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REMOVAL ACTION WORKPLAN

NOVEMBER 2017

THEODORE ROOSEVELT SENIOR HIGH SCHOOL
456 South Mathews Street
Los Angeles, California 90033

TRC Project Number: 265642

Prepared For:
Los Angeles Unified School District
Office of Environmental Health and Safety
333 S. Beaudry Avenue, 21st Floor
Los Angeles, California 90017

Prepared By:

TRC
17911 Von Karman Avenue, Suite 400
Irvine, California 92614
(949) 727-9336

November 30, 2017

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PROFESSIONAL GEOLOGIST
JOHN ERIC NORDENSTAM
No. 7160
STATE OF CALIFORNIA

John Nordenstam, PG
Senior Project Geologist

Jeffrey R. Maxwell, PG
Principal Geologist

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ACRONYMS

ANSI	American National Standards Institute
APN	Assessor's Parcel Number
ARARs	Applicable or Relevant and Appropriate Requirements
ASTM	American Society for Testing and Materials
BACM	Best Available Control Measures
bgs	below ground surface
BMP	Best Management Practice
°C	degrees Celsius
CalEPA	California Environmental Protection Agency
CCR	chain of custody record
CDWR	California Department of Water Resources
COC	contaminant of concern
COPC	constituent of potential concern
CRWQCB	California Regional Water Quality Control Board
dBA	decibels average
DOGGR	Division of Oil, Gas and Geothermal Resources
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
EDR	Environmental Data Resources, Inc.
EPA	Environmental Protection Agency
ESA	environmental site assessment
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSP	Health and Safety Plan
IIPP	Injury and Illness Prevention Program
JSA	job safety analysis
LADBS	Los Angeles Department of Building and Safety
LADPW	Los Angeles Department of Public Works
LARWQCB	Los Angeles Regional Water Quality Control Board
LAUSD	Los Angeles Unified School District
LBP	lead-based paint
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
msl	mean sea level
OCPs	organochlorine pesticides
OSHA	Occupational Safety and Health Administration
PCBs	polychlorinated biphenyls
PEA	Preliminary Environmental Assessment
ppmv	parts per million by volume
PRP	Potentially Responsible Party
QA/QC	quality assurance / quality control
QAPP	Quality Assurance Project Plan
RACT	Remedial Action Completion Report
RAW	Removal Action Workplan
RCRA	Resource Conservation and Recovery Act
RECs	Recognized Environmental Conditions
RSLs	regional screening levels

ACRONYMS
(Continued)

SCAQMD	South Coast Air Quality Management District
SLs	screening levels
STLC	Soluble Threshold Limit Concentration
SVOCs	semi-volatile organic compounds
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAT	turnaround time
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbons
TPH-D	total petroleum hydrocarbons as diesel
TPH-G	total petroleum hydrocarbons as gasoline
TPH-O	total petroleum hydrocarbons as oil
TWA	time weighted average
ug/L	micrograms per liter
ug/m^3	micrograms per cubic meter
USA	Underground Service Alert
USGS	United States Geological Survey
VOCs	volatile organic compounds
ZIMAS	Zoning Information and Map Access System (City of Los Angeles)

1.0 INTRODUCTION

1.1 OVERVIEW

This document presents a Removal Action Work Plan (RAW) for the removal of impacted soil at Roosevelt High School, located at 456 South Mathews Street, Los Angeles, California (Site). See Figures 1 and 2 for the Site location. This document was prepared by TRC Solutions, Inc. (TRC) on behalf of the Los Angeles Unified School District (LAUSD). The main objective of the proposed removal action is the mitigation of arsenic, lead, and total petroleum hydrocarbons (TPH) in subsurface soil to levels necessary to protect human health and the environment. These soil impacts were identified during a Preliminary Environmental Assessment (PEA) Equivalent investigation conducted by TRC between October 3, 2016, and June 14, 2017 (TRC, 2017).

Information provided herein includes a summary of previous investigation work at the Site, a description of the nature and extent of soil impacts, removal action goals to be achieved by the removal action, an overview of the selected remediation approach for the Site, and a detailed plan for conducting the removal action. This RAW also includes a Quality Assurance Project Plan (QAPP; see Appendix A), a site-specific Health and Safety Plan (HSP; see Appendix B), and a Transportation Plan (see Appendix C).

1.2 REMOVAL ACTION OBJECTIVES

Roosevelt High School is currently an operational LAUSD school scheduled for a comprehensive modernization project involving removal and/or renovation of multiple Site structures. The principal objective of this removal action is the mitigation of impacted soil from the Site to a level necessary to protect human health and the environment. This involves the removal or reduction of contaminants to prevent human exposure to chemicals of concern above applicable removal action goals. Based on an analysis of the nature and extent of impact, and on the removal action goals for the Site, the RAW evaluated multiple alternatives appropriate for addressing the removal action objectives. The selected removal action alternative includes the excavation, transportation, and disposal of soil impacted with arsenic, lead, and/or petroleum hydrocarbons at concentrations above removal action goals. The estimated volume of soil to be remediated is approximately 7,019 cubic yards (10,528 tons; estimate includes 3,966 cubic yards of non-hazardous soil and up to 3,053 cubic yards of California hazardous lead-impacted soil). Following removal of the impacted soil and completion of confirmation sampling, the excavations at the Site will be backfilled with clean fill, compacted, and graded.

2.0 SITE DESCRIPTION

2.1 SITE NAME AND ADDRESS

Roosevelt High School is located at 456 South Mathews Street in Los Angeles, California (see Figure 1). The property is bounded by South Mathews Street on the northwest, East 4th Street on the northeast, South Mott Street on the southeast, and East 6th Street on the southwest. The school property is a rectangular-shaped parcel containing approximately 23.70 acres of land.

2.2 DESIGNATED CONTACT

The designated contact person for this project is Mr. Dane Robinson, Site Assessment Project Manager, LAUSD (contract professional).

Los Angeles Unified School District
Office of Environmental Health and Safety
333 South Beaudry Avenue, 21st Floor
Los Angeles, CA 90017
(213) 241-4122
dane.robinson@lausd.net

2.3 MAILING ADDRESS

Theodore Roosevelt Senior High School
456 South Mathews Street
Los Angeles, CA 90033

2.4 TELEPHONE NUMBER

Phone: (323) 780-6500
FAX: (323) 269-5473

2.5 OTHER SITE NAMES

Theodore Roosevelt Senior High School
Roosevelt High School

2.6 REGULATORY IDENTIFICATION NUMBERS

The Site is not listed in the DTSC Envirostor database or the State Water Resources Control Board (SWRCB) Geotracker database.

2.7 EPA IDENTIFICATION NUMBER

The United States Environmental Protection Agency (EPA) Identification Number assigned to the Site is CAD981625163. This number will be used for transportation and off-Site disposal of waste materials generated during implementation of the RAW.

2.8 ASSESSOR'S PARCEL NUMBER

The property has the following Assessor's Parcel Number (APN), as designated by the Los Angeles County Office of the Assessor:

- APN# 5185-004-929

2.9 GEOGRAPHIC COORDINATES

The geographic coordinates for the center of Roosevelt High School are 34.0379 North latitude and 118.2104 West longitude.

2.10 SITE LAND USE AND ZONING

According to the City of Los Angeles Zoning Information and Map Access System (ZIMAS; website ZIMAS.lacity.org), the Site is zoned as follows:

- ZI-2129 – East Los Angeles State Enterprise Zone
- ZI-2452 – Transit Priority Area

2.11 SITE MAPS

The location of Roosevelt High School and surrounding area is presented in Figure 1, and the current layout of the school buildings and outdoor areas is presented on Figure 2. The PEA sampling locations are shown on Figures 2 through 9.

3.0 BACKGROUND INFORMATION

3.1 CURRENT SITE USE

The Site is currently owned by the LAUSD and operated as Roosevelt High School. The Site is a rectangular-shaped property consisting of approximately 23.70 acres. The current campus facilities consist of 16 structures, including an administration/classroom building, a lunch pavilion, a cafeteria, a library/classroom, a music building, a gymnasium, an auditorium/classroom building, an industrial arts building, a former auto shop building, and seven classroom buildings. The property also includes multiple portable classroom buildings. Athletic fields and facilities are located along the northeast portion of the property, as well as in the southeast corner of the property.

3.2 HISTORICAL SITE USE

Aerial Photographs, Sanborn maps, and other historical documentation indicate that the Site was historically developed with multiple residential dwellings and historical streets (South Fickett Street, Eagle Street, and Lanfranco Street) from as early as 1894. Roosevelt High School was constructed in the central portion of the Site in 1922. Subsequent expansions of the school occurred from the 1940s to the 1970s to include the present-day footprint (Converse, 2016).

3.3 SURROUNDING LAND USES

Properties immediately surrounding the Site to the north across East 4th Street, west across South Mathews Street, and east across South Mott Street consist primarily of residential neighborhoods. The property south of the Site across East 6th Street is developed with the Hollenbeck Middle School. The overall area surrounding the school consists primarily of residential development with some commercial development (Converse, 2016).

3.4 PRIOR SITE INVESTIGATION

3.4.1 Geotechnical Investigation

In 2015, a geotechnical investigation was conducted to support proposed campus modifications (Converse, 2016). The investigation consisted of five exploratory geotechnical borings to depths between 30 and 50.5 feet below ground surface (bgs), and determined that undocumented fill soils are present to depths ranging from 5 to 14 feet bgs in the borings. No environmental sampling was conducted as part of this investigation.

3.4.2 Phase I ESA

In August 2016, a Phase I Environmental Site Assessment (Phase I ESA) was conducted to identify any recognized environmental conditions (RECs) or environmental issues associated with the Site (Converse, 2016). The Phase I ESA states that it was completed in accordance with the American Society for Testing and Materials (ASTM) *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM Standard E 1527-13). The Phase 1 ESA included research of available Site background information, including regulatory agency database lists and agency file searches, and did not reveal documentation of any known release(s) of hazardous materials at the Site. Based upon the information derived from the Phase 1 ESA, the Site is not identified as a known hazardous waste disposal site, hazardous substance release site, or landfill, and no hazardous materials pipelines are located beneath or adjacent to the Site. The Phase I ESA identified several on-Site RECs.

Based on the findings of the Phase 1 ESA, Converse provided the following recommendations as related to the RECs:

- Based on the age of the Site buildings, collect shallow soil samples around the drip lines of the existing and former buildings and analyze them for the potential presence of lead-based paint (LBP) residue, and from around the foundations of the existing and former buildings and analyze them for organochlorine pesticides (OCPs).
- Based on the potential presence of arsenic and polychlorinated biphenyls (PCBs) in shallow soils, collect shallow soil samples across the Site and analyze them for arsenic and PCBs.
- Based on the presence and historical use of the hydraulic hoists and 3-stage clarifier associated with the former auto shop operations (Industrial Arts Building) at the mid-eastern portion of the Site, collect soil samples in these locations to determine whether the subsurface has been impacted from these features.
- Considering that the Site is located within the Boyle Heights Oil Field and is within a designated methane zone within the City of Los Angeles, conduct a methane survey in accordance with Los Angeles Department of Building and Safety (LADBS) Site Testing Standards.

3.4.3 PEA Equivalent Investigation

Based on the recommendations outlined above, TRC completed a PEA field investigation consisting of an extensive soil and soil gas sampling program to investigate the RECs identified in the Phase I ESA and to prepare the Site for the modernization and construction activities. The Site was divided into six separate investigation areas (Areas 2, 3, 5, 6, 8, and 9; see Figure 2) based on the planned renovation phases.

The PEA sampling program consisted of shallow soil sampling in the areas of existing buildings, common areas, athletic fields, and parking lots planned for removal/replacement and construction, and

soil gas sampling was conducted across the entire Site to evaluate for the potential presence of subsurface methane. The PEA soil sampling program and protocol varied by boring type and considered the analyte(s) of interest at each respective boring location and Site area. Depending on the analytical results of the shallowest soil sample relative to either accepted background concentrations or selected human health-based screening levels, deeper soil samples were subsequently collected and analyzed to define the vertical extent of impact, and step-out borings were sampled to further define the lateral extent of apparent impact. For the purpose of this evaluation, human health-based screening levels were established based on a combination of the EPA Region IX RSLs and California EPA (CalEPA) Department of Toxic Substances Control (DTSC)-modified Screening Levels (DTSC-SLs; DTSC, 2015). The decision criteria for determining whether analysis of deeper soil samples from a specific boring or collection of step-out samples lateral to an initial boring location was warranted is outlined below:

- Arsenic soil samples were screened utilizing the accepted background concentration of 12 milligrams per kilogram (mg/kg);
- Lead soil samples were screened utilizing the DTSC Residential Screening Level of 80 mg/kg;
- Petroleum hydrocarbons were screened using 100 mg/kg for gasoline-range hydrocarbons (TPH-G), 1,000 mg/kg for diesel-range hydrocarbons (TPH-D), and 1,000 mg/kg for oil-range hydrocarbons (TPH-O);
- Volatile organic compounds (VOCs) were screened utilizing a combination of RSLs and human health-based screening criteria based on the individual chemical or compound;
- PCBs were screened utilizing the RSLs for Residential Land Use (value varies by PCB constituent); and
- OCPs were screened utilizing the RSLs for Residential Land Use (value varies by OCP constituent).

Initial PEA investigation activities were conducted on October 3, and the weekends of October 8-9, 15-16, 22-23, and 29-30, 2016, and field sampling activities included the following:

- collection of shallow soil samples at a total of 283 locations across the Site, including 47 locations in Area 2 (physical education building and courts), 48 locations in Area 3 (athletic field and bleachers), 47 locations in Area 5 (auditorium and lunch pavilion), 80 locations in Area 6 (east-central portion of campus), 38 locations in Area 8 (south-central portion of campus), and 23 locations in Area 9 (southeast portion of campus);
- collection of soil samples at two (2) locations to evaluate undocumented fill beneath the Site;
- collection of soil samples at eight (8) locations near the hydraulic hoists and two (2) locations near the clarifier to evaluate subsurface conditions; and
- installation of nested, multi-depth soil gas probes at 20 locations to evaluate subsurface methane and hydrogen sulfide concentrations.

Based on results of the initial investigation activities, additional investigation was conducted on November 21-23 and December 21, 2016, and March 25-26 and June 14, 2017. These field sampling activities consisted of the following:

- collection of shallow soil samples from an additional 190 borings to further assess the vertical extent (42 borings in previously sampled locations) and lateral extent (148 borings in new locations) of soil impacts identified in the initial 283 locations sampled in October 2016; and
- collection of additional soil gas samples from the nested, multi-depth soil gas probes installed in October 2016.

The soil and soil gas sampling programs are summarized in Tables 1 through 3, and the boring and sampling locations are presented on Figures 2 through 9.

Results of the PEA investigation indicated the following:

- Arsenic was detected in soil at concentrations exceeding the screening level of 12 mg/kg in 48 boring locations across the Site (maximum 66 mg/kg).
- Lead was detected in soil at concentrations exceeding the screening level of 80 mg/kg in 66 boring locations across the Site (maximum 6,300 mg/kg).
- OCPs were detected in multiple composite samples across the Site; however, all OCP concentrations were below their respective health-based screening levels.
- No PCBs, VOCs, semi-volatile organic compounds (SVOCs), or TPH-G were detected in soil above laboratory reporting limits during this investigation.
- TPH-D and TPH-O were detected in soil at concentrations exceeding the screening level of 1,000 mg/kg in one sample collected at one of the four hydraulic hoists (maximum 1,900 mg/kg TPH-D and 4,700 mg/kg TPH-O).
- Additional metals concentrations detected beneath the Site are consistent with background concentrations for California soils (Kearney Foundation, 1996).
- The maximum concentrations of methane and hydrogen sulfide in soil gas measured in the field included 24,500 parts per million by volume (ppmv) and 34.5 ppmv, respectively. The maximum concentrations of methane and hydrogen sulfide in soil gas detected in the laboratory samples included 11,000 ppmv methane and no detectable hydrogen sulfide. Detectable VOCs were also reported at low concentrations in the soil gas samples collected for analysis.

The volume of soil impacted with arsenic, lead, and/or petroleum hydrocarbons above screening levels was calculated to be approximately 7,019 cubic yards (10,528 tons). Refer to Section 5.2 for additional details.

Based on the methane concentrations detected beneath the Site, mitigation will be required as part of future redevelopment of the Site. The methane mitigation system or techniques to be implemented will be sufficient to mitigate the low concentrations of VOC concentrations detected.

4.0 PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

4.1 SITE LOCATION AND TOPOGRAPHY

The Site is located on the eastern portion of the Montebello Plain at an elevation of approximately 313 feet above mean sea level (msl). The topography in the area of the Site slopes to the south and southeast. The Elysian Hills are located approximately 2.5 miles north-northwest of the Site (California Department of Water Resources [CDWR], 1961, and United States Geological Survey [USGS], 1966).

There are two surface water bodies within a 1-mile radius of the Site. The nearest surface water body is the man-made lake at Hollenbeck Park, located approximately 1,850 feet northwest of the Site. The Los Angeles River, a concrete-lined river channel, is located approximately 4,450 feet to the west (USGS, 1966).

4.2 GEOLOGY

4.2.1 Site Geology and Soil Types

The Site is located within the Los Angeles Coastal Plain. The Los Angeles Coastal Plain is an alluviated lowland surrounded by the mountains and hills of the Transverse and Peninsular Ranges. Recent alluvium composed of gravel, sand, silt, and clay is present beneath the area of the Site to a depth of approximately 60 feet bgs, and the Lakewood Formation underlies the alluvium. The Lakewood Formation is composed of marine and continental gravel, sand, sandy silt, silt, and clay with shale pebbles (CDWR, 1961).

4.2.2 Oil and Gas Review

A review of the California Division of Oil, Gas and Geothermal Resources (DOGGR) online well-finder database (http://www.conservation.ca.gov/dog/Pages/Wellfinder.aspx) indicates that the Site is located within the Boyle Heights Oil Field (abandoned). No active or abandoned oil wells are located at the Site. There are a total of five abandoned oil wells located within a 0.5-mile radius of the Site (TRC, 2017).

In addition, per Figure IV.F-2, LADBS Methane and Methane Buffer Zone Map, the Site is located within the City of Los Angeles Methane Zone.

4.3 HYDROGEOLOGY

4.3.1 Site Hydrogeologic Setting

The Site is located within the Los Angeles Forebay area of the Central Groundwater Basin of the Los Angeles-San Gabriel Hydrologic Unit. The Central Groundwater Basin is one of four basins designated in the Los Angeles Coastal Plain (Santa Monica Basin, the West Coast Basin, the Hollywood Basin, and the Central Basin). The Central Basin is bounded on the north by the Hollywood Basin and a series of low hills extending from the Elysian Hills on the northwest to the Puente Hills on the southeast, on the west and south by the Newport-Inglewood fault zone, and on the southeast by the Los Angeles-Orange County line (CDWR, 1961).

The first groundwater production zones in the area of the Site are the Gasper and Exposition Aquifers (CDWR, 1961). Groundwater in the area of the Site has been designated as having beneficial use for municipal, industrial process, and agricultural applications (California Regional Water Quality Control Board [CRWQCB], 1994).

4.3.2 Nearby Groundwater Wells

According to the Los Angeles County Department of Public Works Hydrologic Records Division website (http://dpw.lacounty.gov/general/wells), there are no active wells located within a 1-mile radius of the Site (LADPW). The nearest well is located over 1 mile to the southwest of the Site (State Well ID 2S13W10A01), near the intersection of East 12th Street and South Soto Street. The depth to water measured in this well in May 2017 was 244.60 feet bgs. Only limited information was available for this well.

The nearest groundwater monitoring wells to the Site as found on the SWRCB Geotracker website are approximately 450 feet northwest of the Site. The wells were installed as part of an open Leaking

Underground Storage Tank case (Los Angeles Regional Water Quality Control Board [LARWQCB] Case #900330416) at the Winall Oil Co. service station located at 401 S. Soto Street, which is located at the southwest corner of Soto Street and 4th Street. The depth to groundwater was most recently measured in the seven wells on that property in November 2016, and the depths ranged from approximately 42 to 54 feet bgs. In addition, liquid-phase hydrocarbons were measured in 6 of the 7 wells at a maximum thickness of 0.12 foot. The groundwater flow direction beneath the Winall site is reportedly toward the north (Economy Environmental, Inc., 2017).

According to the Phase I ESA report, the Environmental Data Resources (EDR) Radius Report, there are no public water supply wells within a 1-mile radius of the Site (Converse, 2016).

4.4 PROXIMITY TO NEARBY RECEPTORS

TRC assessed other potential receptors within a 1-mile radius of the Site including hospitals, schools, child day care centers, and senior day care centers. In consideration of the available information in the public domain for the Site (Google Earth, 2017), below are the summarized results.

- There are three hospitals and/or medical facilities located within 1 mile of the Site. The closest facility is the Los Angeles Christian Health Center (1625 East 4th Street), which is located approximately 4,000 feet northwest of the Site.
- There are 10 schools located within 1 mile of the Site. The closest school is Hollenbeck Middle School (2510 East 6th Street), which is due south/southwest of the Site across East 6th Street.
- There are three daycare facilities within 1 mile of the Site. The closest facility is the Salesian Family Youth Center (2228 East 4th Street), which is located 1,470 feet northwest of the Site.
- There are three senior care facilities within 1 mile of the Site. The closest facility is the Boyle Heights Senior Center (2839 East 3rd Street), which is located 1,560 feet east of the Site.

5.0 NATURE, SOURCE, AND EXTENT OF CONTAMINATION

5.1 TYPE, SOURCE, AND EXTENT OF CONTAMINANTS

PEA investigation activities conducted between October 3, 2016, and June 14, 2017, have identified the presence of arsenic, lead, and petroleum hydrocarbons in soil at concentrations in excess of applicable screening levels at multiple locations across the Site. Additional information regarding these contaminants of concern (COCs) is presented below and in Tables 1 and 2.

5.1.1 Arsenic

Arsenic was detected at concentrations exceeding the soil screening level of 12 mg/kg in 48 boring locations across the Site. This includes 11 boring locations in Area 3 (maximum 41 mg/kg in Boring B-13 at 0.5 foot bgs), 25 boring locations in Area 6 (maximum 66 mg/kg in Boring IM-3c at 0.5 foot bgs), and 12 boring locations in Area 9 (maximum 16 mg/kg in Boring Y-17 at 0.5 foot bgs). See Figures 4A, 6A, and 8A for the distribution of arsenic impacts in Areas 3, 6, and 9, respectively.

Based on results of the investigation, one soil sample with the highest arsenic concentration was analyzed for arsenic Soluble Threshold Limit Concentration (STLC; 66 mg/kg in Boring IM-3c at 0.5 foot bgs). The arsenic STLC concentration for this sample was 4.1 milligrams per kilogram (mg/L). This result

indicates that arsenic-impacted soil identified during this investigation would be considered as non-hazardous upon removal.

5.1.2 Lead

Lead was detected at concentrations exceeding the soil screening level of 80 mg/kg in 66 boring locations across the Site. This includes 10 boring locations in Area 2 (maximum 280 mg/kg in Boring B-6b at 2.5 feet bgs), 9 boring locations in Area 3 (maximum 180 mg/kg in Boring B-15b at 0.5 foot bgs), 15 boring locations in Area 5 (maximum 4,300 mg/kg in Boring AUD-3a at 0.5 foot bgs), 27 boring locations in Area 6 (maximum 4,200 mg/kg in Boring Q15a at 2.5 feet bgs), and 5 boring locations in Area 9 (maximum 6,300 mg/kg in Boring W-14a at 0.5 foot bgs). See Figures 3A, 4A, 5A, 6A, and 8A for the distribution of lead impacts in Areas 2, 3, 5, 6, and 9, respectively.

Based on results of the investigation, three soil samples collected during the investigation contained a lead concentration exceeding 1,000 mg/kg (identified above as the maximum concentrations in Areas 5, 6, and 9). In addition, 84 samples (and 6 duplicates) were analyzed for lead STLC. The lead STLC concentrations ranged from 1.3 mg/L to 190 mg/L (Boring Q15a at 2.5 feet bgs). A total of 52 of the 84 lead STLC analyses exceeded the 5.0 mg/L threshold. Therefore, these samples were further analyzed for lead using the Toxicity Characteristic Leaching Procedure (TCLP). Lead TCLP concentrations in these samples ranged from 0.25 mg/L to 1.7 mg/L, below the TCLP threshold of 5.0 mg/L. These results indicated that a portion of the lead-impacted soil identified during this investigation would be considered representative of California (non-Resource Conservation and Recovery Act [RCRA]) hazardous waste upon removal.

5.1.3 Petroleum Hydrocarbons

Petroleum hydrocarbons were detected in soil samples collected to evaluate the hydraulic hoists, clarifier, and fill materials as follows:

- TPH-G: no detectable concentrations were reported above laboratory reporting limits.
- TPH-D: detectable concentrations were reported in samples collected near the hydraulic hoists (maximum 1,900 mg/kg in Boring HL2-2 at 5.0-5.5 feet bgs), clarifier (maximum 4.2 mg/kg in Boring CL1-2 at 2.0-2.5 feet bgs), and in fill materials (maximum 1.7 mg/kg in the composite sample from Boring FILL-1).
- TPH-O: detectable concentrations were reported in samples collected near the hydraulic hoists (maximum 4,700 mg/kg in Boring HL2-2 at 5.0-5.5 feet bgs), clarifier (maximum 7.3 mg/kg in Boring CL1-2 at 0.5-1.0 foot bgs), and in fill materials (maximum 3.4 mg/kg in the composite sample from Boring FILL-1).

Based on these investigation findings, only the soil sample collected from Boring HL2-2 at 5.0-5.5 feet bgs contains detectable TPH-D and TPH-O concentrations exceeding the soil screening criteria of 1,000 mg/kg. See Figure 9A for the distribution of petroleum hydrocarbon-impacted soil at the Industrial Arts Building.

5.2 EXTENT AND VOLUME OF CONTAMINATION

Based on investigation findings, the volumes of soil exceeding acceptable screening levels that will need to be removed prior to or concurrent with renovation activities were calculated for each area (see Figures 3A, 4A, 5A, 6A, 8A, and 9A). A summary of each area is presented below with the proposed

excavation volume, type of soil impact (i.e., lead, arsenic, and/or petroleum hydrocarbons), and the portion of lead-impacted soil that qualifies as California Hazardous (Cal-Haz) lead-affected soil.

- Area 2 – 541.20 cubic yards (811.81 tons) of lead-affected soil, including 123.89 cubic yards (185.83 tons) of Cal-Haz lead-affected soil.
- Area 3 – 708.33 cubic yards (1,062.50 tons) of lead- and arsenic-affected soil, including 168.98 cubic yards (253.47 tons) of Cal-Haz lead-affected soil.
- Area 5 – 1,640.19 cubic yards (2,460.28 tons) of lead-affected soil, including 1,444.44 cubic yards (2,166.67 tons) of Cal-Haz lead-affected soil.
- Area 6 – 2,945.00 cubic yards (4,417.50 tons) of lead- and arsenic-affected soil, including 1,176.57 cubic yards (1764.86 tons) of Cal-Haz lead-affected soil.
- Area 9 – 1,137.19 cubic yards (1,705.78 tons) of lead- and arsenic-affected soil, including 138.89 cubic yards (208.33 tons) of Cal-Haz lead-affected soil.
- Hydraulic Hoists and Clarifier – 46.67 cubic yards (70 tons) of hydrocarbon-affected soil.

The total volume of impacted soil exceeding acceptable screening levels is approximately 7,019 cubic yards (10,528 tons). Complete details regarding the proposed excavations (locations, areas, and depths) are included in Tables 4A and 4B.

5.3 HEALTH EFFECT OF CONTAMINANTS

5.3.1 Arsenic

Arsenic can affect receptors when airborne dust is inhaled, ingested, or by passing through the skin. Arsenic is absorbed rapidly after ingestion, but dermal exposure causes smaller quantities of arsenic in the bloodstream. Acute oral intake of arsenic levels at approximately 300 micrograms per liter (µg/L) or more will cause intestinal discomfort, vomiting, and diarrhea. At high levels of exposure, arsenic can ultimately cause death. White and red blood cell production, abnormal heart rhythm, blood-vessel damage, and impaired nerve function are also a result of arsenic ingestion. The human body has the ability to turn some of the arsenic it ingests into an organic form that is excreted through the body's urine, but some will remain for months or more. Chronic exposure through ingestion may increase the risk of kidney, skin, lung, and bladder cancers as well as skin changes, including dark skin tone patterns (hyperpigmentation) and small warts.

5.3.2 Lead

Lead can affect receptors when airborne dust is inhaled, ingested, or by passing through the skin, although the primary routes of exposure are inhalation and ingestion. The main target for lead toxicity in both adults and children is the nervous system. Lead exposure can cause weakness in fingers, wrists, or ankles; increases in blood pressure; and anemia. At high levels of exposure, lead can severely damage the brain and kidneys and ultimately cause death. Children are more sensitive to the health effects of lead than adults. In children, large amounts of lead ingestion may result in anemia, kidney damage, severe stomach pain, muscle weakness, and brain damage, which can ultimately lead to death. At smaller amounts of lead ingestion, less severe impacts to blood, physical development, and behavior may occur. The human body does not change lead into any other form. Following entry to the body, lead travels in the blood to soft tissues and organs, and then moves into the bones. Lead that is not stored in the bones leaves the body through urine and feces.

5.3.3 Petroleum Hydrocarbons (Hydraulic Oil)

Petroleum hydrocarbons, specifically hydraulic oil, are considered to have a low order of acute and chronic oral and dermal toxicity. Short-term effects from overexposure include respiratory irritation, dizziness, and nausea when inhaled; dermatitis, folliculitis or oil acne when in contact with the skin; and irritation of the mouth, throat, and gastrointestinal tract when ingested. Repeated or prolonger skin contact may cause drying, reddening, itching, and cracking of the skin.

5.4 RECEPTORS POTENTIALLY AFFECTED BY THE SITE

The DTSC PEA Guidance Manual (DTSC, 2015) specifies an exposure scenario for the screening evaluation assuming a hypothetical residential setting, as this is the most conservative approach. In this approach, the receptors would be exposed for 24 hours per day, 350 days per year, for 30 years for the reasonable maximum exposure scenario. Since the Site is an active school facility, actual exposures to known receptors (faculty, students, visitors to the Site, and construction workers) would be much less. The main route of exposure would be via inhalation of airborne particulates during soil disturbance.

5.5 EXPOSURE PATHWAYS AND MEDIA OF CONCERN

Based on the current Site development (e.g., asphalt/concrete paving, school buildings, grass-covered athletic fields, and limited planter areas), potential emissions from soil are considered to be insignificant under current conditions. There is no documentation of a release of hazardous substances to the atmosphere. Future Site development and construction activities would result in the removal of asphalt and concrete paving and certain buildings and structures that could increase the potential for dermal contact, dust generation and fugitive dust inhalation, and incidental ingestion. Potential sources of a hazardous substances release to the atmosphere are limited to fugitive dust from surface soils. Therefore, the potential for releases of hazardous substances from the Site to the atmosphere is considered to be *de minimis* provided that appropriate dust control measures are implemented during soil disturbance. Sensitive receptors in the vicinity of the Site (within 1 mile) are discussed above in Section 4.4.

6.0 ENGINEERING EVALUATION / COST ANALYSIS (EE/CA)

6.1 IDENTIFICATION AND SCREENING OF REMEDIAL ACTION TECHNOLOGIES

Various potentially feasible remedial technologies for remediation of the impacted soil beneath the Site are available and were reviewed. The following criteria were considered while selecting a remedy:

- Technical analysis for effectiveness, practicality, and reliability;
- Ability to remove COCs from soil;
- Economic considerations, including anticipated time to reach the desired cleanup levels; and
- Site-specific conditions such as depth and types of contamination present beneath the Site, soil properties, and soil stratigraphy.

The following general remediation alternatives or process options were considered for the Site: no further action, containment, and source removal (excavation) with off-Site disposal. Details for each general category are presented below.

6.1.1 No Action

Although the No Action alternative is not considered a technology, it is considered as part of this evaluation to provide a reference point for comparison to other remedial response measures. Remedial technologies would not be implemented under a No Action alternative (impacted soil would remain in place undisturbed).

