter at 1-s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_1

For Site Class = D and $S_1 = 0.754$ g, $F_v = 1.500$

Equation (11.4-1): $S_{MS} = F_a S_s = 1.000 \times 2.109 = 2.109 \text{ g}$

Equation (11.4-2): $S_{M1} = F_v S_1 = 1.500 \times 0.754 = 1.131 \text{ g}$

Section 11.4.4 — Design Spectral Acceleration Parameters

Equation (11.4-3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 2.109 = 1.406 \text{ g}$

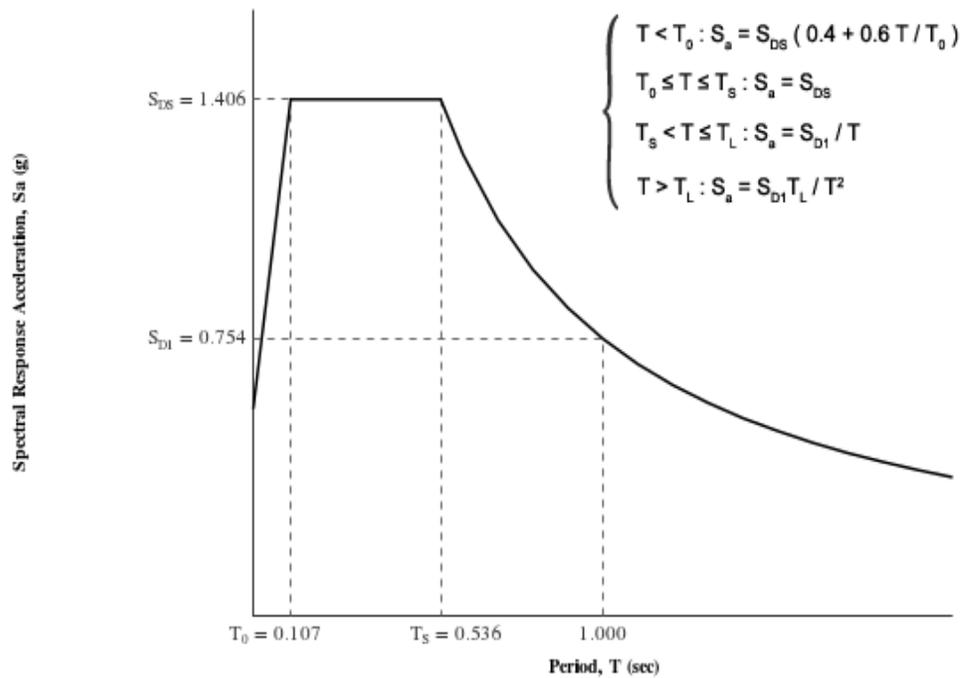
Equation (11.4-4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 1.131 = 0.754 \text{ g}$

Section 11.4.5 — Design Response Spectrum

From [Figure 22-12](#)^[3]

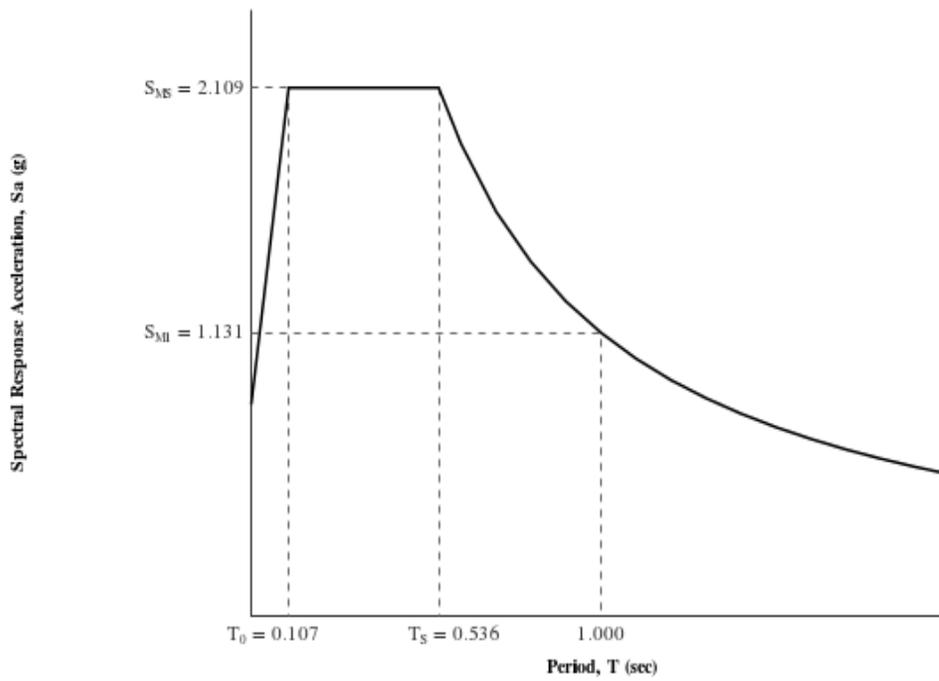
$T_L = 8 \text{ seconds}$

Figure 11.4-1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From [Figure 22-7](#) ^[4]

$$PGA = 0.825$$

Equation (11.8-1):

$$PGA_M = F_{PGA}PGA = 1.000 \times 0.825 = 0.825 \text{ g}$$

Table 11.8-1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.825 g, $F_{PGA} = 1.000$

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From [Figure 22-17](#) ^[5]

$$C_{RS} = 0.928$$

From [Figure 22-18](#) ^[6]

$$C_{R1} = 0.952$$

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \leq S_{DS} < 0.33g$	B	B	C
$0.33g \leq S_{DS} < 0.50g$	C	C	D
$0.50g \leq S_{DS}$	D	D	D

For Risk Category = I and $S_{DS} = 1.406 g$, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \leq S_{D1} < 0.133g$	B	B	C
$0.133g \leq S_{D1} < 0.20g$	C	C	D
$0.20g \leq S_{D1}$	D	D	D

For Risk Category = I and $S_{D1} = 0.754 g$, Seismic Design Category = D

Note: When S_1 is greater than or equal to $0.75g$, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category \equiv "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1:*
https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2:*
https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12:*
https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7:*
https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17:*
https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18:*
https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

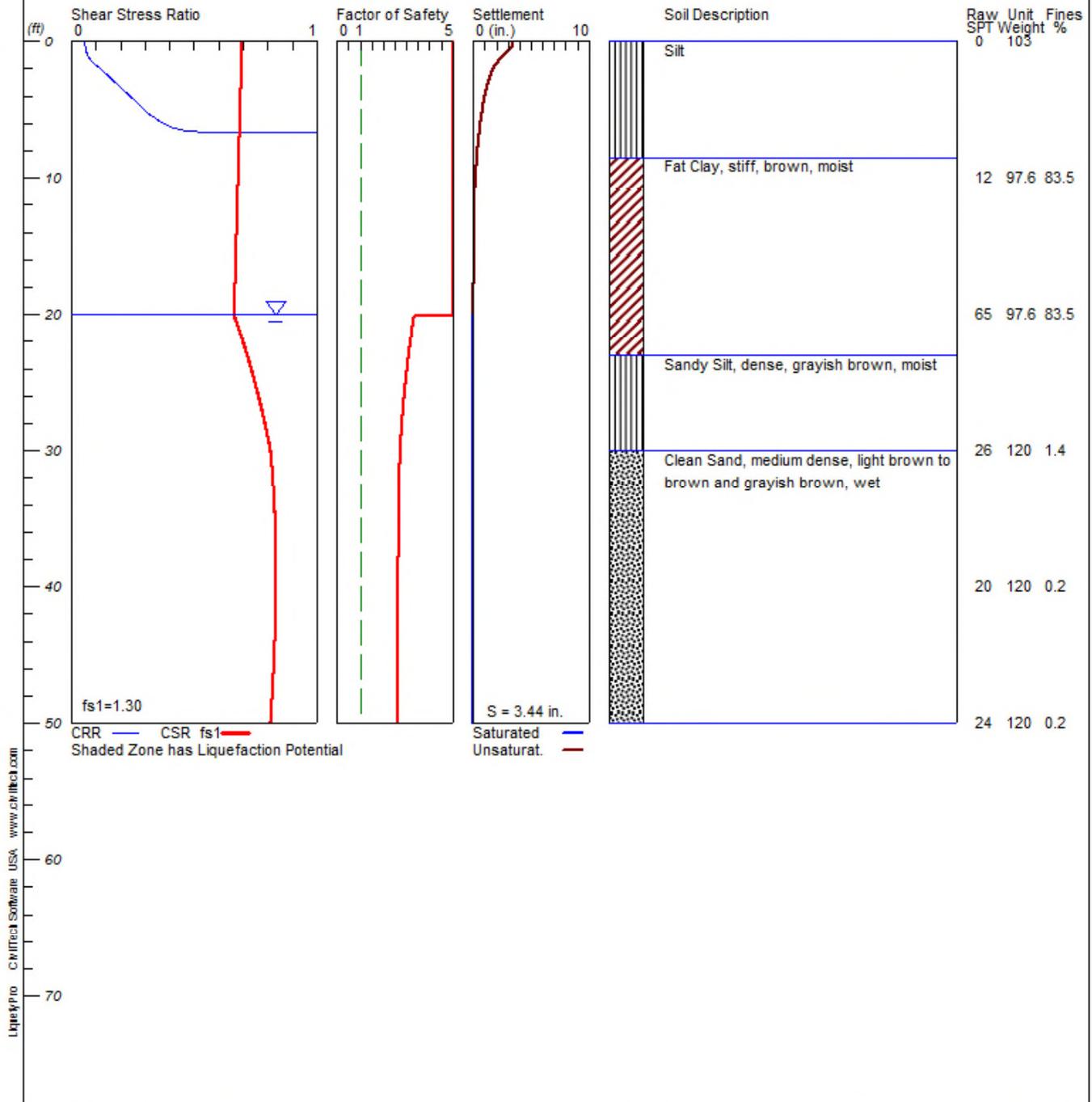
APPENDIX I
LIQUEFACTION ANALYSIS

LIQUEFACTION ANALYSIS

Adventure Park Multi-Benefit Project

Hole No.=B3 Water Depth=20 ft Surface Elev.=145

Magnitude=7.2
Acceleration=0.825g



LIQUEFACTION ANALYSIS SUMMARY

Copyright by CivilTech Software
www.civiltechsoftware.com

Font: Courier New, Regular, Size 8 is recommended for this report.
Licensed to , 6/13/2018 5:04:27 PM

Input File Name: P:\gmepub\Soils Investigations\Projects\2016\Adventure Park
Multi-Benefit Stormwater Capture Project\Working Files\Liquefaction
Analysis\Adventure Park Multi-Benefit Proj. - Liq. Anal
Title: Adventure Park Multi-Benefit Project
Subtitle: Geotechnical and Infiltration Feasibility Investig

Surface Elev.=145
Hole No.=B3
Depth of Hole= 50.00 ft
Water Table during Earthquake= 20.00 ft
Water Table during In-Situ Testing= 28.50 ft
Max. Acceleration= 0.82 g
Earthquake Magnitude= 7.20

Input Data:

Surface Elev.=145
Hole No.=B3
Depth of Hole=50.00 ft
Water Table during Earthquake= 20.00 ft
Water Table during In-Situ Testing= 28.50 ft
Max. Acceleration=0.82 g
Earthquake Magnitude=7.20
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.5
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
Plot one CSR curve (fs1=User)

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt
 10. Use Curve Smoothing: Yes*
 * Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	0.00	103.00	0.00
10.00	12.00	97.60	83.50
20.00	65.00	97.60	83.50
30.00	26.00	120.00	1.40
40.00	20.00	120.00	0.20
50.00	24.00	120.00	0.20

Output Results:

Settlement of Saturated Sands=0.00 in.
 Settlement of Unsaturated Sands=3.44 in.
 Total Settlement of Saturated and Unsaturated Sands=3.44 in.
 Differential Settlement=1.720 to 2.271 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	0.05	0.70	5.00	0.00	3.44	3.44
0.05	0.05	0.70	5.00	0.00	3.44	3.44
0.10	0.05	0.70	5.00	0.00	3.44	3.44
0.15	0.05	0.70	5.00	0.00	3.43	3.43
0.20	0.05	0.70	5.00	0.00	3.43	3.43
0.25	0.05	0.70	5.00	0.00	3.41	3.41
0.30	0.05	0.70	5.00	0.00	3.38	3.38
0.35	0.06	0.70	5.00	0.00	3.33	3.33
0.40	0.06	0.70	5.00	0.00	3.27	3.27
0.45	0.06	0.70	5.00	0.00	3.22	3.22
0.50	0.06	0.70	5.00	0.00	3.16	3.16
0.55	0.06	0.70	5.00	0.00	3.10	3.10
0.60	0.06	0.70	5.00	0.00	3.05	3.05
0.65	0.06	0.70	5.00	0.00	2.99	2.99
0.70	0.06	0.70	5.00	0.00	2.94	2.94
0.75	0.06	0.70	5.00	0.00	2.88	2.88
0.80	0.06	0.70	5.00	0.00	2.83	2.83
0.85	0.06	0.70	5.00	0.00	2.77	2.77
0.90	0.06	0.70	5.00	0.00	2.72	2.72
0.95	0.06	0.70	5.00	0.00	2.66	2.66
1.00	0.06	0.70	5.00	0.00	2.61	2.61
1.05	0.07	0.70	5.00	0.00	2.55	2.55
1.10	0.07	0.70	5.00	0.00	2.50	2.50
1.15	0.07	0.70	5.00	0.00	2.44	2.44

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

1.20	0.07	0.70	5.00	0.00	2.39	2.39
1.25	0.07	0.70	5.00	0.00	2.33	2.33
1.30	0.08	0.70	5.00	0.00	2.28	2.28
1.35	0.08	0.69	5.00	0.00	2.23	2.23
1.40	0.08	0.69	5.00	0.00	2.18	2.18
1.45	0.08	0.69	5.00	0.00	2.13	2.13
1.50	0.09	0.69	5.00	0.00	2.09	2.09
1.55	0.09	0.69	5.00	0.00	2.04	2.04
1.60	0.09	0.69	5.00	0.00	2.00	2.00
1.65	0.09	0.69	5.00	0.00	1.96	1.96
1.70	0.10	0.69	5.00	0.00	1.93	1.93
1.75	0.10	0.69	5.00	0.00	1.89	1.89
1.80	0.10	0.69	5.00	0.00	1.85	1.85
1.85	0.11	0.69	5.00	0.00	1.82	1.82
1.90	0.11	0.69	5.00	0.00	1.79	1.79
1.95	0.11	0.69	5.00	0.00	1.76	1.76
2.00	0.12	0.69	5.00	0.00	1.73	1.73
2.05	0.12	0.69	5.00	0.00	1.70	1.70
2.10	0.12	0.69	5.00	0.00	1.67	1.67
2.15	0.13	0.69	5.00	0.00	1.64	1.64
2.20	0.13	0.69	5.00	0.00	1.62	1.62
2.25	0.13	0.69	5.00	0.00	1.59	1.59
2.30	0.14	0.69	5.00	0.00	1.57	1.57
2.35	0.14	0.69	5.00	0.00	1.54	1.54
2.40	0.14	0.69	5.00	0.00	1.52	1.52
2.45	0.15	0.69	5.00	0.00	1.50	1.50
2.50	0.15	0.69	5.00	0.00	1.47	1.47
2.55	0.15	0.69	5.00	0.00	1.45	1.45
2.60	0.15	0.69	5.00	0.00	1.43	1.43
2.65	0.16	0.69	5.00	0.00	1.41	1.41
2.70	0.16	0.69	5.00	0.00	1.39	1.39
2.75	0.16	0.69	5.00	0.00	1.37	1.37
2.80	0.17	0.69	5.00	0.00	1.35	1.35
2.85	0.17	0.69	5.00	0.00	1.33	1.33
2.90	0.17	0.69	5.00	0.00	1.32	1.32
2.95	0.18	0.69	5.00	0.00	1.30	1.30
3.00	0.18	0.69	5.00	0.00	1.28	1.28
3.05	0.18	0.69	5.00	0.00	1.26	1.26
3.10	0.18	0.69	5.00	0.00	1.25	1.25
3.15	0.19	0.69	5.00	0.00	1.23	1.23
3.20	0.19	0.69	5.00	0.00	1.22	1.22
3.25	0.19	0.69	5.00	0.00	1.20	1.20
3.30	0.20	0.69	5.00	0.00	1.18	1.18
3.35	0.20	0.69	5.00	0.00	1.17	1.17
3.40	0.20	0.69	5.00	0.00	1.15	1.15
3.45	0.21	0.69	5.00	0.00	1.14	1.14
3.50	0.21	0.69	5.00	0.00	1.13	1.13
3.55	0.21	0.69	5.00	0.00	1.11	1.11

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

3.60	0.21	0.69	5.00	0.00	1.10	1.10
3.65	0.22	0.69	5.00	0.00	1.08	1.08
3.70	0.22	0.69	5.00	0.00	1.07	1.07
3.75	0.22	0.69	5.00	0.00	1.06	1.06
3.80	0.23	0.69	5.00	0.00	1.05	1.05
3.85	0.23	0.69	5.00	0.00	1.03	1.03
3.90	0.23	0.69	5.00	0.00	1.02	1.02
3.95	0.24	0.69	5.00	0.00	1.01	1.01
4.00	0.24	0.69	5.00	0.00	1.00	1.00
4.05	0.24	0.69	5.00	0.00	0.99	0.99
4.10	0.25	0.69	5.00	0.00	0.97	0.97
4.15	0.25	0.69	5.00	0.00	0.96	0.96
4.20	0.25	0.69	5.00	0.00	0.95	0.95
4.25	0.25	0.69	5.00	0.00	0.94	0.94
4.30	0.26	0.69	5.00	0.00	0.93	0.93
4.35	0.26	0.69	5.00	0.00	0.92	0.92
4.40	0.26	0.69	5.00	0.00	0.91	0.91
4.45	0.27	0.69	5.00	0.00	0.90	0.90
4.50	0.27	0.69	5.00	0.00	0.89	0.89
4.55	0.27	0.69	5.00	0.00	0.88	0.88
4.60	0.27	0.69	5.00	0.00	0.87	0.87
4.65	0.28	0.69	5.00	0.00	0.86	0.86
4.70	0.28	0.69	5.00	0.00	0.85	0.85
4.75	0.28	0.69	5.00	0.00	0.84	0.84
4.80	0.28	0.69	5.00	0.00	0.83	0.83
4.85	0.29	0.69	5.00	0.00	0.82	0.82
4.90	0.29	0.69	5.00	0.00	0.81	0.81
4.95	0.29	0.69	5.00	0.00	0.80	0.80
5.00	0.30	0.69	5.00	0.00	0.79	0.79
5.05	0.30	0.69	5.00	0.00	0.78	0.78
5.10	0.30	0.69	5.00	0.00	0.77	0.77
5.15	0.31	0.69	5.00	0.00	0.76	0.76
5.20	0.31	0.69	5.00	0.00	0.75	0.75
5.25	0.31	0.69	5.00	0.00	0.75	0.75
5.30	0.32	0.69	5.00	0.00	0.74	0.74
5.35	0.32	0.69	5.00	0.00	0.73	0.73
5.40	0.32	0.69	5.00	0.00	0.72	0.72
5.45	0.33	0.69	5.00	0.00	0.71	0.71
5.50	0.33	0.69	5.00	0.00	0.70	0.70
5.55	0.33	0.69	5.00	0.00	0.69	0.69
5.60	0.34	0.69	5.00	0.00	0.69	0.69
5.65	0.34	0.69	5.00	0.00	0.68	0.68
5.70	0.35	0.69	5.00	0.00	0.67	0.67
5.75	0.35	0.69	5.00	0.00	0.66	0.66
5.80	0.36	0.69	5.00	0.00	0.65	0.65
5.85	0.36	0.69	5.00	0.00	0.65	0.65
5.90	0.36	0.69	5.00	0.00	0.64	0.64
5.95	0.37	0.69	5.00	0.00	0.63	0.63