6.1.2 Containment

Containment technologies do not aggressively treat or alter chemicals, but prevent migration and eliminate exposure pathways. Containment measures usually refer to physical barriers that cover, seal, or otherwise isolate impacted areas, and are usually used for contaminants that have limited migration potential. A typical Containment approach for soil would include capping the impacted area(s) with a low-permeability material (engineered fill soil, geomembrane, concrete, or asphalt).

6.1.3 Source Removal

Source removal technologies eliminate ongoing exposure pathways and threats to the environment by removing the COCs above the removal action goals from the subsurface. Once removed, the impacted material is hauled from the Site and disposed in an appropriate manner. Source removal prevents the migration of the COCs and limits the remaining treatment efforts by eliminating the source of impact. Clean imported materials will be backfilled into the excavation areas upon completion.

6.2 EVALUATION OF REMOVAL ACTION ALTERNATIVES

Based on the analysis of the nature and extent of contamination, and on the removal action goals established for the Site, the following alternatives appropriate for addressing the remedial action objectives were selected for analysis:

- Alternative 1 - No Action
- Alternative 2 - Containment
- Alternative 3 - Excavation and Off-Site Disposal

A brief summary of each remedial action alternative, along with a detailed analysis of the excavation approach, is provided in the following section. The Applicable or Relevant and Appropriate Requirements (ARARs) associated with this project and the excavation alternative are presented in Table 5.

6.2.1 No Action

The No Action alternative provides a baseline for other proposed alternatives to be compared to. Remedial technologies would not be implemented under a No Action alternative. Impacted soil would remain in place undisturbed. Since the Site is an active school facility scheduled for a comprehensive modernization effort, which will include disturbance of subsurface materials during construction, the No Action alternative is not a feasible option and is not evaluated further.

6.2.2 Containment

Containment technologies do not aggressively treat or alter chemicals, but prevent migration and eliminate exposure pathways. Since the Site is an active school facility scheduled for a comprehensive modernization effort, which will include disturbance of subsurface materials during construction, and considering that some impacted soil areas are located in planters or athletic fields with the potential for future exposure, the Containment alternative is not a feasible option and is not evaluated further.

6.2.3 Excavation and Off-Site Disposal

The soil excavation with off-Site disposal alternative would involve excavation of impacted soil exceeding the removal action goals with subsequent disposal at a landfill off Site. Current projections are that up to 7,019 cubic yards of soil exceeding the removal action goals would require removal from the Site (see Section 5.2).

The excavated soil would be segregated in stockpiles and, based on the waste profiles, the impacted soil would be loaded and transported to appropriately permitted landfills for disposal.

The option presented under this alternative assumes that the majority of the soil will be classified as a California regulated, Class 2, non-hazardous waste (approximately 3,966 cubic yards), with some lead-impacted classified as a California regulated, Class 1 hazardous waste (up to 3,053 cubic yards). This is based on previous PEA analytical results, in which lead was detected in multiple locations at elevated concentrations; however, this will be confirmed by additional analyses following soil removal.

After excavation of the impacted soil at the designated locations across the Site, confirmation samples would be collected from the bottom and sides of the individual excavations and analyzed. Once the removal of soils exceeding the cleanup goals was completed and confirmed, clean soil would be imported and the excavations would be graded and compacted. The graded and compacted surface would be completed to facilitate future development activities.

After completion of backfilling activities, the Site would be suitable for completion of the comprehensive school modernization and construction activities. A Remedial Action Completion Report documenting soil removal activities would be prepared upon completion of all field activities.

6.2.3.1 *Effectiveness*

Both short-term and long-term effectiveness is achieved as this removal action alternative involves physical removal from the Site of contaminants above removal action goals in the Site soils.

The excavation and off-Site disposal of impacted soil would have an immediate short-term beneficial effect by dramatically reducing the extent of contaminants at the Site. The excavation process would increase the potential exposure risks in the short term for workers and the surrounding community to increased noise levels, dust, and air emissions containing the primary constituents of concern (arsenic, lead, and petroleum hydrocarbons). However, the use of appropriate personal protective equipment by on-Site workers and the implementation of appropriate noise control measures, dust control measures, and an air quality monitoring plan would mitigate these problems.

With respect to the long-term effectiveness, excavation and off-Site disposal of impacted soil will permanently and significantly reduce the extent of soil contaminants at the Site by removing soil that

exceeds the established cleanup goals. Since the excavated areas will also be backfilled with clean imported soil, all hazards otherwise associated with direct exposure, inhalation, and ingestion would be eliminated by the remediation process.

6.2.3.2 *Reduction of Toxicity, Mobility, or Volume*

By excavating, transporting, and disposing of contaminated soil from the Site to an off-Site location, contaminant volume and toxicity at the Site would be reduced. Materials above the cleanup goals would be removed, which would lower the overall toxicity of the Site. Additionally, the excavations would be backfilled and compacted with clean imported soil that would provide further protection to the environment by limiting infiltration of surface water and mobility of contaminants remaining. This layer of backfill would also eliminate human contact with any impacted soil remaining.

This removal alternative, however, does not result in a net reduction of toxicity or volume as the impacted soil is moved to another location (off-Site disposal) and not treated.

6.2.3.3 *Implementability*

The excavation and off-Site disposal alternative can be implemented with minimal difficulties. Numerous removal actions of similar nature, performed in the past without incident, have demonstrated that the potential for exposure to the soil and airborne contaminants can be mitigated if appropriate best management practices are used. Additionally, there are no land-banned disposal restrictions for the waste, based on the contaminant concentrations reported in the investigative reports. Special permitting is not required for the excavation and removal activities required under this alternative.

6.2.3.4 *Cost*

For this alternative, the estimated cost for off-Site landfill disposal if 3,966 cubic yards (5,949 tons) of non-hazardous soil and up to 3,053 cubic yards (4,579 tons) of California regulated hazardous soil is $1,762,465 and is shown in Table 6.

The excavation field work scope is estimated for completion in approximately 30 days. The actual work schedule will be determined by the LAUSD construction schedule and the sequencing of work across the Site.

Future liabilities and costs could arise should the chosen disposal site become the subject of a future cleanup action. Current environmental regulations contain provisions that name past users of a hazardous waste disposal site as Potentially Responsible Parties (PRPs), if a fiscally responsible party (i.e., landfill operator) is not able to respond to a cleanup action.

6.2.3.5 *Compliance with ARARs*

This removal alternative would comply with the ARARs outlined in Table 5. The impacted soil would also comply with off-Site disposal facility operating permits.

6.2.3.6 *Overall Protection of Human Health and the Environment*

Removing impacted soil from the Site will limit exposure and protect human health and the environment.

6.2.3.7 *State Acceptance*

This alternative has been implemented with success on previous projects many times in the past and would be acceptable to the state regulatory offices with jurisdiction (i.e., DTSC).

6.2.3.8 *Community Acceptance*

It is not likely that the surrounding community or citizen activist groups will be opposed to this alternative, which has been implemented with success on previous projects in other communities in California.

6.3 DESCRIPTION OF SELECTED REMEDY

Based on review of environmental Site conditions, evaluation of the removal action alternatives provided herein, and the removal action objectives for the Site, the proposed removal action approach is soil excavation with off-Site disposal of non-hazardous and California hazardous soils. The scope of the proposed removal action is to excavate approximately 7,019 cubic yards of soil impacted with arsenic, lead, and/or petroleum hydrocarbons that is above the removal action goals (12 mg/kg for arsenic, 80 mg.kg for lead, and 1,000 mg/kg for TPH-D/TPH-O). The proposed areas of soil excavation are shown in Figures 3A, 4A, 5A, 6A, 8A, and 9A. Soil impacted by arsenic, lead, and petroleum hydrocarbons will be excavated to the extent necessary to remove impacted soils with detectable concentrations above the applicable removal action goals (maximum depth of 5.5 feet bgs; see Tables 4A and 4B), which will be protective of human health and the environment. Details of the recommended removal action approach are presented below.

7.0 REMOVAL ACTION IMPLEMENTATION

7.1 SITE PREPARATION AND SECURITY MEASURES

7.1.1 Delineation of Excavation Areas

The proposed excavation areas are shown in Figures 3A, 4A, 5A, 6A, 8A, and 9A for soil impacts identified in Areas 2, 3, 5, 6, 9, and the Industrial Arts Building in Area 6, respectively. Refer to Tables 4A and 4B for the limits of proposed excavation in each area (lateral extent and depth). Prior to initiating soil excavation activities, the excavation areas will be marked in the field with stakes, flags, or paint. In addition, prior to beginning work, fencing (6-foot tall, chain-link with wind screen) will be installed around individual excavation areas to prevent unauthorized entry to the work areas and to minimize fugitive dust emissions during work activities.

7.1.2 Utility Clearance

Clearance of utilities and other underground obstacles will be conducted prior to initiating any on-Site soil excavation activities. Underground Service Alert (USA) will be notified at least two business days prior to commencing work at the Site, and the excavation locations will be marked with white paint according to USA requirements. The USA ticket will be maintained as long as work continues at the Site, and will be updated as necessary for excavation location adjustments.

7.1.3 Security Measures

Site security will be controlled in accordance with the requirements of this security plan. During removal activities, security and facilities to protect work areas from unauthorized entry, vandalism, or theft shall be maintained. Wrought iron and chain-link fencing is already in place along the perimeter of the Site to prevent unauthorized entry to the school. Additional 6-foot tall, chain-link fencing with wind screen will be installed around individual excavation areas to prevent unauthorized entry to the work areas during working and non-working hours, and to minimize fugitive dust emissions during work activities. Gates will be locked at all times when construction and Site personnel are not in attendance.

Construction access to the Site will be from the existing gates on South Mathews Street, East 4th Street, East 6th Street, and South Mott Street. Construction traffic must utilize these points of access throughout the duration of the work. In general, the proposed removal action incorporates the following Site access controls:

- Site and work areas will be enclosed by fencing at all times. In addition, active work areas will be enclosed by 6-foot tall, chain-link fencing with wind screen (per SCAQMD Rule 1466 requirements).
- Access to the Site will be limited to the gates along South Mathews Street, East 4th Street, East 6th Street, and South Mott Street. The gates will be locked after work hours.
- Site and work area access will be limited to authorized personnel.
- All personnel entering the work areas will be required to have appropriate health and safety training and will sign the Site-specific HSP each morning.
- All visitors will be registered and must sign in upon entering the work areas.
- Access to the excavation and stockpile areas with exposed impacted soils will be restricted in accordance with the HSP.

7.1.4 Contaminant Control

During all soil excavation and handling operations, appropriate steps will be implemented to minimize impacts from dust to other areas of the Site, the adjacent properties, and the surrounding community. Air monitoring and dust mitigation procedures will be implemented as outlined in Sections 7.4 and 7.5 of this RAW, and dust control during loading and soil transportation operations will be addressed as outlined in the Transportation Plan in Appendix C. Vehicles and equipment used in the handling of impacted soil will be decontaminated before leaving the Site. Due to the small size of the proposed excavation areas, a Storm Water Pollution Prevention Plan (SWPPP) will not be prepared specifically for this removal action; however, Best Management Practices (BMPs) will be implemented to minimize issues associated with storm water runoff.

7.1.5 Permits and Plans

It is anticipated that no grading permit will be required from the LADPW for work associated with the proposed removal action. However, given the number of trucks needed to transport impacted soil off Site for disposal, approval of the waste transportation route may be required from the LADPW.

Work activities will comply with all provisions of South Coast Air Quality Management District (SCAQMD) Rules 401 (Visible Emissions), 402 (Odor and Nuisance), 403 (Fugitive Dust), and 1466 (Control of Particulate Emissions from Soils with Toxic Air Contaminants).

7.1.6 Demolition of Pavements

Prior to excavating impacted soil in areas covered with paving (concrete or asphalt), the paving materials will be carefully removed and stockpiled separately for disposal.

7.2 FIELD DOCUMENTATION

7.2.1 Field Logbooks

Field activity logs will be maintained by field personnel to provide daily records of significant events, observations, and measurements during field activities. All entries will be signed and dated. All members of the field team will use these forms, which will be kept as a permanent record.

Entries into the field logs will be made using indelible ink. Each page of the field logs will be sequentially numbered at the top and dated. Each page will also be signed and dated at the bottom by the person responsible for the entry, and any blank space at the bottom of the page will be marked out to indicate that it has been left blank intentionally. Corrections will be made by striking out the incorrect information with a single horizontal line, such that the incorrect information is still legible, and the correct information will be entered above the strike out. All corrections will be initialed and dated.

It should be noted that field log entries should be factual, detailed, and objective. The following are items which should, if applicable, be recorded in the field logs during field activities:

- Name and location of Site
- Name and affiliation of sampling team members
- Time of arrival on Site
- Weather conditions
- Arrival and departure times of visitors
- Health and safety related issues (Site-specific HSP and job safety analyses [JSAs] will be on Site at all times)
- Summary of equipment preparation procedures
- Summary of day (e.g., excavation progress, down time, etc.)
- Dates and times of sample collection or event
- Numbers and types of samples taken, sample location, and sample identification
- A description of sampling methodology
- Field measurements of samples
- Description of lithology observed in excavations
- Record of telephone calls and/or contact with people at the Site
- Any problems or unusual observations

7.2.2 Chain of Custody Records

The purpose of a chain of custody record (CCR) is to create an accurate written record that can be used to trace the possession and handling of a sample from the moment of its collection through analysis. In addition, other information, such as holding times from the field to the laboratory, can be verified.

A CCR will be initiated and completed using the approved California-certified laboratory's CCR during sample collection. Possession of every sample will be recorded from the time of collection until the

analytical results are fully documented by the laboratory. The following steps shall be followed in completing the CCR:

- Use a blue or black ball point pen and press firmly (the form has three pages).

- Generally, the following should be recorded by the Site Coordinator in the spaces designated on the CCR:
    - Project name and number
    - Site name and address
    - Sampler's name (signature and print), organization, and address
    - Identification/field sample number (distinguish the number zero from the letter 'O' by drawing a slash through the number zero)
    - Date and time of collection
    - Sample type (soil, water, etc.)
    - Number of sample containers
    - Laboratory parameters (use a separate column for each analysis and check, using an 'X', samples corresponding to the specific parameter to be analyzed)
    - Turn-around time (TAT; i.e., 24 hours, 5 working days, etc.)

- Identify and mark how many pages are including in the CCR.

- In the case of more than one cooler per shipment, the cooler number will be included on the CCR.

- All individuals relinquishing and receiving samples will sign, date, and indicate the time in the lower portion of the CCR.

If an error is made on the CCR prior to custody transfer, it will be crossed out and initialed, and the correct information written above the error. If an error is made after custody transfer, the Task Leader will immediately notify the laboratory and any other organization to which the information was submitted of the correction.

The CCR will accompany the samples at all times while the samples are in transit. Upon receipt of the samples at the laboratory, the laboratory sample custodian will sign and date the CCR, indicating acceptance of the samples. The original (white copy) of the completed CCR will be maintained at the laboratory until submittal of analytical results, at which time the original, or a photocopy if other laboratories are involved, is remitted with the analytical results. A copy of the completed CCR will be maintained by the project.

7.2.3 Photographs

Prior to the start of field activities, photographic documentation shall be obtained for the Site, each individual excavation area, and areas surrounding the excavation area. The photographs will document the condition of the Site and adjoining areas prior to commencing soil excavation activities. Photographs will be taken with equipment that provides date and time stamping.

7.3 EXCAVATION

7.3.1 Confined Space Entry Requirements

Confined space entry permitting is not required for the soil removal activities at the Site.

7.3.2 Temporary Stockpile Operations

The proposed excavation areas are shown in Figures 3A, 4A, 5A, 6A, 8A, and 9A for soil impacts identified in Areas 2, 3, 5, 6, 9, and the Industrial Arts Building in Area 6, respectively. Refer to Tables 4A and 4B for the limits of proposed excavation in each area (lateral extent and depth). The excavated material will include non-impacted soil, impacted soil, and debris. Where possible, soil may be direct loaded onto trucks for off-site transport and disposal. For waste materials that are not directly loaded onto trucks, specific areas will be identified where temporary stockpiles may be located. Excavated materials will be confined within the designated perimeters. The stockpile locations will vary depending upon the excavation work area(s), but will generally be located in close proximity to the excavation area(s) for staging and loading for off-Site transport. Impacted soil stockpiles will be placed on top of and covered with plastic sheeting, and the stockpiles will remain covered during all periods of inactivity. All soil stockpiles will be visually inspected to ensure integrity of the plastic covered surfaces. See Section 7.3.3 for additional details on soil segregation and stockpile management.

7.3.3 Waste Segregation Operations

For each excavation area, soil will be segregated based on the type of impacts. The excavated soil will initially be segregated according to existing soil analytical data, field observation, and field monitoring results.

Five distinct and separate stockpiles will be created:

- Non-hazardous arsenic- and lead-impacted soil;
- California hazardous (non-RCRA) lead-impacted soil;
- Non-hazardous petroleum hydrocarbon-impacted soil;
- Non-impacted soil; and
- Demolition debris (e.g., steel, concrete, asphalt, etc.).

The soil will be stockpiled and managed as specified in SCAQMD Rule 1466 and according to the following criteria:

- Impacted soil (arsenic, lead, and petroleum hydrocarbons) will be segregated from non-impacted soil in separate stockpiles so that mixing of the stockpiles does not occur. The soil will be segregated based on previous analytical data and field observations (e.g., soil staining or discoloration for petroleum hydrocarbon-impacted soil). Soil suspected of being impacted with arsenic, lead, and petroleum hydrocarbons based on previous investigations will be stockpiled in appropriate staging areas for waste characterization and off-Site disposal. Soil that is suspected of being clean will be stockpiled separately and samples will be collected for analysis. If results of analyses confirm the soil is clean, it will be transferred to clean stockpile areas for future reuse on Site as fill material. If the suspected clean soil is determined to be impacted, it will be transferred to the impacted soil stockpile to await off-Site transport and disposal. Soil with suspected elevated lead impacts in excess of Soluble Threshold Limit Concentration (STLC)

limits, based on previous PEA investigation findings, will be stockpiled separately and samples will be collected for analysis. Based on analytical results, this soil will either remain in a separate stockpile to be handled and transported off Site as a California hazardous waste, or be transferred to the non-hazardous soil stockpile to await off-Site transport and disposal.

- The soil stockpile locations will vary depending upon the excavation work area(s). In general, impacted soil stockpiles will be in close proximity to the excavation area(s) for staging and loading for off-Site transport. Clean soil and demolition debris will be stockpiled separately in each area for reuse and off-Site disposal, respectively.
- Soil stockpiles will be placed on top of and covered with plastic sheeting. The plastic sheeting seams will overlap a minimum of 24 inches and be secured with duct tape.
- Soil stockpiles will be sprayed with water and covered with plastic sheeting for all periods of inactivity.
- Soil stockpiles with arsenic and lead impacts will not exceed 400 cubic yards per stockpile, and will not be stockpiled higher than the surrounding fencing. There is no limitation on the volume of clean soil that can be stockpiled on Site.
- Soil stockpiles with arsenic and lead impacts will be labeled with "SCAQMD Rule 1466 – Control of Particulate Emissions from Soils with Toxic Air Contaminants Applicable Soil".
- All soil stockpiles will be visually inspected daily to ensure integrity of the plastic covered surfaces.
- Soil loading into trucks for off-Site transport will be conducted either directly during soil excavation or from the stockpiles of soil. All transportation and treatment/disposal activities will be performed in accordance with applicable Federal, State, and local laws, regulations, and ordinances.
- Impacted soil will be removed from the Site no greater than 5 days from the time of excavation.
- A record of the identification and business addresses of the generator, transporter, and storage/treatment facilities will be maintained. Such record (manifest) will be signed by each party at the time custody is transferred.

Soil sampling and analysis shall be performed as described in Section 7.7.

7.3.4 Decontamination Area(s)

All equipment used during removal action activities will be decontaminated prior to leaving the Site following use. Vehicles and excavation equipment will be decontaminated in a track-out prevention zone. This will consist of a rumble plate or asphalt pad along construction/work exits. Stray waste material on vehicles, the tires, etc., that cannot be covered or protected, will be cleaned off manually. The dump truck will then be covered with a tarp to prevent soil and/or dust from spilling out of the truck during transport to the treatment/disposal facility. Soil sampling equipment (i.e., hand auger) will be cleaned and decontaminated before and after each use at each individual excavation location by scrubbing in a non-phosphate detergent and tap water wash, followed by a tap water rinse, and an initial and final rinse in deionized water to prevent cross contamination.

Waste materials generated during vehicle/excavation equipment cleaning will be temporarily stored on Site in designated areas pending waste profiling and disposal with excavation waste materials. Decontamination fluids generated during cleaning of hand-held equipment will be placed in labeled, Department of Transportation (DOT)-approved, 55-gallon drums pending waste profiling and disposal at an appropriate facility.

7.3.5 Excavation Plan

The proposed removal action approach is soil excavation with off-Site disposal of non-hazardous and hazardous soils. The scope of the proposed removal action is to excavate approximately 7,019 cubic yards of soil impacted with arsenic, lead, and/or petroleum hydrocarbons that is above the removal action goals (12 mg/kg for arsenic, 80 mg.kg for lead, and 1,000 mg/kg for TPH-D/TPH-O). The proposed areas of soil excavation are shown in Figures 3A, 4A, 5A, 6A, 8A, and 9A. Soil impacted by arsenic, lead, and petroleum hydrocarbons in each area will be excavated to the extent necessary to remove impacted soils with detectable concentrations above the applicable removal action goals (maximum depth of 5.5 feet bgs; see Tables 4A and 4B). The sequencing of removal action activities across the Site will be determined in consultation with LAUSD.

The equipment that will be used during excavation activities may include the following: excavator or backhoe, rubber-tired loader, water truck, end-dump trailers/trucks, and support trucks. Confirmation soil samples will be collected at the excavation limits and from the excavation bottom to confirm removal of impacted soil to the removal action goals.

The exclusion, decontamination, and support zones will be identified and clearly marked on the Site for each excavation area. The exclusion zone will contain the excavation area, the soil stockpiles, and the truck loading area. The decontamination zone will be located immediately adjacent to the exclusion zone for purposes of decontaminating personnel, equipment, and vehicles exiting the exclusion zone.

Due to concern regarding the presence of impacted soil at the Site and the possibility that soil removal activities could be associated with odors, noise, and dust/particulate emissions from the work areas, monitoring for these issues will be conducted within the work areas and at the Site perimeter and procedures will be established to provide mitigation to protect on-Site workers, visitors, and the surrounding community in accordance (i.e., HSP, Dust Control Plan, etc.).

The excavated materials will be segregated as follows: 1) non-hazardous arsenic- and lead-impacted soil; 2) California hazardous lead-impacted soil; 3) non-hazardous petroleum hydrocarbon-impacted soil; 4) non-impacted soil; and 5) demolition debris (e.g., steel, concrete, asphalt, etc.). The stockpile locations will vary depending upon the excavation work area(s), but will generally be located in close proximity to the excavation area(s) for staging and loading for off-Site transport. Impacted soil stockpiles will be placed on top of and covered with plastic sheeting, and the stockpiles will remain covered during all periods of inactivity. All soil stockpiles will be visually inspected to ensure integrity of the plastic covered surfaces.

All waste materials will be loaded into hauling trucks and shipped by a qualified (licensed/registered and insured) waste hauler to facilities permitted to dispose of the materials at a rate determined by the volume the disposal facility is capable of handling and the amount that can be transported without exceeding air quality thresholds. Based on evaluation of available PEA analytical data, the arsenic-impacted and petroleum hydrocarbon-impacted soil has been characterized as non-hazardous. Lead-impacted soil has been identified at concentrations that would characterize some material as non-hazardous and some material as hazardous; therefore, the lead-impacted soil will be stockpiled for appropriate waste profiling prior to off-Site disposal.

Soil for off-Site disposal will be transported in end-dump trailers/trucks to designated facilities. The transportation routes will be selected to minimize the truck travel time on surface streets and to provide

the shortest distance traveled. All removal, transportation, and disposal activities will be performed in accordance with applicable Federal, State, and local laws, regulations, and ordinances.

Upon completion, backfill and compaction of the excavation areas will be conducted to assure that the excavated areas are suitable for future construction activities.

For the soil sampling and analysis plan, including the soil sampling approach, methodology, and analyses, refer to Section 7.7.

7.4 AIR AND METEOROLOGICAL MONITORING

7.4.1 Air Monitoring

Results of the PEA investigation identified soil impacted with arsenic, lead, and petroleum hydrocarbons (diesel and oil range) in multiple locations across the Site. No VOCs above removal action goals were detected in subsurface soil. As a result, no air monitoring for VOCs per SCAQMD Rule 1166 (Excavation of Soil Contaminated with Volatile Organic Compounds) will be necessary. However, air monitoring will be conducted in accordance with SCAQMD Rules 401 (Visible Emissions), 402 (Odor and Nuisance), 403 (Fugitive Dust), and 1466 (Control of Particulate Emissions from Soils with Toxic Air Contaminants). Odor monitoring and mitigation is discussed below, and the Dust Control Plan is presented in Section 7.5.

The primary odor emission source at the Site will be the petroleum hydrocarbon-impacted soil near one of the hydraulic hoists at the Industrial Arts Building in Area 6 that will be exposed and excavated; there are no odors associated with the arsenic and lead impacts. Use of construction equipment may also be considered as an odor source. Potential odor emission receptors include on-Site workers, faculty and students at the school, pedestrians, local residents, and vehicle drivers adjacent to the Site. Due to public perception issues, it will be very important to monitor and control odors at the Site. As noted previously for noise receptors, it is not anticipated that off-Site receptors will be significantly impacted by odors from this project.

Detection of strong odors within the work area or discernible odors above background at the perimeter of the work area will be used as triggers for odor mitigation measures as required by SCAQMD Rule 402. All excavated soil will be sprayed with water for odor and dust suppression, and impacted soil stockpiles will be covered with plastic sheeting while temporarily stored on Site.

The following measures will be used to minimize odors from construction equipment:

- Reduce construction equipment emissions by shutting off all equipment not in use;
- Reduce construction-related traffic;
- Minimize traffic obstructions; and
- Maintain equipment regularly.

7.4.2 Meteorological Monitoring

Ambient weather conditions (wind speed and direction, temperature, relative humidity, etc.) will be monitored using a portable weather station during performance of all Site work activities and recorded on the field log. Information regarding prevailing wind patterns and daily wind direction observations will be used to assist with placement of monitoring stations, and information regarding wind speed will be used to facilitate decision-making regarding Site controls.

If sustained winds are in excess of 15 miles per hour averaged over a 15-minute period, or if instantaneous wind speeds exceed 25 miles per hour, work activities will be stopped until the winds subside.

7.5 DUST CONTROL PLAN

Dust control measures will be implemented to stabilize exposed surfaces and minimize activities that suspend or track dust particles. Soil excavation and handling shall be accomplished in a manner that includes adequate measures to minimize and control dust and spillage of soil within the Site.

All work shall be in compliance with applicable SCAQMD requirements. Specifically, the excavation contractor shall be responsible to meet requirements specified in SCAQMD Rules 401 (Visible Emissions), 403 (Fugitive Dust), and 1466 (Control of Particulate Emissions from Soils with Toxic Air Contaminants) and shall implement reasonable Best Available Control Measures (BACM) in accordance with Rules 403 and 1466 to minimize dust emissions.

7.5.1 Dust Monitoring

Dust and particulate monitoring will be conducted using a combination of three continuous, direct-reading particulate monitors (e.g., E-BAM Particulate Monitor or equivalent) and an MIE Personal DataRam Model PDR 1000 aerosol monitor (or equivalent). The three continuous, direct-reading particulate monitors will be placed around the excavation area(s) as work progresses (meters will be moved as work moves from location to location), with one meter located in the upwind direction and two meters located in the downwind location. The location of the downwind aerosol monitors will be adjusted daily based upon prevailing wind direction as indicated by a weather vane installed at the Site, weather station readings, or a hand-held wind speed meter. The use of three continuous, direct-reading particulate monitors will provide a greater degree of confidence in quantifying potential fugitive dust, provide better coverage for shifting wind patterns, and supply additional data to address potential community concerns. The monitors will provide concentrations of particulate matter in the size of 10 microns or less (PM_{10}). An exceedance will be defined as a PM_{10} level of greater than 25 micrograms per cubic meter ($ug/m^{3)}$ determined by simultaneous sampling, as the difference between the upwind and downwind samples collected by the continuous, direct-reading particulate monitors. Each unit will be set to record PM_{10} readings at minimum 10-minute intervals over the course of the working day. If the PM_{10} concentration averaged over 2 hours exceeds 25 ug/m^3, soil excavation and handling operations will be discontinued and appropriate dust control measures described below will be implemented (i.e., application of water to work areas). When the PM_{10} concentration is equal to or less than 25 ug/m^3 averaged over 30 minutes, work activities can resume. A portable Model PDR 1000 (or equivalent) will be used within and around each work area/hot zone to determine if dust suppression is needed or if worker protection action levels have been exceeded. If practicable, the data stored by each unit will be downloaded to a computer at the end of the day and printed out as a daily record (or at the end of each work week). The Environmental Consultant's personnel will also record the upwind, downwind, and work area PM_{10} concentration values

every hour on a standard Field Parameter Data Sheet. All dust monitoring records will be retained on Site.

7.5.2 Dust Control Measures

Dust control measures will be specified based on the results of dust monitoring described above, on-Site activities, type and location of operations, and the prevailing wind direction. Dust control measures shall include, but not be limited to, the following:

- Provide wet suppression of exposed soil during excavation, loading, and unloading of contaminated soil.
- Haul trucks transporting contaminated soil shall be adequately tarped before leaving the Site.
- Appropriate measures shall be implemented by the contractor to control track out of soil from the Site onto adjacent paved roads.
- Reduce speed on unpaved areas, and limit on-Site traffic speed.
- Cover and secure stockpiles and exposed areas at the end of each workday.
- Provide LAUSD/Remediation Contractor contact information and SCAQMD Rule 1466 warning statement on signs posted at the entrances and along the fence surrounding the property in the event of dust or other Site-related issues during work activities.

7.5.3 Worker Protection Requirements

Site workers will be required to have appropriate respiratory protection at all times within the exclusion zone. It may be appropriate to wear a particulate filter (dust mask) during dust producing activities.

7.6 NOISE MONITORING AND CONTROL PLAN

The objectives of the Noise Control Plan are to identify noise sources and receptors, to identify monitoring methods, to provide worker hearing protection requirements, and to provide mitigation methods.

7.6.1 Noise Sources and Receptors

Any noise above 85 decibels average (dBA) at the Hot Zone perimeter for mobile equipment will be considered a noise source (County of Los Angeles Code, *Title 12 Environmental Protection, Chapter 12.08 Noise Control, Section 440, Construction Noise*, 2001). General construction equipment noise levels at 50 feet have been summarized below (Bolt, Beranek, and Newman, *Noise from Construction Equipment and Operations Building Equipment, and Home Appliances.* Prepared for the U.S. Environmental Protection Agency, Office of Noise Abatement and Control, Washington, D.C., 1971):

- Truck - 91 dBA
- Crane - 83 dBA
- Roller - 89 dBA
- Bulldozer - 80 dBA
- Pickup Truck - 60 dBA
- Backhoe - 85 dBA
- Jack Hammer - 88 dBA
- Rock Drill - 98 dBA
- Pneumatic Tool - 86 dBA

Manufacturer specifications will be reviewed for noise levels produced by any on-Site equipment. If necessary, mufflers or alternative equipment may be selected to minimize noise levels.

Potential noise receptors include on-Site workers and visitors, pedestrians, vehicle drivers, and residents adjacent to the Site. However, other than on-Site workers, receptors are not anticipated to be significantly impacted by noise from this project.

7.6.2 Noise Monitoring

Noise monitoring will be conducted with a sound level meter as discussed in County of Los Angeles Code, *Title 12 Environmental Protection, Chapter 12.08 Noise Control, Section 340, Sound Level Meter*, 2001). A Quest Micro 14 hand-held noise dosimeter or equivalent will be used and will satisfy the requirements pertinent for Type 2 meters in the American National Standards Institute (ANSI) specifications for sound level meters.

Monitoring will occur within the hot zone and at the perimeters of the hot zone, and at the Site perimeter. The monitoring frequency will be determined according to the type and location of operations.

7.6.3 Worker Protection Requirements

Site workers will be required to have appropriate hearing protection at all times within the hot zone. Also, appropriate worker hearing protection will be required for any anticipated noise exposure above 85 dBA for 8 hours of exposure.

7.6.4 Noise Mitigation Measures

Noise mitigation measures will be specified based on the results of the noise monitoring. If the noise levels exceed 85 dBA outside the hot zone, mitigation measures may include one or more of the following:

- Sound barriers will be placed around the work areas.
- Alternate low-noise-generating equipment will be specified.
- Mufflers will be used on selected equipment.
- Work areas will be expanded such that noise levels will be below 85 dBA at the perimeter.
- Reduce construction vehicle speed.
- Route construction-related traffic away from noise-sensitive areas.

7.7 SOIL SAMPLING AND ANALYSIS PLAN

The field sampling program during and upon completion of soil removal will include confirmation soil sampling within the excavation areas upon completion of impacted soil removal, and stockpile sampling of impacted soil and potential fill soil. The following sections provide specific sampling methods and procedures, sample handling, documentation, and the sample analysis program.

7.7.1 Sample Collection Methodology

Following removal of impacted soil from each of the proposed excavation areas, samples will be collected and analyzed from the sidewalls and excavation bottom to verify the lateral and vertical extent of soil removal. In general, a sampling grid with 10-foot by 10-foot spacing will be established for the collection of excavation bottom samples, and sidewall samples will be collected at ~20-foot intervals or 10-foot intervals at irregularly shaped areas. In smaller excavation areas, sampling will be conducted at closer spacings, as appropriate, to ensure adequate confirmation of impacted soil removal. At a minimum, the smaller excavations will have one confirmation sample per sidewall and one confirmation sample from the excavation bottom. In areas where soil removal is being conducted up to a clean sample location from the PEA investigation, no additional soil samples will be collected.

The bottoms and sidewalls of excavations will be examined for evidence of impact prior to selecting sample locations. If evidence of impact is indicated, the confirmation or additional samples will be collected from those suspect locations. If no evidence of impact is identified in the sidewalls, the sample will be collected from the mid-point of the wall. For example, if the excavation is 4 feet in depth, the sidewall sample would be collected from 2 feet bgs. If there is an obvious change in lithology in a sidewall below the suspected depth of impact, the sidewall sample will be collected at this location just above the contact.

If results of confirmation sampling indicate soil concentrations exceeding removal action goals remain in the subsurface, additional soil excavation will be conducted and additional confirmation samples will be collected to verify removal of the impacted soil.

Soil excavation and sampling will be conducted using an excavator or backhoe, and excavated soil will either be directly loaded onto trucks for removal from the Site, or temporarily stockpiled on Site for waste profiling and later disposal. Excavation soil samples will be collected from the base and/or sidewalls of the excavation from freshly uncovered soil, or from a relatively undisturbed portion of soil within the excavator/backhoe bucket, using 6-inch long by 1.5-inch diameter stainless steel sample tubes, or samples will be collected in 4-ounce glass jars. Each sample will be labeled with the sample identification number, sample depth, and date of collection. After the samples have been labeled and documented in the chain of custody record, they will be placed in a cooler with ice at ~4 degrees Celsius (4 °C) for transport to a State-certified laboratory.

7.7.2 Sample Handling

7.7.2.1 *Sample Containers and Preservation*

Sample containers will be delivered to the sampling Site or office, and will be cleaned and prepared by the analytical laboratory using standard EPA-approved protocols. Sample containers will be protected from dust or other contamination between the time of receipt and the time of usage at the Site.

7.7.2.2 *Sample Identification/Labeling*

Each sample will be assigned a unique sample identification number to allow for proper data management. These sample numbers will be included on the sample label, in the daily field sheets to identify notes pertaining to the sample, and on the chain of custody form. The sample number will consist of a two- to five-digit sample location designator, a two-digit sample depth indicator (soil samples only), and a two-digit number indicating the sequential sample number.

Samples will be labeled immediately after collection. The following information will be included on the sample label: sample location, sample identification number, date and time of collection, preservatives added (if any), and requested analysis. The labels will be filled out in indelible ink and firmly affixed to the sample container. Clear packing tape will then be used to cover the completed sample label to prevent damage to the label during shipping.

7.7.2.3 *Sample Shipping*

A courier service will be used to transport the samples from the Site to the laboratory under chain of custody protocol. Transportation of the samples will adhere to DOT requirements.

7.7.3 Sample Analyses

7.7.3.1 *General*

Analytical methods utilized by the laboratory are those detailed in CalEPA documents. Any deviations from these methods will require the concurrence and approval of the LAUSD. The required levels of analysis and validation for this project are outlined in the QAPP in Appendix A.

7.7.3.2 *Soil Samples*

Confirmation soil samples collected during removal action activities will be analyzed as follows:

- arsenic-impacted areas will be analyzed using EPA Method 6020B;
- lead-impacted areas will be analyzed using EPA Method 6010B; and
- the petroleum hydrocarbon-impacted area will be analyzed for TPH-D and TPH-O using EPA Method 8015B(M).

Stockpile soil samples collected to characterize soil previously identified with elevated lead concentrations will be analyzed as follows:

- lead-impacted stockpiles will be analyzed using EPA Method 6010B, and the samples will be further analyzed for STLC lead and TCLP lead, as needed, using the appropriate extraction method(s) and EPA Method 6010B, to determine the waste classification of the soil.

7.7.3.3 *Quality Assurance/Quality Control*

Equipment Blanks

As discussed in the QAPP (Appendix A), equipment (rinsate) blanks will be collected at a rate of one per sampling crew per day or one per 20 soil samples collected during the soil removal action, whichever is

most frequent. Equipment blanks provide a quality assurance/quality control (QA/QC) check on field decontamination procedures. Equipment blanks will not apply for soil samples collected directly into the individual sample containers. Equipment blanks for soil samples will be collected by pouring deionized water over the decontaminated hand auger sampler and collecting the runoff directly into laboratory-supplied sample jars.

Field Duplicates

As discussed in the QAPP (Appendix A), field duplicates will be collected at a rate of one per 10 soil samples collected, as a QA/QC check on precision and reproducibility of results. Duplicate soil samples will comprise a brass tube adjacent to the original sample tube within the same lithologic layer or material.

Matrix Spike/Matrix Spike Duplicates – Laboratory Internal QA/QC

Matrix spike and laboratory control samples will be obtained and analyzed to determine if sample recoveries falling outside of acceptance windows are attributed to sample matrix interferences and/or to laboratory errors, and to measure the accuracy of the analysis. Laboratory duplicates for inorganic analytes and matrix spike duplicates for organic analytes will be analyzed to evaluate laboratory reproducibility or precision.

7.8 TRANSPORTATION PLAN FOR OFF-SITE DISPOSAL

Waste materials will be handled by personnel and equipment in strict compliance with all Federal, State, and local regulations, statutes, and ordinances, including:

- California Hazardous Waste Control Law, Chapter 6.95, Division 20, Health and Safety Code
- California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 5, 6, 6.5, and 7
- United States Code of Federal Regulations, Title 40, Parts 261 through 265; Title 49, Parts 100 through 179 and Part 387 through 399; and Title 20, Part 1910
- California Highway Patrol, Hazardous Waste Licensing and Transport Route Regulations
- California Vehicle Code, Hazardous Waste Transport
- SCAQMD Rules and Regulations
- EPA Land Disposal Restrictions
- City of Los Angeles Truck Routing Ordinances

Refer to the Transportation Plan in Appendix C for additional waste transportation and disposal details.

7.8.1 Waste Hauling

The hauling contractor(s) used to transport impacted soil and debris to the off-Site disposal facilities will be fully licensed and permitted by the EPA and the State. Contractors shall comply with the City of Los Angeles Truck Route Ordinance and use City-approved truck routes.

Trucks used for the off-Site transportation of impacted soil will remain in clean areas at all times to minimize the need to decontaminate the truck tires. During loading, noise, odor, and dust emissions will be monitored and mitigated as necessary. The hauling trucks will employ spill control measures described in Section 7.9.

7.8.2 Approved Treatment and Disposal Facilities

The disposal facilities shown in the Transportation Plan in Appendix C (Section 5.0) are proposed for use for this project. The Remediation Contractor selected for this project will be required to prepare an amendment to the Transportation Plan that specifies the actual disposal facilities and the transportation routes planned for use (if they vary from those proposed herein), the selected transportation company, and any proposed deviations from the procedures outlined in the Transportation Plan.

7.9 SPILL CONTINGENCY PLAN

Spill prevention and control measures to prevent or reduce the discharge of pollutants to the environment from leaks or spills will be implemented during excavation, stockpiling, loading, and transportation operations. At a minimum, measures to prevent spillage of contaminated soil while loading and hauling will include the following:

- Covering the trucks with tarps or plastic sheeting before proceeding to the off-Site treatment facility.

- When hauling over public highways, loads shall be trimmed and material removed from shelf areas of vehicles to eliminate spilling materials.

In the event of an emergency or spill during transport to the treatment facility, the driver of the hauling truck will use the following procedures:

- Park the vehicle in the most secure area available, away from homes, traffic, waterways, and businesses.

- Stay with the vehicle until appropriate support has arrived; move a safe distance away from the vehicle or spill material if danger exists.

- Notify the appropriate emergency contacts. Reporting will include at least the following information:
  - Name and telephone number of driver
  - Exact location of the spill or threatened spill
  - Time and type of incident
  - Name and quantity of material involved, to the extent known
  - Extent of injuries or property damage, if any
  - Manifest number
  - Possible hazards to human health or the environment (i.e., location of nearby receptors)

Impacted soil that is spilled outside of containment/control/stockpile areas on Site will be immediately recovered and placed into an appropriate storage location/container. If the spill occurs on soil, some additional surface soil will be recovered/removed along with the impacted soil. If the spill occurs on asphalt, residual spilled soil will be scraped up.

Impacted soil that is spilled off Site will be properly removed/cleaned up pursuant to directions of local authorities (e.g., California Highway Patrol, City, County, etc.).

7.10 BACKFILL AND SITE RESTORATION

Areas excavated as a result of removal activities will be backfilled with approved clean fill. The clean fill may consist of one or more of the following sources: 1) clean quarried material; 2) imported material from an off-Site source; and 3) clean soil generated on Site in the course of exposing and removing soil impacts. Debris, plant matter, and other deleterious material shall not be present in soils used for fill. Backfilling and compaction of excavated areas shall be in conformance with City of Los Angeles requirements, and compaction certification will be provided by the LAUSD Geotechnical Engineer of Record.

7.10.1 Borrow Source Evaluation

Prior to using fill material on Site, the soil quality data of the source material will be reviewed. Sampling of fill material intended for use at the Site shall be conducted to verify the quality of the material, unless the fill material originates from a clean, quarried source, in which case no sampling will be conducted. Imported fill will be free of contamination and non-soil material. Clean soil generated on Site from excavation activities must be less than the removal action goals and must comply with LAUSD soil reuse criteria. Soils treated at another site undergoing remediation will not be used as backfill material at the Site.

Sampling of the backfill soils shall be conducted in accordance with the LAUSD Environmental Import/Export Materials Testing (Guidance Section 01 4524) requirements. Soil sample collection shall be performed as described in Section 7.7. At a minimum, backfill materials will be sampled (discrete and composite samples) at a frequency consistent with the volume-specific sampling criteria outlined in LAUSD Guidance Section 01 4524.

Discrete soil samples will be analyzed for the following:

- TPH-G using EPA Methods 8015B(M)/5035; and
- VOCs using EPA Methods 8260B/5035.

Composite soil samples will be analyzed for the following:

- TPH - Full Carbon Speciation using EPA Method 8015B(M);
- PCBs using EPA Method 8082;
- SVOCs using EPA Method 8270C;
- OCPs using EPA Method 8081A;
- Organophosphorus Pesticides (OPPs) using EPA Method 8141A;
- Chlorinated Herbicides using EPA Method 8151A;
- California Title 22 Metals using EPA Methods 6010B/7471A;
- Hexavalent Chromium using EPA Method 7199; and
- Arsenic and Thallium using EPA Method 6020.

The Remediation Contractor will be responsible for providing documentation of the source of clean fill material and for performing and/or providing documentation of the geotechnical suitability and environmental analysis of the clean import fill material.

7.10.2 Site Restoration

Upon completion of excavation, backfill, and compaction activities, each work area will be completed at the surface to comply with the planned reuse of the Site (i.e., covered with new building construction, concrete/asphalt paving, or clean soil for athletic fields and planters).

8.0 PUBLIC PARTICIPATION

In accordance with the public participation requirements outlined in the DTSC Public Participation Manual, the following activities will be completed for this RAW process:

- Develop a mailing list for faculty and students of Roosevelt High School.
- Establish Information Repositories for the Site to provide public access to technical reports and other key project information (locations to be selected prior to the Public Meeting). Final documents, including the Phase I ESA, Draft PEA Report, Draft RAW, fact sheets, and other materials relevant to the Site will be placed in the Information Repositories and maintained throughout the duration of the cleanup work.
- Develop and submit fact sheets to LAUSD for review and approval, and print and distribute fact sheets to the community mailing lists described above.
- Publish, in a major local newspaper(s), a public notice announcing the availability of the RAW for public review and comment. The public comment period will last a minimum of 30 days. All comments regarding the RAW will be directed to the LAUSD.
- Conduct a public meeting to inform the public of the proposed activities and to receive public comments on the RAW.
- Once the public comment period has ended, LAUSD will consider comments received and determine whether revisions to the RAW are necessary.
- If appropriate, TRC will revise the RAW on the basis of comments received from the public, and submit the revised RAW to LAUSD for review and approval. If such a revision is necessary, TRC will also notify the public of any significant changes from the action proposed in the RAW.

9.0 QUALITY ASSURANCE PROJECT PLAN

A QAPP has been prepared to provide data quality assurance, guidance, and requirements for activities associated with field measurements, sampling, laboratory analysis, data management, and reporting during project activities. The QAPP is presented in Appendix A. It is recommended that the Environmental Consultant selected to implement this RAW prepare an amendment to the QAPP to identify quality control sample collection requirements and specific data quality objectives of the measurement data, as well as the analytical laboratory to be used for sample analysis. The primary quality control features of the QA/QC program include the collection and analysis of field quality control samples and the data validation.

10.0 HEALTH AND SAFETY

The LAUSD Remediation Contractor will prepare a comprehensive health and safety plan (HSP) prior to implementation of proposed RAW activities at the Site (see Appendix B for an example). The intent of the HSP, which includes protocols to be followed during remediation activities, is to ensure the health and safety of on-Site project employees, subcontractors, visitors, and the public during all Site work. The HSP identifies policy, procedures, and systems to be followed by project personnel, and is required to be followed and signed by all field personnel, subcontractors, vendors, visitors, and agency representatives at the Site.

The HSP is implemented in conjunction with other health and safety programs, including the Injury and Illness Prevention Program (IIPP). In addition, project procedures will guide the JSA documents created for critical work, safety task assignments used daily to direct that day's activity, as well as additional postings, signs, or informational memos regarding safety. JSA documents are intended to be fluid; sections will be amended or added when new safety hazards are identified as the project proceeds.

A copy of the HSP will be readily available during field activities. On the morning of each day of field activities, a health and safety meeting will be conducted with all Site workers to discuss the health and safety issues and concerns related to the specific work, including safety concerns regarding coordination of investigation activities. All Site workers will be required to review and sign the HSP before conducting work at the Site. In addition, Site workers shall meet the training requirements specified in the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard (29 CFR 1910.120[e]).

11.0 PROJECT SCHEDULE AND REPORT OF COMPLETION

The start date for proposed removal action activities is contingent upon receipt of public comments on the draft RAW, preparation of the final RAW, and selection of an Environmental Consultant and Remediation Contractor by LAUSD. At the present time, it is anticipated that excavation activities may begin in the first quarter of 2018 (weather permitting). It is anticipated that work activities can be completed in approximately 1 month of continuous work; the actual duration of work activities is contingent upon how LAUSD stages construction activities at the Site. A detailed work schedule will be provided under separate cover following final approval of the RAW and discussion with LAUSD.

A Remedial Action Completion Report (RACR) will be prepared once all removal action activities have been completed. A licensed Professional Geologist will certify that the removal action activities were performed in accordance with the project plans and specifications. This report will include:

- Summary of the removal action activities;
- Analytical test results of excavation confirmation soil samples, stockpile soil samples, and imported fill material samples, including QA/QC sample results;
- Location(s) of fill material source(s), owner(s) name and address, bills of lading, and rationale for selection of sampling locations and depths;
- Observations and findings of the environmental controls and measurements;
- Final limits of soil excavation with the volumes of soil removed; and
- Documentation showing final disposal of all waste materials generated at the Site.

The draft RACR will be available for LAUSD review within 45 days following completion of field activities, and the final RACR will be provided to LAUSD within 7 days of receiving comments on the draft.

12.0 REFERENCES

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TABLES

Table 1
General Site Screening Results - Lead-Based Paint and Termiticide Sampling
Preliminary Environmental Assessment Equivalent Report
LAUSD - Roosevelt High School
456 South Mathews Street
Los Angeles, California

Sample Location	Sample Date	Depth (feet bgs)	Analyses and Analytical Methods													Comments
			Arsenic (As) EPA 6010B		Lead (Pb) EPA 6010B			Organochlorine Pesticides (OCPs) EPA 8081A							PCBs EPA 8082	
			TTLC	STLC	TTLC	STLC	TCLP	4,4'-DDD	4,4'-DDE	4,4'-DDT	alpha-Chlordane	Chlordane	Dieldrin	gamma-Chlordane		
Units:			mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
Screening Level:			12	5.0	80	5.0	5.0		2,000	1,900	NA	430	34	NA		
Area 2 - Physical Education Building and Courts																
PE-1-0.5	10/15/2016	0.5	**5.7**	**---**	**8.4**	---	---	---	---	---	---	---	---	---	---	
PE-1-2.5	10/15/2016	2.5	**4.5**	---	**6.4**	---	---	---	---	---	---	---	---	---	---	
PE-2-0.5	10/15/2016	0.5	**3.2**	---	**13**	---	---	---	---	---	---	---	---	---	---	
PE-2-2.5	10/15/2016	2.5	**2.5**	---	**44**	---	---	---	---	---	---	---	---	---	---	
PE-3-0.5	10/15/2016	0.5	**2.9**	---	**55**	---	---	---	---	---	---	---	---	---	---	
PE-3-0.5 DUP	10/15/2016	0.5	**3.0**	---	**63**	---	---	---	---	---	---	---	---	---	---	
PE-3-2.5	10/15/2016	2.5	**1.8**	---	**92**	**5.5**	ND<0.25	---	---	---	---	---	---	---	---	
PE-3-3.5	3/25/2017	3.5	---	---	**110**	**7.4**	**0.044 J**	---	---	---	---	---	---	---	---	
PE-3b-0.5	11/23/2016	0.5	---	---	**22**	---	---	---	---	---	---	---	---	---	---	
PE-3b-2.5	11/23/2016	2.5	---	---	**86**	**5.8**	ND<0.25	---	---	---	---	---	---	---	---	
PE-3b-3.5	11/23/2016	3.5	---	---	**32**	---	---	---	---	---	---	---	---	---	---	
PE-3b1-0.5	3/25/2017	0.5	---	---	**6.0**	---	---	---	---	---	---	---	---	---	---	
PE-3b1-2.5	3/25/2017	2.5	---	---	**87**	**3.4**	---	---	---	---	---	---	---	---	---	
PE-3b1-3.5	3/25/2017	3.5	---	---	**40**	---	---	---	---	---	---	---	---	---	---	
PE-3c-0.5	11/23/2016	0.5	---	---	**3.2**	---	---	---	---	---	---	---	---	---	---	
PE-3c-2.5	11/23/2016	2.5	---	---	**2.5**	---	---	---	---	---	---	---	---	---	---	
PE-3c-3.5	11/23/2016	3.5	---	---	**2.7**	---	---	---	---	---	---	---	---	---	---	
PE-3c1-0.5	3/25/2017	0.5	---	---	**9.0**	---	---	---	---	---	---	---	---	---	---	
PE-3c1-2.5	3/25/2017	2.5	---	---	**21**	---	---	---	---	---	---	---	---	---	---	
PE-3c1-3.5	3/25/2017	3.5	---	---	**7.6**	---	---	---	---	---	---	---	---	---	---	
PE-3d-0.5	11/23/2016	0.5	---	---	**16**	---	---	---	---	---	---	---	---	---	---	
PE-3d-0.5 DUP	11/23/2016	0.5	---	---	**19**	---	---	---	---	---	---	---	---	---	---	
PE-3d-2.5	11/23/2016	2.5	---	---	**62**	---	---	---	---	---	---	---	---	---	---	
PE-3d-3.5	11/23/2016	3.5	---	---	**64**	---	---	---	---	---	---	---	---	---	---	
PE-4-0.5	10/15/2016	0.5	**2.2**	---	**17**	---	---	---	---	---	---	---	---	---	---	
PE-4-2.5	10/15/2016	2.5	**3.0**	---	**24**	---	---	---	---	---	---	---	---	---	---	
PE-5	N/A	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Removed from program
B-6-0.5	10/23/2016	0.5	**2.2**	---	**22**	---	---	---	---	---	---	---	---	---	---	
B-6-2.5	10/23/2016	2.5	**1.9**	---	**110**	**4.7**	---	---	---	---	---	---	---	---	---	
B-6-3.5	6/14/2017	3.5	---	---	**36**	---	---	---	---	---	---	---	---	---	---	
B-6-3.5 DUP	6/14/2017	3.5	---	---	**20**	---	---	---	---	---	---	---	---	---	---	
B-6-4.5	6/14/2017	4.5	---	---	**3.7**	---	---	---	---	---	---	---	---	---	---	
B-6b-0.5	11/23/2016	0.5	---	---	**15**	---	---	---	---	---	---	---	---	---	---	
B-6b-2.5	11/23/2016	2.5	---	---	**280**	**16**	**0.15 J**	---	---	---	---	---	---	---	---	
B-6b-3.5	11/23/2016	3.5	---	---	**5.3**	---	---	---	---	---	---	---	---	---	---	
B-6c-0.5	11/23/2016	0.5	---	---	**85**	**2.6**	---	---	---	---	---	---	---	---	---	
B-6c-2.5	11/23/2016	2.5	---	---	**35**	---	---	---	---	---	---	---	---	---	---	
B-6c-2.5 DUP	11/23/2016	2.5	---	---	**26**	---	---	---	---	---	---	---	---	---	---	
B-6c-3.5	11/23/2016	3.5	---	---	**190**	**3.9**	---	---	---	---	---	---	---	---	---	
B-6c-4.5	6/14/2017	4.5	---	---	**25**	---	---	---	---	---	---	---	---	---	---	
B-6d-0.5	11/23/2016	0.5	---	---	**14**	---	---	---	---	---	---	---	---	---	---	
B-6d-2.5	11/23/2016	2.5	---	---	**18**	---	---	---	---	---	---	---	---	---	---	
B-6d-3.5	11/23/2016	3.5	---	---	**58**	---	---	---	---	---	---	---	---	---	---	

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
B-7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Removed from program
B-7-0.5	3/25/2017	0.5	---	---	**15**	---	---	---	---	---	---	---	---	---	---	
B-7-2.5	3/25/2017	2.5	---	---	**5.3**	---	---	---	---	---	---	---	---	---	---	
B-7-3.5	3/25/2017	3.5	---	---	**9.3**	---	---	---	---	---	---	---	---	---	---	
B-7-4.5	3/25/2017	4.5	---	---	**4.0**	---	---	---	---	---	---	---	---	---	---	
B-8-0.5	10/23/2016	0.5	**1.6**	---	**10**	---	---	---	---	---	---	---	---	---	---	
B-8-2.5	10/23/2016	2.5	**1.7**	---	**5.5**	---	---	---	---	---	---	---	---	---	---	
Composite A11	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	**0.34J**	**0.48J**	ND<1.0	**1.2J**	**0.46J**	ND<1.0	---	Composite of B-6-0.5 and B-8-0.5
B-9-0.5	10/8/2016	0.5	**3.7**	---	**20**	---	---	---	---	---	---	---	---	---	---	
B-9-2.5	10/8/2016	2.5	**1.5**	**---**	**30**	---	---	---	---	---	---	---	---	---	---	
B-10-0.5	10/8/2016	0.5	**3.4**	**---**	**43**	---	---	---	---	---	---	---	---	---	---	
B-10-0.5 DUP	10/8/2016	0.5	**5.0**	---	**55**	---	---	---	---	---	---	---	---	---	---	
B-10-2.5	10/8/2016	2.5	**3.1**	---	**65**	---	---	---	---	---	---	---	---	---	---	
B-11-0.5	10/8/2016	0.5	**3.1**	---	**39**	---	---	---	---	---	---	---	---	---	---	
B-11-2.5	10/8/2016	2.5	**1.9**	---	**5.4**	---	---	---	---	---	---	---	---	---	---	
B-12-0.5	10/15/2016	0.5	**1.8**	---	**3.6**	---	---	---	---	---	---	---	---	---	---	
B-12-2.5	10/15/2016	2.5	**1.7**	---	**5.1**	---	---	---	---	---	---	---	---	---	---	
Composite A1	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	**3.2**	**0.88J**	ND<1.0	**1.5J**	ND<2.0	ND<1.0	ND<16	Composite of B-9-0.5, B-10-0.5, B-11-0.5, and B-12-0.5
C-6-0.5	10/23/2016	0.5	**1.6**	---	**11**	---	---	---	---	---	---	---	---	---	---	
C-6-2.5	10/23/2016	2.5	**2.2**	---	**8.6**	---	---	---	---	---	---	---	---	---	---	
C-6-3.5	6/14/2017	3.5	---	---	**16**	---	---	---	---	---	---	---	---	---	---	
C-6-4.5	3/25/2017	4.5	---	---	**57**	---	---	---	---	---	---	---	---	---	---	
C-7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Removed from program
C-7-0.5	3/25/2017	0.5	---	---	**23**	---	---	---	---	---	---	---	---	---	---	
C-7-2.5	3/25/2017	2.5	---	---	**13**	---	---	---	---	---	---	---	---	---	---	
C-7-3.5	3/25/2017	3.5	---	---	**16**	---	---	---	---	---	---	---	---	---	---	
C-7-4.5	3/25/2017	4.5	---	---	**12**	---	---	---	---	---	---	---	---	---	---	
C-8-0.5	10/23/2016	0.5	**3.1**	---	**22**	---	---	---	---	---	---	---	---	---	---	
C-8-2.5	10/23/2016	2.5	**2.0**	---	**31**	---	---	---	---	---	---	---	---	---	---	
C-8-2.5 DUP	10/23/2016	2.5	**2.5**	---	**34**	---	---	---	---	---	---	---	---	---	---	
Composite A12	N/A	0.5	**---**	---	**---**	---	---	**0.36J**	**1.1J**	ND<2.0	ND<1.0	**1.9J**	ND<2.0	**0.23J**	---	Composite of C-6-0.5 and C-8-0.5
C-9-0.5	10/8/2016	0.5	**3.4**	---	**12**	---	---	---	---	---	---	---	---	---	---	
C-9-2.5	10/8/2016	2.5	**1.4**	---	**8.6**	---	---	---	---	---	---	---	---	---	---	
C-10-0.5	10/8/2016	0.5	**1.7**	---	**23**	---	---	---	---	---	---	---	---	---	---	
C-10-2.5	10/8/2016	2.5	**1.2**	---	**9.7**	---	---	---	---	---	---	---	---	---	---	
C-11-0.5	10/8/2016	0.5	**3.0**	---	**18**	---	---	---	---	---	---	---	---	---	---	
C-11-2.5	10/8/2016	2.5	**1.4**	---	**14**	---	---	---	---	---	---	---	---	---	---	
C-12-0.5	10/15/2016	0.5	ND<2.0	---	**120**	**3.3**	---	---	---	---	---	---	---	---	---	
C-12-2.5	10/15/2016	2.5	**1.5**	---	**7.2**	---	---	---	---	---	---	---	---	---	---	
C-12a-0.5	11/23/2016	0.5	---	---	**21**	---	---	---	---	---	---	---	---	---	---	
C-12c-0.5	11/23/2016	0.5	---	---	**16**	---	---	---	---	---	---	---	---	---	---	
C-12d-0.5	11/23/2016	0.5	---	---	**9.2**	---	---	---	---	---	---	---	---	---	---	
Composite A2	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	**1.1J**	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of C-9-0.5, C-10-0.5, C-11-0.5, and C-12-0.5
D-6-0.5	10/23/2016	0.5	**2.9**	---	**18**	---	---	---	---	---	---	---	---	---	---	

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
D-6-2.5	10/23/2016	2.5	**2.6**	---	**20**	---	---	---	---	---	---	---	---	---	---	
D-7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Removed from program
D-8-0.5	10/23/2016	0.5	**2.7**	---	**15**	---	---	---	---	---	---	---	---	---	---	
D-8-0.5 DUP	10/23/2016	0.5	**2.9**	---	**18**	---	---	---	---	---	---	---	---	---	---	
D-8-2.5	10/23/2016	2.5	**2.3**	---	**12**	---	---	---	---	---	---	---	---	---	---	
Composite A13	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of D-6-0.5 and D-8-0.5
D-9-0.5	10/8/2016	0.5	**3.4**	---	**28**	---	---	---	---	---	---	---	---	---	---	
D-9-2.5	10/8/2016	2.5	**2.6**	---	**28**	---	---	---	---	---	---	---	---	---	---	
D-9-2.5 DUP	10/8/2016	2.5	**4.3**	---	**34**	---	---	---	---	---	---	---	---	---	---	
D-10-0.5	10/8/2016	0.5	**2.9**	---	**25**	---	---	---	---	---	---	---	---	---	---	
D-10-2.5	10/8/2016	2.5	**3.3**	---	**56**	---	---	---	---	---	---	---	---	---	---	
D-11-0.5	10/8/2016	0.5	**4.1**	**---**	**18**	---	---	---	---	---	---	---	---	---	---	
D-11-2.5	10/8/2016	2.5	**1.6**	**---**	**41**	---	---	---	---	---	---	---	---	---	---	
D-12-0.5	10/15/2016	0.5	**3.8**	---	**21**	---	---	---	---	---	---	---	---	---	---	
D-12-2.5	10/15/2016	2.5	**2.8**	---	**38**	---	---	---	---	---	---	---	---	---	---	
D-12-2.5 DUP	10/15/2016	2.5	**1.8**	---	**16**	---	---	---	---	---	---	---	---	---	---	
Composite A3	N/A	0.5	**---**	---	**---**	---	---	**1.2J**	**18**	**3.4**	ND<1.0	**3.0J**	**0.44J**	**0.31J**	---	Composite of D-9-0.5, D-10-0.5, D-11-0.5, and D-12-0.5
E-6-0.5	10/23/2016	0.5	**2.6**	---	**28**	---	---	---	---	---	---	---	---	---	---	
E-6-2.5	10/23/2016	2.5	**4.2**	---	**26**	---	---	---	---	---	---	---	---	---	---	
E-7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Removed from program
E-8-0.5	10/23/2016	0.5	**3.1**	---	**20**	---	---	---	---	---	---	---	---	---	---	
E-8-2.5	10/23/2016	2.5	**1.8**	---	**7.9**	---	---	---	---	---	---	---	---	---	---	
Composite A14	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	**0.20J**	ND<2.0	ND<1.0	**1.5J**	ND<2.0	ND<1.0	---	Composite of E-6-0.5 and E-8-0.5
E-9-0.5	10/8/2016	0.5	**2.9**	---	**24**	---	---	---	---	---	---	---	---	---	---	
E-9-2.5	10/8/2016	2.5	**3.5**	---	**16**	---	---	---	---	---	---	---	---	---	---	
E-10-0.5	10/8/2016	0.5	**3.5**	---	**18**	---	---	---	---	---	---	---	---	---	---	
E-10-2.5	10/8/2016	2.5	**3.1**	---	**16**	---	---	---	---	---	---	---	---	---	---	
E-11-0.5	10/8/2016	0.5	**2.6**	---	**26**	---	---	---	---	---	---	---	---	---	---	
E-11-2.5	10/8/2016	2.5	**3.6**	---	**24**	---	---	---	---	---	---	---	---	---	---	
E-12-0.5	10/15/2016	0.5	ND<2.0	---	**5.7**	---	---	---	---	---	---	---	---	---	---	
E-12-0.5 DUP	10/15/2016	0.5	**1.6**	---	**37**	---	---	---	---	---	---	---	---	---	---	
E-12-2.5	10/15/2016	2.5	**0.94J**	---	**22**	---	---	---	---	---	---	---	---	---	---	
Composite A4	N/A	0.5	**---**	---	**---**	---	---	**0.53J**	**14**	**1.5J**	**0.45J**	**4.6J**	**0.91J**	**0.41J**	---	Composite of E-9-0.5, E-10-0.5, E-11-0.5, and E-12-0.5
F-6-0.5	10/23/2016	0.5	**2.0**	---	**19**	---	---	---	---	---	---	---	---	---	---	
F-6-2.5	10/23/2016	2.5	**2.7**	---	**21**	---	---	---	---	---	---	---	---	---	---	
F-7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Removed from program
F-8-0.5	10/23/2016	0.5	**4.5**	---	**9.2**	---	---	---	---	---	---	---	---	---	---	
F-8-2.5	10/23/2016	2.5	**1.9**	---	**15**	---	---	---	---	---	---	---	---	---	---	
Composite A15	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of F-6-0.5 and F-8-0.5
Composite A15 DUP	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	**0.21J**	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of F-6-0.5 and F-8-0.5
F-9-0.5	10/8/2016	0.5	**3.5**	---	**24**	---	---	---	---	---	---	---	---	---	---	
F-9-0.5 DUP	10/8/2016	0.5	**3.7**	---	**23**	---	---	---	---	---	---	---	---	---	---	
F-9-2.5	10/8/2016	2.5	**3.2**	---	**34**	---	---	---	---	---	---	---	---	---	---	
F-10-0.5	10/8/2016	0.5	**3.0**	---	**34**	---	---	---	---	---	---	---	---	---	---	