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

6.00	0.38	0.69	5.00	0.00	0.62	0.62
6.05	0.38	0.69	5.00	0.00	0.62	0.62
6.10	0.39	0.69	5.00	0.00	0.61	0.61
6.15	0.39	0.69	5.00	0.00	0.60	0.60
6.20	0.40	0.69	5.00	0.00	0.59	0.59
6.25	0.41	0.69	5.00	0.00	0.59	0.59
6.30	0.41	0.69	5.00	0.00	0.58	0.58
6.35	0.42	0.69	5.00	0.00	0.57	0.57
6.40	0.43	0.69	5.00	0.00	0.57	0.57
6.45	0.45	0.69	5.00	0.00	0.56	0.56
6.50	0.46	0.69	5.00	0.00	0.55	0.55
6.55	0.49	0.69	5.00	0.00	0.54	0.54
6.60	0.53	0.69	5.00	0.00	0.54	0.54
6.65	2.22	0.69	5.00	0.00	0.53	0.53
6.70	2.22	0.69	5.00	0.00	0.52	0.52
6.75	2.22	0.69	5.00	0.00	0.52	0.52
6.80	2.22	0.69	5.00	0.00	0.51	0.51
6.85	2.22	0.69	5.00	0.00	0.51	0.51
6.90	2.22	0.69	5.00	0.00	0.50	0.50
6.95	2.22	0.69	5.00	0.00	0.49	0.49
7.00	2.22	0.69	5.00	0.00	0.49	0.49
7.05	2.22	0.69	5.00	0.00	0.48	0.48
7.10	2.22	0.69	5.00	0.00	0.47	0.47
7.15	2.22	0.69	5.00	0.00	0.47	0.47
7.20	2.22	0.69	5.00	0.00	0.46	0.46
7.25	2.22	0.69	5.00	0.00	0.46	0.46
7.30	2.22	0.69	5.00	0.00	0.45	0.45
7.35	2.22	0.69	5.00	0.00	0.44	0.44
7.40	2.22	0.69	5.00	0.00	0.44	0.44
7.45	2.22	0.69	5.00	0.00	0.43	0.43
7.50	2.22	0.68	5.00	0.00	0.43	0.43
7.55	2.22	0.68	5.00	0.00	0.42	0.42
7.60	2.22	0.68	5.00	0.00	0.42	0.42
7.65	2.22	0.68	5.00	0.00	0.41	0.41
7.70	2.22	0.68	5.00	0.00	0.40	0.40
7.75	2.22	0.68	5.00	0.00	0.40	0.40
7.80	2.22	0.68	5.00	0.00	0.39	0.39
7.85	2.22	0.68	5.00	0.00	0.39	0.39
7.90	2.22	0.68	5.00	0.00	0.38	0.38
7.95	2.22	0.68	5.00	0.00	0.38	0.38
8.00	2.22	0.68	5.00	0.00	0.37	0.37
8.05	2.22	0.68	5.00	0.00	0.37	0.37
8.10	2.22	0.68	5.00	0.00	0.36	0.36
8.15	2.22	0.68	5.00	0.00	0.35	0.35
8.20	2.22	0.68	5.00	0.00	0.35	0.35
8.25	2.22	0.68	5.00	0.00	0.34	0.34
8.30	2.22	0.68	5.00	0.00	0.34	0.34
8.35	2.22	0.68	5.00	0.00	0.34	0.34

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

8.40	2.22	0.68	5.00	0.00	0.33	0.33
8.45	2.22	0.68	5.00	0.00	0.33	0.33
8.50	2.22	0.68	5.00	0.00	0.32	0.32
8.55	2.22	0.68	5.00	0.00	0.32	0.32
8.60	2.22	0.68	5.00	0.00	0.32	0.32
8.65	2.22	0.68	5.00	0.00	0.31	0.31
8.70	2.22	0.68	5.00	0.00	0.31	0.31
8.75	2.22	0.68	5.00	0.00	0.30	0.30
8.80	2.22	0.68	5.00	0.00	0.30	0.30
8.85	2.22	0.68	5.00	0.00	0.30	0.30
8.90	2.22	0.68	5.00	0.00	0.29	0.29
8.95	2.22	0.68	5.00	0.00	0.29	0.29
9.00	2.22	0.68	5.00	0.00	0.28	0.28
9.05	2.22	0.68	5.00	0.00	0.28	0.28
9.10	2.22	0.68	5.00	0.00	0.28	0.28
9.15	2.22	0.68	5.00	0.00	0.27	0.27
9.20	2.22	0.68	5.00	0.00	0.27	0.27
9.25	2.22	0.68	5.00	0.00	0.27	0.27
9.30	2.22	0.68	5.00	0.00	0.26	0.26
9.35	2.22	0.68	5.00	0.00	0.26	0.26
9.40	2.22	0.68	5.00	0.00	0.25	0.25
9.45	2.22	0.68	5.00	0.00	0.25	0.25
9.50	2.22	0.68	5.00	0.00	0.25	0.25
9.55	2.22	0.68	5.00	0.00	0.24	0.24
9.60	2.22	0.68	5.00	0.00	0.24	0.24
9.65	2.22	0.68	5.00	0.00	0.24	0.24
9.70	2.22	0.68	5.00	0.00	0.23	0.23
9.75	2.22	0.68	5.00	0.00	0.23	0.23
9.80	2.22	0.68	5.00	0.00	0.22	0.22
9.85	2.22	0.68	5.00	0.00	0.22	0.22
9.90	2.22	0.68	5.00	0.00	0.22	0.22
9.95	2.22	0.68	5.00	0.00	0.21	0.21
10.00	2.22	0.68	5.00	0.00	0.21	0.21
10.05	2.22	0.68	5.00	0.00	0.21	0.21
10.10	2.22	0.68	5.00	0.00	0.20	0.20
10.15	2.22	0.68	5.00	0.00	0.20	0.20
10.20	2.22	0.68	5.00	0.00	0.19	0.19
10.25	2.22	0.68	5.00	0.00	0.19	0.19
10.30	2.22	0.68	5.00	0.00	0.19	0.19
10.35	2.22	0.68	5.00	0.00	0.18	0.18
10.40	2.22	0.68	5.00	0.00	0.18	0.18
10.45	2.22	0.68	5.00	0.00	0.18	0.18
10.50	2.22	0.68	5.00	0.00	0.17	0.17
10.55	2.22	0.68	5.00	0.00	0.17	0.17
10.60	2.22	0.68	5.00	0.00	0.16	0.16
10.65	2.22	0.68	5.00	0.00	0.16	0.16
10.70	2.22	0.68	5.00	0.00	0.16	0.16
10.75	2.22	0.68	5.00	0.00	0.15	0.15

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

10.80	2.22	0.68	5.00	0.00	0.15	0.15
10.85	2.22	0.68	5.00	0.00	0.15	0.15
10.90	2.22	0.68	5.00	0.00	0.14	0.14
10.95	2.22	0.68	5.00	0.00	0.14	0.14
11.00	2.22	0.68	5.00	0.00	0.14	0.14
11.05	2.22	0.68	5.00	0.00	0.13	0.13
11.10	2.22	0.68	5.00	0.00	0.13	0.13
11.15	2.22	0.68	5.00	0.00	0.12	0.12
11.20	2.22	0.68	5.00	0.00	0.12	0.12
11.25	2.22	0.68	5.00	0.00	0.12	0.12
11.30	2.22	0.68	5.00	0.00	0.11	0.11
11.35	2.22	0.68	5.00	0.00	0.11	0.11
11.40	2.22	0.68	5.00	0.00	0.11	0.11
11.45	2.22	0.68	5.00	0.00	0.10	0.10
11.50	2.22	0.68	5.00	0.00	0.10	0.10
11.55	2.22	0.68	5.00	0.00	0.10	0.10
11.60	2.22	0.68	5.00	0.00	0.10	0.10
11.65	2.22	0.68	5.00	0.00	0.10	0.10
11.70	2.22	0.68	5.00	0.00	0.10	0.10
11.75	2.22	0.68	5.00	0.00	0.10	0.10
11.80	2.22	0.68	5.00	0.00	0.10	0.10
11.85	2.22	0.68	5.00	0.00	0.10	0.10
11.90	2.22	0.68	5.00	0.00	0.10	0.10
11.95	2.22	0.68	5.00	0.00	0.10	0.10
12.00	2.22	0.68	5.00	0.00	0.10	0.10
12.05	2.22	0.68	5.00	0.00	0.10	0.10
12.10	2.22	0.68	5.00	0.00	0.10	0.10
12.15	2.22	0.68	5.00	0.00	0.10	0.10
12.20	2.22	0.68	5.00	0.00	0.10	0.10
12.25	2.22	0.68	5.00	0.00	0.10	0.10
12.30	2.22	0.68	5.00	0.00	0.10	0.10
12.35	2.22	0.68	5.00	0.00	0.09	0.09
12.40	2.22	0.68	5.00	0.00	0.09	0.09
12.45	2.22	0.68	5.00	0.00	0.09	0.09
12.50	2.22	0.68	5.00	0.00	0.09	0.09
12.55	2.22	0.68	5.00	0.00	0.09	0.09
12.60	2.22	0.68	5.00	0.00	0.09	0.09
12.65	2.22	0.68	5.00	0.00	0.09	0.09
12.70	2.22	0.68	5.00	0.00	0.09	0.09
12.75	2.22	0.68	5.00	0.00	0.09	0.09
12.80	2.22	0.68	5.00	0.00	0.09	0.09
12.85	2.22	0.68	5.00	0.00	0.09	0.09
12.90	2.22	0.68	5.00	0.00	0.09	0.09
12.95	2.22	0.68	5.00	0.00	0.09	0.09
13.00	2.22	0.68	5.00	0.00	0.09	0.09
13.05	2.22	0.68	5.00	0.00	0.09	0.09
13.10	2.22	0.68	5.00	0.00	0.09	0.09
13.15	2.22	0.68	5.00	0.00	0.09	0.09