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F-10-2.5	10/8/2016	2.5	**1.4**	---	**43**	---	---	---	---	---	---	---	---	---	---	
F-11-0.5	10/8/2016	0.5	**2.8**	---	**23**	---	---	---	---	---	---	---	---	---	---	
F-11-2.5	10/8/2016	2.5	**0.97J**	---	**7.2**	---	---	---	---	---	---	---	---	---	---	
F-12-0.5	10/15/2016	0.5	ND<2.0	---	**15**	---	---	---	---	---	---	---	---	---	---	
F-12-2.5	10/15/2016	2.5	**1.8**	---	**5.5**	---	---	---	---	---	---	---	---	---	---	
Composite A5	N/A	0.5	**---**	---	**---**	---	---	**0.32J**	**9.3**	**0.70J**	**0.33J**	**4.2J**	**7.8**	**0.46J**	---	Composite of F-9-0.5, F-10-0.5, F-11-0.5, and F-12-0.5
G-11-0.5	10/15/2016	0.5	**2.9**	**---**	**13**	---	---	---	---	---	---	---	---	---	---	
G-11-2.5	10/15/2016	2.5	**4.7**	---	**5.7**	---	---	---	---	---	---	---	---	---	---	
G-12-0.5	10/15/2016	0.5	ND<5.0	---	**23**	---	---	---	---	---	---	---	---	---	---	
G-12-2.5	10/15/2016	2.5	**1.1**	---	**4.3**	---	---	---	---	---	---	---	---	---	---	
Composite A6	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of G-11-0.5 and G-12-0.5
H-1-0.5	10/15/2016	0.5	**4.3**	---	**8.4**	---	---	---	---	---	---	---	---	---	---	
H-1-2.5	10/15/2016	2.5	**5.0**	---	**6.7**	---	---	---	---	---	---	---	---	---	---	
H-1c-0.5	6/14/2017	0.5	---	---	**13**	---	---	---	---	---	---	---	---	---	---	
H-1c-2.5	6/14/2017	2.5	---	---	**13**	---	---	---	---	---	---	---	---	---	---	
H-1c-3.5	6/14/2017	3.5	---	---	**7.6**	---	---	---	---	---	---	---	---	---	---	
H-1c1-0.5	6/14/2017	0.5	---	---	**15**	---	---	---	---	---	---	---	---	---	---	
H-1c1-2.5	6/14/2017	2.5	---	---	**7.6**	---	---	---	---	---	---	---	---	---	---	
H-1c1-3.5	6/14/2017	3.5	---	---	**3.7**	---	---	---	---	---	---	---	---	---	---	
H-2-0.5	10/15/2016	0.5	**5.3**	---	**8.9**	---	---	---	---	---	---	---	---	---	---	
H-2-2.5	10/15/2016	2.5	**5.6**	---	**230**	**3.3**	---	---	---	---	---	---	---	---	---	
H-2-3.5	3/25/2017	3.5	---	---	**3.8**	---	---	---	---	---	---	---	---	---	---	
H-2a-0.5	11/21/2016	0.5	---	---	**5.2**	---	---	---	---	---	---	---	---	---	---	
H-2a-2.5	11/21/2016	2.5	---	---	**20**	---	---	---	---	---	---	---	---	---	---	
H-2a-3.5	11/21/2016	3.5	---	---	**6.9**	---	---	---	---	---	---	---	---	---	---	
H-2b-0.5	11/21/2016	0.5	---	---	**37**	---	---	---	---	---	---	---	---	---	---	
H-2b-2.5	11/21/2016	2.5	---	---	**9.0**	---	---	---	---	---	---	---	---	---	---	
H-2b-3.5	11/21/2016	3.5	---	---	**7.2**	---	---	---	---	---	---	---	---	---	---	
H-2b1-0.5	3/25/2017	0.5	---	---	**4.2**	---	---	---	---	---	---	---	---	---	---	
H-2b1-2.5	3/25/2017	2.5	---	---	**4.8**	---	---	---	---	---	---	---	---	---	---	
H-2b1-3.5	3/25/2017	3.5	---	---	**5.2**	---	---	---	---	---	---	---	---	---	---	
H-2c-0.5	11/21/2016	0.5	---	---	**81**	**4.1**	---	---	---	---	---	---	---	---	---	
H-2c-2.5	11/21/2016	2.5	---	---	**7.8**	---	---	---	---	---	---	---	---	---	---	
H-2c-2.5 DUP	11/21/2016	2.5	---	---	**8.9**	---	---	---	---	---	---	---	---	---	---	
H-2c-3.5	11/21/2016	3.5	---	---	**5.7**	---	---	---	---	---	---	---	---	---	---	
H-2c1-0.5	3/25/2017	0.5	---	---	**71**	---	---	---	---	---	---	---	---	---	---	
H-2c1-2.5	3/25/2017	2.5	---	---	**3.4**	---	---	---	---	---	---	---	---	---	---	
H-2c1-3.5	3/25/2017	3.5	---	---	**4.0**	---	---	---	---	---	---	---	---	---	---	
H-2d-0.5	11/21/2016	0.5	---	---	**5.9**	---	---	---	---	---	---	---	---	---	---	
H-2d-2.5	11/21/2016	2.5	---	---	**29**	---	---	---	---	---	---	---	---	---	---	
H-2d-3.5	11/21/2016	3.5	---	---	**8.6**	---	---	---	---	---	---	---	---	---	---	
H-2d-3.5 DUP	11/21/2016	3.5	---	---	**9.9**	---	---	---	---	---	---	---	---	---	---	
H-2d1-0.5	3/25/2017	0.5	---	---	**92**	**2.5**	---	---	---	---	---	---	---	---	---	
H-2d1-2.5	3/25/2017	2.5	---	---	**4.0**	---	---	---	---	---	---	---	---	---	---	

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			TTLC	STLC	TTLC	STLC	TCLP	4,4'-DDD	4,4'-DDE	4,4'-DDT	alpha-Chlordane	Chlordane	Dieldrin	gamma-Chlordane		
		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
H-2d1-3.5	3/25/2017	3.5	---	---	**4.1**	---	---	---	---	---	---	---	---	---	---	
H-2d1-3.5 DUP	3/25/2017	3.5	---	---	**5.4**	---	---	---	---	---	---	---	---	---	---	
H-3-0.5	10/15/2016	0.5	**5.5**	---	**17**	---	---	---	---	---	---	---	---	---	---	
H-3-0.5 DUP	10/15/2016	0.5	**4.6**	---	**14**	---	---	---	---	---	---	---	---	---	---	
H-3-2.5	10/15/2016	2.5	**4.9**	---	**4.7**	---	---	---	---	---	---	---	---	---	---	
Composite A9	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	**0.96J**	ND<2.0	ND<1.0	---	Composite of H-1-0.5, H-2-0.5, and H-3-0.5
H-4-0.5	10/15/2016	0.5	**3.3**	---	**8.5**	---	---	---	---	---	---	---	---	---	---	
H-4-2.5	10/15/2016	2.5	**2.1**	---	**7.3**	---	---	---	---	---	---	---	---	---	---	
H-5-0.5	10/15/2016	0.5	**2.4**	---	**3.9**	---	---	---	---	---	---	---	---	---	---	
H-5-2.5	10/15/2016	2.5	**2.4**	---	**1.7**	---	---	---	---	---	---	---	---	---	---	
H-5-2.5 DUP	10/15/2016	2.5	**3.4**	---	**18**	---	---	---	---	---	---	---	---	---	---	
Composite A10	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	**0.29J**	**2.7J**	ND<2.0	**0.28J**	---	Composite of H-4-0.5 and H-5-0.5
Composite A10 DUP	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	**0.26J**	**3.4J**	ND<2.0	**0.34J**	---	Composite of H-4-0.5 and H-5-0.5
H-11-0.5	10/15/2016	0.5	**2.6**	---	**14**	---	---	---	---	---	---	---	---	---	---	
H-11-2.5	10/15/2016	2.5	**4.4**	---	**5.6**	---	---	---	---	---	---	---	---	---	---	
H-12-0.5	10/15/2016	0.5	ND<2.0	---	**4.7**	---	---	---	---	---	---	---	---	---	---	
H-12-2.5	10/15/2016	2.5	**1.0J**	---	**3.4**	---	---	---	---	---	---	---	---	---	---	
Composite A7	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	**0.24J**	**2.9J**	ND<2.0	**0.29J**	---	Composite of H-11-0.5 and H-12-0.5
I-11-0.5	10/15/2016	0.5	**4.6**	**---**	**15**	---	---	---	---	---	---	---	---	---	---	
I-11-2.5	10/15/2016	2.5	**5.3**	---	**5.1**	---	---	---	---	---	---	---	---	---	---	
I-12-0.5	10/15/2016	0.5	**1.0J**	---	**2.6**	---	---	---	---	---	---	---	---	---	---	
I-12-2.5	10/15/2016	2.5	**0.77J**	---	**2.7**	---	---	---	---	---	---	---	---	---	---	
Composite A8	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	ND<16	Composite of I-11-0.5 and I-12-0.5
Area 3 - Athletic Field and Bleachers																
B-13-0.5	10/9/2016	0.5	**41**	---	**96**	**6.1**	**0.029 J**	---	---	---	---	---	---	---	---	
B-13-2.5	10/9/2016	2.5	**2.4**	---	**16**	---	---	---	---	---	---	---	---	---	---	
B-13-2.5 DUP	10/9/2016	2.5	**4.9**	---	**19**	---	---	---	---	---	---	---	---	---	---	
B-13a-0.5	11/22/2016	0.5	**17**	---	**96**	**6.3**	**0.11 J**	---	---	---	---	---	---	---	---	
B-13a-2.5	11/22/2016	2.5	**12**	---	**95**	**6.8**	**0.050**	---	---	---	---	---	---	---	---	
B-13a-3.5	3/25/2017	3.5	---	---	**82**	**2.6**	---	---	---	---	---	---	---	---	---	
B-13b-0.5	11/22/2016	0.5	**14**	---	**27**	---	---	---	---	---	---	---	---	---	---	
B-13b-2.5	11/22/2016	2.5	**7.5**	---	---	---	---	---	---	---	---	---	---	---	---	
B-13c-0.5	11/22/2016	0.5	**7.8**	---	**99**	**3.6**	---	---	---	---	---	---	---	---	---	
B-13c-2.5	11/22/2016	2.5	---	---	**8.8**	---	---	---	---	---	---	---	---	---	---	
B-13d-0.5	11/22/2016	0.5	**1.9**	---	**17**	---	---	---	---	---	---	---	---	---	---	
B-13d-2.5	11/22/2016	2.5	**1.2**	---	---	---	---	---	---	---	---	---	---	---	---	
B-14-0.5	10/9/2016	0.5	**19**	---	**62**	---	---	---	---	---	---	---	---	---	---	
B-14-2.5	10/9/2016	2.5	**2.9**	---	**58**	---	---	---	---	---	---	---	---	---	---	
B-14a-0.5	11/22/2016	0.5	**12**	---	---	---	---	---	---	---	---	---	---	---	---	
B-14a-0.5 DUP	11/22/2016	0.5	**15**	---	---	---	---	---	---	---	---	---	---	---	---	
B-14a-2.5	11/22/2016	2.5	**6.1**	---	---	---	---	---	---	---	---	---	---	---	---	
B-14b-0.5	11/22/2016	0.5	**19**	---	---	---	---	---	---	---	---	---	---	---	---	
B-14b-2.5	11/22/2016	2.5	**4.5**	---	---	---	---	---	---	---	---	---	---	---	---	

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
B-14c-0.5	11/22/2016	0.5	**3.5**	---	---	---	---	---	---	---	---	---	---	---	---	
B-15-0.5	10/9/2016	0.5	**16**	---	**69**	---	---	---	---	---	---	---	---	---	---	
B-15-2.5	10/9/2016	2.5	**4.0**	---	**33**	---	---	---	---	---	---	---	---	---	---	
B-15a-0.5	11/22/2016	0.5	**17**	---	---	---	---	---	---	---	---	---	---	---	---	
B-15a-2.5	11/22/2016	2.5	**5.6**	---	---	---	---	---	---	---	---	---	---	---	---	
B-15b-0.5	11/22/2016	0.5	**5.2**	---	**180**	**2.8**	---	---	---	---	---	---	---	---	---	
B-15b-2.5	11/22/2016	2.5	**---**	---	**32**	---	---	---	---	---	---	---	---	---	---	
B-15c-0.5	11/22/2016	0.5	**3.1**	---	---	---	---	---	---	---	---	---	---	---	---	
Composite B1	N/A	0.5	**---**	---	**---**	---	---	**0.70J**	ND<2.0	**0.16J**	ND<1.0	ND<8.5	ND<2.0	ND<1.0	**---**	Composite of B-13-0.5, B-14-0.5, and B-15-0.5
B-16-0.5	10/9/2016	0.5	**13**	---	**81**	**3.7**	---	---	---	---	---	---	---	---	---	
B-16-0.5 DUP	10/9/2016	0.5	**15**	---	**70**	---	---	---	---	---	---	---	---	---	---	
B-16-2.5	10/9/2016	2.5	**2.7**	---	**76**	---	---	---	---	---	---	---	---	---	---	
B-16a-0.5	11/22/2016	0.5	**15**	---	**49**	---	---	---	---	---	---	---	---	---	---	
B-16a-0.5 DUP	11/22/2016	0.5	**27**	---	**72**	---	---	---	---	---	---	---	---	---	---	
B-16a-2.5	11/22/2016	2.5	**22**	---	---	---	---	---	---	---	---	---	---	---	---	
B-16a-3.5	3/25/2017	3.5	**4.4**	---	---	---	---	---	---	---	---	---	---	---	---	
B-16a-3.5 DUP	3/25/2017	3.5	**4.2**	---	---	---	---	---	---	---	---	---	---	---	---	
B-16b-0.5	11/22/2016	0.5	**3.1**	---	**69**	---	---	---	---	---	---	---	---	---	---	
B-16c-0.5	11/22/2016	0.5	**4.7**	---	**13**	---	---	---	---	---	---	---	---	---	---	
B-16c-0.5 DUP	11/22/2016	0.5	**6.4**	---	**22**	---	---	---	---	---	---	---	---	---	---	
B-17-0.5	10/9/2016	0.5	**2.9**	---	**5.2**	---	---	---	---	---	---	---	---	---	---	
B-17-2.5	10/9/2016	2.5	**12**	---	**53**	---	---	---	---	---	---	---	---	---	---	
Composite B2	N/A	0.5	**---**	---	**---**	---	---	**0.23J**	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	**---**	Composite of B-16-0.5 and B-17-0.5
C-13-0.5	10/9/2016	0.5	**2.8**	**---**	**150**	**11**	**0.095 J**	---	---	---	---	---	---	---	---	
C-13-2.5	10/9/2016	2.5	**1.6**	---	**15**	---	---	---	---	---	---	---	---	---	---	
C-13b-0.5	11/22/2016	0.5	---	---	**37**	---	---	---	---	---	---	---	---	---	---	
C-13c-0.5	11/22/2016	0.5	---	---	**110**	**3.0**	---	---	---	---	---	---	---	---	---	
C-13c-2.5	11/22/2016	2.5	---	---	**26**	---	---	---	---	---	---	---	---	---	---	
C-13d-0.5	11/22/2016	0.5	---	---	**48**	---	---	---	---	---	---	---	---	---	---	
C-14-0.5	10/9/2016	0.5	**6.5**	---	**44**	---	---	---	---	---	---	---	---	---	---	
C-14-2.5	10/9/2016	2.5	**1.6**	---	**14**	---	---	---	---	---	---	---	---	---	---	
C-15-0.5	10/9/2016	0.5	**5.8**	---	**71**	---	---	---	---	---	---	---	---	---	---	
C-15-2.5	10/9/2016	2.5	**3.0**	---	**28**	---	---	---	---	---	---	---	---	---	---	
Composite B3	N/A	0.5	**---**	---	**---**	---	---	**0.42J**	**0.66J**	**0.63J**	ND<1.0	ND<8.5	ND<2.0	ND<1.0	**---**	Composite of C-13-0.5, C-14-0.5, and C-15-0.5
C-16-0.5	10/9/2016	0.5	**4.7**	---	**70**	---	---	---	---	---	---	---	---	---	---	
C-16-0.5 DUP	10/9/2016	0.5	**2.4**	---	**43**	---	---	---	---	---	---	---	---	---	---	
C-16-2.5	10/9/2016	2.5	**2.7**	---	**29**	---	---	---	---	---	---	---	---	---	---	
C-17-0.5	10/9/2016	0.5	**3.0**	---	**85**	**4.7**	---	---	---	---	---	---	---	---	---	
C-17-2.5	10/9/2016	2.5	**2.8**	---	**22**	---	---	---	---	---	---	---	---	---	---	
C-17a-0.5	11/22/2016	0.5	**---**	---	**55**	---	---	---	---	---	---	---	---	---	---	
C-17b-0.5	11/22/2016	0.5	**---**	---	**99**	**6.6**	**0.036 J**	---	---	---	---	---	---	---	---	
C-17b-2.5	11/22/2016	2.5	**---**	---	**65**	---	---	---	---	---	---	---	---	---	---	
C-17c-0.5	11/22/2016	0.5	**---**	---	**42**	---	---	---	---	---	---	---	---	---	---	
C-17d-0.5	11/22/2016	0.5	**---**	---	**51**	---	---	---	---	---	---	---	---	---	---	
C-18-0.5	3/25/2017	0.5	**---**	---	**53**	---	---	---	---	---	---	---	---	---	---	

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C-18-2.5	3/25/2017	2.5	---	---	6.9	---	---	---	---	---	---	---	---	---	---	
C-18a-0.5	3/25/2017	0.5	---	---	47	---	---	---	---	---	---	---	---	---	---	
C-18a-0.5 DUP	3/25/2017	0.5	---	---	42	---	---	---	---	---	---	---	---	---	---	
C-18a-2.5	3/25/2017	2.5	---	---	5.3	---	---	---	---	---	---	---	---	---	---	
C-18c-0.5	3/25/2017	0.5	---	---	17	---	---	---	---	---	---	---	---	---	---	
C-18c-2.5	3/25/2017	2.5	---	---	4.5	---	---	---	---	---	---	---	---	---	---	
Composite B4	N/A	0.5	---	---	---	---	---	0.34J	0.27J	0.33J	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of C-16-0.5 and C-17-0.5
D-13-0.5	10/8/2016	0.5	2.6	---	43	---	---	---	---	---	---	---	---	---	---	
D-13-2.5	10/8/2016	2.5	1.8	---	18	---	---	---	---	---	---	---	---	---	---	
D-14-0.5	10/9/2016	0.5	3.8	---	50	---	---	---	---	---	---	---	---	---	---	
D-14-2.5	10/9/2016	2.5	3.7	---	16	---	---	---	---	---	---	---	---	---	---	
D-14-2.5 DUP	10/9/2016	2.5	2.7	---	1.9	---	---	---	---	---	---	---	---	---	---	
D-15-0.5	10/9/2016	0.5	2.7	---	14	---	---	---	---	---	---	---	---	---	---	
D-15-2.5	10/9/2016	2.5	2.1	---	29	---	---	---	---	---	---	---	---	---	---	
Composite B5	N/A	0.5	---	---	---	---	---	0.34J	0.79J	0.45J	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of D-13-0.5, D-14-0.5, and D-15-0.5
D-16-0.5	10/9/2016	0.5	4.8	---	34	---	---	---	---	---	---	---	---	---	---	
D-16-2.5	10/9/2016	2.5	1.9	---	33	---	---	---	---	---	---	---	---	---	---	
D-17-0.5	10/9/2016	0.5	3.9	---	76	---	---	---	---	---	---	---	---	---	---	
D-17-2.5	10/9/2016	2.5	2.8	---	45	---	---	---	---	---	---	---	---	---	---	
Composite B6	N/A	0.5	---	---	---	---	---	0.35J	0.88J	0.51J	ND<1.0	3.5J	ND<2.0	ND<1.0	---	Composite of D-16-0.5 and D-17-0.5
E-13-0.5	10/8/2016	0.5	1.7	---	40	---	---	---	---	---	---	---	---	---	---	
E-13-2.5	10/8/2016	2.5	0.88J	---	3.4	---	---	---	---	---	---	---	---	---	---	
E-14-0.5	10/9/2016	0.5	3.5	---	27	---	---	---	---	---	---	---	---	---	---	
E-14-2.5	10/9/2016	2.5	3.0	---	14	---	---	---	---	---	---	---	---	---	---	
E-14-2.5 DUP	10/9/2016	2.5	3.5	---	15	---	---	---	---	---	---	---	---	---	---	
E-15-0.5	10/9/2016	0.5	3.1	---	20	---	---	---	---	---	---	---	---	---	---	
E-15-2.5	10/9/2016	2.5	2.2	---	8.6	---	---	---	---	---	---	---	---	---	---	
Composite B7	N/A	0.5	---	---	---	---	---	ND<2.0	0.91J	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of E-13-0.5, E-14-0.5, and E-15-0.5
E-16-0.5	10/9/2016	0.5	4.3	---	37	---	---	---	---	---	---	---	---	---	---	
E-16-2.5	10/9/2016	2.5	0.93J	---	49	---	---	---	---	---	---	---	---	---	---	
E-17-0.5	10/9/2016	0.5	4.7	---	68	---	---	---	---	---	---	---	---	---	---	
E-17-2.5	10/9/2016	2.5	1.3	---	11	---	---	---	---	---	---	---	---	---	---	
Composite B8	N/A	0.5	---	---	---	---	---	ND<2.0	0.83J	0.28J	ND<1.0	3.1J	ND<2.0	ND<1.0	---	Composite of E-16-0.5 and E-17-0.5
F-13-0.5	10/8/2016	0.5	1.3	---	12	---	---	---	---	---	---	---	---	---	---	
F-13-2.5	10/8/2016	2.5	2.2	---	30	---	---	---	---	---	---	---	---	---	---	
F-14-0.5	10/9/2016	0.5	4.2	---	48	---	---	---	---	---	---	---	---	---	---	
F-14-0.5 DUP	10/9/2016	0.5	2.6	---	42	---	---	---	---	---	---	---	---	---	---	
F-14-2.5	10/9/2016	2.5	2.0	---	8.8	---	---	---	---	---	---	---	---	---	---	
F-15-0.5	10/9/2016	0.5	4.5	---	28	---	---	---	---	---	---	---	---	---	---	
F-15-2.5	10/9/2016	2.5	1.5	---	16	---	---	---	---	---	---	---	---	---	---	
Composite B9	N/A	0.5	---	---	---	---	---	ND<2.0	1.2J	0.25J	ND<1.0	3.1J	ND<2.0	ND<1.0	---	Composite of F-13-0.5, F-14-0.5, and F-15-0.5
F-16-0.5	10/9/2016	0.5	2.9	---	16	---	---	---	---	---	---	---	---	---	---	
F-16-2.5	10/9/2016	2.5	1.7	---	42	---	---	---	---	---	---	---	---	---	---	

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
F-17-0.5	10/9/2016	0.5	**3.0**	---	**29**	---	---	---	---	---	---	---	---	---	---	
F-17-2.5	10/9/2016	2.5	**2.1**	---	**55**	---	---	---	---	---	---	---	---	---	---	
Composite B10	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	**2.0**	**0.60J**	**0.53J**	**5.1J**	ND<2.0	**0.23J**	---	Composite of F-16-0.5 and F-17-0.5
Composite B10 DUP	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	**1.1J**	**0.34J**	ND<1.0	**1.6J**	ND<2.0	ND<1.0	---	Composite of F-16-0.5 and F-17-0.5
G-13-0.5	10/8/2016	0.5	**1.6**	---	**10**	---	---	---	---	---	---	---	---	---	---	
G-13-2.5	10/8/2016	2.5	**1.7**	---	**37**	---	---	---	---	---	---	---	---	---	---	
G-13-2.5 DUP	10/8/2016	2.5	**1.6**	---	**4.0**	---	---	---	---	---	---	---	---	---	---	
G-14-0.5	10/9/2016	0.5	**3.4**	---	**29**	---	---	---	---	---	---	---	---	---	---	
G-14-2.5	10/9/2016	2.5	ND<1.0	---	**2.2**	---	---	---	---	---	---	---	---	---	---	
G-15-0.5	10/9/2016	0.5	**3.9**	---	**31**	---	---	---	---	---	---	---	---	---	---	
G-15-2.5	10/9/2016	2.5	**1.1**	---	**8.9**	---	---	---	---	---	---	---	---	---	---	
Composite B11	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	**1.3J**	**0.50J**	**0.24J**	**4.2J**	ND<2.0	ND<1.0	**---**	Composite of G-13-0.5, G-14-0.5, and G-15-0.5
G-16-0.5	10/9/2016	0.5	**4.8**	---	**26**	---	---	---	---	---	---	---	---	---	---	
G-16-2.5	10/9/2016	2.5	**1.2**	---	**6.0**	---	---	---	---	---	---	---	---	---	---	
G-17-0.5	10/9/2016	0.5	**3.8**	---	**48**	---	---	---	---	---	---	---	---	---	---	
G-17-2.5	10/9/2016	2.5	**1.6**	---	**3.4**	---	---	---	---	---	---	---	---	---	---	
Composite B12	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	**1.7J**	ND<2.0	**0.64J**	**4.1J**	ND<2.0	ND<1.0	---	Composite of G-16-0.5 and G-17-0.5
H-13-0.5	10/8/2016	0.5	**3.7**	---	**48**	---	---	---	---	---	---	---	---	---	---	
H-13-2.5	10/8/2016	2.5	**1.5**	---	**2.7**	---	---	---	---	---	---	---	---	---	---	
H-14-0.5	10/9/2016	0.5	ND<5.0	---	**28**	---	---	---	---	---	---	---	---	---	---	
H-14-2.5	10/9/2016	2.5	**1.6**	---	**4.3**	---	---	---	---	---	---	---	---	---	---	
H-15-0.5	10/9/2016	0.5	**4.3**	---	**27**	---	---	---	---	---	---	---	---	---	---	
H-15-2.5	10/9/2016	2.5	**1.4**	**---**	**6.0**	---	---	---	---	---	---	---	---	---	---	
Composite B13	N/A	0.5	**---**	**---**	**---**	---	---	ND<2.0	**1.1J**	**0.41J**	**0.32J**	**2.9J**	ND<2.0	ND<1.0	**---**	Composite of H-13-0.5, H-14-0.5, and H-15-0.5
H-16-0.5	10/9/2016	0.5	**4.7**	**---**	**33**	---	---	---	---	---	---	---	---	---	---	
H-16-2.5	10/9/2016	2.5	**2.4**	**---**	**20**	---	---	---	---	---	---	---	---	---	---	
H-17-0.5	10/9/2016	0.5	**7.3**	**---**	**60**	---	---	---	---	---	---	---	---	---	---	
H-17-0.5 DUP	10/9/2016	0.5	**3.9**	**---**	**65**	---	---	---	---	---	---	---	---	---	---	
H-17-2.5	10/9/2016	2.5	**1.9**	**---**	**3.6**	---	---	---	---	---	---	---	---	---	---	
Composite B14	N/A	0.5	**---**	**---**	**---**	---	---	ND<2.0	**0.75J**	**0.28J**	ND<1.0	**2.1J**	ND<2.0	ND<1.0	---	Composite of H-16-0.5 and H-17-0.5
I-13-0.5	10/8/2016	0.5	**2.5**	**---**	**5.9**	---	---	---	---	---	---	---	---	---	---	
I-13-2.5	10/8/2016	2.5	**1.3**	**---**	**1.6**	---	---	---	---	---	---	---	---	---	---	
I-14-0.5	10/9/2016	0.5	**3.5**	**---**	**49**	---	---	---	---	---	---	---	---	---	---	
I-14-2.5	10/9/2016	2.5	**2.3**	**---**	**6.1**	---	---	---	---	---	---	---	---	---	---	
I-15-0.5	10/9/2016	0.5	**4.7**	**---**	**43**	---	---	---	---	---	---	---	---	---	---	
I-15-2.5	10/9/2016	2.5	**3.5**	**---**	**53**	---	---	---	---	---	---	---	---	---	---	
Composite B15	N/A	0.5	**---**	**---**	**---**	---	---	ND<2.0	**0.28J**	**0.28J**	ND<1.0	ND<8.5	ND<2.0	ND<1.0	(1)	Composite of I-13-0.5, I-14-0.5, and I-15-0.5
I-16-0.5	10/9/2016	0.5	**2.9**	**---**	**13**	---	---	---	---	---	---	---	---	---	---	
I-16-2.5	10/9/2016	2.5	**4.6**	**---**	**35**	---	---	---	---	---	---	---	---	---	---	
I-17-0.5	10/9/2016	0.5	**8.7**	**---**	**79**	---	---	---	---	---	---	---	---	---	---	
I-17-2.5	10/9/2016	2.5	**1.8**	**---**	**2.4**	---	---	---	---	---	---	---	---	---	---	
Composite B16	N/A	0.5	**---**	**---**	**---**	---	---	ND<2.0	**0.58J**	**0.21J**	**0.34J**	**2.7J**	ND<2.0	ND<1.0	---	Composite of I-16-0.5 and I-17-0.5

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
J-14-0.5	10/9/2016	0.5	**4.3**	**---**	**43**	---	---	---	---	---	---	---	---	---	---	
J-14-2.5	10/9/2016	2.5	**1.8**	**---**	**77**	---	---	---	---	---	---	---	---	---	---	
J-15-0.5	10/9/2016	0.5	**4.6**	**---**	**64**	---	---	---	---	---	---	---	---	---	---	
J-15-2.5	10/9/2016	2.5	**1.2**	**---**	**1.7**	---	---	---	---	---	---	---	---	---	---	
J-16-0.5	10/9/2016	0.5	**3.8**	**---**	**68**	---	---	---	---	---	---	---	---	---	---	
J-16-2.5	10/9/2016	2.5	**2.7**	**---**	**20**	---	---	---	---	---	---	---	---	---	---	
J-17-0.5	10/9/2016	0.5	**4.8**	**---**	**59**	---	---	---	---	---	---	---	---	---	---	
J-17-2.5	10/9/2016	2.5	**2.0**	**---**	**3.8**	---	---	---	---	---	---	---	---	---	---	
Composite B17	N/A	0.5	**---**	**---**	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of J-14-0.5, J-15-0.5, J-16-0.5, and J-17-0.5
K-14-0.5	10/9/2016	0.5	**3.4**	**---**	**55**	---	---	---	---	---	---	---	---	---	---	
K-14-2.5	10/9/2016	2.5	**1.0**	**---**	**5.6**	---	---	---	---	---	---	---	---	---	---	
K-15-0.5	10/9/2016	0.5	**2.3**	**---**	**47**	---	---	---	---	---	---	---	---	---	---	
K-15-2.5	10/9/2016	2.5	**0.84J**	**---**	**2.2**	---	---	---	---	---	---	---	---	---	---	
K-16-0.5	10/9/2016	0.5	**1.6**	**---**	**9.6**	---	---	---	---	---	---	---	---	---	---	
K-16-2.5	10/9/2016	2.5	**1.8**	**---**	**13**	---	---	---	---	---	---	---	---	---	---	
K-16-2.5 DUP	10/9/2016	2.5	**2.5**	**---**	**25**	---	---	---	---	---	---	---	---	---	---	
K-17-0.5	10/15/2016	0.5	**6.3**	**---**	**9.7**	---	---	---	---	---	---	---	---	---	---	
K-17-0.5 DUP	10/15/2016	0.5	**3.4**	**---**	**8.2**	---	---	---	---	---	---	---	---	---	---	
K-17-2.5	10/15/2016	2.5	**1.2**	**---**	**3.4**	---	---	---	---	---	---	---	---	---	---	
Composite B18	N/A	0.5	**---**	**---**	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of K-14-0.5, K-15-0.5, K-16-0.5, and K-17-0.5
Area 5 - Auditorium and Lunch Pavilion																
						---	---									
MB-1-0.5	10/15/2016	0.5	**6.9**	**---**	**24**	---	---	---	---	---	---	---	---	---	---	
MB-1-2.5	10/15/2016	2.5	**0.96J**	**---**	**3.0**	---	---	---	---	---	---	---	---	---	---	
MB-2-0.5	10/15/2016	0.5	**8.1**	**---**	**8.1**	---	---	---	---	---	---	---	---	---	---	
MB-2-2.5	10/15/2016	2.5	**4.9**	**---**	**4.9**	---	---	---	---	---	---	---	---	---	---	
MB-2-2.5 DUP	10/15/2016	2.5	**7.6**	**---**	**5.0**	---	---	---	---	---	---	---	---	---	---	
MB-3-0.5	10/16/2016	0.5	**4.4**	**---**	**15**	---	---	---	---	---	---	---	---	---	---	
MB-3-2.5	10/16/2016	2.5	**3.1**	**---**	**7.2**	---	---	---	---	---	---	---	---	---	---	
Composite C1	N/A	0.5	**---**	**---**	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of MB-1-0.5, MB-2-0.5, MB-3-0.5
MB-4-0.5	10/15/2016	0.5	**6.1**	**---**	**18**	---	---	---	---	---	---	---	---	---	---	
MB-4-2.5	10/15/2016	2.5	**4.2**	**---**	**18**	---	---	---	---	---	---	---	---	---	---	
MB-5-0.5	10/15/2016	0.5	**3.9**	**---**	**24**	---	---	---	---	---	---	---	---	---	---	
MB-5-0.5 DUP	10/15/2016	0.5	**4.3**	**---**	**11**	---	---	---	---	---	---	---	---	---	---	
MB-5-2.5	10/15/2016	2.5	**4.6**	**---**	**5.2**	---	---	---	---	---	---	---	---	---	---	
MB-6-0.5	10/16/2016	0.5	**3.5**	**---**	**41**	---	---	---	---	---	---	---	---	---	---	
MB-6-0.5 DUP	10/16/2016	0.5	**3.5**	**---**	**89**	**2.5**	---	---	---	---	---	---	---	---	---	
MB-6-2.5	10/16/2016	2.5	**2.4**	**---**	**27**	---	---	---	---	---	---	---	---	---	---	
MB-6a-0.5	11/21/2016	0.5	**---**	**---**	**7.7**	---	---	---	---	---	---	---	---	---	---	
MB-6c-0.5	11/21/2016	0.5	**---**	**---**	**8.9**	---	---	---	---	---	---	---	---	---	---	
MB-6d-0.5	11/21/2016	0.5	**---**	**---**	**7.8**	---	---	---	---	---	---	---	---	---	---	
Composite C2	N/A	0.5	**---**	**---**	**---**	---	---	ND<2.0	**1.2J**	ND<2.0	**0.48J**	**5.2J**	ND<2.0	ND<1.0	---	Composite of MB-4-0.5, MB-5-0.5, MB-6-0.5
Composite C2 DUP	N/A	0.5	**---**	**---**	**---**	---	---	ND<2.0	**0.43J**	ND<2.0	ND<1.0	**1.1J**	ND<2.0	ND<1.0	---	Composite of MB-4-0.5, MB-5-0.5, MB-6-0.5

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
AUD-1-0.5	10/16/2016	0.5	**3.9**	**---**	**24**	---	---	---	---	---	---	---	---	---	---	
AUD-1-2.5	10/16/2016	2.5	**0.98J**	**---**	**5.1**	---	---	---	---	---	---	---	---	---	---	
AUD-2-0.5	10/16/2016	0.5	ND<2.0	**---**	**4.4**	---	---	---	---	---	---	---	---	---	---	
AUD-2-0.5 DUP	10/16/2016	0.5	**6.3**	**---**	**29**	---	---	---	---	---	---	---	---	---	---	
AUD-2-2.5	10/16/2016	2.5	**4.1**	**---**	**10**	---	---	---	---	---	---	---	---	---	---	
AUD-3-0.5	10/16/2016	0.5	**3.5**	**---**	**110**	**6.4**	ND<0.25	---	---	---	---	---	---	---	---	
AUD-3-2.5	10/16/2016	2.5	**2.4**	**---**	**8.5**	---	---	---	---	---	---	---	---	---	---	
AUD-3a-0.5	11/21/2016	0.5	**---**	**---**	**4300**	**74**	**1.7**	---	---	---	---	---	---	---	---	
AUD-3a-2.5	11/21/2016	2.5	**---**	**---**	**53**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-3a1-0.5	3/25/2017	0.5	**---**	**---**	**110**	**5.6**	**0.17 J**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-3a1-0.5 DUP	3/25/2017	0.5	**---**	**---**	**110**	**5.7**	**0.16 J**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-3a1-2.5	3/25/2017	2.5	**---**	**---**	**9.7**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-3b-0.5	11/21/2016	0.5	**---**	**---**	**140**	**10**	ND<0.25	---	---	---	---	---	---	---	---	
AUD-3b-2.5	11/21/2016	2.5	**---**	**---**	**7.7**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-3b1-0.5	3/25/2017	0.5	**---**	**---**	**22**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-3b1-2.5	3/25/2017	2.5	**---**	**---**	**3.2**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-3c-0.25	11/21/2016	0.25	**---**	**---**	**500**	**13**	**0.015 J**	---	---	---	---	---	---	---	---	
AUD-3c-0.5	11/21/2016	0.5	**---**	**---**	**700**	**22**	**0.28**	---	---	---	---	---	---	---	---	
AUD-3c-2.5	11/21/2016	2.5	**---**	**---**	**42**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-3c1-0.5	3/25/2017	0.5	**---**	**---**	**100**	**4.3**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-3c1-2.5	3/25/2017	2.5	**---**	**---**	**43**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-4-0.25	11/21/2016	0.25	**---**	**---**	**29**	---	---	---	---	---	---	---	---	---	---	
AUD-4-0.25 DUP	11/21/2016	0.25	**---**	**---**	**20**	---	---	---	---	---	---	---	---	---	---	
AUD-4-0.5	10/16/2016	0.5	**8.8**	**---**	**390**	**29**	**0.41**	---	---	---	---	---	---	---	---	
AUD-4-2.5	10/16/2016	2.5	**3.0**	**---**	**12**	---	---	---	---	---	---	---	---	---	---	
AUD-4b-0.25	11/21/2016	0.25	**---**	**---**	**21**	---	---	---	---	---	---	---	---	---	---	
AUD-4b-0.5	11/21/2016	0.5	**---**	**---**	**9.8**	---	---	---	---	---	---	---	---	---	---	
AUD-4c-0.25	11/21/2016	0.25	**---**	**---**	**49**	---	---	---	---	---	---	---	---	---	---	
AUD-4c-0.5	11/21/2016	0.5	**---**	**---**	**460**	ND<1.0	---	---	---	---	---	---	---	---	---	
AUD-4c-2.5	11/21/2016	2.5	**---**	**---**	**18**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-4c1-0.5	3/25/2017	0.5	**---**	**---**	**11**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-4c1-2.5	3/25/2017	2.5	**---**	**---**	**7.4**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
Composite C3	N/A	0.5	**---**	**---**	**---**	---	--	**0.22J**	**1.1J**	**0.50J**	**1.2**	**6.8J**	**1.7J**	**0.71J**	(2)	Composite of AUD-1-0.5, AUD-2-0.5, AUD-3-0.5, and AUD-4-0.5
AUD-5-0.25	11/21/2016	0.25	**---**	**---**	**130**	**17**	**0.040 J**	---	---	---	---	---	---	---	---	
AUD-5-0.5	10/16/2016	0.5	ND<5.0	**---**	**620**	**24**	**0.59**	---	---	---	---	---	---	---	---	
AUD-5-2.5	10/16/2016	2.5	**3.2**	**---**	**43**	---	---	---	---	---	---	---	---	---	---	
AUD-5b-0.25	11/21/2016	0.5	**---**	**---**	**13**	---	---	---	---	---	---	---	---	---	---	
AUD-5b-0.5	11/21/2016	0.5	**---**	**---**	**240**	**9.7**	ND<0.25	---	---	---	---	---	---	---	---	
AUD-5b-2.5	11/21/2016	2.5	**---**	**---**	**28**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	---	---	
AUD-5c-0.25	11/21/2016	0.25	**---**	**---**	**110**	**6.0**	ND<0.25	---	---	---	---	---	---	---	---	
AUD-5c-0.5	11/21/2016	0.5	**---**	**---**	**13**	---	---	---	---	---	---	---	---	---	---	
AUD-6-0.25	11/21/2016	0.25	**---**	**---**	**160**	**7.8**	**0.11 J**	---	---	---	---	---	---	---	---	
AUD-6-0.5	10/16/2016	0.5	**5.2**	**---**	**670**	**26**	**1.5**	---	---	---	---	---	---	---	---	
AUD-6-2.5	10/16/2016	2.5	**3.4**	**---**	**19**	---	---	---	---	---	---	---	---	---	---	
AUD-6b-0.25	11/21/2016	0.25	**--**	**---**	**41**	---	---	---	---	---	---	---	---	---	---	
AUD-6b-0.5	11/21/2016	0.5	**--**	**---**	**160**	**13**	ND<0.25	---	---	---	---	---	---	---	---	

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Sample Location	Sample Date	Depth (feet bgs)	Analyses and Analytical Methods													Comments
			Arsenic (As) EPA 6010B		Lead (Pb) EPA 6010B			Organochlorine Pesticides (OCPs) EPA 8081A							PCBs EPA 8082	
			TTLC	STLC	TTLC	STLC	TCLP	4,4'-DDD	4,4'-DDE	4,4'-DDT	alpha-Chlordane	Chlordane	Dieldrin	gamma-Chlordane		
		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
AUD-6b-2.5	11/21/2016	2.5	---	---	**2.5**	---	---	---	---	---	---	---	---	---	---	
AUD-6c-0.25	11/21/2016	0.25	--	---	**110**	**3.9**	---	---	---	---	---	---	---	---	---	
AUD-6c-0.25 DUP	11/21/2016	0.25	--	---	**82**	**6.2**	ND<0.25	---	---	---	---	---	---	---	---	
AUD-6c-0.5	11/21/2016	0.5	--	---	**66**	---	---	---	---	---	---	---	---	---	---	
AUD-7-0.5	10/16/2016	0.5	**4.5**	---	**16**	---	---	---	---	---	---	---	---	---	---	
AUD-7-0.5 DUP	10/16/2016	0.5	**4.8**	---	**12**	---	---	---	---	---	---	---	---	---	---	
AUD-7-2.5	10/16/2016	2.5	**4.1**	---	**12**	---	---	---	---	---	---	---	---	---	---	
AUD-8-0.5	10/16/2016	0.5	**1.9**	---	**3.2**	---	---	---	---	---	---	---	---	---	---	
AUD-8-2.5	10/16/2016	2.5	**2.8**	---	**2.3**	---	---	---	---	---	---	---	---	---	---	
AUD-8-2.5 DUP	10/16/2016	2.5	**3.1**	---	**2.4**	---	---	---	---	---	---	---	---	---	---	
Composite C4	N/A	0.5	---	---	---	---	---	ND<2.0	**1.3J**	**1.2J**	**3.0**	**22**	**7.3**	**1.7**	---	Composite of AUD-5-0.5, AUD-6-0.5, AUD-7-0.5, and AUD-8-0.5
AUD-9-0.5	10/16/2016	0.5	**3.8J**	---	**6.0**	---	---	---	---	---	---	---	---	---	---	
AUD-9-0.5 DUP	10/16/2016	0.5	**4.5J**	---	**5.9**	---	---	---	---	---	---	---	---	---	---	
AUD-9-2.5	10/16/2016	2.5	**2.5**	---	**1.3**	---	---	---	---	---	---	---	---	---	---	
AUD-10-0.5	10/16/2016	0.5	**8.4**	---	**19**	---	---	---	---	---	---	---	---	---	---	
AUD-10-2.5	10/16/2016	2.5	**2.2**	---	**9.2**	---	---	---	---	---	---	---	---	---	---	
AUD-11-0.5	10/16/2016	0.5	**3.5**	---	**17**	---	---	---	---	---	---	---	---	---	---	
AUD-11-2.5	10/16/2016	2.5	**1.7**	---	**3.8**	---	---	---	---	---	---	---	---	---	---	
AUD-12-0.5	10/16/2016	0.5	**3.5**	---	**25**	---	---	---	---	---	---	---	---	---	---	
AUD-12-2.5	10/16/2016	2.5	**1.8**	---	**8.1**	---	---	---	---	---	---	---	---	---	---	
Composite C5	N/A	0.5	---	---	---	---	---	**0.25J**	**0.59J**	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of AUD-9-0.5, AUD-10-0.5, AUD-11-0.5, and AUD-12-0.5

UB-1-0.5	10/16/2016	0.5	**4.0J**	---	**6.1**	---	---	---	---	---	---	---	---	---	---	
UB-1-2.5	10/16/2016	2.5	**3.2**	---	**2.8**	---	---	---	---	---	---	---	---	---	---	
UB-2-0.5	10/16/2016	0.5	**5.9**	---	**8.6**	---	---	---	---	---	---	---	---	---	---	
UB-2-2.5	10/16/2016	2.5	**5.3**	---	**4.7**	---	---	---	---	---	---	---	---	---	---	
UB-3-0.5	10/16/2016	0.5	**6.5**	---	**26**	---	---	---	---	---	---	---	---	---	---	
UB-3-2.5	10/16/2016	2.5	**4.7**	---	**5.1**	---	---	---	---	---	---	---	---	---	---	
Composite C6	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	ND<16	Composite of UB-1-0.5, UB-2-0.5, and UB-3-0.5
UB-4-0.5	10/16/2016	0.5	**3.1**	---	**6.9**	---	---	---	---	---	---	---	---	---	---	
UB-4-2.5	10/16/2016	2.5	**3.9**	---	**5.0**	---	---	---	---	---	---	---	---	---	---	
UB-5-0.5	10/16/2016	0.5	**6.7**	---	**9.8**	---	---	---	---	---	---	---	---	---	---	
UB-5-2.5	10/16/2016	2.5	**1.9**	---	**2.6**	---	---	---	---	---	---	---	---	---	---	
UB-5-2.5 DUP	10/16/2016	2.5	**2.4**	---	**2.4**	---	---	---	---	---	---	---	---	---	---	
UB-6-0.5	10/16/2016	0.5	**2.3**	---	**6.1**	---	---	---	---	---	---	---	---	---	---	
UB-6-0.5 DUP	10/16/2016	0.5	**2.0**	---	**5.9**	---	---	---	---	---	---	---	---	---	---	
UB-6-2.5	10/16/2016	2.5	**2.0**	---	**3.4**	---	---	---	---	---	---	---	---	---	---	
Composite C7	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of UB-4-0.5, UB-5-0.5, and UB-6-0.5
HVAC-1-0.5	10/16/2016	0.5	**3.7**	---	**3.7**	---	---	---	---	---	---	---	---	---	---	
HVAC-1-2.5	10/16/2016	2.5	**2.8**	---	**2.7**	---	---	---	---	---	---	---	---	---	---	
HVAC-2-0.5	10/16/2016	0.5	**3.9**	---	**4.7**	---	---	---	---	---	---	---	---	---	---	
HVAC-2-2.5	10/16/2016	2.5	**3.4**	---	**3.1**	---	---	---	---	---	---	---	---	---	---	
HVAC-3-0.5	10/16/2016	0.5	**2.8**	---	**8.5**	---	---	---	---	---	---	---	---	---	---	
HVAC-3-2.5	10/16/2016	2.5	**2.5**	---	**6.8**	---	---	---	---	---	---	---	---	---	---	
Composite C8	N/A	0.5	---	---	---	---	---	---	---	---	---	---	---	---	ND<16	Composite of HVAC-1-0.5, HVAC-2-0.5, HVAC-3-0.5

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
Composite C8 DUP	N/A	0.5	---	---	---	---	---	---	---	---	---	---	---	---	ND<16	Composite of HVAC-1-0.5, HVAC-2-0.5, HVAC-3-0.5
AA-653-1-0.5	10/15/2016	0.5	**3.5**	---	**21**	---	---	---	---	---	---	---	---	---	---	
AA-653-1-2.5	10/15/2016	2.5	**9.0**	---	**12**	---	---	---	---	---	---	---	---	---	---	
AA-653-2-0.5	10/16/2016	0.5	**2.1**	---	**23**	---	---	---	---	---	---	---	---	---	---	
AA-653-2-2.5	10/16/2016	2.5	**1.5**	---	**4.7**	---	---	---	---	---	---	---	---	---	---	
AA-653-3-0.5	10/16/2016	0.5	**10**	---	**17**	---	---	---	---	---	---	---	---	---	---	
AA-653-3-2.5	10/16/2016	2.5	**2.0**	---	**13**	---	---	---	---	---	---	---	---	---	---	
AA-653-3-2.5 DUP	10/16/2016	2.5	**2.9**	---	**9.8**	---	---	---	---	---	---	---	---	---	---	
AA-653-4-0.5	10/16/2016	0.5	ND<5.0	---	**26**	---	---	---	---	---	---	---	---	---	---	
AA-653-4-2.5	10/16/2016	2.5	**2.5**	---	**17**	---	---	---	---	---	---	---	---	---	---	
Composite C9	N/A	0.5	---	---	---	---	---	**1.1J**	**1.0J**	**2.3**	ND<1.0	**1.4J**	ND<2.0	ND<1.0	---	Composite of AA653-1-0.5, AA653-2-0.5, AA653-3-0.5, and AA653-4-0.5
AA-652-1-0.5	10/16/2016	0.5	**3.5**	---	**7.4**	---	---	---	---	---	---	---	---	---	---	
AA-652-1-2.5	10/16/2016	2.5	**1.9**	---	**6.2**	---	---	---	---	---	---	---	---	---	---	
AA-652-2-0.5	10/16/2016	0.5	**2.2**	---	**4.8**	---	---	---	---	---	---	---	---	---	---	
AA-652-2-2.5	10/16/2016	2.5	**1.6**	---	**4.9**	---	---	---	---	---	---	---	---	---	---	
AA-652-3-0.5	10/16/2016	0.5	**2.6**	---	**3.4**	---	---	---	---	---	---	---	---	---	---	
AA-652-3-0.5 DUP	10/16/2016	0.5	**2.8**	---	**13**	---	---	---	---	---	---	---	---	---	---	
AA-652-3-2.5	10/16/2016	2.5	**1.6**	---	**8.3**	---	---	---	---	---	---	---	---	---	---	
AA-652-4-0.5	10/16/2016	0.5	**2.2**	---	**3.2**	---	---	---	---	---	---	---	---	---	---	
AA-652-4-2.5	10/16/2016	2.5	**1.3**	---	**4.0**	---	---	---	---	---	---	---	---	---	---	
Composite C10	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of AA652-1-0.5, AA652-2-0.5, AA652-3-0.5, and AA652-4-0.5
P-6-0.5	10/16/2016	0.5	**5.2**	---	**7.5**	---	---	---	---	---	---	---	---	---	---	
P-6-2.5	10/16/2016	2.5	**7.5**	---	**4.3**	---	---	---	---	---	---	---	---	---	---	
P-7-0.5	10/16/2016	0.5	ND<10	---	**13**	---	---	---	---	---	---	---	---	---	---	
P-7-2.5	10/16/2016	2.5	**2.9**	---	**7.3**	---	---	---	---	---	---	---	---	---	---	
Q-6-0.5	10/16/2016	0.5	**1.6**	---	**6.3**	---	---	---	---	---	---	---	---	---	---	
Q-6-0.5 DUP	10/16/2016	0.5	ND<20	---	**4.9J**	---	---	---	---	---	---	---	---	---	---	
Q-6-2.5	10/16/2016	2.5	**5.8**	---	**4.4**	---	---	---	---	---	---	---	---	---	---	
Q-7-0.5	10/16/2016	0.5	**4.6**	---	**9.1**	---	---	---	---	---	---	---	---	---	---	
Q-7-2.5	10/16/2016	2.5	**5.5**	---	**5.6**	---	---	---	---	---	---	---	---	---	---	
Composite C11	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of P6-0.5, P7-0.5, Q6-0.5, and Q7-0.5
Q-4-0.5	10/16/2016	0.5	**1.8J**	---	**4.9**	---	---	---	---	---	---	---	---	---	---	
Q-4-2.5	10/16/2016	2.5	**7.8**	---	**8.2**	---	---	---	---	---	---	---	---	---	---	
Q4-2.5 DUP	10/16/2016	2.5	**6.5**	---	**11**	---	---	---	---	---	---	---	---	---	---	
R-4-0.5	10/16/2016	0.5	ND<20	---	**4.0J**	---	---	---	---	---	---	---	---	---	---	
R-4-2.5	10/16/2016	2.5	**5.3**	---	**6.3**	---	---	---	---	---	---	---	---	---	---	
S-4-0.5	10/16/2016	0.5	ND<5.0	---	**8.3**	---	---	---	---	---	---	---	---	---	---	
S-4-2.5	10/16/2016	2.5	**5.3**	---	**4.4**	---	---	---	---	---	---	---	---	---	---	
T4-0.5	10/16/2016	0.5	ND<20	---	**5.4J**	---	---	---	---	---	---	---	---	---	---	
T-4-0.5 DUP	10/16/2016	0.5	**1.2**	---	**3.4**	---	---	---	---	---	---	---	---	---	---	

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
T-4-2.5	10/16/2016	2.5	**4.4**	---	**7.7**	---	---	---	---	---	---	---	---	---	---	
Composite C12	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of Q4-0.5, R4-0.5, S4-0.5, and T4-0.5
Composite C12 DUP	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of Q4-0.5, R4-0.5, S4-0.5, and T4-0.5
R-7-0.5	10/16/2016	0.5	**2.8**	---	**7.9**	---	---	---	---	---	---	---	---	---	---	
R-7-2.5	10/16/2016	2.5	**5.5**	---	**9.7**	---	---	---	---	---	---	---	---	---	---	
S-7-0.5	10/16/2016	0.5	**9.1**	---	**7.8**	---	---	---	---	---	---	---	---	---	---	
S-7-2.5	10/16/2016	2.5	**4.8**	---	**6.5**	---	---	---	---	---	---	---	---	---	---	
T-7-0.5	10/16/2016	0.5	ND<1.0	---	**4.9**	---	---	---	---	---	---	---	---	---	---	
T-7-2.5	10/16/2016	2.5	**2.9**	---	**17**	---	---	---	---	---	---	---	---	---	---	
Composite C13	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of R7-0.5, S7-0.5, and T7-0.5
Area 6																
AA955-1-0.5	10/23/2016	0.5	**7.0**	---	**4.0**	---	---	---	---	---	---	---	---	---	---	
AA955-1-2.5	10/23/2016	2.5	**9.2**	---	**4.1**	---	---	---	---	---	---	---	---	---	---	
AA955-2-0.5	10/23/2016	0.5	**8.2**	---	**5.5**	---	---	---	---	---	---	---	---	---	---	
AA955-2-2.5	10/23/2016	2.5	**9.6**	---	**5.4**	---	---	---	---	---	---	---	---	---	---	
AA955-2-2.5 DUP	10/23/2016	2.5	**11**	---	**5.4**	---	---	---	---	---	---	---	---	---	---	
AA955-3-0.5	10/23/2016	0.5	**1.5**	---	**6.3**	---	---	---	---	---	---	---	---	---	---	
AA955-3-0.5 DUP	10/23/2016	0.5	**2.1**	---	**5.6**	---	---	---	---	---	---	---	---	---	---	
AA955-3-2.5	10/23/2016	2.5	**1.4**	---	**7.4**	---	---	---	---	---	---	---	---	---	---	
Composite F1	N/A	0.5	---	---	---	---	---	ND<20	ND<20	ND<20	ND<10	ND<85	ND<20	ND<10	ND<16	Composite of AA955-1-0.5, AA955-2-0.5, and AA955-3-0.5
AA955-4-0.5	10/23/2016	0.5	**1.2**	---	**3.2**	---	---	---	---	---	---	---	---	---	---	
AA955-4-2.5	10/23/2016	2.5	**1.1**	---	**33**	---	---	---	---	---	---	---	---	---	---	
AA955-5-0.5	10/23/2016	0.5	**2.2**	---	**3.8**	---	---	---	---	---	---	---	---	---	---	
AA955-5-2.5	10/23/2016	2.5	**0.82J**	---	**2.7**	---	---	---	---	---	---	---	---	---	---	
AA955-6-0.5	10/23/2016	0.5	**1.0**	---	**3.4**	---	---	---	---	---	---	---	---	---	---	
AA955-6-2.5	10/23/2016	2.5	ND<1.0	---	**2.1**	---	---	---	---	---	---	---	---	---	---	
Composite F2	N/A	0.5	---	---	---	---	---	ND<20	ND<20	ND<20	ND<10	ND<85	ND<20	ND<10	---	Composite of AA955-4-0.5, AA955-5-0.5, and AA955-6-0.5
AA2573-1-0.5	10/23/2016	0.5	**2.7**	---	**13**	---	---	---	---	---	---	---	---	---	---	
AA2573-1-2.5	10/23/2016	2.5	**2.8**	---	**16**	---	---	---	---	---	---	---	---	---	---	
AA2573-2-0.5	10/29/2016	0.5	**1.9**	---	**3.3**	---	---	---	---	---	---	---	---	---	---	
AA2573-2-0.5 DUP	10/29/2016	0.5	**2.1**	---	**3.5**	---	---	---	---	---	---	---	---	---	---	
AA2573-2-2.5	10/29/2016	2.5	**3.7**	---	**17**	---	---	---	---	---	---	---	---	---	---	
AA2573-3-0.5	10/23/2016	0.5	**1.5**	---	**3.9**	---	---	---	---	---	---	---	---	---	---	
AA2573-3-2.5	10/23/2016	2.5	**2.2**	---	**3.5**	---	---	---	---	---	---	---	---	---	---	
Composite F3	N/A	0.5	---	---	---	---	---	ND<2.0	**1.9J**	**1.9J**	ND<1.0	ND<8.5	**5.6**	ND<1.0	---	Composite of AA2573-1-0.5, AA2573-2-0.5, and AA2573-3-0.5
AA2573-4-0.5	10/23/2016	0.5	**5.2**	---	**6.5**	---	---	---	---	---	---	---	---	---	---	
AA2573-4-2.5	10/23/2016	2.5	**2.4**	---	**4.9**	---	---	---	---	---	---	---	---	---	---	
AA2573-5-0.5	10/23/2016	0.5	**6.2**	---	**13**	---	---	---	---	---	---	---	---	---	---	
AA2573-5-2.5	10/23/2016	2.5	**2.4**	---	**11**	---	---	---	---	---	---	---	---	---	---	
Composite F4	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	**13**	ND<1.0	---	Composite of AA2573-4-0.5 and AA2573-5-0.5
AA1917-1-0.5	10/29/2016	0.5	**1.6**	---	**3.3**	---	---	---	---	---	---	---	---	---	---	

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			TTLC	STLC	TTLC	STLC	TCLP	4,4'-DDD	4,4'-DDE	4,4'-DDT	alpha-Chlordane	Chlordane	Dieldrin	gamma-Chlordane		
		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
AA1917-1-2.5	10/29/2016	2.5	**1.5**	**---**	**16**	---	---	---	---	---	---	---	---	---	---	
AA1917-2-0.5	10/29/2016	0.5	**2.1**	**---**	**4.5**	---	---	---	---	---	---	---	---	---	---	
AA1917-2-2.5	10/29/2016	2.5	**1.5**	**---**	**9.1**	---	---	---	---	---	---	---	---	---	---	
AA1917-3-0.5	10/29/2016	0.5	**1.8**	**---**	**4.7**	---	---	---	---	---	---	---	---	---	---	
AA1917-3-2.5	10/29/2016	2.5	**1.8**	**---**	**6.1**	---	---	---	---	---	---	---	---	---	---	
AA1917-4-0.5	10/29/2016	0.5	**1.9**	**---**	**5.5**	---	---	---	---	---	---	---	---	---	---	
AA1917-4-2.5	10/29/2016	2.5	**2.5**	**---**	**220**	**0.52 J**	---	---	---	---	---	---	---	---	---	
AA1917-4-3.5	3/25/2017	3.5	---	---	**120**	**0.43 J**	---	---	---	---	---	---	---	---	---	
AA1917-4-3.5 DUP	3/25/2017	3.5	---	---	**12**	---	---	---	---	---	---	---	---	---	---	
AA1917-4b-0.5	11/22/2016	0.5	---	**---**	**3.8**	---	---	---	---	---	---	---	---	---	---	
AA1917-4b-2.5	11/22/2016	2.5	---	**---**	**6.5**	---	---	---	---	---	---	---	---	---	---	
AA1917-4b-3.5	11/22/2016	3.5	---	---	**18**	---	---	---	---	---	---	---	---	---	---	
AA1917-4c-2.5	11/22/2016	2.5	---	---	**3.0**	---	---	---	---	---	---	---	---	---	---	
AA1917-4c-2.5 DUP	11/22/2016	2.5	---	---	**2.3**	---	---	---	---	---	---	---	---	---	---	
AA1917-4c-3.5	11/22/2016	3.5	---	**---**	**3.9**	---	---	---	---	---	---	---	---	---	---	
AA1917-4d-0.5	11/22/2016	0.5	---	---	**5.4**	---	---	---	---	---	---	---	---	---	---	
AA1917-4d-2.5	11/22/2016	2.5	---	**---**	**8.7**	---	---	---	---	---	---	---	---	---	---	
AA1917-4d-2.5 DUP	11/22/2016	2.5	---	---	**7.5**	---	---	---	---	---	---	---	---	---	---	
AA1917-4d-3.5	11/22/2016	3.5	---	**---**	**6.9**	---	---	---	---	---	---	---	---	---	---	
Composite F5	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	**2.8**	ND<1.0	**---**	Composite of AA1917-1-0.5, AA1917-2-0.5, AA1917-3-0.5, and AA1917-4-0.5
AA2685-1-0.5	10/29/2016	0.5	**5.5**	---	**27**	---	---	---	---	---	---	---	---	---	---	
AA2685-1-2.5	10/29/2016	2.5	**5.2**	**---**	**10**	---	---	---	---	---	---	---	---	---	---	
AA2685-2-0.5	10/29/2016	0.5	**9.5**	---	**9.2**	---	---	---	---	---	---	---	---	---	---	
AA2685-2-2.5	10/29/2016	2.5	**4.9**	**---**	**19**	---	---	---	---	---	---	---	---	---	---	
AA2685-3-0.5	10/29/2016	0.5	**2.2**	---	**14**	---	---	---	---	---	---	---	---	---	---	
AA2685-3-2.5	10/29/2016	2.5	**2.6**	**---**	**19**	---	---	---	---	---	---	---	---	---	---	
AA2685-4-0.5	10/29/2016	0.5	**4.2**	---	**7.7**	---	---	---	---	---	---	---	---	---	---	
AA2685-4-2.5	10/29/2016	2.5	**5.9**	---	**9.5**	---	---	---	---	---	---	---	---	---	---	
AA2685-4-2.5 DUP	10/29/2016	2.5	**6.0**	**---**	**10**	---	---	---	---	---	---	---	---	---	---	
Composite F6	N/A	0.5	**---**	---	**---**	---	---	ND<10	ND<10	**15**	**1.3J**	**18J**	**2.0J**	**2.0J**	**---**	Composite of AA2685-1-0.5, AA2685-2-0.5, AA2685-3-0.5, and AA2685-4-0.5
AA2684-1-0.5	10/29/2016	0.5	**2.0**	---	**11**	---	---	---	---	---	---	---	---	---	---	
AA2684-1-2.5	10/29/2016	2.5	**2.0**	**---**	**16**	---	---	---	---	---	---	---	---	---	---	
AA2684-2-0.5	10/29/2016	0.5	**18**	---	**19**	---	---	---	---	---	---	---	---	---	---	
AA2684-2-2.5	10/29/2016	2.5	**20**	**---**	**16**	---	---	---	---	---	---	---	---	---	---	
AA2684-2-3.5	3/25/2017	3.5	**19**	**---**	**---**	---	---	---	---	---	---	---	---	---	---	
AA2684-2-3.5 DUP	3/25/2017	3.5	**20**	**---**	**---**	---	---	---	---	---	---	---	---	---	---	
AA2684-3-0.5	10/29/2016	0.5	**6.7**	---	**20**	---	---	---	---	---	---	---	---	---	---	
AA2684-3-2.5	10/29/2016	2.5	**33**	**---**	**25**	---	---	---	---	---	---	---	---	---	---	
AA2684-3-3.5	3/25/2017	3.5	**15**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA2684-4-0.5	10/29/2016	0.5	**6.8**	---	**16**	---	---	---	---	---	---	---	---	---	---	
AA2684-4-2.5	10/29/2016	2.5	**8.5**	---	**7.3**	---	---	---	---	---	---	---	---	---	---	
AA2684-5-0.5	12/21/2016	0.5	**2.7**	**---**	---	---	---	---	---	---	---	---	---	---	---	