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

13.20	2.22	0.68	5.00	0.00	0.09	0.09
13.25	2.22	0.68	5.00	0.00	0.09	0.09
13.30	2.22	0.68	5.00	0.00	0.08	0.08
13.35	2.22	0.68	5.00	0.00	0.08	0.08
13.40	2.22	0.68	5.00	0.00	0.08	0.08
13.45	2.22	0.68	5.00	0.00	0.08	0.08
13.50	2.22	0.68	5.00	0.00	0.08	0.08
13.55	2.22	0.68	5.00	0.00	0.08	0.08
13.60	2.22	0.68	5.00	0.00	0.08	0.08
13.65	2.22	0.67	5.00	0.00	0.08	0.08
13.70	2.22	0.67	5.00	0.00	0.08	0.08
13.75	2.22	0.67	5.00	0.00	0.08	0.08
13.80	2.22	0.67	5.00	0.00	0.08	0.08
13.85	2.22	0.67	5.00	0.00	0.08	0.08
13.90	2.22	0.67	5.00	0.00	0.08	0.08
13.95	2.22	0.67	5.00	0.00	0.08	0.08
14.00	2.22	0.67	5.00	0.00	0.08	0.08
14.05	2.22	0.67	5.00	0.00	0.08	0.08
14.10	2.22	0.67	5.00	0.00	0.08	0.08
14.15	2.22	0.67	5.00	0.00	0.08	0.08
14.20	2.22	0.67	5.00	0.00	0.08	0.08
14.25	2.22	0.67	5.00	0.00	0.08	0.08
14.30	2.22	0.67	5.00	0.00	0.07	0.07
14.35	2.22	0.67	5.00	0.00	0.07	0.07
14.40	2.22	0.67	5.00	0.00	0.07	0.07
14.45	2.22	0.67	5.00	0.00	0.07	0.07
14.50	2.22	0.67	5.00	0.00	0.07	0.07
14.55	2.22	0.67	5.00	0.00	0.07	0.07
14.60	2.22	0.67	5.00	0.00	0.07	0.07
14.65	2.22	0.67	5.00	0.00	0.07	0.07
14.70	2.22	0.67	5.00	0.00	0.07	0.07
14.75	2.22	0.67	5.00	0.00	0.07	0.07
14.80	2.22	0.67	5.00	0.00	0.07	0.07
14.85	2.22	0.67	5.00	0.00	0.07	0.07
14.90	2.22	0.67	5.00	0.00	0.07	0.07
14.95	2.22	0.67	5.00	0.00	0.07	0.07
15.00	2.22	0.67	5.00	0.00	0.07	0.07
15.05	2.22	0.67	5.00	0.00	0.07	0.07
15.10	2.22	0.67	5.00	0.00	0.07	0.07
15.15	2.22	0.67	5.00	0.00	0.07	0.07
15.20	2.22	0.67	5.00	0.00	0.07	0.07
15.25	2.22	0.67	5.00	0.00	0.07	0.07
15.30	2.22	0.67	5.00	0.00	0.06	0.06
15.35	2.22	0.67	5.00	0.00	0.06	0.06
15.40	2.22	0.67	5.00	0.00	0.06	0.06
15.45	2.22	0.67	5.00	0.00	0.06	0.06
15.50	2.22	0.67	5.00	0.00	0.06	0.06
15.55	2.22	0.67	5.00	0.00	0.06	0.06

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

15.60	2.22	0.67	5.00	0.00	0.06	0.06
15.65	2.22	0.67	5.00	0.00	0.06	0.06
15.70	2.22	0.67	5.00	0.00	0.06	0.06
15.75	2.22	0.67	5.00	0.00	0.06	0.06
15.80	2.22	0.67	5.00	0.00	0.06	0.06
15.85	2.22	0.67	5.00	0.00	0.06	0.06
15.90	2.22	0.67	5.00	0.00	0.06	0.06
15.95	2.22	0.67	5.00	0.00	0.06	0.06
16.00	2.22	0.67	5.00	0.00	0.06	0.06
16.05	2.22	0.67	5.00	0.00	0.06	0.06
16.10	2.22	0.67	5.00	0.00	0.06	0.06
16.15	2.22	0.67	5.00	0.00	0.06	0.06
16.20	2.22	0.67	5.00	0.00	0.05	0.05
16.25	2.22	0.67	5.00	0.00	0.05	0.05
16.30	2.22	0.67	5.00	0.00	0.05	0.05
16.35	2.22	0.67	5.00	0.00	0.05	0.05
16.40	2.22	0.67	5.00	0.00	0.05	0.05
16.45	2.22	0.67	5.00	0.00	0.05	0.05
16.50	2.22	0.67	5.00	0.00	0.05	0.05
16.55	2.22	0.67	5.00	0.00	0.05	0.05
16.60	2.22	0.67	5.00	0.00	0.05	0.05
16.65	2.22	0.67	5.00	0.00	0.05	0.05
16.70	2.22	0.67	5.00	0.00	0.05	0.05
16.75	2.22	0.67	5.00	0.00	0.05	0.05
16.80	2.22	0.67	5.00	0.00	0.05	0.05
16.85	2.22	0.67	5.00	0.00	0.05	0.05
16.90	2.22	0.67	5.00	0.00	0.05	0.05
16.95	2.22	0.67	5.00	0.00	0.05	0.05
17.00	2.22	0.67	5.00	0.00	0.05	0.05
17.05	2.22	0.67	5.00	0.00	0.04	0.04
17.10	2.22	0.67	5.00	0.00	0.04	0.04
17.15	2.22	0.67	5.00	0.00	0.04	0.04
17.20	2.22	0.67	5.00	0.00	0.04	0.04
17.25	2.22	0.67	5.00	0.00	0.04	0.04
17.30	2.22	0.67	5.00	0.00	0.04	0.04
17.35	2.22	0.67	5.00	0.00	0.04	0.04
17.40	2.22	0.67	5.00	0.00	0.04	0.04
17.45	2.22	0.67	5.00	0.00	0.04	0.04
17.50	2.22	0.67	5.00	0.00	0.04	0.04
17.55	2.22	0.67	5.00	0.00	0.04	0.04
17.60	2.22	0.67	5.00	0.00	0.04	0.04
17.65	2.22	0.67	5.00	0.00	0.04	0.04
17.70	2.22	0.67	5.00	0.00	0.04	0.04
17.75	2.22	0.67	5.00	0.00	0.04	0.04
17.80	2.22	0.67	5.00	0.00	0.03	0.03
17.85	2.22	0.67	5.00	0.00	0.03	0.03
17.90	2.22	0.67	5.00	0.00	0.03	0.03
17.95	2.22	0.67	5.00	0.00	0.03	0.03

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

18.00	2.22	0.67	5.00	0.00	0.03	0.03
18.05	2.22	0.67	5.00	0.00	0.03	0.03
18.10	2.22	0.67	5.00	0.00	0.03	0.03
18.15	2.22	0.67	5.00	0.00	0.03	0.03
18.20	2.22	0.67	5.00	0.00	0.03	0.03
18.25	2.22	0.67	5.00	0.00	0.03	0.03
18.30	2.22	0.67	5.00	0.00	0.03	0.03
18.35	2.22	0.67	5.00	0.00	0.03	0.03
18.40	2.22	0.67	5.00	0.00	0.03	0.03
18.45	2.22	0.67	5.00	0.00	0.03	0.03
18.50	2.22	0.67	5.00	0.00	0.02	0.02
18.55	2.22	0.67	5.00	0.00	0.02	0.02
18.60	2.22	0.67	5.00	0.00	0.02	0.02
18.65	2.22	0.67	5.00	0.00	0.02	0.02
18.70	2.22	0.67	5.00	0.00	0.02	0.02
18.75	2.22	0.67	5.00	0.00	0.02	0.02
18.80	2.22	0.67	5.00	0.00	0.02	0.02
18.85	2.22	0.67	5.00	0.00	0.02	0.02
18.90	2.22	0.67	5.00	0.00	0.02	0.02
18.95	2.22	0.67	5.00	0.00	0.02	0.02
19.00	2.22	0.67	5.00	0.00	0.02	0.02
19.05	2.22	0.67	5.00	0.00	0.02	0.02
19.10	2.22	0.67	5.00	0.00	0.02	0.02
19.15	2.22	0.67	5.00	0.00	0.01	0.01
19.20	2.22	0.67	5.00	0.00	0.01	0.01
19.25	2.22	0.67	5.00	0.00	0.01	0.01
19.30	2.22	0.67	5.00	0.00	0.01	0.01
19.35	2.22	0.67	5.00	0.00	0.01	0.01
19.40	2.22	0.67	5.00	0.00	0.01	0.01
19.45	2.22	0.67	5.00	0.00	0.01	0.01
19.50	2.22	0.67	5.00	0.00	0.01	0.01
19.55	2.22	0.67	5.00	0.00	0.01	0.01
19.60	2.22	0.67	5.00	0.00	0.01	0.01
19.65	2.22	0.67	5.00	0.00	0.01	0.01
19.70	2.22	0.67	5.00	0.00	0.01	0.01
19.75	2.22	0.67	5.00	0.00	0.01	0.01
19.80	2.22	0.66	5.00	0.00	0.00	0.00
19.85	2.22	0.66	5.00	0.00	0.00	0.00
19.90	2.22	0.66	5.00	0.00	0.00	0.00
19.95	2.22	0.66	5.00	0.00	0.00	0.00
20.00	2.22	0.66	5.00	0.00	0.00	0.00
20.05	2.22	0.66	3.34	0.00	0.00	0.00
20.10	2.22	0.67	3.34	0.00	0.00	0.00
20.15	2.22	0.67	3.33	0.00	0.00	0.00
20.20	2.22	0.67	3.33	0.00	0.00	0.00
20.25	2.22	0.67	3.32	0.00	0.00	0.00
20.30	2.22	0.67	3.32	0.00	0.00	0.00
20.35	2.22	0.67	3.31	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

20.40	2.22	0.67	3.31	0.00	0.00	0.00
20.45	2.22	0.67	3.30	0.00	0.00	0.00
20.50	2.22	0.67	3.30	0.00	0.00	0.00
20.55	2.22	0.67	3.29	0.00	0.00	0.00
20.60	2.22	0.68	3.29	0.00	0.00	0.00
20.65	2.22	0.68	3.28	0.00	0.00	0.00
20.70	2.22	0.68	3.28	0.00	0.00	0.00
20.75	2.22	0.68	3.27	0.00	0.00	0.00
20.80	2.22	0.68	3.27	0.00	0.00	0.00
20.85	2.22	0.68	3.27	0.00	0.00	0.00
20.90	2.22	0.68	3.26	0.00	0.00	0.00
20.95	2.22	0.68	3.26	0.00	0.00	0.00
21.00	2.22	0.68	3.25	0.00	0.00	0.00
21.05	2.22	0.68	3.25	0.00	0.00	0.00
21.10	2.22	0.68	3.24	0.00	0.00	0.00
21.15	2.22	0.69	3.24	0.00	0.00	0.00
21.20	2.22	0.69	3.23	0.00	0.00	0.00
21.25	2.22	0.69	3.23	0.00	0.00	0.00
21.30	2.22	0.69	3.23	0.00	0.00	0.00
21.35	2.22	0.69	3.22	0.00	0.00	0.00
21.40	2.22	0.69	3.22	0.00	0.00	0.00
21.45	2.22	0.69	3.21	0.00	0.00	0.00
21.50	2.22	0.69	3.21	0.00	0.00	0.00
21.55	2.22	0.69	3.21	0.00	0.00	0.00
21.60	2.22	0.69	3.20	0.00	0.00	0.00
21.65	2.22	0.69	3.20	0.00	0.00	0.00
21.70	2.22	0.70	3.19	0.00	0.00	0.00
21.75	2.22	0.70	3.19	0.00	0.00	0.00
21.80	2.22	0.70	3.18	0.00	0.00	0.00
21.85	2.22	0.70	3.18	0.00	0.00	0.00
21.90	2.22	0.70	3.18	0.00	0.00	0.00
21.95	2.22	0.70	3.17	0.00	0.00	0.00
22.00	2.22	0.70	3.17	0.00	0.00	0.00
22.05	2.22	0.70	3.16	0.00	0.00	0.00
22.10	2.22	0.70	3.16	0.00	0.00	0.00
22.15	2.22	0.70	3.16	0.00	0.00	0.00
22.20	2.22	0.70	3.15	0.00	0.00	0.00
22.25	2.22	0.70	3.15	0.00	0.00	0.00
22.30	2.22	0.71	3.15	0.00	0.00	0.00
22.35	2.22	0.71	3.14	0.00	0.00	0.00
22.40	2.22	0.71	3.14	0.00	0.00	0.00
22.45	2.22	0.71	3.13	0.00	0.00	0.00
22.50	2.22	0.71	3.13	0.00	0.00	0.00
22.55	2.22	0.71	3.13	0.00	0.00	0.00
22.60	2.22	0.71	3.12	0.00	0.00	0.00
22.65	2.22	0.71	3.12	0.00	0.00	0.00
22.70	2.22	0.71	3.11	0.00	0.00	0.00
22.75	2.22	0.71	3.11	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