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
AA2684-5-2.5	12/21/2016	2.5	**1.9**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2684-5-3.5	12/21/2016	3.5	**1.6**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2684-6-0.5	12/21/2016	0.5	**27**	**---**	---	---	---	---	---	---	---	---	---	---	---	
AA2684-6-0.5 DUP	12/21/2016	0.5	**28**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2684-6-2.5	12/21/2016	2.5	**28**	**---**	---	---	---	---	---	---	---	---	---	---	---	
AA2684-6-3.5	12/21/2016	3.5	**23**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2684-6-4.5	3/25/2017	4.5	**4.7**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2684-7-0.5	12/21/2016	0.5	**2.3**	**---**	---	---	---	---	---	---	---	---	---	---	---	
AA2684-7-2.5	12/21/2016	2.5	**1.4**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2684-7-3.5	12/21/2016	3.5	**1.2**	---	---	---	---	---	---	---	---	---	---	---	---	
Composite F7	N/A	0.5	**---**	**---**	**---**	---	---	ND<10	ND<10	ND<10	ND<5.0	**5.1J**	ND<10	ND<5.0	**---**	Composite of AA2684-1-0.5, AA2684-2-0.5, AA2684-3-0.5, and AA2684-4-0.5
AA2543-1-0.5	10/29/2016	0.5	**3.9**	**---**	**7.4**	---	---	---	---	---	---	---	---	---	---	
AA2543-1-2.5	10/29/2016	2.5	**34**	---	**26**	---	---	---	---	---	---	---	---	---	---	
AA2543-1-3.5	3/25/2017	3.5	**23**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2543-2-0.5	10/29/2016	0.5	**23**	**---**	**17**	---	---	---	---	---	---	---	---	---	---	
AA2543-2-2.5	10/29/2016	2.5	**25**	---	**17**	---	---	---	---	---	---	---	---	---	---	
AA2543-2-2.5 DUP	10/29/2016	2.5	**24**	**---**	**17**	---	---	---	---	---	---	---	---	---	---	
AA2543-2-3.5	3/25/2017	3.5	**7.2**	**---**	**---**	---	---	---	---	---	---	---	---	---	---	
AA2543-3-0.5	10/29/2016	0.5	**2.0**	---	**7.2**	---	---	---	---	---	---	---	---	---	---	
AA2543-3-2.5	10/29/2016	2.5	**4.2**	**---**	**18**	---	---	---	---	---	---	---	---	---	---	
Composite F8	N/A	0.5	**---**	---	**---**	---	---	ND<10	ND<10	ND<10	ND<5.0	**6.5J**	ND<10	ND<5.0	**---**	Composite of AA2543-1-0.5, AA2543-2-0.5, and AA2543-3-0.5
AA2543-4-0.5	10/29/2016	0.5	**6.2**	**---**	**12**	---	---	---	---	---	---	---	---	---	---	
AA2543-4-2.5	10/29/2016	2.5	**11**	---	**38**	---	---	---	---	---	---	---	---	---	---	
AA2543-5-0.5	10/29/2016	0.5	**25**	**---**	**16**	---	---	---	---	---	---	---	---	---	---	
AA2543-5-2.5	10/29/2016	2.5	**34**	---	**26**	---	---	---	---	---	---	---	---	---	---	
AA2543-5-3.5	3/26/2017	3.5	**27**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2543-5-3.5 DUP	3/26/2017	3.5	**30**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2543-6-0.5	10/29/2016	0.5	**39**	**---**	**34**	---	---	---	---	---	---	---	---	---	---	
AA2543-6-2.5	10/29/2016	2.5	**19**	---	**35**	---	---	---	---	---	---	---	---	---	---	
AA2543-6-3.5	3/26/2017	3.5	**1.2**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2543-7-0.5	12/21/2016	0.5	**2.7**	**---**	**29**	---	---	---	---	---	---	---	---	---	---	
AA2543-7-2.5	12/21/2016	2.5	**1.5**	---	**4.0**	---	---	---	---	---	---	---	---	---	---	
AA2543-7-2.5 DUP	12/21/2016	2.5	**1.6**	**---**	---	---	---	---	---	---	---	---	---	---	---	
AA2543-7-3.5	12/21/2016	3.5	**2.9**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2543-8-0.5	12/21/2016	0.5	**2.8**	**---**	**39**	---	---	---	---	---	---	---	---	---	---	
AA2543-8-2.5	12/21/2016	2.5	**2.0**	---	**8.4**	---	---	---	---	---	---	---	---	---	---	
AA2543-8-3.5	12/21/2016	3.5	**1.5**	**---**	---	---	---	---	---	---	---	---	---	---	---	
Composite F9	N/A	0.5	**---**	---	**---**	---	---	ND<10	ND<10	ND<10	ND<5.0	ND<42	ND<10	ND<5.0	**---**	Composite of AA2543-4-0.5, AA2543-5-0.5, and AA2543-6-0.5
AA2038-1-0.5	10/30/2016	0.5	**23**	**---**	**11**	---	---	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA2038-1-2.5	10/30/2016	2.5	**23**	---	**7.9**	---	---	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA2038-1-3.5	3/26/2017	3.5	**19**	---	---	---	---	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA2038-2-0.5	10/30/2016	0.5	**14**	**---**	**13**	---	---	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA2038-2-2.5	10/30/2016	2.5	**31**	---	**15**	---	---	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	

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AA2038-2-3.5	3/26/2017	3.5	**24**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2038-3-0.5	10/30/2016	0.5	**13**	---	**8.0**	---	---	---	---	---	---	---	---	---	---	
AA2038-3-2.5	10/30/2016	2.5	**27**	---	**10**	---	---	---	---	---	---	---	---	---	---	
AA2038-3-3.5	3/26/2017	3.5	**12**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2038-4-0.5	10/30/2016	0.5	**16**	---	**13**	---	---	---	---	---	---	---	---	---	---	
AA2038-4-2.5	10/30/2016	2.5	**20**	---	**9.8**	---	---	---	---	---	---	---	---	---	---	
AA2038-4-2.5 DUP	10/30/2016	2.5	**21**	---	**12**	---	---	---	---	---	---	---	---	---	---	
AA2038-4-3.5	3/26/2017	3.5	**20**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2038-5-0.5	12/21/2016	0.5	**4.1**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2038-5-2.5	12/21/2016	2.5	**3.4**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2038-5-3.5	12/21/2016	3.5	**2.8**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2038-6-0.5	12/21/2016	0.5	**6.1**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2038-6-2.5	12/21/2016	2.5	**3.3**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2038-6-3.5	12/21/2016	3.5	**3.9**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2038-7-0.5	12/21/2016	0.5	**12**	---	**40**	---	---	---	---	---	---	---	---	---	---	
AA2038-7-2.5	12/21/2016	2.5	**11**	---	**37**	---	---	---	---	---	---	---	---	---	---	
AA2038-7-3.5	12/21/2016	3.5	**8.8**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2038-7-3.5 DUP	12/21/2016	3.5	**10**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2038-8-0.5	12/21/2016	0.5	**5.5**	---	**59**	---	---	---	---	---	---	---	---	---	---	
AA2038-8-2.5	12/21/2016	2.5	**4.2**	---	**21**	---	---	---	---	---	---	---	---	---	---	
AA2038-8-3.5	12/21/2016	3.5	**4.0**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2038-9-0.5	12/21/2016	0.5	**6.4**	---	**150**	**8.1**	0.040	---	---	---	---	---	---	---	---	
AA2038-9-2.5	12/21/2016	2.5	**4.2**	---	**14**	---	---	---	---	---	---	---	---	---	---	
AA2038-9-3.5	12/21/2016	3.5	**4.1**	---	---	---	---	---	---	---	---	---	---	---	---	
Composite F10	N/A	0.5	---	---	---	---	---	ND<20	ND<20	ND<20	ND<10	ND<85	ND<20	ND<10	---	Composite of AA2038-1-0.5, AA2038-2-0.5, AA2038-3-0.5, and AA2038-4-0.5
Composite F10 DUP	N/A	0.5	---	---	---	---	---	ND<20	ND<20	ND<20	ND<10	ND<85	ND<20	ND<10	---	Composite of AA2038-1-0.5, AA2038-2-0.5, AA2038-3-0.5, and AA2038-4-0.5
AA2249-1-0.5	10/30/2016	0.5	**24**	---	**14**	---	---	---	---	---	---	---	---	---	---	
AA2249-1-2.5	10/30/2016	2.5	**33**	---	**12**	---	---	---	---	---	---	---	---	---	---	
AA2249-1-3.5	3/26/2017	3.5	**19**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2249-2-0.5	10/30/2016	0.5	**22**	---	**19**	---	---	---	---	---	---	---	---	---	---	
AA2249-2-2.5	10/30/2016	2.5	**35**	---	**13**	---	---	---	---	---	---	---	---	---	---	
AA2249-2-2.5 DUP	10/30/2016	2.5	**31**	---	**14**	---	---	---	---	---	---	---	---	---	---	
AA2249-2-3.5	3/26/2017	3.5	**26**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2249-3-0.5	10/30/2016	0.5	**6.4**	---	**8.5**	---	---	---	---	---	---	---	---	---	---	
AA2249-3-2.5	10/30/2016	2.5	**5.9**	---	**9.2**	---	---	---	---	---	---	---	---	---	---	
AA2249-4-0.5	10/30/2016	0.5	**2.3**	---	**4.2**	---	---	---	---	---	---	---	---	---	---	
AA2249-4-2.5	10/30/2016	2.5	**1.7**	---	**1.9**	---	---	---	---	---	---	---	---	---	---	
AA2249-5-0.5	12/21/2016	0.5	**6.1**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2249-5-0.5 DUP	12/21/2016	0.5	**5.4**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2249-5-2.5	12/21/2016	2.5	**6.1**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2249-5-3.5	12/21/2016	3.5	**10**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2249-6-0.5	12/21/2016	0.5	**1.6**	---	---	---	---	---	---	---	---	---	---	---	---	
AA2249-6-2.5	12/21/2016	2.5	**2.9**	---	---	---	---	---	---	---	---	---	---	---	---	

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			Arsenic (As) EPA 6010B		Lead (Pb) EPA 6010B			Organochlorine Pesticides (OCPs) EPA 8081A							PCBs EPA 8082	
			TTLC	STLC	TTLC	STLC	TCLP	4,4'-DDD	4,4'-DDE	4,4'-DDT	alpha-Chlordane	Chlordane	Dieldrin	gamma-Chlordane		
		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
AA2249-6-3.5	12/21/2016	3.5	**3.0**	---	---	---	---	---	---	---	---	---	---	---	---	
Composite F11	N/A	0.5	---	---	---	---	---	ND<20	ND<20	ND<20	ND<10	ND<85	ND<20	ND<10	---	Composite of AA2249-1-0.5, AA2249-2-0.5, AA2249-3-0.5, and AA2249-4-0.5
FS-1-0.5	10/23/2016	0.5	**3.0**	---	**19**	---	---	---	---	---	---	---	---	---	---	
FS-1-2.5	10/23/2016	2.5	ND<1.0	---	**3.9**	---	---	---	---	---	---	---	---	---	---	
FS-2-0.5	10/23/2016	0.5	**20**	---	**6.7**	---	---	---	---	---	---	---	---	---	---	
FS-2-2.5	10/23/2016	2.5	**4.9**	---	**3.1**	---	---	---	---	---	---	---	---	---	---	
FS-2b-0.5	11/22/2016	0.5	**10**	---	---	---	---	---	---	---	---	---	---	---	---	
FS-2c-0.5	11/22/2016	0.5	**3.4**	---	---	---	---	---	---	---	---	---	---	---	---	
FS-3-0.5	10/23/2016	0.5	**2.4**	---	**4.5**	---	---	---	---	---	---	---	---	---	---	
FS-3-2.5	10/23/2016	2.5	**3.7**	---	**3.3**	---	---	---	---	---	---	---	---	---	---	
FS-4-0.5	10/23/2016	0.5	**3.9**	---	**29**	---	---	---	---	---	---	---	---	---	---	
FS-4-2.5	10/23/2016	2.5	**1.4**	---	**2.7**	---	---	---	---	---	---	---	---	---	---	
Composite F12	N/A	0.5	---	---	---	---	---	ND<2.0	**0.80J**	ND<2.0	ND<1.0	ND<8.5	**1.0J**	ND<1.0	---	Composite of FS-1-0.5, FS-2-0.5, FS-3-0.5, and FS-4-0.5
IA-1-0.5	10/30/2016	0.5	**0.88J**	---	**3.2**	---	---	---	---	---	---	---	---	---	---	
IA-1-2.5	10/30/2016	2.5	**3.6**	---	**20**	---	---	---	---	---	---	---	---	---	---	
IA-2-0.5	10/30/2016	0.5	**0.80J**	---	**4.0**	---	---	---	---	---	---	---	---	---	---	
IA-2-2.5	10/30/2016	2.5	**0.90J**	---	**3.6**	---	---	---	---	---	---	---	---	---	---	
IA-3-0.5	10/30/2016	0.5	**2.2**	---	**2.6**	---	---	---	---	---	---	---	---	---	---	
IA-3-0.5 DUP	10/30/2016	0.5	**2.0**	---	**3.7**	---	---	---	---	---	---	---	---	---	---	
IA-3-2.5	10/30/2016	2.5	**0.96J**	---	**2.6**	---	---	---	---	---	---	---	---	---	---	
IA-4-0.5	10/30/2016	0.5	**1.8**	---	**13**	---	---	---	---	---	---	---	---	---	---	
IA-4-2.5	10/30/2016	2.5	**2.2**	---	**8.7**	---	---	---	---	---	---	---	---	---	---	
IA-5-0.5	10/30/2016	0.5	**1.7**	---	**29**	---	---	---	---	---	---	---	---	---	---	
IA-5-2.5	10/30/2016	2.5	**2.4**	---	**12**	---	---	---	---	---	---	---	---	---	---	
IA-6-0.5	10/30/2016	0.5	**1.4**	---	**24**	---	---	---	---	---	---	---	---	---	---	
IA-6-2.5	10/30/2016	2.5	**3.4**	---	**35**	---	---	---	---	---	---	---	---	---	---	
IA-7-0.5	3/26/2017	0.5	---	---	**12**	---	---	---	---	---	---	---	---	---	---	
IA-7-2.5	3/26/2017	2.5	---	---	**7.9**	---	---	---	---	---	---	---	---	---	---	
IA-7-3.5	3/26/2017	3.5	---	---	**2.8**	---	---	---	---	---	---	---	---	---	---	
IA-7-4.5	3/26/2017	4.5	---	---	**13**	---	---	---	---	---	---	---	---	---	---	
IA-8-0.5	3/26/2017	0.5	---	---	**21**	---	---	---	---	---	---	---	---	---	---	
IA-8-2.5	3/26/2017	2.5	---	---	**11**	---	---	---	---	---	---	---	---	---	---	
IA-8-3.5	3/26/2017	3.5	---	---	**11**	---	---	---	---	---	---	---	---	---	---	
IA-8-4.5	3/26/2017	4.5	---	---	**9.6**	---	---	---	---	---	---	---	---	---	---	
AS-1-0.5	10/30/2016	0.5	**1.6**	---	**3.9**	---	---	---	---	---	---	---	---	---	---	
AS-1-2.5	10/30/2016	2.5	**1.6**	---	**4.0**	---	---	---	---	---	---	---	---	---	---	
AS-2-0.5	10/30/2016	0.5	**2.0**	---	**65**	---	---	---	---	---	---	---	---	---	---	
AS-2-2.5	10/30/2016	2.5	**1.6**	---	**10**	---	---	---	---	---	---	---	---	---	---	
AS-2-2.5 DUP	10/30/2016	2.5	**2.5**	---	**7.3**	---	---	---	---	---	---	---	---	---	---	
AS-3-0.5	10/30/2016	0.5	**1.7**	---	**5.5**	---	---	---	---	---	---	---	---	---	---	
AS-3-2.5	10/30/2016	2.5	**1.7**	---	**14**	---	---	---	---	---	---	---	---	---	---	
AS-4-0.5	10/30/2016	0.5	**2.0**	---	**4.4**	---	---	---	---	---	---	---	---	---	---	

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
AS-4-2.5	10/30/2016	2.5	**1.5**	**---**	**3.2**	---	---	---	---	---	---	---	---	---	---	
Composite F13	N/A	0.5	**---**	**---**	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	ND<16	Composite of AS-1-0.5, AS-2-0.5, AS-3-0.5, and AS-4-0.5
IM-1-0.5	10/30/2016	0.5	**8.3**	---	**42**	---	---	---	---	---	---	---	---	---	---	
IM-1-2.5	10/30/2016	2.5	**20**	---	**35**	---	---	---	---	---	---	---	---	---	---	
IM-1-3.5	3/26/2017	3.5	**4.4**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-1a-0.5	12/21/2016	0.5	**1.1**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-1a-2.5	12/21/2016	2.5	**1.5**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-1a-3.5	12/21/2016	3.5	**1.6**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-1b-0.5	11/23/2016	0.5	**7.2**	---	**44**	---	---	---	---	---	---	---	---	---	---	
IM-1b-2.5	11/23/2016	2.5	**2.0**	---	**10**	---	---	---	---	---	---	---	---	---	---	
IM-1b-3.5	11/23/2016	3.5	**2.9**	---	**8.5**	---	---	---	---	---	---	---	---	---	---	
IM-1d-0.5	11/23/2016	0.5	**5.0**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-1d-2.5	11/23/2016	2.5	**3.7**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-2-0.5	10/30/2016	0.5	**4.2**	---	**42**	---	---	---	---	---	---	---	---	---	---	
IM-2-2.5	10/30/2016	2.5	**4.6**	---	**160**	**13**	**0.020 J**	---	---	---	---	---	---	---	---	
IM-2-3.5	3/26/2017	3.5	---	---	**63**	---	---	---	---	---	---	---	---	---	---	
IM-2a-0.5	12/21/2016	0.5	---	---	**2.5**	---	---	---	---	---	---	---	---	---	---	
IM-2a-2.5	12/21/2016	2.5	---	---	**2.3**	---	---	---	---	---	---	---	---	---	---	
IM-2a-3.5	12/21/2016	3.5	---	---	**2.2**	---	---	---	---	---	---	---	---	---	---	
IM-2b-0.5	11/23/2016	0.5	**17**	---	**100**	**6.8**	**0.028 J**	---	---	---	---	---	---	---	---	
IM-2b-0.5 DUP	11/23/2016	0.5	**17**	---	**150**	**6.3**	**0.038 J**	---	---	---	---	---	---	---	---	
IM-2b-2.5	11/23/2016	2.5	---	---	**4.1**	---	---	---	---	---	---	---	---	---	---	
IM-2b-3.5	11/23/2016	3.5	---	---	**3.3**	---	---	---	---	---	---	---	---	---	---	
IM-3-0.5	10/30/2016	0.5	**25**	---	**74**	---	---	---	---	---	---	---	---	---	---	
IM-3-0.5 DUP	10/30/2016	0.5	**22**	---	**61**	---	---	---	---	---	---	---	---	---	---	
IM-3-2.5	10/30/2016	2.5	**6.9**		**11**	---	---	---	---	---	---	---	---	---	---	
IM-3c-0.5	11/23/2016	0.5	**66**	**4.1**	---	---	---	---	---	---	---	---	---	---	---	
IM-3c-2.5	11/23/2016	2.5	**22**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-3c-3.5	11/23/2016	3.5	**16**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-3c-4.5	3/26/2017	4.5	**2.2**	---	---	---	---	---	---	---	---	---	---	---	---	
Composite F14	N/A	0.5	**---**	---	**---**	---	---	**5.0**	**400**	**18**	**30**	**270**	**6.7**	**30**	**---**	Composite of IM-1-0.5, IM-2-0.5, and IM-3-0.5
IM-4-0.5	10/30/2016	0.5	**16**	---	**66**	---	---	---	---	---	---	---	---	---	---	
IM-4-2.5	10/30/2016	2.5	**20**	---	**22**	---	---	---	---	---	---	---	---	---	---	
IM-4-3.5	3/26/2017	3.5	ND<1.0	---	---	---	---	---	---	---	---	---	---	---	---	
IM-4d-0.5	11/23/2016	0.5	**9.3**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-4d-2.5	11/23/2016	2.5	**4.7**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-4d-3.5	11/23/2016	3.5	**5.7**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-5-0.5	10/30/2016	0.5	**29**	---	**54**	---	---	---	---	---	---	---	---	---	---	
IM-5-2.5	10/30/2016	2.5	**22**	---	**40**	---	---	---	---	---	---	---	---	---	---	
IM-5-3.5	3/26/2017	3.5	**2.1**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-5d-0.5	11/23/2016	0.5	**24**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-5d-2.5	11/23/2016	2.5	**5.5**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-5d-2.5 DUP	11/23/2016	2.5	**7.3**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-5d-3.5	11/23/2016	3.5	**14**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-5d-4.5	3/26/2017	4.5	**11**	---	---	---	---	---	---	---	---	---	---	---	---	

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
IM-5d-4.5 DUP	3/26/2017	4.5	**10**	---	---	---	---	---	---	---	---	---	---	---	---	
IM-6-0.5	10/30/2016	0.5	**12**	---	**36**	---	---	---	---	---	---	---	---	---	---	
IM-6-2.5	10/30/2016	2.5	**2.9**	---	**25**	---	---	---	---	---	---	---	---	---	---	
IM-6-2.5 DUP	10/30/2016	2.5	**2.6**	---	**29**	---	---	---	---	---	---	---	---	---	---	
Composite F15	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	**1.1J**	ND<2.0	**1.2**	**13**	**1.3J**	**1.2**	**---**	Composite of IM-4-0.5, IM-5-0.5, and IM-6-0.5
CRA-1-0.5	10/30/2016	0.5	**1.8**	---	**26**	---	---	---	---	---	---	---	---	---	---	
CRA-1-0.5 DUP	10/30/2016	0.5	**2.3**	---	**24**	---	---	---	---	---	---	---	---	---	---	
CRA-1-2.5	10/30/2016	2.5	**2.5**	---	**51**	---	---	---	---	---	---	---	---	---	---	
CRA-2-0.5	10/30/2016	0.5	**3.6**	---	**110**	**10**	ND<0.25	---	---	---	---	---	---	---	---	
CRA-2-2.5	10/30/2016	2.5	**3.5**	---	**140**	**5.4**	**0.033 J**	---	---	---	---	---	---	---	---	
CRA-2-3.5	3/26/2017	3.5	---	---	**23**	---	---	---	---	---	---	---	---	---	---	
CRA-2b-0.5	11/22/2016	0.5	---	---	**89**	**4.5**	---	---	---	---	---	---	---	---	---	
CRA-2b-2.5	11/22/2016	2.5	---	---	**720**	**140**	**0.82**	---	---	---	---	---	---	---	---	
CRA-2b-3.5	11/22/2016	3.5	---	---	**67**	---	---	---	---	---	---	---	---	---	---	
CRA-2c-0.5	11/22/2016	0.5	---	---	**54**	---	---	---	---	---	---	---	---	---	---	
CRA-2c-2.5	11/22/2016	2.5	---	---	**39**	---	---	---	---	---	---	---	---	---	---	
CRA-2c-3.5	11/22/2016	3.5	---	---	**120**	**5.6**	**0.017 J**	---	---	---	---	---	---	---	---	
CRA-2c-4.5	3/26/2017	4.5	---	---	**11**	---	---	---	---	---	---	---	---	---	---	
CRA-2c-4.5 DUP	3/26/2017	4.5	---	---	**5.9**	---	---	---	---	---	---	---	---	---	---	
CRA-2d-0.5	11/22/2016	0.5	**1.9**	---	**31**	---	---	---	---	---	---	---	---	---	---	
CRA-2d-0.5 DUP	11/22/2016	0.5	**2.8**	---	**73**	---	---	---	---	---	---	---	---	---	---	
CRA-2d-2.5	11/22/2016	2.5	---	---	**44**	---	---	---	---	---	---	---	---	---	---	
CRA-2d-2.5 DUP	11/22/2016	2.5	---	---	**51**	---	---	---	---	---	---	---	---	---	---	
CRA-2d-3.5	11/22/2016	3.5	---	---	**13**	---	---	---	---	---	---	---	---	---	---	
CRA-3-0.5	10/30/2016	0.5	**16**	---	**55**	---	---	---	---	---	---	---	---	---	---	
CRA-3-2.5	10/30/2016	2.5	**5.4**	---	**6.0**	---	---	---	---	---	---	---	---	---	---	
CRA-3c-0.5	11/22/2016	0.5	**3.4**	---	---	---	---	---	---	---	---	---	---	---	---	
CRA-3d-0.5	11/22/2016	0.5	**1.7**	---	---	---	---	---	---	---	---	---	---	---	---	
CRA-4-0.5	10/30/2016	0.5	**1.9**	---	**41**	---	---	---	---	---	---	---	---	---	---	
CRA-4-2.5	10/30/2016	2.5	**1.1**	---	**11**	---	---	---	---	---	---	---	---	---	---	
Composite F16	N/A	0.5	**---**	**---**	**---**	---	---	ND<2.0	**0.73J**	**3.8**	ND<1.0	ND<8.5	**2.6**	ND<1.0	**---**	Composite of CRA-1-0.5, CRA-2-0.5, CRA-3-0.5, and CRA-4-0.5
CRB-1-0.5	10/30/2016	0.5	**1.9**	---	**33**	---	---	---	---	---	---	---	---	---	---	
CRB-1-2.5	10/30/2016	2.5	**2.4**	---	**4.8**	---	---	---	---	---	---	---	---	---	---	
CRB-2-0.5	10/30/2016	0.5	**2.1**	---	**3.4**	---	---	---	---	---	---	---	---	---	---	
CRB-2-2.5	10/30/2016	2.5	**1.9**	---	**2.4**	---	---	---	---	---	---	---	---	---	---	
CRB-3-0.5	10/30/2016	0.5	**1.7**	---	**14**	---	---	---	---	---	---	---	---	---	---	
CRB-3-2.5	10/30/2016	2.5	**1.3**	---	**24**	---	---	---	---	---	---	---	---	---	---	
CRB-4-0.5	10/30/2016	0.5	**2.1**	---	**3.5**	---	---	---	---	---	---	---	---	---	---	
CRB-4-2.5	10/30/2016	2.5	**1.7**	---	**4.6**	---	---	---	---	---	---	---	---	---	---	
CRB-4-2.5 DUP	10/30/2016	2.5	**1.6**	---	**3.0**	---	---	---	---	---	---	---	---	---	---	
Composite F17	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	**---**	Composite of CRB-1-0.5, CRB-2-0.5, CRB-3-0.5, and CRB-4-0.5
CR1-1-0.5	10/30/2016	0.5	**3.8**	---	**35**	---	---	---	---	---	---	---	---	---	---	
CR1-1-0.5 DUP	10/30/2016	0.5	**3.5**	---	**44**	---	---	---	---	---	---	---	---	---	---	

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			TTLC	STLC	TTLC	STLC	TCLP	4,4'-DDD	4,4'-DDE	4,4'-DDT	alpha-Chlordane	Chlordane	Dieldrin	gamma-Chlordane		
		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
CR1-1-2.5	10/30/2016	2.5	**3.5**	---	**14**	---	---	---	---	---	---	---	---	---	---	
CR1-2-0.5	10/30/2016	0.5	**4.1**	---	**100**	**6.3**	**0.017 J**	---	---	---	---	---	---	---	---	
CR1-2-2.5	10/30/2016	2.5	**3.7**	---	**37**	---	---	---	---	---	---	---	---	---	---	
CR1-2a-0.5	11/23/2016	0.5	---	---	**75**	---	---	---	---	---	---	---	---	---	---	
CR1-2b-0.5	11/23/2016	0.5	---	---	**74**	---	---	---	---	---	---	---	---	---	---	
CR1-2d-0.5	11/23/2016	0.5	---	---	**120**	**26**	**0.25**	---	---	---	---	---	---	---	---	
CR1-2d-2.5	11/23/2016	2.5	---	---	**6.5**	---	---	---	---	---	---	---	---	---	---	
CR1-2d1-0.5	3/26/2017	0.5	---	---	**160**	**11**	**0.10 J**	---	---	---	---	---	---	---	---	
CR1-2d1-2.5	3/26/2017	2.5	---	---	**3.3**	---	---	---	---	---	---	---	---	---	---	
CR1-3-0.5	10/30/2016	0.5	**1.6**	---	**9.0**	---	---	---	---	---	---	---	---	---	---	
CR1-3-2.5	10/30/2016	2.5	**1.8**	---	**5.5**	---	---	---	---	---	---	---	---	---	---	
Composite F18	N/A	0.5	---	---	---	---	---	ND<2.0	**0.77J**	ND<2.0	**1.8**	**21**	**7.3**	**1.4**	ND<16	Composite of CR1-1-0.5, CR1-2-0.5, and CR1-3-0.5
Composite F18 DUP	N/A	0.5	---	---	---	---	---	ND<2.0	**0.65J**	ND<2.0	**1.8**	**22**	**6.5**	**1.5**	ND<16	Composite of CR1-1-0.5, CR1-2-0.5, and CR1-3-0.5
CR1-4-0.5	10/30/2016	0.5	**4.9**	---	**130**	**32**	**0.12 J**	---	---	---	---	---	---	---	---	
CR1-4-2.5	10/30/2016	2.5	**3.1**	---	**14**	---	---	---	---	---	---	---	---	---	---	
CR1-4b-0.5	11/23/2016	0.5	---	---	**350**	**22**	**0.12 J**	---	---	---	---	---	---	---	---	
CR1-4b-2.5	11/23/2016	2.5	---	---	**33**	---	---	---	---	---	---	---	---	---	---	
CR1-4b1-0.5	3/26/2017	0.5	---	---	**21**	---	---	---	---	---	---	---	---	---	---	
CR1-4b1-0.5 DUP	3/26/2017	0.5	---	---	**21**	---	---	---	---	---	---	---	---	---	---	
CR1-4b1-2.5	3/26/2017	2.5	---	---	**4.5**	---	---	---	---	---	---	---	---	---	---	
CR1-4c-0.5	11/23/2016	0.5	---	---	**53**	---	---	---	---	---	---	---	---	---	---	
CR1-5-0.25	11/23/2016	0.25	**9.3**	---	**170**	**11**	**0.031 J**	---	---	---	---	---	---	---	---	
CR1-5-0.5	10/30/2016	0.5	**23**	---	**310**	**25**	**0.16 J**	---	---	---	---	---	---	---	---	
CR1-5-2.5	10/30/2016	2.5	**15**	---	**18**	---	---	---	---	---	---	---	---	---	---	
CR1-5-3.5	3/26/2017	3.5	**1.7**	---	---	---	---	---	---	---	---	---	---	---	---	
CR1-5b-0.25	11/23/2016	0.25	**13**	---	**190**	**9.0**	**0.048 J**	---	---	---	---	---	---	---	---	
CR1-5b-0.25 DUP	11/23/2016	0.25	**13**	---	**180**	**12**	**0.034 J**	---	---	---	---	---	---	---	---	
CR1-5b-0.5	11/23/2016	0.5	**32**	---	**630**	**25**	**0.071 J**	---	---	---	---	---	---	---	---	
CR1-5b-2.5	11/23/2016	2.5	**19**	---	**140**	**14**	**0.044 J**	---	---	---	---	---	---	---	---	
CR1-5b-3.5	11/23/2016	3.5	**10**	---	**12**	---	---	---	---	---	---	---	---	---	---	
CR1-5c-0.25	11/23/2016	0.25	**3.6**	---	**43**	---	---	---	---	---	---	---	---	---	---	
CR1-5c-0.5	11/23/2016	0.5	**4.9**	---	**37**	---	---	---	---	---	---	---	---	---	---	
CR1-5c-2.5	11/23/2016	2.5	**1.5**	---	**12**	---	---	---	---	---	---	---	---	---	---	
CR1-5c-3.5	11/23/2016	3.5	**1.9**	---	**6.6**	---	---	---	---	---	---	---	---	---	---	
CR1-5d-0.25	11/23/2016	0.25	**8.6**	---	**91**	**8.5**	**0.024 J**	---	---	---	---	---	---	---	---	
CR1-5d-0.5	11/23/2016	0.5	**6.4**	---	**25**	---	---	---	---	---	---	---	---	---	---	
CR1-5d-2.5	11/23/2016	2.5	**1.9**	---	**22**	---	---	---	---	---	---	---	---	---	---	
CR1-5d-3.5	11/23/2016	3.5	**1.8**	---	**50**	---	---	---	---	---	---	---	---	---	---	
CR1-5d-3.5 DUP	11/23/2016	3.5	**2.3**	---	**5.7**	---	---	---	---	---	---	---	---	---	---	
CR1-5d1-0.5	3/25/2017	0.5	**6.9**	---	**51**	---	---	---	---	---	---	---	---	---	---	
CR1-5d1-0.5 DUP	3/25/2017	0.5	**6.6**	---	**79**	---	---	---	---	---	---	---	---	---	---	
CR1-5d1-2.5	3/25/2017	2.5	**2.6**	---	**3.8**	---	---	---	---	---	---	---	---	---	---	
CR1-6-0.5	10/30/2016	0.5	**3.4**	---	**10**	---	---	---	---	---	---	---	---	---	---	
CR1-6-2.5	10/30/2016	2.5	**2.7**	---	**6.7**	---	---	---	---	---	---	---	---	---	---	
Composite F19	N/A	0.5	---	---	---	---	---	ND<2.0	**0.54J**	ND<2.0	**0.46J**	**5.0J**	ND<2.0	**0.30J**	---	Composite of CR1-4-0.5, CR1-5-0.5, and CR1-6-0.5

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
P14-0.5	10/29/2016	0.5	**3.1**	---	**6.9**	---	---	---	---	---	---	---	---	---	---	
P14-0.5 DUP	10/29/2016	0.5	**2.6**	---	**6.4**	---	---	---	---	---	---	---	---	---	---	
P14-2.5	10/29/2016	2.5	**3.2**	---	**21**	---	---	---	---	---	---	---	---	---	---	
P15-0.5	10/30/2016	0.5	**3.4**	---	**90**	**4.9**	---	---	---	---	---	---	---	---	---	
P15-2.5	10/30/2016	2.5	**2.9**	---	**140**	**9.7**	ND<0.25	---	---	---	---	---	---	---	---	
P15-3.5	3/25/2017	3.5	---	---	**24**	---	---	---	---	---	---	---	---	---	---	
P15a-0.5	11/22/2016	0.5	---	---	**39**	---	---	---	---	---	---	---	---	---	---	
P15a-2.5	11/22/2016	2.5	---	---	**150**	**2.2**	---	---	---	---	---	---	---	---	---	
P15a-3.5	11/22/2016	3.5	---	---	**13**	---	---	---	---	---	---	---	---	---	---	
P15b-0.5	11/22/2016	0.5	---	---	**190**	**8.5**	**0.014 J**	---	---	---	---	---	---	---	---	
P15b-2.5	11/22/2016	2.5	---	---	**55**	---	---	---	---	---	---	---	---	---	---	
P15b-3.5	11/22/2016	3.5	---	---	**3.6**	---	---	---	---	---	---	---	---	---	---	
P15d-0.5	11/22/2016	0.5	---	---	**140**	**4.8**	---	---	---	---	---	---	---	---	---	
P15d-2.5	11/22/2016	2.5	---	---	**440**	**7.3**	ND<0.25	---	---	---	---	---	---	---	---	
P15d-2.5 DUP	11/22/2016	2.5	---	---	**110**	**11**	**0.043 J**	---	---	---	---	---	---	---	---	
P15d-3.5	11/22/2016	3.5	---	---	**39**	---	---	---	---	---	---	---	---	---	---	
P15d1-0.5	3/25/2017	0.5	---	---	**12**	---	---	---	---	---	---	---	---	---	---	
P15d1-2.5	3/25/2017	2.5	---	---	**21**	---	---	---	---	---	---	---	---	---	---	
P15d1-3.5	3/25/2017	3.5	---	---	**280**	**20**	**0.080 J**	---	---	---	---	---	---	---	---	
P15d1-4.5	3/25/2017	4.5	---	---	**10**	---	---	---	---	---	---	---	---	---	---	
P15d1-4.5 DUP	3/25/2017	4.5	---	---	**11**	---	---	---	---	---	---	---	---	---	---	
P16-0.5	10/30/2016	0.5	**2.9**	---	**110**	**7.4**	**0.028 J**	---	---	---	---	---	---	---	---	
P16-2.5	10/30/2016	2.5	**2.3**	---	**13**	---	---	---	---	---	---	---	---	---	---	
P16a-0.5	11/22/2016	0.5	---	---	**31**	---	---	---	---	---	---	---	---	---	---	
P16b-0.5	11/22/2016	0.5	**5.2**	---	**34**	---	---	---	---	---	---	---	---	---	---	
P16c-0.5	11/22/2016	0.5	**3.1**	---	**84**	**3.6**	---	---	---	---	---	---	---	---	---	
P16c-2.5	11/22/2016	2.5	---	---	**22**	---	---	---	---	---	---	---	---	---	---	
Composite F20	N/A	0.5	**---**	---	**---**	---	---	ND<20	**4.6J**	ND<20	ND<10	ND<85	ND<20	ND<10	**---**	Composite of P14-0.5, P15-0.5, and P16-0.5
Q14-0.5	10/30/2016	0.5	**2.2**	---	**5.6**	---	---	---	---	---	---	---	---	---	---	
Q14-2.5	10/30/2016	2.5	**1.5**	---	**32**	---	---	---	---	---	---	---	---	---	---	
Q15-0.5	10/30/2016	0.5	**3.1**	---	**110**	**6.0**	ND<0.25	---	---	---	---	---	---	---	---	
Q15-2.5	10/30/2016	2.5	**3.8**	---	**59**	---	---	---	---	---	---	---	---	---	---	
Q15a-0.5	11/22/2016	0.5	---	---	**46**	---	---	---	---	---	---	---	---	---	---	
Q15a-2.5	11/22/2016	2.5	---	---	**4200**	**190**	ND<0.25	---	---	---	---	---	---	---	---	
Q15a-3.5	11/22/2016	3.5	---	---	**190**	**120**	**0.029 J**	---	---	---	---	---	---	---	---	
Q15a-3.5 DUP	11/22/2016	3.5	---	---	**280**	**6.5**	ND<0.25	---	---	---	---	---	---	---	---	
Q15a-4.5	3/25/2017	4.5	---	---	**140**	**4.2**	---	---	---	---	---	---	---	---	---	
Q15b-0.5	11/22/2016	0.5	---	---	**56**	---	---	---	---	---	---	---	---	---	---	
Q15b-2.5	11/22/2016	2.5	---	---	**6**	---	---	---	---	---	---	---	---	---	---	
Q15d-0.5	11/22/2016	0.5	---	---	**23**	---	---	---	---	---	---	---	---	---	---	
Q15d-2.5	11/22/2016	2.5	---	---	**97**	**3.9**	---	---	---	---	---	---	---	---	---	
Q15d-3.5	3/25/2017	3.5	---	---	**4.5**	---	---	---	---	---	---	---	---	---	---	
Q15d-4.5	3/25/2017	4.5	---	---	**3.9**	---	---	---	---	---	---	---	---	---	---	
Q15d1-0.5	3/26/2017	0.5	---	---	**5.8**	---	---	---	---	---	---	---	---	---	---	
Q15d1-2.5	3/26/2017	2.5	---	---	**6.3**	---	---	---	---	---	---	---	---	---	---	

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Q15d1-2.5 DUP	3/26/2017	2.5	---	---	**7.2**	---	---	---	---	---	---	---	---	---	---	
Q15d1-3.5	3/26/2017	3.5	---	---	**7.0**	---	---	---	---	---	---	---	---	---	---	
Q15d1-4.5	3/26/2017	4.5	---	---	**4.3**	---	---	---	---	---	---	---	---	---	---	
Q16-0.5	10/30/2016	0.5	**5.3**	---	**36**	---	---	---	---	---	---	---	---	---	---	
Q16-2.5	10/30/2016	2.5	**3.1**	---	**5.9**	---	---	---	---	---	---	---	---	---	---	
Composite F21	N/A	0.5	**---**	---	**---**	---	---	**0.30J**	**2.4**	**3.8**	**0.90J**	**13**	**0.58J**	**0.82J**	**---**	Composite of Q14-0.5, Q15-0.5, and Q16-0.5
R14-0.5	10/30/2016	0.5	**2.2**	---	**2.8**	---	---	---	---	---	---	---	---	---	---	
R14-2.5	10/30/2016	2.5	**2.2**	---	**3.4**	---	---	---	---	---	---	---	---	---	---	
R15-0.25	11/22/2016	0.25	---	---	**95**	**0.78 J**	---	---	---	---	---	---	---	---	---	
R15-0.25 DUP	11/22/2016	0.25	---	---	**19**	---	---	---	---	---	---	---	---	---	---	
R15-0.5	10/30/2016	0.5	**3.8**	---	**300**	**1.9**	---	---	---	---	---	---	---	---	---	
R15-2.5	10/30/2016	2.5	**2.5**	---	**22**	---	---	---	---	---	---	---	---	---	---	
R15a-0.25	11/22/2016	0.25	---	---	**63**	---	---	---	---	---	---	---	---	---	---	
R15a-0.5	11/22/2016	0.5	---	---	**9.4**	---	---	---	---	---	---	---	---	---	---	
R15a-2.5	11/22/2016	2.5	---	---	**2.7**	---	---	---	---	---	---	---	---	---	---	
R15b-0.25	11/22/2016	0.25	---	---	**31**	---	---	---	---	---	---	---	---	---	---	
R15b-0.5	11/22/2016	0.5	---	---	**15**	---	---	---	---	---	---	---	---	---	---	
R15c-0.25	11/22/2016	0.25	---	---	**61**	---	---	---	---	---	---	---	---	---	---	
R15c-0.5	11/22/2016	0.5	---	---	**16**	---	---	---	---	---	---	---	---	---	---	
R15d-0.25	11/22/2016	0.25	---	---	**21**	---	---	---	---	---	---	---	---	---	---	
R15d-0.5	11/22/2016	0.5	---	---	**100**	**8.3**	ND<0.25	---	---	---	---	---	---	---	---	
R15d-2.5	11/22/2016	2.5	---	---	**41**	---	---	---	---	---	---	---	---	---	---	
R16-0.5	10/30/2016	0.5	**2.9**	---	**41**	---	---	---	---	---	---	---	---	---	---	
R16-2.5	10/30/2016	2.5	**3.4**	---	**10**	---	---	---	---	---	---	---	---	---	---	
Composite F22	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	**1.7J**	**2.4**	ND<1.0	ND<8.5	ND<2.0	ND<1.0	**---**	Composite of R14-0.5, R15-0.5, and R16-0.5
Area 8 - South Central Portion of Campus																
AA923-1-0.5	10/22/2016	0.5	**2.9**	---	**1.9**	---	---	---	---	---	---	---	---	---	---	
AA923-1-0.5 DUP	10/22/2016	0.5	**3.0**	---	**1.9**	---	---	---	---	---	---	---	---	---	---	
AA923-1-2.5	10/22/2016	2.5	**2.6**	---	**1.8**	---	---	---	---	---	---	---	---	---	---	
AA923-2-0.5	10/22/2016	0.5	**2.4**	---	**1.5**	---	---	---	---	---	---	---	---	---	---	
AA923-2-2.5	10/22/2016	2.5	**3.2**	---	**1.2**	---	---	---	---	---	---	---	---	---	---	
AA923-2-2.5 DUP	10/22/2016	2.5	**3.8**	---	**1.0**	---	---	---	---	---	---	---	---	---	---	
AA923-3-0.5	10/22/2016	0.5	**3.2**	---	**11**	---	---	---	---	---	---	---	---	---	---	
AA923-3-2.5	10/22/2016	2.5	**3.1**	---	**1.8**	---	---	---	---	---	---	---	---	---	---	
Composite D1	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	**---**	Composite of AA923-1-0.5, AA923-2-0.5, and AA923-3-0.5
AA923-4-0.5	10/22/2016	0.5	**8.0**	---	**1.4**	---	---	---	---	---	---	---	---	---	---	
AA923-4-2.5	10/22/2016	2.5	**4.4**	---	**1.7**	---	---	---	---	---	---	---	---	---	---	
AA923-5-0.5	10/22/2016	0.5	**3.5**	---	**2.6**	---	---	---	---	---	---	---	---	---	---	
AA923-5-2.5	10/22/2016	2.5	**3.1**	---	**3.8**	---	---	---	---	---	---	---	---	---	---	
AA923-6-0.5	10/22/2016	0.5	**3.3**	---	**4.8**	---	---	---	---	---	---	---	---	---	---	
AA923-6-2.5	10/22/2016	2.5	**3.1**	---	**2.7**	---	---	---	---	---	---	---	---	---	---	
Composite D2	N/A	0.5	**---**	---	**---**	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	**---**	Composite of AA923-4-0.5, AA923-5-0.5, and AA923-6-0.5

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			TTLC	STLC	TTLC	STLC	TCLP	4,4'-DDD	4,4'-DDE	4,4'-DDT	alpha-Chlordane	Chlordane	Dieldrin	gamma-Chlordane		
		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
AA1322-1-0.5	10/22/2016	0.5	**5.1**	---	**1.6**	---	---	---	---	---	---	---	---	---	---	
AA1322-1-2.5	10/22/2016	2.5	**3.2**	---	**2.1**	---	---	---	---	---	---	---	---	---	---	
AA1322-2-0.5	10/22/2016	0.5	**4.9**	---	**1.6**	---	---	---	---	---	---	---	---	---	---	
AA1322-2-2.5	10/22/2016	2.5	**3.0**	---	**1.4**	---	---	---	---	---	---	---	---	---	---	
AA1322-3-0.5	10/22/2016	0.5	**3.6**	---	**2.3**	---	---	---	---	---	---	---	---	---	---	
AA1322-3-2.5	10/22/2016	2.5	**4.7**	---	**1.3**	---	---	---	---	---	---	---	---	---	---	
Composite D3	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of AA1322-1-0.5, AA1322-2-0.5, and AA1322-3-0.5
AA1322-4-0.5	10/22/2016	0.5	**4.8**	---	**1.8**	---	---	---	---	---	---	---	---	---	---	
AA1322-4-2.5	10/22/2016	2.5	**4.9**	---	**1.8**	---	---	---	---	---	---	---	---	---	---	
AA1322-5-0.5	10/22/2016	0.5	**6.6**	---	**1.9**	---	---	---	---	---	---	---	---	---	---	
AA1322-5-2.5	10/22/2016	2.5	**3.4**	---	**1.3**	---	---	---	---	---	---	---	---	---	---	
AA1322-6-0.5	10/22/2016	0.5	**2.7**	---	**3.0**	---	---	---	---	---	---	---	---	---	---	
AA1322-6-2.5	10/22/2016	2.5	**2.2**	---	**1.6**	---	---	---	---	---	---	---	---	---	---	
Composite D4	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of AA1322-4-0.5, AA1322-5-0.5, and AA1322-6-0.5
AA828-1-0.5	10/23/2016	0.5	**2.1**	---	**3.8**	---	---	---	---	---	---	---	---	---	---	
AA828-1-2.5	10/23/2016	2.5	**2.6**	---	**2.6**	---	---	---	---	---	---	---	---	---	---	
AA828-2-0.5	10/23/2016	0.5	**2.8**	---	**2.5**	---	---	---	---	---	---	---	---	---	---	
AA828-2-2.5	10/23/2016	2.5	**2.6**	---	**1.6**	---	---	---	---	---	---	---	---	---	---	
AA828-3-0.5	10/23/2016	0.5	**2.7**	---	**1.6**	---	---	---	---	---	---	---	---	---	---	
AA828-3-2.5	10/23/2016	2.5	**2.6**	---	**1.1**	---	---	---	---	---	---	---	---	---	---	
Composite D5	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of AA828-1-0.5, AA828-2-0.5, and AA828-3-0.5
AA828-4-0.5	10/22/2016	0.5	**10**	---	**16**	---	---	---	---	---	---	---	---	---	---	
AA828-4-2.5	10/22/2016	2.5	**3.9**	---	**1.4**	---	---	---	---	---	---	---	---	---	---	
AA828-5-0.5	10/22/2016	0.5	**3.5**	---	**2.0**	---	---	---	---	---	---	---	---	---	---	
AA828-5-0.5 DUP	10/22/2016	0.5	**3.9**	---	**1.9**	---	---	---	---	---	---	---	---	---	---	
AA828-5-2.5	10/22/2016	2.5	**2.3**	---	**1.3**	---	---	---	---	---	---	---	---	---	---	
AA828-6-0.5	10/22/2016	0.5	**2.5**	---	**1.8**	---	---	---	---	---	---	---	---	---	---	
AA828-6-2.5	10/22/2016	2.5	**2.2**	---	**1.9**	---	---	---	---	---	---	---	---	---	---	
AA828-6-2.5 DUP	10/22/2016	2.5	**2.6**	---	**1.4**	---	---	---	---	---	---	---	---	---	---	
Composite D6	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of AA828-4-0.5, AA828-5-0.5, and AA828-6-0.5
AA651/683-1-0.5	10/23/2016	0.5	**2.7**	---	**2.3**	---	---	---	---	---	---	---	---	---	---	
AA651/683-1-2.5	10/23/2016	2.5	**2.6**	---	**1.3**	---	---	---	---	---	---	---	---	---	---	
AA651/683-2-0.5	10/23/2016	0.5	**2.5**	---	**5.6**	---	---	---	---	---	---	---	---	---	---	
AA651/683-2-2.5	10/23/2016	2.5	**1.6**	---	**1.1**	---	---	---	---	---	---	---	---	---	---	
AA651/683-2-2.5 DUP	10/23/2016	2.5	**2.6**	---	**1.5**	---	---	---	---	---	---	---	---	---	---	
AA651/683-3-0.5	10/23/2016	0.5	**2.2**	---	**2.0**	---	---	---	---	---	---	---	---	---	---	
AA651/683-3-0.5 DUP	10/23/2016	0.5	**4.2**	---	**2.6**	---	---	---	---	---	---	---	---	---	---	
AA651/683-3-2.5	10/23/2016	2.5	**1.9**	---	**24**	---	---	---	---	---	---	---	---	---	---	
Composite D7	N/A	0.5	---	---	---	---	---	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of AA651/683-1-0.5, AA651/683-2-0.5, and AA651/683-3-0.5
AA651/683-4-0.5	10/23/2016	0.5	**2.6**	---	**6.6**	---	---	---	---	---	---	---	---	---	---	
AA651/683-4-2.5	10/23/2016	2.5	**4.8**	---	**2.3**	---	---	---	---	---	---	---	---	---	---	
AA651/683-5-0.5	10/23/2016	0.5	**3.2**	---	**1.6**	---	---	---	---	---	---	---	---	---	---	
AA651/683-5-2.5	10/23/2016	2.5	**7.3**	---	**1.0J**	---	---	---	---	---	---	---	---	---	---	

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AA651/683-6-0.5	10/23/2016	0.5	**3.3**	---	**1.9**	---	---	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA651/683-6-2.5	10/23/2016	2.5	**2.0**	---	**1.4**	---	---	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Composite D8	N/A	0.5	**---**	---	**---**	**---**	**---**	ND<2.0	**0.41J**	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	**---**	Composite of AA651/683-4-0.5, AA651/683-5-0.5, and AA651/683-6-0.5
AA-831-1-0.5	10/23/2016	0.5	**3.4**	---	**2.5**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA-831-1-2.5	10/23/2016	2.5	**3.0**	---	**2.4**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA-831-2-0.5	10/23/2016	0.5	**2.9**	---	**5.4**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA-831-2-2.5	10/23/2016	2.5	**5.4**	---	**2.2**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA-831-3-0.5	10/23/2016	0.5	**2.6**	---	**4.6**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA-831-3-0.5 DUP	10/23/2016	0.5	**3.9**	---	**2.8**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA-831-3-2.5	10/23/2016	2.5	**2.5**	---	**2.0**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Composite D9	N/A	0.5	**---**	---	**---**	**---**	**---**	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	**---**	Composite of AA831-1-0.5, AA831-2-0.5, and AA831-3-0.5
AA-831-4-0.5	10/23/2016	0.5	**3.0**	---	**2.7**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA-831-4-2.5	10/23/2016	2.5	**2.2**	---	**1.7**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA-831-4-2.5 DUP	10/23/2016	2.5	**3.1**	---	**1.6**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA-831-5-0.5	10/23/2016	0.5	**1.8**	---	**2.5**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA-831-5-2.5	10/23/2016	2.5	**2.7**	---	**2.0**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA-831-6-0.5	10/23/2016	0.5	**2.5**	---	**3.0**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
AA-831-6-2.5	10/23/2016	2.5	**2.8**	---	**2.4**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Composite D10	N/A	0.5	**---**	---	**---**	**---**	**---**	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	ND<16	Composite of AA831-4-0.5, AA831-5-0.5, and AA831-6-0.5
Composite D10 DUP	N/A	0.5	**---**	---	**---**	**---**	**---**	ND<2.0	ND<2.0	**0.22J**	ND<1.0	**1.1J**	ND<2.0	ND<1.0	ND<16	Composite of AA831-4-0.5, AA831-5-0.5, and AA831-6-0.5
X-8-0.5	10/22/2016	0.5	**2.6**	---	**2.2**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
X-8-2.5	10/22/2016	2.5	**1.8**	---	**1.6**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
X-9-0.5	10/22/2016	0.5	**3.4**	---	**1.1**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
X-9-2.5	10/22/2016	2.5	**2.6**	---	**1.2**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
X-10-0.5	10/22/2016	0.5	**2.0**	---	**1.3**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
X-10-2.5	10/22/2016	2.5	**0.85J**	---	**1.2**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
X-11-0.5	10/22/2016	0.5	**2.3**	---	**3.8**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
X-11-2.5	10/22/2016	2.5	**1.4**	---	**1.6**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Composite D11	N/A	0.5	**---**	---	**---**	**---**	**---**	ND<2.0	**0.39J**	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	---	Composite of X8-0.5, X9-0.5, X10-0.5, and X11-0.5
Y-8-0.5	10/22/2016	0.5	**2.8**	---	**1.4**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Y-8-0.5 DUP	10/22/2016	0.5	**3.5**	---	**1.7**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Y-8-2.5	10/22/2016	2.5	**1.2**	**---**	**1.3**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Y-9-0.5	10/22/2016	0.5	**2.0**	**---**	**1.5**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Y-9-2.5	10/22/2016	2.5	**2.0**	---	**1.4**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Y-9-2.5 DUP	10/22/2016	2.5	**2.9**	---	**1.3**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Y-10-0.5	10/22/2016	0.5	**1.2**	---	**0.68J**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Y-10-2.5	10/22/2016	2.5	**4.6**	---	**1.7**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Y-11-0.5	10/22/2016	0.5	**3.1**	---	**2.8**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Y-11-2.5	10/22/2016	2.5	**4.1**	---	**1.8**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	
Composite D12	N/A	0.5	**---**	---	**---**	**---**	**---**	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<8.5	ND<2.0	ND<1.0	**---**	Composite of Y8-0.5, Y9-0.5, Y10-0.5, and Y11-0.5

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			Arsenic (As) EPA 6010B		Lead (Pb) EPA 6010B			Organochlorine Pesticides (OCPs) EPA 8081A								PCBs EPA 8082	
			TTLC	STLC	TTLC	STLC	TCLP	4,4'-DDD	4,4'-DDE	4,4'-DDT	alpha-Chlordane	Chlordane	Dieldrin	gamma-Chlordane		
		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
Area 9 - Southeast Portion of Campus																	
V-13-0.5	10/22/2016	0.5	**10**	---	**6.3**	---	---	---	---	---	---	---	---	---	---	---	
V-13-2.5	10/22/2016	2.5	**1.8**	---	**2.0**	---	---	---	---	---	---	---	---	---	---	---	
V-14-0.5	10/22/2016	0.5	**3.3**	---	**54**	---	---	---	---	---	---	---	---	---	---	---	
V-14-2.5	10/22/2016	2.5	**1.5**	---	**4.1**	---	---	---	---	---	---	---	---	---	---	---	
V-15-0.5	10/22/2016	0.5	**4.1**	---	**46**	---	---	---	---	---	---	---	---	---	---	---	
V-15-2.5	10/22/2016	2.5	**2.6**	---	**27**	---	---	---	---	---	---	---	---	---	---	---	
Composite E1	N/A	0.5	---	---	---	---	---	ND<2.0	**7.2**	**6.7**	**2.6**	**30**	**0.49J**	**3.0**	---	Composite of V13-0.5, V14-0.5, and V15-0.5
V-16-0.25	11/21/2016	0.25	---	---	**14**	---	---	---	---	---	---	---	---	---	---	
V-16-0.5	10/22/2016	0.5	**2.9**	---	**390**	**2.2**	---	---	---	---	---	---	---	---	---	
V-16-2.5	10/22/2016	2.5	**4.1**	---	**25**	---	---	---	---	---	---	---	---	---	---	
V-16a-0.25	11/21/2016	0.25	---	---	**29**	---	---	---	---	---	---	---	---	---	---	
V-16a-0.5	11/21/2016	0.5	---	---	**21**	---	---	---	---	---	---	---	---	---	---	
V-16b-0.25	11/21/2016	0.25	---	---	**12**	---	---	---	---	---	---	---	---	---	---	
V-16b-0.5	11/21/2016	0.5	---	---	**19**	---	---	---	---	---	---	---	---	---	---	
V-16b-0.5 DUP	11/21/2016	0.5	---	---	**22**	---	---	---	---	---	---	---	---	---	---	
V-16c-0.25	11/21/2016	0.25	---	---	**15**	---	---	---	---	---	---	---	---	---	---	
V-16c-0.5	11/21/2016	0.5	---	---	**29**	---	---	---	---	---	---	---	---	---	---	
V-16d-0.25	11/21/2016	0.25	---	---	**7.6**	---	---	---	---	---	---	---	---	---	---	
V-16d-0.5	11/21/2016	0.5	---	---	**12**	---	---	---	---	---	---	---	---	---	---	
V-17-0.5	10/22/2016	0.5	**5.8**	---	**12**	---	---	---	---	---	---	---	---	---	---	
V-17-2.5	10/22/2016	2.5	**2.3**	---	**23**	---	---	---	---	---	---	---	---	---	---	
Composite E2	N/A	0.5	---	---	---	---	---	ND<2.0	**3.8**	**3.5**	**1.3**	**13**	**0.26J**	**1.2**	---	Composite of V16-0.5 and V17-0.5
W-12-0.5	10/22/2016	0.5	**6.7**	---	**12**	---	---	---	---	---	---	---	---	---	---	
W-12-2.5	10/22/2016	2.5	**2.3**	---	**2.0**	---	---	---	---	---	---	---	---	---	---	
W-13-0.5	10/22/2016	0.5	**3.5**	---	**1.2**	---	---	---	---	---	---	---	---	---	---	
W-13-2.5	10/22/2016	2.5	**3.2**	---	**4.5**	---	---	---	---	---	---	---	---	---	---	
W-14-0.5	10/22/2016	0.5	**2.4**	---	**1.5**	---	---	---	---	---	---	---	---	---	---	
W-14-0.5 DUP	10/22/2016	0.5	**12**	---	**21**	---	---	---	---	---	---	---	---	---	---	
W-14-2.5	10/22/2016	2.5	**3.1**	---	**250**	**17**	**0.47**	---	---	---	---	---	---	---	---	
W-14-3.5	3/25/2017	3.5	---	---	**29**	---	---	---	---	---	---	---	---	---	---	
W-14a-0.5	11/21/2016	0.5	---	---	**6300**	**1.3**	---	---	---	---	---	---	---	---	---	
W-14a-2.5	11/21/2016	2.5	---	---	**7.9**	---	---	---	---	---	---	---	---	---	---	
W-14a-3.5	11/21/2016	3.5	---	---	**6.0**	---	---	---	---	---	---	---	---	---	---	
W-14b-0.5	11/21/2016	0.5	---	---	**10**	---	---	---	---	---	---	---	---	---	---	
W-14b-2.5	11/21/2016	2.5	---	---	**32**	---	---	---	---	---	---	---	---	---	---	
W-14b-2.5 DUP	11/21/2016	2.5	---	---	**10**	---	---	---	---	---	---	---	---	---	---	
W-14b-3.5	11/21/2016	3.5	---	---	**3.3**	---	---	---	---	---	---	---	---	---	---	
W-14c-0.5	11/21/2016	0.5	---	---	**9.8**	---	---	---	---	---	---	---	---	---	---	
W-14c-0.5 DUP	11/21/2016	0.5	---	---	**8.4**	---	---	---	---	---	---	---	---	---	---	
W-14c-0.5	6/14/2017	0.5	**14**	---	---	---	---	---	---	---	---	---	---	---	---	
W-14c-0.5 DUP	6/14/2017	0.5	**13**	---	---	---	---	---	---	---	---	---	---	---	---	
W-14c-2.5	11/21/2016	2.5	---	---	**99**	**3.4**	---	---	---	---	---	---	---	---	---	
W-14c-2.5	6/14/2017	2.5	**2.5**	---	---	---	---	---	---	---	---	---	---	---	---	
W-14c-3.5	11/21/2016	3.5	---	---	**43**	---	---	---	---	---	---	---	---	---	---	