22.80	2.22	0.71	3.11	0.00	0.00	0.00
22.85	2.22	0.72	3.10	0.00	0.00	0.00
22.90	2.22	0.72	3.10	0.00	0.00	0.00
22.95	2.22	0.72	3.10	0.00	0.00	0.00
23.00	2.22	0.72	3.09	0.00	0.00	0.00
23.05	2.22	0.72	3.09	0.00	0.00	0.00
23.10	2.22	0.72	3.09	0.00	0.00	0.00
23.15	2.22	0.72	3.08	0.00	0.00	0.00
23.20	2.22	0.72	3.08	0.00	0.00	0.00
23.25	2.22	0.72	3.08	0.00	0.00	0.00
23.30	2.22	0.72	3.07	0.00	0.00	0.00
23.35	2.22	0.72	3.07	0.00	0.00	0.00
23.40	2.22	0.72	3.06	0.00	0.00	0.00
23.45	2.22	0.73	3.06	0.00	0.00	0.00
23.50	2.22	0.73	3.06	0.00	0.00	0.00
23.55	2.22	0.73	3.05	0.00	0.00	0.00
23.60	2.22	0.73	3.05	0.00	0.00	0.00
23.65	2.22	0.73	3.05	0.00	0.00	0.00
23.70	2.22	0.73	3.04	0.00	0.00	0.00
23.75	2.22	0.73	3.04	0.00	0.00	0.00
23.80	2.22	0.73	3.04	0.00	0.00	0.00
23.85	2.22	0.73	3.03	0.00	0.00	0.00
23.90	2.22	0.73	3.03	0.00	0.00	0.00
23.95	2.22	0.73	3.03	0.00	0.00	0.00
24.00	2.22	0.73	3.02	0.00	0.00	0.00
24.05	2.22	0.73	3.02	0.00	0.00	0.00
24.10	2.22	0.74	3.02	0.00	0.00	0.00
24.15	2.22	0.74	3.01	0.00	0.00	0.00
24.20	2.22	0.74	3.01	0.00	0.00	0.00
24.25	2.22	0.74	3.01	0.00	0.00	0.00
24.30	2.22	0.74	3.01	0.00	0.00	0.00
24.35	2.22	0.74	3.00	0.00	0.00	0.00
24.40	2.22	0.74	3.00	0.00	0.00	0.00
24.45	2.22	0.74	3.00	0.00	0.00	0.00
24.50	2.22	0.74	2.99	0.00	0.00	0.00
24.55	2.22	0.74	2.99	0.00	0.00	0.00
24.60	2.22	0.74	2.99	0.00	0.00	0.00
24.65	2.22	0.74	2.98	0.00	0.00	0.00
24.70	2.22	0.74	2.98	0.00	0.00	0.00
24.75	2.22	0.75	2.98	0.00	0.00	0.00
24.80	2.22	0.75	2.97	0.00	0.00	0.00
24.85	2.22	0.75	2.97	0.00	0.00	0.00
24.90	2.22	0.75	2.97	0.00	0.00	0.00
24.95	2.22	0.75	2.97	0.00	0.00	0.00
25.00	2.22	0.75	2.96	0.00	0.00	0.00
25.05	2.22	0.75	2.96	0.00	0.00	0.00
25.10	2.22	0.75	2.96	0.00	0.00	0.00
25.15	2.22	0.75	2.95	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

25.20	2.22	0.75	2.95	0.00	0.00	0.00
25.25	2.22	0.75	2.95	0.00	0.00	0.00
25.30	2.22	0.75	2.94	0.00	0.00	0.00
25.35	2.22	0.75	2.94	0.00	0.00	0.00
25.40	2.22	0.76	2.94	0.00	0.00	0.00
25.45	2.22	0.76	2.94	0.00	0.00	0.00
25.50	2.22	0.76	2.93	0.00	0.00	0.00
25.55	2.22	0.76	2.93	0.00	0.00	0.00
25.60	2.22	0.76	2.93	0.00	0.00	0.00
25.65	2.22	0.76	2.93	0.00	0.00	0.00
25.70	2.22	0.76	2.92	0.00	0.00	0.00
25.75	2.22	0.76	2.92	0.00	0.00	0.00
25.80	2.22	0.76	2.92	0.00	0.00	0.00
25.85	2.22	0.76	2.91	0.00	0.00	0.00
25.90	2.22	0.76	2.91	0.00	0.00	0.00
25.95	2.22	0.76	2.91	0.00	0.00	0.00
26.00	2.22	0.76	2.91	0.00	0.00	0.00
26.05	2.22	0.76	2.90	0.00	0.00	0.00
26.10	2.22	0.77	2.90	0.00	0.00	0.00
26.15	2.22	0.77	2.90	0.00	0.00	0.00
26.20	2.22	0.77	2.90	0.00	0.00	0.00
26.25	2.22	0.77	2.89	0.00	0.00	0.00
26.30	2.22	0.77	2.89	0.00	0.00	0.00
26.35	2.22	0.77	2.89	0.00	0.00	0.00
26.40	2.22	0.77	2.89	0.00	0.00	0.00
26.45	2.22	0.77	2.88	0.00	0.00	0.00
26.50	2.22	0.77	2.88	0.00	0.00	0.00
26.55	2.22	0.77	2.88	0.00	0.00	0.00
26.60	2.22	0.77	2.88	0.00	0.00	0.00
26.65	2.22	0.77	2.87	0.00	0.00	0.00
26.70	2.22	0.77	2.87	0.00	0.00	0.00
26.75	2.22	0.77	2.87	0.00	0.00	0.00
26.80	2.22	0.77	2.87	0.00	0.00	0.00
26.85	2.22	0.78	2.86	0.00	0.00	0.00
26.90	2.22	0.78	2.86	0.00	0.00	0.00
26.95	2.22	0.78	2.86	0.00	0.00	0.00
27.00	2.22	0.78	2.86	0.00	0.00	0.00
27.05	2.22	0.78	2.85	0.00	0.00	0.00
27.10	2.22	0.78	2.85	0.00	0.00	0.00
27.15	2.22	0.78	2.85	0.00	0.00	0.00
27.20	2.22	0.78	2.85	0.00	0.00	0.00
27.25	2.22	0.78	2.84	0.00	0.00	0.00
27.30	2.22	0.78	2.84	0.00	0.00	0.00
27.35	2.22	0.78	2.84	0.00	0.00	0.00
27.40	2.22	0.78	2.84	0.00	0.00	0.00
27.45	2.22	0.78	2.83	0.00	0.00	0.00
27.50	2.22	0.78	2.83	0.00	0.00	0.00
27.55	2.22	0.78	2.83	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

27.60	2.22	0.79	2.83	0.00	0.00	0.00
27.65	2.22	0.79	2.82	0.00	0.00	0.00
27.70	2.22	0.79	2.82	0.00	0.00	0.00
27.75	2.22	0.79	2.82	0.00	0.00	0.00
27.80	2.22	0.79	2.82	0.00	0.00	0.00
27.85	2.22	0.79	2.82	0.00	0.00	0.00
27.90	2.22	0.79	2.81	0.00	0.00	0.00
27.95	2.22	0.79	2.81	0.00	0.00	0.00
28.00	2.22	0.79	2.81	0.00	0.00	0.00
28.05	2.22	0.79	2.81	0.00	0.00	0.00
28.10	2.22	0.79	2.81	0.00	0.00	0.00
28.15	2.22	0.79	2.80	0.00	0.00	0.00
28.20	2.22	0.79	2.80	0.00	0.00	0.00
28.25	2.22	0.79	2.80	0.00	0.00	0.00
28.30	2.22	0.79	2.80	0.00	0.00	0.00
28.35	2.22	0.79	2.79	0.00	0.00	0.00
28.40	2.22	0.79	2.79	0.00	0.00	0.00
28.45	2.22	0.80	2.79	0.00	0.00	0.00
28.50	2.22	0.80	2.79	0.00	0.00	0.00
28.55	2.22	0.80	2.79	0.00	0.00	0.00
28.60	2.22	0.80	2.78	0.00	0.00	0.00
28.65	2.22	0.80	2.78	0.00	0.00	0.00
28.70	2.22	0.80	2.78	0.00	0.00	0.00
28.75	2.22	0.80	2.78	0.00	0.00	0.00
28.80	2.22	0.80	2.78	0.00	0.00	0.00
28.85	2.22	0.80	2.77	0.00	0.00	0.00
28.90	2.22	0.80	2.77	0.00	0.00	0.00
28.95	2.22	0.80	2.77	0.00	0.00	0.00
29.00	2.22	0.80	2.77	0.00	0.00	0.00
29.05	2.22	0.80	2.77	0.00	0.00	0.00
29.10	2.22	0.80	2.76	0.00	0.00	0.00
29.15	2.22	0.80	2.76	0.00	0.00	0.00
29.20	2.22	0.80	2.76	0.00	0.00	0.00
29.25	2.22	0.80	2.76	0.00	0.00	0.00
29.30	2.22	0.81	2.76	0.00	0.00	0.00
29.35	2.22	0.81	2.75	0.00	0.00	0.00
29.40	2.22	0.81	2.75	0.00	0.00	0.00
29.45	2.22	0.81	2.75	0.00	0.00	0.00
29.50	2.22	0.81	2.75	0.00	0.00	0.00
29.55	2.22	0.81	2.75	0.00	0.00	0.00
29.60	2.22	0.81	2.74	0.00	0.00	0.00
29.65	2.22	0.81	2.74	0.00	0.00	0.00
29.70	2.22	0.81	2.74	0.00	0.00	0.00
29.75	2.22	0.81	2.74	0.00	0.00	0.00
29.80	2.22	0.81	2.74	0.00	0.00	0.00
29.85	2.22	0.81	2.74	0.00	0.00	0.00
29.90	2.22	0.81	2.73	0.00	0.00	0.00
29.95	2.22	0.81	2.73	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

30.00	2.22	0.81	2.73	0.00	0.00	0.00
30.05	2.22	0.81	2.73	0.00	0.00	0.00
30.10	2.22	0.81	2.73	0.00	0.00	0.00
30.15	2.22	0.81	2.73	0.00	0.00	0.00
30.20	2.22	0.81	2.73	0.00	0.00	0.00
30.25	2.22	0.81	2.73	0.00	0.00	0.00
30.30	2.22	0.81	2.73	0.00	0.00	0.00
30.35	2.22	0.81	2.72	0.00	0.00	0.00
30.40	2.22	0.81	2.72	0.00	0.00	0.00
30.45	2.22	0.82	2.72	0.00	0.00	0.00
30.50	2.22	0.82	2.72	0.00	0.00	0.00
30.55	2.22	0.82	2.72	0.00	0.00	0.00
30.60	2.22	0.82	2.72	0.00	0.00	0.00
30.65	2.22	0.82	2.72	0.00	0.00	0.00
30.70	2.22	0.82	2.72	0.00	0.00	0.00
30.75	2.22	0.82	2.72	0.00	0.00	0.00
30.80	2.22	0.82	2.72	0.00	0.00	0.00
30.85	2.22	0.82	2.72	0.00	0.00	0.00
30.90	2.22	0.82	2.72	0.00	0.00	0.00
30.95	2.22	0.82	2.71	0.00	0.00	0.00
31.00	2.22	0.82	2.71	0.00	0.00	0.00
31.05	2.22	0.82	2.71	0.00	0.00	0.00
31.10	2.22	0.82	2.71	0.00	0.00	0.00
31.15	2.22	0.82	2.71	0.00	0.00	0.00
31.20	2.22	0.82	2.71	0.00	0.00	0.00
31.25	2.22	0.82	2.71	0.00	0.00	0.00
31.30	2.22	0.82	2.71	0.00	0.00	0.00
31.35	2.22	0.82	2.71	0.00	0.00	0.00
31.40	2.22	0.82	2.71	0.00	0.00	0.00
31.45	2.22	0.82	2.71	0.00	0.00	0.00
31.50	2.22	0.82	2.71	0.00	0.00	0.00
31.55	2.22	0.82	2.71	0.00	0.00	0.00
31.60	2.22	0.82	2.70	0.00	0.00	0.00
31.65	2.22	0.82	2.70	0.00	0.00	0.00
31.70	2.22	0.82	2.70	0.00	0.00	0.00
31.75	2.22	0.82	2.70	0.00	0.00	0.00
31.80	2.22	0.82	2.70	0.00	0.00	0.00
31.85	2.22	0.82	2.70	0.00	0.00	0.00
31.90	2.22	0.82	2.70	0.00	0.00	0.00
31.95	2.22	0.82	2.70	0.00	0.00	0.00
32.00	2.22	0.82	2.70	0.00	0.00	0.00
32.05	2.22	0.82	2.70	0.00	0.00	0.00
32.10	2.22	0.82	2.70	0.00	0.00	0.00
32.15	2.22	0.82	2.70	0.00	0.00	0.00
32.20	2.22	0.82	2.70	0.00	0.00	0.00
32.25	2.22	0.82	2.70	0.00	0.00	0.00
32.30	2.22	0.82	2.70	0.00	0.00	0.00
32.35	2.22	0.82	2.69	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

32.40	2.22	0.82	2.69	0.00	0.00	0.00
32.45	2.22	0.82	2.69	0.00	0.00	0.00
32.50	2.22	0.82	2.69	0.00	0.00	0.00
32.55	2.22	0.82	2.69	0.00	0.00	0.00
32.60	2.22	0.82	2.69	0.00	0.00	0.00
32.65	2.22	0.82	2.69	0.00	0.00	0.00
32.70	2.22	0.82	2.69	0.00	0.00	0.00
32.75	2.22	0.83	2.69	0.00	0.00	0.00
32.80	2.22	0.83	2.69	0.00	0.00	0.00
32.85	2.22	0.83	2.69	0.00	0.00	0.00
32.90	2.22	0.83	2.69	0.00	0.00	0.00
32.95	2.22	0.83	2.69	0.00	0.00	0.00
33.00	2.22	0.83	2.69	0.00	0.00	0.00
33.05	2.22	0.83	2.69	0.00	0.00	0.00
33.10	2.22	0.83	2.69	0.00	0.00	0.00
33.15	2.22	0.83	2.69	0.00	0.00	0.00
33.20	2.22	0.83	2.68	0.00	0.00	0.00
33.25	2.22	0.83	2.68	0.00	0.00	0.00
33.30	2.22	0.83	2.68	0.00	0.00	0.00
33.35	2.22	0.83	2.68	0.00	0.00	0.00
33.40	2.22	0.83	2.68	0.00	0.00	0.00
33.45	2.22	0.83	2.68	0.00	0.00	0.00
33.50	2.22	0.83	2.68	0.00	0.00	0.00
33.55	2.22	0.83	2.68	0.00	0.00	0.00
33.60	2.22	0.83	2.68	0.00	0.00	0.00
33.65	2.22	0.83	2.68	0.00	0.00	0.00
33.70	2.22	0.83	2.68	0.00	0.00	0.00
33.75	2.22	0.83	2.68	0.00	0.00	0.00
33.80	2.22	0.83	2.68	0.00	0.00	0.00
33.85	2.22	0.83	2.68	0.00	0.00	0.00
33.90	2.22	0.83	2.68	0.00	0.00	0.00
33.95	2.22	0.83	2.68	0.00	0.00	0.00
34.00	2.22	0.83	2.68	0.00	0.00	0.00
34.05	2.22	0.83	2.68	0.00	0.00	0.00
34.10	2.22	0.83	2.68	0.00	0.00	0.00
34.15	2.22	0.83	2.68	0.00	0.00	0.00
34.20	2.22	0.83	2.68	0.00	0.00	0.00
34.25	2.22	0.83	2.68	0.00	0.00	0.00
34.30	2.22	0.83	2.67	0.00	0.00	0.00
34.35	2.22	0.83	2.67	0.00	0.00	0.00
34.40	2.22	0.83	2.67	0.00	0.00	0.00
34.45	2.22	0.83	2.67	0.00	0.00	0.00
34.50	2.22	0.83	2.67	0.00	0.00	0.00
34.55	2.22	0.83	2.67	0.00	0.00	0.00
34.60	2.22	0.83	2.67	0.00	0.00	0.00
34.65	2.22	0.83	2.67	0.00	0.00	0.00
34.70	2.22	0.83	2.67	0.00	0.00	0.00
34.75	2.22	0.83	2.67	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

34.80	2.22	0.83	2.67	0.00	0.00	0.00
34.85	2.22	0.83	2.67	0.00	0.00	0.00
34.90	2.23	0.83	2.69	0.00	0.00	0.00
34.95	2.23	0.83	2.69	0.00	0.00	0.00
35.00	2.23	0.83	2.69	0.00	0.00	0.00
35.05	2.23	0.83	2.68	0.00	0.00	0.00
35.10	2.23	0.83	2.68	0.00	0.00	0.00
35.15	2.23	0.83	2.68	0.00	0.00	0.00
35.20	2.23	0.83	2.68	0.00	0.00	0.00
35.25	2.23	0.83	2.68	0.00	0.00	0.00
35.30	2.23	0.83	2.68	0.00	0.00	0.00
35.35	2.23	0.83	2.68	0.00	0.00	0.00
35.40	2.23	0.83	2.68	0.00	0.00	0.00
35.45	2.23	0.83	2.68	0.00	0.00	0.00
35.50	2.23	0.83	2.68	0.00	0.00	0.00
35.55	2.23	0.83	2.68	0.00	0.00	0.00
35.60	2.23	0.83	2.68	0.00	0.00	0.00
35.65	2.23	0.83	2.68	0.00	0.00	0.00
35.70	2.23	0.83	2.68	0.00	0.00	0.00
35.75	2.23	0.83	2.67	0.00	0.00	0.00
35.80	2.23	0.83	2.67	0.00	0.00	0.00
35.85	2.23	0.83	2.67	0.00	0.00	0.00
35.90	2.23	0.83	2.67	0.00	0.00	0.00
35.95	2.23	0.83	2.67	0.00	0.00	0.00
36.00	2.23	0.83	2.67	0.00	0.00	0.00
36.05	2.23	0.83	2.67	0.00	0.00	0.00
36.10	2.23	0.83	2.67	0.00	0.00	0.00
36.15	2.23	0.83	2.67	0.00	0.00	0.00
36.20	2.22	0.83	2.67	0.00	0.00	0.00
36.25	2.22	0.83	2.67	0.00	0.00	0.00
36.30	2.22	0.83	2.67	0.00	0.00	0.00
36.35	2.22	0.83	2.67	0.00	0.00	0.00
36.40	2.22	0.83	2.67	0.00	0.00	0.00
36.45	2.22	0.83	2.67	0.00	0.00	0.00
36.50	2.22	0.83	2.67	0.00	0.00	0.00
36.55	2.22	0.83	2.67	0.00	0.00	0.00
36.60	2.22	0.83	2.66	0.00	0.00	0.00
36.65	2.22	0.83	2.66	0.00	0.00	0.00
36.70	2.22	0.83	2.66	0.00	0.00	0.00
36.75	2.22	0.83	2.66	0.00	0.00	0.00
36.80	2.22	0.83	2.66	0.00	0.00	0.00
36.85	2.22	0.83	2.66	0.00	0.00	0.00
36.90	2.22	0.83	2.66	0.00	0.00	0.00
36.95	2.22	0.83	2.66	0.00	0.00	0.00
37.00	2.22	0.83	2.66	0.00	0.00	0.00
37.05	2.22	0.83	2.66	0.00	0.00	0.00
37.10	2.22	0.83	2.66	0.00	0.00	0.00
37.15	2.22	0.83	2.66	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

37.20	2.22	0.83	2.66	0.00	0.00	0.00
37.25	2.22	0.83	2.66	0.00	0.00	0.00
37.30	2.22	0.83	2.66	0.00	0.00	0.00
37.35	2.22	0.83	2.66	0.00	0.00	0.00
37.40	2.22	0.83	2.66	0.00	0.00	0.00
37.45	2.22	0.83	2.66	0.00	0.00	0.00
37.50	2.22	0.83	2.66	0.00	0.00	0.00
37.55	2.22	0.83	2.65	0.00	0.00	0.00
37.60	2.22	0.83	2.65	0.00	0.00	0.00
37.65	2.22	0.83	2.65	0.00	0.00	0.00
37.70	2.22	0.84	2.65	0.00	0.00	0.00
37.75	2.22	0.84	2.65	0.00	0.00	0.00
37.80	2.21	0.84	2.65	0.00	0.00	0.00
37.85	2.21	0.84	2.65	0.00	0.00	0.00
37.90	2.21	0.84	2.65	0.00	0.00	0.00
37.95	2.21	0.84	2.65	0.00	0.00	0.00
38.00	2.21	0.84	2.65	0.00	0.00	0.00
38.05	2.21	0.84	2.65	0.00	0.00	0.00
38.10	2.21	0.84	2.65	0.00	0.00	0.00
38.15	2.21	0.84	2.65	0.00	0.00	0.00
38.20	2.21	0.84	2.65	0.00	0.00	0.00
38.25	2.21	0.84	2.65	0.00	0.00	0.00
38.30	2.21	0.84	2.65	0.00	0.00	0.00
38.35	2.21	0.84	2.65	0.00	0.00	0.00
38.40	2.21	0.84	2.65	0.00	0.00	0.00
38.45	2.21	0.84	2.65	0.00	0.00	0.00
38.50	2.21	0.84	2.65	0.00	0.00	0.00
38.55	2.21	0.84	2.65	0.00	0.00	0.00
38.60	2.21	0.84	2.65	0.00	0.00	0.00
38.65	2.21	0.84	2.65	0.00	0.00	0.00
38.70	2.21	0.84	2.64	0.00	0.00	0.00
38.75	2.21	0.84	2.64	0.00	0.00	0.00
38.80	2.21	0.84	2.64	0.00	0.00	0.00
38.85	2.21	0.84	2.64	0.00	0.00	0.00
38.90	2.21	0.84	2.64	0.00	0.00	0.00
38.95	2.21	0.84	2.64	0.00	0.00	0.00
39.00	2.21	0.84	2.64	0.00	0.00	0.00
39.05	2.21	0.84	2.64	0.00	0.00	0.00
39.10	2.21	0.84	2.64	0.00	0.00	0.00
39.15	2.21	0.84	2.64	0.00	0.00	0.00
39.20	2.21	0.84	2.64	0.00	0.00	0.00
39.25	2.21	0.84	2.64	0.00	0.00	0.00
39.30	2.21	0.84	2.64	0.00	0.00	0.00
39.35	2.21	0.84	2.64	0.00	0.00	0.00
39.40	2.21	0.84	2.64	0.00	0.00	0.00
39.45	2.20	0.84	2.64	0.00	0.00	0.00
39.50	2.20	0.84	2.64	0.00	0.00	0.00
39.55	2.20	0.84	2.64	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

39.60	2.20	0.84	2.64	0.00	0.00	0.00
39.65	2.20	0.84	2.64	0.00	0.00	0.00
39.70	2.20	0.84	2.64	0.00	0.00	0.00
39.75	2.20	0.84	2.64	0.00	0.00	0.00
39.80	2.20	0.84	2.64	0.00	0.00	0.00
39.85	2.20	0.84	2.64	0.00	0.00	0.00
39.90	2.20	0.84	2.64	0.00	0.00	0.00
39.95	2.20	0.84	2.64	0.00	0.00	0.00
40.00	2.20	0.84	2.64	0.00	0.00	0.00
40.05	2.20	0.84	2.64	0.00	0.00	0.00
40.10	2.20	0.84	2.64	0.00	0.00	0.00
40.15	2.20	0.84	2.63	0.00	0.00	0.00
40.20	2.20	0.84	2.63	0.00	0.00	0.00
40.25	2.20	0.84	2.63	0.00	0.00	0.00
40.30	2.20	0.84	2.63	0.00	0.00	0.00
40.35	2.20	0.84	2.63	0.00	0.00	0.00
40.40	2.20	0.83	2.63	0.00	0.00	0.00
40.45	2.20	0.83	2.63	0.00	0.00	0.00
40.50	2.20	0.83	2.63	0.00	0.00	0.00
40.55	2.20	0.83	2.63	0.00	0.00	0.00
40.60	2.20	0.83	2.63	0.00	0.00	0.00
40.65	2.20	0.83	2.63	0.00	0.00	0.00
40.70	2.20	0.83	2.63	0.00	0.00	0.00
40.75	2.20	0.83	2.63	0.00	0.00	0.00
40.80	2.20	0.83	2.63	0.00	0.00	0.00
40.85	2.20	0.83	2.63	0.00	0.00	0.00
40.90	2.20	0.83	2.63	0.00	0.00	0.00
40.95	2.20	0.83	2.63	0.00	0.00	0.00
41.00	2.20	0.83	2.63	0.00	0.00	0.00
41.05	2.20	0.83	2.63	0.00	0.00	0.00
41.10	2.19	0.83	2.63	0.00	0.00	0.00
41.15	2.19	0.83	2.63	0.00	0.00	0.00
41.20	2.19	0.83	2.63	0.00	0.00	0.00
41.25	2.19	0.83	2.63	0.00	0.00	0.00
41.30	2.19	0.83	2.63	0.00	0.00	0.00
41.35	2.19	0.83	2.63	0.00	0.00	0.00
41.40	2.19	0.83	2.63	0.00	0.00	0.00
41.45	2.19	0.83	2.63	0.00	0.00	0.00
41.50	2.19	0.83	2.63	0.00	0.00	0.00
41.55	2.19	0.83	2.63	0.00	0.00	0.00
41.60	2.19	0.83	2.63	0.00	0.00	0.00
41.65	2.19	0.83	2.63	0.00	0.00	0.00
41.70	2.19	0.83	2.63	0.00	0.00	0.00
41.75	2.19	0.83	2.63	0.00	0.00	0.00
41.80	2.19	0.83	2.63	0.00	0.00	0.00
41.85	2.19	0.83	2.63	0.00	0.00	0.00
41.90	2.19	0.83	2.63	0.00	0.00	0.00
41.95	2.19	0.83	2.63	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

42.00	2.19	0.83	2.63	0.00	0.00	0.00
42.05	2.19	0.83	2.63	0.00	0.00	0.00
42.10	2.19	0.83	2.63	0.00	0.00	0.00
42.15	2.19	0.83	2.63	0.00	0.00	0.00
42.20	2.19	0.83	2.63	0.00	0.00	0.00
42.25	2.19	0.83	2.63	0.00	0.00	0.00
42.30	2.19	0.83	2.63	0.00	0.00	0.00
42.35	2.19	0.83	2.63	0.00	0.00	0.00
42.40	2.19	0.83	2.63	0.00	0.00	0.00
42.45	2.19	0.83	2.63	0.00	0.00	0.00
42.50	2.19	0.83	2.63	0.00	0.00	0.00
42.55	2.19	0.83	2.63	0.00	0.00	0.00
42.60	2.19	0.83	2.63	0.00	0.00	0.00
42.65	2.19	0.83	2.62	0.00	0.00	0.00
42.70	2.19	0.83	2.62	0.00	0.00	0.00
42.75	2.18	0.83	2.62	0.00	0.00	0.00
42.80	2.18	0.83	2.62	0.00	0.00	0.00
42.85	2.18	0.83	2.62	0.00	0.00	0.00
42.90	2.18	0.83	2.62	0.00	0.00	0.00
42.95	2.18	0.83	2.62	0.00	0.00	0.00
43.00	2.18	0.83	2.62	0.00	0.00	0.00
43.05	2.18	0.83	2.62	0.00	0.00	0.00
43.10	2.18	0.83	2.62	0.00	0.00	0.00
43.15	2.18	0.83	2.62	0.00	0.00	0.00
43.20	2.18	0.83	2.62	0.00	0.00	0.00
43.25	2.18	0.83	2.62	0.00	0.00	0.00
43.30	2.18	0.83	2.62	0.00	0.00	0.00
43.35	2.18	0.83	2.62	0.00	0.00	0.00
43.40	2.18	0.83	2.62	0.00	0.00	0.00
43.45	2.18	0.83	2.62	0.00	0.00	0.00
43.50	2.18	0.83	2.62	0.00	0.00	0.00
43.55	2.18	0.83	2.62	0.00	0.00	0.00
43.60	2.18	0.83	2.62	0.00	0.00	0.00
43.65	2.18	0.83	2.62	0.00	0.00	0.00
43.70	2.18	0.83	2.62	0.00	0.00	0.00
43.75	2.18	0.83	2.62	0.00	0.00	0.00
43.80	2.18	0.83	2.62	0.00	0.00	0.00
43.85	2.18	0.83	2.62	0.00	0.00	0.00
43.90	2.18	0.83	2.62	0.00	0.00	0.00
43.95	2.18	0.83	2.62	0.00	0.00	0.00
44.00	2.18	0.83	2.62	0.00	0.00	0.00
44.05	2.18	0.83	2.62	0.00	0.00	0.00
44.10	2.18	0.83	2.62	0.00	0.00	0.00
44.15	2.18	0.83	2.62	0.00	0.00	0.00
44.20	2.18	0.83	2.62	0.00	0.00	0.00
44.25	2.18	0.83	2.62	0.00	0.00	0.00
44.30	2.18	0.83	2.62	0.00	0.00	0.00
44.35	2.18	0.83	2.62	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

44.40	2.17	0.83	2.62	0.00	0.00	0.00
44.45	2.17	0.83	2.62	0.00	0.00	0.00
44.50	2.17	0.83	2.62	0.00	0.00	0.00
44.55	2.17	0.83	2.62	0.00	0.00	0.00
44.60	2.17	0.83	2.62	0.00	0.00	0.00
44.65	2.17	0.83	2.62	0.00	0.00	0.00
44.70	2.17	0.83	2.62	0.00	0.00	0.00
44.75	2.17	0.83	2.62	0.00	0.00	0.00
44.80	2.17	0.83	2.62	0.00	0.00	0.00
44.85	2.17	0.83	2.62	0.00	0.00	0.00
44.90	2.17	0.83	2.62	0.00	0.00	0.00
44.95	2.17	0.83	2.62	0.00	0.00	0.00
45.00	2.17	0.83	2.62	0.00	0.00	0.00
45.05	2.17	0.83	2.62	0.00	0.00	0.00
45.10	2.17	0.83	2.62	0.00	0.00	0.00
45.15	2.17	0.83	2.62	0.00	0.00	0.00
45.20	2.17	0.83	2.62	0.00	0.00	0.00
45.25	2.17	0.83	2.62	0.00	0.00	0.00
45.30	2.17	0.83	2.62	0.00	0.00	0.00
45.35	2.17	0.83	2.62	0.00	0.00	0.00
45.40	2.17	0.83	2.62	0.00	0.00	0.00
45.45	2.17	0.83	2.62	0.00	0.00	0.00
45.50	2.17	0.83	2.62	0.00	0.00	0.00
45.55	2.17	0.83	2.62	0.00	0.00	0.00
45.60	2.17	0.83	2.62	0.00	0.00	0.00
45.65	2.17	0.83	2.62	0.00	0.00	0.00
45.70	2.17	0.83	2.62	0.00	0.00	0.00
45.75	2.17	0.83	2.62	0.00	0.00	0.00
45.80	2.17	0.83	2.62	0.00	0.00	0.00
45.85	2.17	0.83	2.62	0.00	0.00	0.00
45.90	2.17	0.83	2.62	0.00	0.00	0.00
45.95	2.17	0.83	2.62	0.00	0.00	0.00
46.00	2.17	0.83	2.62	0.00	0.00	0.00
46.05	2.17	0.83	2.62	0.00	0.00	0.00
46.10	2.16	0.83	2.62	0.00	0.00	0.00
46.15	2.16	0.83	2.62	0.00	0.00	0.00
46.20	2.16	0.83	2.62	0.00	0.00	0.00
46.25	2.16	0.82	2.62	0.00	0.00	0.00
46.30	2.16	0.82	2.62	0.00	0.00	0.00
46.35	2.16	0.82	2.62	0.00	0.00	0.00
46.40	2.16	0.82	2.62	0.00	0.00	0.00
46.45	2.16	0.82	2.62	0.00	0.00	0.00
46.50	2.16	0.82	2.62	0.00	0.00	0.00
46.55	2.16	0.82	2.62	0.00	0.00	0.00
46.60	2.16	0.82	2.62	0.00	0.00	0.00
46.65	2.16	0.82	2.62	0.00	0.00	0.00
46.70	2.16	0.82	2.62	0.00	0.00	0.00
46.75	2.16	0.82	2.62	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

46.80	2.16	0.82	2.62	0.00	0.00	0.00
46.85	2.16	0.82	2.62	0.00	0.00	0.00
46.90	2.16	0.82	2.62	0.00	0.00	0.00
46.95	2.16	0.82	2.62	0.00	0.00	0.00
47.00	2.16	0.82	2.63	0.00	0.00	0.00
47.05	2.16	0.82	2.63	0.00	0.00	0.00
47.10	2.16	0.82	2.63	0.00	0.00	0.00
47.15	2.16	0.82	2.63	0.00	0.00	0.00
47.20	2.16	0.82	2.63	0.00	0.00	0.00
47.25	2.16	0.82	2.63	0.00	0.00	0.00
47.30	2.16	0.82	2.63	0.00	0.00	0.00
47.35	2.16	0.82	2.63	0.00	0.00	0.00
47.40	2.16	0.82	2.63	0.00	0.00	0.00
47.45	2.16	0.82	2.63	0.00	0.00	0.00
47.50	2.16	0.82	2.63	0.00	0.00	0.00
47.55	2.16	0.82	2.63	0.00	0.00	0.00
47.60	2.16	0.82	2.63	0.00	0.00	0.00
47.65	2.16	0.82	2.63	0.00	0.00	0.00
47.70	2.16	0.82	2.63	0.00	0.00	0.00
47.75	2.16	0.82	2.63	0.00	0.00	0.00
47.80	2.16	0.82	2.63	0.00	0.00	0.00
47.85	2.15	0.82	2.63	0.00	0.00	0.00
47.90	2.15	0.82	2.63	0.00	0.00	0.00
47.95	2.15	0.82	2.63	0.00	0.00	0.00
48.00	2.15	0.82	2.63	0.00	0.00	0.00
48.05	2.15	0.82	2.63	0.00	0.00	0.00
48.10	2.15	0.82	2.63	0.00	0.00	0.00
48.15	2.15	0.82	2.63	0.00	0.00	0.00
48.20	2.15	0.82	2.63	0.00	0.00	0.00
48.25	2.15	0.82	2.63	0.00	0.00	0.00
48.30	2.15	0.82	2.63	0.00	0.00	0.00
48.35	2.15	0.82	2.63	0.00	0.00	0.00
48.40	2.15	0.82	2.63	0.00	0.00	0.00
48.45	2.15	0.82	2.63	0.00	0.00	0.00
48.50	2.15	0.82	2.63	0.00	0.00	0.00
48.55	2.15	0.82	2.63	0.00	0.00	0.00
48.60	2.15	0.82	2.63	0.00	0.00	0.00
48.65	2.15	0.82	2.63	0.00	0.00	0.00
48.70	2.15	0.82	2.63	0.00	0.00	0.00
48.75	2.15	0.82	2.63	0.00	0.00	0.00
48.80	2.15	0.82	2.63	0.00	0.00	0.00
48.85	2.15	0.82	2.63	0.00	0.00	0.00
48.90	2.15	0.82	2.63	0.00	0.00	0.00
48.95	2.15	0.82	2.63	0.00	0.00	0.00
49.00	2.15	0.82	2.63	0.00	0.00	0.00
49.05	2.15	0.82	2.63	0.00	0.00	0.00
49.10	2.15	0.82	2.63	0.00	0.00	0.00
49.15	2.15	0.82	2.63	0.00	0.00	0.00

Adventure Park Multi-Benefit Proj. - Liq. Analysis_6-8-18.sum.txt

49.20	2.15	0.82	2.63	0.00	0.00	0.00
49.25	2.15	0.82	2.63	0.00	0.00	0.00
49.30	2.15	0.82	2.63	0.00	0.00	0.00
49.35	2.15	0.81	2.63	0.00	0.00	0.00
49.40	2.15	0.81	2.63	0.00	0.00	0.00
49.45	2.15	0.81	2.63	0.00	0.00	0.00
49.50	2.15	0.81	2.63	0.00	0.00	0.00
49.55	2.14	0.81	2.63	0.00	0.00	0.00
49.60	2.14	0.81	2.63	0.00	0.00	0.00
49.65	2.14	0.81	2.63	0.00	0.00	0.00
49.70	2.14	0.81	2.63	0.00	0.00	0.00
49.75	2.14	0.81	2.64	0.00	0.00	0.00
49.80	2.14	0.81	2.64	0.00	0.00	0.00
49.85	2.14	0.81	2.64	0.00	0.00	0.00
49.90	2.14	0.81	2.64	0.00	0.00	0.00
49.95	2.14	0.81	2.64	0.00	0.00	0.00
50.00	2.14	0.81	2.64	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/ft ²)	
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

Adventure Park - Pump Noise Sources

Name	Result. PWL			Lw / Li	Value	Height (m)		Coordinates		
	Day	Evening	Night	Type				X	Y	Z
	(dBA)	(dBA)	(dBA)					(m)	(m)	(m)
1	87	87	87	Lw	pump	1	r	11404356.08	3756289.84	1
2	87	87	87	Lw	pump	1	r	11404363.73	3756294.46	1
3	87	87	87	Lw	pump	1	r	11404371.37	3756299.41	1
4	87	87	87	Lw	pump	1	r	11404379.61	3756304.29	1
5	87	87	87	Lw	pump	1	r	11404387.25	3756309.33	1
6	87	87	87	Lw	pump	1	r	11404394.93	3756313.98	1
7	87	87	87	Lw	pump	1	r	11404399.9	3756306.15	1
8	87	87	87	Lw	pump	1	r	11404392.18	3756301.28	1
9	87	87	87	Lw	pump	1	r	11404384.13	3756296.62	1
10	87	87	87	Lw	pump	1	r	11404376.4	3756291.86	1
11	87	87	87	Lw	pump	1	r	11404368.68	3756286.99	1
12	87	87	87	Lw	pump	1	r	11404360.84	3756282.01	1
13	87	87	87	Lw	pump	1	r	11404365.92	3756274.39	1
14	87	87	87	Lw	pump	1	r	11404373.33	3756279.26	1
15	87	87	87	Lw	pump	1	r	11404381.38	3756283.92	1
16	87	87	87	Lw	pump	1	r	11404389.11	3756288.79	1
17	87	87	87	Lw	pump	1	r	11404396.94	3756293.76	1
18	87	87	87	Lw	pump	1	r	11404404.45	3756298.31	1
19	87	87	87	Lw	pump	1	r	11404409.43	3756290.38	1
20	87	87	87	Lw	pump	1	r	11404401.7	3756285.82	1
21	87	87	87	Lw	pump	1	r	11404393.76	3756281.17	1
22	87	87	87	Lw	pump	1	r	11404386.25	3756276.19	1
23	87	87	87	Lw	pump	1	r	11404378.31	3756271.53	1
24	87	87	87	Lw	pump	1	r	11404370.58	3756266.45	1
25	87	87	87	Lw	pump	1	r	11404406.63	3756277.94	1
26	87	87	87	Lw	pump	1	r	11404398.79	3756272.91	1
27	87	87	87	Lw	pump	1	r	11404375.56	3756258.83	1
28	87	87	87	Lw	pump	1	r	11404383.18	3756263.7	1
29	87	87	87	Lw	pump	1	r	11404390.8	3756268.57	1

Adventure Park - Pump Noise Receptor

Name	Level Lr		Noise Type	Height		Coordinates		
	Day	Night		(m)	r	X	Y	Z
	(dBA)	(dBA)				(m)	(m)	(m)
East Receptor	47	47	Total	1.52	r	11404441.14	3756383.78	1.52
North Receptor	46.6	46.6	Total	1.52	r	11404295.03	3756361.42	1.52
South Receptor	49.2	49.2	Total	1.52	r	11404425.14	3756206.25	1.52