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
W-14d-0.5	11/21/2016	0.5	---	---	**9.3**	---	---	---	---	---	---	---	---	---	---	
W-14d-2.5	11/21/2016	2.5	---	---	**11**	---	---	---	---	---	---	---	---	---	---	
W-14d-3.5	11/21/2016	3.5	---	---	**3.9**	---	---	---	---	---	---	---	---	---	---	
Composite E3	N/A	0.5	---	---	---	---	---	ND<2.0	**2.6**	**0.74J**	**2.1**	**20**	**0.28J**	**1.8**	---	Composite of W12-0.5, W13-0.5, and W14-0.5
W-15-0.5	10/22/2016	0.5	**3.4**	---	**1.9**	---	---	---	---	---	---	---	---	---	---	
W-15-2.5	10/22/2016	2.5	**2.3**	---	**14**	---	---	---	---	---	---	---	---	---	---	
W-15-2.5 DUP	10/22/2016	2.5	**3.6**	---	**6.3**	---	---	---	---	---	---	---	---	---	---	
W-16-0.5	10/22/2016	0.5	**3.8**	---	**11**	---	---	---	---	---	---	---	---	---	---	
W-16-2.5	10/22/2016	2.5	**2.4**	---	**8.8**	---	---	---	---	---	---	---	---	---	---	
W-17-0.5	10/22/2016	0.5	**3.8**	---	**23**	---	---	---	---	---	---	---	---	---	---	
W-17-2.5	10/22/2016	2.5	**2.6**	---	**8.4**	---	---	---	---	---	---	---	---	---	---	
Composite E4	N/A	0.5	---	---	---	---	---	ND<2.0	**0.65J**	**1.5J**	**0.90J**	**9.2**	ND<2.0	**1.2**	---	Composite of W15-0.5, W16-0.5, and W17-0.5
W-18-0.5	6/14/2017	0.5	**11**	---	---	---	---	---	---	---	---	---	---	---	---	
W-18-2.5	6/14/2017	2.5	**2.4**	---	---	---	---	---	---	---	---	---	---	---	---	
W-18a-0.5	6/14/2017	0.5	**3.0**	---	---	---	---	---	---	---	---	---	---	---	---	
W-18a-2.5	6/14/2017	2.5	**2.5**	---	---	---	---	---	---	---	---	---	---	---	---	
X-12-0.5	10/22/2016	0.5	**13**	---	**13**	---	---	---	---	---	---	---	---	---	---	
X-12-2.5	10/22/2016	2.5	**3.1**	---	**3.3**	---	---	---	---	---	---	---	---	---	---	
X-12a-0.5	6/14/2017	0.5	**12**	---	---	---	---	---	---	---	---	---	---	---	---	
X-12a-2.5	6/14/2017	2.5	**1.7**	---	---	---	---	---	---	---	---	---	---	---	---	
X-12b-0.5	6/14/2017	0.5	**6.5**	---	---	---	---	---	---	---	---	---	---	---	---	
X-12b-2.5	6/14/2017	2.5	**3.1**	---	---	---	---	---	---	---	---	---	---	---	---	
X-12c-0.5	6/14/2017	0.5	**12**	---	---	---	---	---	---	---	---	---	---	---	---	
X-12c-2.5	6/14/2017	2.5	**3.8**	---	---	---	---	---	---	---	---	---	---	---	---	
X-13-0.5	10/22/2016	0.5	**4.1**	---	**5.3**	---	---	---	---	---	---	---	---	---	---	
X-13-2.5	10/22/2016	2.5	**2.7**	---	**41**	---	---	---	---	---	---	---	---	---	---	
X-14-0.5	10/22/2016	0.5	**13**	---	**13**	---	---	---	---	---	---	---	---	---	---	
X-14-2.5	10/22/2016	2.5	**3.0**	---	**80**	**1.5**	---	---	---	---	---	---	---	---	---	
X-14-3.5	3/25/2017	3.5	---	---	**17**	---	---	---	---	---	---	---	---	---	---	
X-14b-0.5	11/21/2016	0.5	---	---	**11**	---	---	---	---	---	---	---	---	---	---	
X-14b-0.5	6/14/2017	0.5	**14**	---	---	---	---	---	---	---	---	---	---	---	---	
X-14b-0.5 DUP	6/14/2017	0.5	**9.8**	---	---	---	---	---	---	---	---	---	---	---	---	
X-14b-2.5	11/21/2016	2.5	---	---	**18**	---	---	---	---	---	---	---	---	---	---	
X-14b-2.5	6/14/2017	2.5	**2.9**	---	---	---	---	---	---	---	---	---	---	---	---	
X-14b-3.5	11/21/2016	3.5	---	---	**13**	---	---	---	---	---	---	---	---	---	---	
X-14c-0.5	11/21/2016	0.5	---	---	**9.8**	---	---	---	---	---	---	---	---	---	---	
X-14c-0.5	6/14/2017	0.5	**9.2**	---	---	---	---	---	---	---	---	---	---	---	---	
X-14c-2.5	11/21/2016	2.5	---	---	**8.7**	---	---	---	---	---	---	---	---	---	---	
X-14c-2.5 DUP	11/21/2016	2.5	---	---	**8.6**	---	---	---	---	---	---	---	---	---	---	
X-14c-2.5	6/14/2017	2.5	**1.7**	---	---	---	---	---	---	---	---	---	---	---	---	
X-14c-3.5	11/21/2016	3.5	---	---	**13**	---	---	---	---	---	---	---	---	---	---	
X-14d-0.5	11/21/2016	0.5	---	---	**5.9**	---	---	---	---	---	---	---	---	---	---	
X-14d-0.5	6/14/2017	0.5	**3.9**	---	---	---	---	---	---	---	---	---	---	---	---	
X-14d-2.5	11/21/2016	2.5	---	---	**10**	---	---	---	---	---	---	---	---	---	---	
X-14d-2.5	6/14/2017	2.5	**2.6**	---	---	---	---	---	---	---	---	---	---	---	---	
X-14d-3.5	11/21/2016	3.5	---	---	**4.5**	---	---	---	---	---	---	---	---	---	---	

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		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
Composite E5	N/A	0.5	---	---	---	---	---	**1.1J**	**1.9J**	**0.99J**	**2.3**	**29**	ND<2.0	**2.4**	---	Composite of X12-0.5, X13-0.5, and X14-0.5
X-15-0.5	10/22/2016	0.5	**9.0**	---	**10**	---	---	---	---	---	---	---	---	---	---	
X-15-2.5	10/22/2016	2.5	**6.0**	---	**8.2**	---	---	---	---	---	---	---	---	---	---	
X-16-0.5	10/22/2016	0.5	**9.1**	---	**8.5**	---	---	---	---	---	---	---	---	---	---	
X-16-2.5	10/22/2016	2.5	**2.3**	---	**5.0**	---	---	---	---	---	---	---	---	---	---	
X-17-0.5	10/22/2016	0.5	**14**	---	**9.0**	---	---	---	---	---	---	---	---	---	---	
X-17-0.5 DUP	10/22/2016	0.5	**15**	---	**8.7**	---	---	---	---	---	---	---	---	---	---	
X-17-2.5	10/22/2016	2.5	**2.7**	---	**7.2**	---	---	---	---	---	---	---	---	---	---	
X-17a-0.5	11/21/2016	0.5	**8.5**	---	---	---	---	---	---	---	---	---	---	---	---	
X-17b-0.5	11/21/2016	0.5	**12**	---	---	---	---	---	---	---	---	---	---	---	---	
X-17b-0.5 DUP	11/21/2016	0.5	**11**	---	---	---	---	---	---	---	---	---	---	---	---	
X-17b-2.5	11/21/2016	2.5	**3.7**	---	---	---	---	---	---	---	---	---	---	---	---	
X-17c-0.5	11/21/2016	0.5	**9.9**	---	---	---	---	---	---	---	---	---	---	---	---	
X-17d-0.5	11/21/2016	0.5	**11**	---	---	---	---	---	---	---	---	---	---	---	---	
X-18-0.5	3/25/2017	0.5	**13**	---	---	---	---	---	---	---	---	---	---	---	---	
X-18-2.5	3/25/2017	2.5	**4.2**	---	---	---	---	---	---	---	---	---	---	---	---	
X-18a-0.5	3/25/2017	0.5	**13**	---	---	---	---	---	---	---	---	---	---	---	---	
X-18a-2.5	3/25/2017	2.5	**3.1**	---	---	---	---	---	---	---	---	---	---	---	---	
X-18c-0.5	3/25/2017	0.5	**14**	---	---	---	---	---	---	---	---	---	---	---	---	
X-18c-2.5	3/25/2017	2.5	**2.5**	---	---	---	---	---	---	---	---	---	---	---	---	
Composite E6	N/A	0.5	---	---	---	---	---	**1.4J**	**3.4**	**1.4J**	**2.0**	**33**	**0.37J**	**3.1**	---	Composite of X15-0.5, X16-0.5, and X17-0.5
Y-12-0.5	10/22/2016	0.5	**8.5**	---	**12**	---	---	---	---	---	---	---	---	---	---	
Y-12-2.5	10/22/2016	2.5	**1.9**	---	**4.1**	---	---	---	---	---	---	---	---	---	---	
Y-12-2.5 DUP	10/22/2016	2.5	**3.1**	---	**4.0**	---	---	---	---	---	---	---	---	---	---	
Y-13-0.5	10/22/2016	0.5	**10**	---	**8.9**	---	---	---	---	---	---	---	---	---	---	
Y-13-2.5	10/22/2016	2.5	**3.0**	---	**30**	---	---	---	---	---	---	---	---	---	---	
Y-14-0.5	10/22/2016	0.5	**6.8**	---	**8.2**	---	---	---	---	---	---	---	---	---	---	
Y-14-2.5	10/22/2016	2.5	**2.8**	---	**4.4**	---	---	---	---	---	---	---	---	---	---	
Composite E7	N/A	0.5	---	---	---	---	---	ND<2.0	**0.65J**	**0.32J**	**0.58J**	**5.8J**	ND<2.0	**0.47J**	ND<16	Composite of Y12-0.5, Y13-0.5, and Y14-0.5
Y-15-0.5	10/22/2016	0.5	**3.6**	---	**8.9**	---	---	---	---	---	---	---	---	---	---	
Y-15-2.5	10/22/2016	2.5	**2.4**	---	**8.0**	---	---	---	---	---	---	---	---	---	---	
Y-16-0.5	10/22/2016	0.5	**2.6**	---	**6.1**	---	---	---	---	---	---	---	---	---	---	
Y-16-2.5	10/22/2016	2.5	**8.9**	---	**11**	---	---	---	---	---	---	---	---	---	---	
Y-17-0.5	10/22/2016	0.5	**16**	---	**12**	---	---	---	---	---	---	---	---	---	---	
Y-17-2.5	10/22/2016	2.5	**2.6**	---	**7.5**	---	---	---	---	---	---	---	---	---	---	
Y-17b-0.5	11/21/2016	0.5	**4.9**	---	---	---	---	---	---	---	---	---	---	---	---	
Y-17c-0.5	11/21/2016	0.5	**14**	---	---	---	---	---	---	---	---	---	---	---	---	
Y-17c-2.5	11/21/2016	2.5	**2.6**	---	---	---	---	---	---	---	---	---	---	---	---	
Y-17d-0.5	11/21/2016	0.5	**4.7**	---	---	---	---	---	---	---	---	---	---	---	---	
Y-17d-0.5 DUP	11/21/2016	0.5	**3.2**	---	---	---	---	---	---	---	---	---	---	---	---	
Composite E8	N/A	0.5	---	---	---	---	---	ND<2.0	**1.1J**	**0.75J**	**0.42J**	**3.9J**	ND<2.0	**0.34J**	---	Composite of Y15-0.5, Y16-0.5, and Y17-0.5
Composite E8 DUP	N/A	0.5	---	---	---	---	---	ND<2.0	**0.87J**	**0.47J**	**0.80J**	**7.4J**	ND<2.0	**1.3**	---	Composite of Y15-0.5, Y16-0.5, and Y17-0.5
Z-17-0.5	3/25/2017	0.5	**11**	---	---	---	---	---	---	---	---	---	---	---	---	
Z-17-2.5	3/25/2017	2.5	**3.0**	---	---	---	---	---	---	---	---	---	---	---	---	

Table 1
General Site Screening Results - Lead-Based Paint and Termiticide Sampling
Preliminary Environmental Assessment Equivalent Report
LAUSD - Roosevelt High School
456 South Mathews Street
Los Angeles, California

Sample Location	Sample Date	Depth (feet bgs)	Analyses and Analytical Methods													Comments
			Arsenic (As) EPA 6010B		Lead (Pb) EPA 6010B			Organochlorine Pesticides (OCPs) EPA 8081A							PCBs EPA 8082	
			TTLC	STLC	TTLC	STLC	TCLP	4,4'-DDD	4,4'-DDE	4,4'-DDT	alpha-Chlordane	Chlordane	Dieldrin	gamma-Chlordane		
Units:			mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
Z-17b-0.5	3/25/2017	0.5	**4.6**	---	---	---	---	---	---	---	---	---	---	---	---	
Z-17b-2.5	3/25/2017	2.5	**3.4**	---	---	---	---	---	---	---	---	---	---	---	---	
Z-17d-0.5	3/25/2017	0.5	**10**	---	---	---	---	---	---	---	---	---	---	---	---	
Z-17d-2.5	3/25/2017	2.5	**2.8**	---	---	---	---	---	---	---	---	---	---	---	---	
Units:			mg/L		mg/L			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
Equipment Blanks																
EB-1-10/8/16	10/8/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-1-10/9/16	10/9/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-2-10/9/16	10/9/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-4-10/15/16	10/15/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-5-10/15/16	10/15/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-6-10/16/16	10/16/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-7-10/16/16	10/16/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-8-10/22/16	10/22/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-9-10/22/16	10/22/2016	-	ND<0.010	---	**0.0066**	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-10-10/22/16	10/22/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-11-10/23/16	10/23/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-12-10/23/16	10/23/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-13-10/29/16	10/29/2016	-	ND<0.050	---	ND<0.025	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-14-10/29/16	10/29/2016	-	ND<0.050	---	ND<0.025	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-15-10/30/16	10/30/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.02	ND<0.25	ND<0.05	ND<0.02	ND	
EB-16-10/30/16	10/30/2016	-	ND<0.010	---	ND<0.0050	---	---	ND<0.06	ND<0.06	ND<0.06	ND<0.03	ND<0.28	ND<0.06	ND<0.03	ND	
EB-17	11/21/2016	-	ND<0.010	---	ND<0.0050	---	---	---	---	---	---	---	---	---	---	
EB-18	11/21/2016	-	ND<0.010	---	**0.013**	---	---	---	---	---	---	---	---	---	---	
EB-19	11/22/2016	-	ND<0.010	---	ND<0.0050	---	---	---	---	---	---	---	---	---	---	
EB-20	11/22/2016	-	ND<0.010	---	ND<0.0050	---	---	---	---	---	---	---	---	---	---	
EB-21	11/23/2016	-	ND<0.010	---	**0.0030 J**	---	---	---	---	---	---	---	---	---	---	
EB-22	11/23/2016	-	ND<0.010	---	ND<0.0050	---	---	---	---	---	---	---	---	---	---	
EB-23	12/21/2016	-	ND<0.010	---	**0.0031 J**	---	---	---	---	---	---	---	---	---	---	
EB-24-3/25/17	3/25/2017	-	ND<0.010	---	ND<0.0050	---	---	---	---	---	---	---	---	---	---	
EB-25-3/25/17	3/25/2017	-	**0.0093 J**	---	**0.0029 J**	---	---	---	---	---	---	---	---	---	---	
EB-26-3/26/17	3/26/2017	-	**0.0090 J**	---	ND<0.0050	---	---	---	---	---	---	---	---	---	---	
EB-27-3/26/17	3/26/2017	-	ND<0.010	---	ND<0.0050	---	---	---	---	---	---	---	---	---	---	
EB-28-6/14/17	6/14/2017	-	ND<0.010	---	**0.0032 J**	---	---	---	---	---	---	---	---	---	---	
EB-29-6/14/17	6/14/2017	-	ND<0.010	---	**0.0034 J**	---	---	---	---	---	---	---	---	---	---	

Table 1
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Sample Location	Sample Date	Depth (feet bgs)	Analyses and Analytical Methods													Comments
			Arsenic (As) EPA 6010B		Lead (Pb) EPA 6010B			Organochlorine Pesticides (OCPs) EPA 8081A							PCBs EPA 8082	
			TTLC	STLC	TTLC	STLC	TCLP	4,4'-DDD	4,4'-DDE	4,4'-DDT	alpha-Chlordane	Chlordane	Dieldrin	gamma-Chlordane		
		Units:	mg/kg	mg/L	mg/kg	mg/L	mg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	

Notes:

Table summarizes arsenic and lead laboratory analytical reports for soil samples.
Samples with detectable concentrations presented in **bold** font.
Arsenic screening level based on California background level.
TTLC screening level based on Department of Toxic Substances Control (DTSC) Office of Human Ecological Risk (HERO) Human Health Risk Assessment (HRRA) Note Number 3, Table 1 (DTSC, 2015).
OCPs screening levels are based on Department of Toxic Substances Control (DTSC) Office of Human Ecological Risk (HERO) Human Health Risk Assessment (HRRA) Note Number 3-Table 1 Cancer Value (or Non-Cancer value, lowest value) (DTSC, 2015) or United States Environmental Protection Agency (US EPA) Regional Screening Level [carcinogenic or non-carcinogenic, lowest value) (EPA, 2015).

LAUSD = Los Angeles Unified School District
ID = Identification
bgs = below ground surface
EPA = Environmental Protection Agency
--- = not analyzed

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
µg/L = micrograms per liter
DUP = Duplicate of preceeding sample
J = Analyte detected below the Practical Quantitation Limit but above or equal to the Method Detection Limit. Result is an estimated concentration.

(1) = 3.8J Aroclor 1260
(2) = 11J Aroclor 1260

Table 2
Summary of Hoist and Clarifier Soil Sample Results - TPH, VOCs, OCPs, PCBs, and Metals
Preliminary Environmental Assessment Equivalent Report
LAUSD - Roosevelt High School
456 South Mathews Street
Los Angeles, California

Sample Location	Date	Depth (feet bgs)	Total Petroleum Hydrocarbons (TPH) EPA Method 8015			VOCs EPA Method 8260B	SVOCs EPA Method 8270C	Organochlorine Pesticides (OCPs) EPA 8081A	Polychlorinated Biphenyls (PCBs) - EPA Method 8082	Metals - EPA Methods 6010B/7471A																Comments
			Gasoline Range	Diesel Range (C10-22)	Motor Oil Range (C23-C36)					Antimony	Arsenic	Barium	Berrylium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	
Units:			mg/kg	mg/kg	mg/kg	(µg/kg)	(µg/kg)	µg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
Screening Level:			NA	NA	NA					12								80									
Hydraulic Hoist Samples																											
HL1-1-0.5-1.0	10/22/2016	0.5-1.0	---	**2.6**	**3.2**	---	---	---	ND<16	ND<2.0	**1.3**	**72**	**0.34J**	ND<1.0	**7.5**	**3.7**	**6.5**	**2.1**	**0.03J**	ND<1.0	**5.7**	ND<1.0	ND<1.0	ND<1.0	**17**	**19**	
HL1-1-2.0-2.5	10/22/2016	2.0-2.5	---	**2.6**	**2.1**	---	---	---	ND<16	ND<2.0	**1.5**	**99**	**0.36J**	ND<1.0	**11**	**5.7**	**8.7**	**1.8**	**0.02J**	ND<1.0	**7.6**	ND<1.0	ND<1.0	ND<1.0	**32**	**32**	
HL1-1-5.0-5.5	10/22/2016	5.0-5.5	---	**3.1**	**2.2**	---	---	---	ND<16	ND<2.0	**1.4**	**42**	**0.16J**	ND<1.0	**8.0**	**3.6**	**5.2**	**1.3**	**0.03J**	ND<1.0	**5.8**	ND<1.0	ND<1.0	ND<1.0	**14**	**15**	
HL1-1-9.5-10.0	10/22/2016	9.5-10.0	---	**1.5**	**1.0**	---	---	---	ND<16	ND<2.0	**2.3**	**29**	**0.10J**	ND<1.0	**4.0**	**2.4**	**3.3**	**1.1**	ND<0.10	**0.20J**	**2.6**	ND<1.0	ND<1.0	ND<1.0	**19**	**11**	
HL1-2-0.5-1.0	10/22/2016	0.5-1.0	---	**3.2**	**3.6**	---	---	---	ND<16	ND<2.0	ND<1.0	**96**	**0.37J**	ND<1.0	**9.9**	**9.7**	**8.2**	**2.3**	**0.02J**	ND<1.0	**7.3**	ND<1.0	ND<1.0	ND<1.0	**22**	**27**	
HL1-2-2.0-2.5	10/22/2016	2.0-2.5	---	**1.4**	**1.3**	---	---	---	ND<16	ND<2.0	**1.4**	**120**	**0.47J**	ND<1.0	**14**	**5.4**	**13**	**3.1**	**0.05J**	ND<1.0	**9.3**	ND<1.0	ND<1.0	ND<1.0	**29**	**32**	
HL1-2-5.0-5.5	10/22/2016	5.0-5.5	---	**1.6**	**1.3**	---	---	---	ND<16	ND<2.0	**1.4**	**48**	**0.20J**	ND<1.0	**11**	**5.9**	**5.4**	**1.8**	**0.03J**	ND<1.0	**7.0**	ND<1.0	ND<1.0	ND<1.0	**25**	**15**	
HL1-2-9.5-10.0	10/22/2016	9.5-10.0	---	**3.6**	**2.2**	---	---	---	ND<16	ND<2.0	**1.2**	**39**	**0.19J**	ND<1.0	**11**	**4.1**	**4.9**	**1.4**	**0.03J**	ND<1.0	**6.3**	ND<1.0	ND<1.0	ND<1.0	**23**	**15**	
HL1-2-9.5-10.0 Duplicate	10/22/2016	9.5-10.0	---	**1.6**	**1.3**	---	---	---	ND<16	ND<2.0	**1.2**	**39**	ND<1.0	**0.11J**	**8.6**	**4.1**	**5.1**	**1.4**	**0.05J**	ND<1.0	**6.5**	ND<1.0	ND<1.0	ND<1.0	**19**	**16**	
HL2-1-0.5-1.0	10/22/2016	0.5-1.0	---	**2.0**	**1.6**	---	---	---	ND<16	ND<2.0	**1.7**	**75**	**0.25J**	ND<1.0	**9.5**	**4.6**	**8.0**	**5.0**	**0.03J**	ND<1.0	**6.0**	ND<1.0	ND<1.0	**0.56J**	**19**	**30**	
HL2-1-2.0-2.5	10/22/2016	2.0-2.5	---	**4.2**	**3.0**	---	---	---	ND<16	ND<2.0	**1.2**	**61**	**0.34J**	ND<1.0	**10**	**5.6**	**5.8**	**2.1**	**0.02J**	ND<1.0	**8.1**	ND<1.0	ND<1.0	ND<1.0	**24**	**17**	
HL2-1-5.0-5.5	10/22/2016	5.0-5.5	---	**1.3**	**1.5**	---	---	---	ND<16	ND<2.0	**0.77J**	**44**	**0.20J**	ND<1.0	**9.7**	**5.8**	**4.5**	**1.4**	**0.02J**	ND<1.0	**7.1**	ND<1.0	ND<1.0	ND<1.0	**18**	**17**	
HL2-1-9.5-10.0	10/22/2016	9.5-10.0	---	ND<1.0	ND<1.0	---	---	---	ND<16	ND<2.0	**1.7**	**17**	**0.09J**	ND<1.0	**3.2**	**1.7**	**2.6**	**0.72J**	**0.02J**	**1.1**	**1.9**	ND<1.0	ND<1.0	ND<1.0	**13**	**6.4**	
HL2-2-0.5-1.0	10/22/2016	0.5-1.0	---	**3.6**	**4.2**	---	---	---	ND<16	ND<2.0	**1.3**	**76**	**0.37J**	ND<1.0	**12**	**7.9**	**7.9**	**2.7**	**0.03J**	ND<1.0	**7.8**	ND<1.0	ND<1.0	ND<1.0	**27**	**23**	
HL2-2-2.0-2.5	10/22/2016	2.0-2.5	---	**1.9**	**1.4**	---	---	---	ND<16	ND<2.0	**0.89J**	**70**	**0.30J**	ND<1.0	**8.6**	**4.1**	**5.6**	**2.2**	**0.02J**	ND<1.0	**6.5**	ND<1.0	ND<1.0	ND<1.0	**21**	**19**	
HL2-2-5.0-5.5	10/22/2016	5.0-5.5	---	**1900**	**4700**	---	---	---	ND<16	ND<2.0	**1.1**	**70**	**0.23J**	ND<1.0	**11**	**5.3**	**5.9**	**1.6**	**0.03J**	ND<1.0	**8.9**	ND<1.0	ND<1.0	ND<1.0	**19**	**22**	
HL2-2-10.0-10.5	10/22/2016	10.0-10.5	---	**7.3**	**8.2**	---	---	---	ND<16	ND<2.0	**0.88J**	**38**	ND<1.0	ND<1.0	**2.7**	**1.1**	**2.6**	**0.79J**	ND<0.10	**0.52J**	**2.1**	ND<1.0	ND<1.0	ND<1.0	**10**	**5.9**	
HL3-1-0.5-1.0	10/22/2016	0.5-1.0	---	**1.8**	**1.8**	---	---	---	ND<16	ND<2.0	ND<1.0	**51**	**0.22J**	ND<1.0	**7.7**	**3.8**	**5.2**	**3.0**	**0.03J**	ND<1.0	**4.3**	ND<1.0	ND<1.0	ND<1.0	**16**	**17**	
HL3-1-2.0-2.5	10/22/2016	2.0-2.5	---	**2.3**	**2.3**	---	---	---	ND<16	ND<2.0	ND<1.0	**57**	**0.34J**	ND<1.0	**10**	**6.1**	**6.7**	**2.4**	**0.03J**	ND<1.0	**7.1**	ND<1.0	ND<1.0	ND<1.0	**24**	**26**	
HL3-1-5.0-5.5	10/22/2016	5.0-5.5	---	**3.8**	**3.0**	---	---	---	ND<16	ND<2.0	**1.1**	**59**	**0.30J**	ND<1.0	**12**	**4.2**	**5.0**	**1.6**	**0.03J**	ND<1.0	**8.1**	ND<1.0	ND<1.0	ND<1.0	**19**	**16**	
HL3-1-5.0-5.5 Duplicate	10/22/2016	5.0-5.5	---	**1.5**	**1.3**	---	---	---	ND<16	ND<2.0	**1.3**	**54**	ND<1.0	ND<1.0	**13**	**2.9**	**5.7**	**1.7**	**0.03J**	ND<1.0	**7.2**	ND<1.0	ND<1.0	ND<1.0	**19**	**18**	
HL3-1-9.5-10.0	10/22/2016	9.5-10.0	---	**2.4**	**1.6**	---	---	---	ND<16	ND<2.0	**1.1**	**65**	**0.06J**	ND<1.0	**2.5**	**1.2**	**2.0J**	**0.61J**	ND<0.10	**0.61J**	**2.5**	ND<1.0	ND<1.0	ND<1.0	**9.7**	**4.6**	
HL3-2-0.5-1.0	10/22/2016	0.5-1.0	---	**2.3**	**2.7**	---	---	---	ND<16	ND<2.0	**0.93J**	**69**	**0.27J**	ND<1.0	**7.5**	**3.1**	**7.4**	**2.2**	**0.03J**	ND<1.0	**4.4**	ND<1.0	ND<1.0	ND<1.0	**17**	**21**	
HL3-2-2.0-2.5	10/22/2016	2.0-2.5	---	**3.6**	**3.5**	---	---	---	ND<16	ND<2.0	**1.1**	**130**	**0.33J**	ND<1.0	**9.6**	**4.6**	**7.2**	**1.8**	**0.02J**	ND<1.0	**6.8**	ND<1.0	ND<1.0	ND<1.0	**23**	**23**	
HL3-2-5.0-5.5	10/22/2016	5.0-5.5	---	**2.0**	**2.3**	---	---	---	ND<16	ND<2.0	ND<1.0	**36**	**0.09J**	ND<1.0	**5.5**	**2.6**	**3.4**	**0.88J**	ND<0.10	ND<1.0	**2.8**	ND<1.0	ND<1.0	ND<1.0	**12**	**11**	
HL3-2-9.5-10.0	10/22/2016	9.5-10.0	---	**3.6**	**3.3**	---	---	---	ND<16	ND<2.0	**1.9**	**100**	**0.32J**	ND<1.0	**11**	**4.7**	**7.4**	**17**	**0.03J**	ND<1.0	**6.5**	ND<1.0	ND<1.0	ND<1.0	**24**	**37**	
HL4-1-0.5-1.0	10/22/2016	0.5-1.0	---	**3.0**	**13**	---	---	---	ND<16	ND<2.0	**1.5**	**140**	**0.37J**	ND<1.0	**13**	**6.6**	**9.3**	**2.8**	ND<0.10	ND<1.0	**9.3**	ND<1.0	ND<1.0	ND<1.0	**31**	**30**	
HL4-1-2.0-2.5	10/22/2016	2.0-2.5	---	**3.7**	**3.9**	---	---	---	ND<16	ND<2.0	**1.3**	**150**	**0.41J**	ND<1.0	**14**	**6.9**	**9.8**	**3.0**	**0.02J**	ND<1.0	**9.9**	ND<1.0	ND<1.0	ND<1.0	**28**	**32**	
HL4-1-5.0-5.5	10/22/2016	5.0-5.5	---	**1.1**	**1.0**	---	---	---	ND<16	ND<2.0	**1.6**	**99**	**0.42J**	ND<1.0	**14**	**4.2**	**7.0**	**2.9**	**0.02J**	ND<1.0	**8.8**	ND<1.0	ND<1.0	ND<1.0	**30**	**22**	
HL4-1-9.5-10.0	10/22/2016	9.5-10.0	---	**2.7**	**3.1**	---	---	---	ND<16	ND<2.0	**2.6**	**32**	**0.11J**	ND<1.0	**6.6**	**2.1**	**3.3**	**1.2**	ND<0.10	**0.47J**	**3.1**	ND<1.0	ND<1.0	ND<1.0	**34**	**8.8**	
HL4-2-0.5-1.0	10/22/2016	0.5-1.0	---	**5.5**	**11**	---	---	---	**(1)**	ND<2.0	**2.2**	**88**	**0.27J**	ND<1.0	**13**	**5.0**	**8.4**	**4.3**	**0.02J**	ND<1.0	**8.0**	ND<1.0	ND<1.0	ND<1.0	**25**	**25**	
HL4-2-2.0-2.5	10/22/2016	2.0-2.5	---	**1.6**	**1.5**	---	---	---	ND<16	ND<2.0	**1.4**	**82**	**0.21J**	ND<1.0	**8.5**	**4.2**	**5.4**	**1.6**	**0.02J**	ND<1.0	**6.5**	ND<1.0	ND<1.0	ND<1.0	**21**	**19**	
HL4-2-5.0-5.5	10/22/2016	5.0-5.5	---	**5.6**	**5.7**	---	---	---	ND<16	ND<2.0	**2.4**	**54**	**0.28J**	ND<1.0	**10**	**3.5**	**4.5**	**1.8**	**0.02J**	ND<1.0	**8.1**	ND<1.0	ND<1.0	ND<1.0	**26**	**17**	
HL4-2-5.0-5.5 Duplicate	10/22/2016	5.0-5.5	---	**1.0**	**ND<1.0**	---	---	---	ND<16	ND<2.0	**3.0**	**61**	**0.06J**	**0.18J**	**12**	**3.1**	**5.2**	**1.8**	**0.02J**	ND<1.0	**9.1**	ND<1.0	ND<1.0	ND<1.0	**30**	**20**	
HL4-2-9.5-10.0	10/22/2016	9.5-10.0	---	**2.5**	**2.5**	---	---	---	ND<16	ND<2.0	**5.1**	**32**	**0.10J**	ND<1.0	**3.4**	**1.8**	**4.4**	**1.0**	ND<0.10	**0.90J**	**3.6**	ND<1.0	ND<1.0	ND<1.0	**27**	**6.8**	
Clarifier Samples																											
CL1-1-0.5-1.0	10/22/2016	0.5-1.0	---	ND<1.0	ND<1.0	ND	**(2)**	---	---	ND<2.0	**1.8**	**61**	**0.35J**	ND<1.0	**11**	**4.0**	**5.8**	**2.4**	**0.03J**	ND<1.0	**6.4**	ND<1.0	ND<1.0	ND<1.0	**26**	**17**	
CL1-1-2.0-2.5	10/22/2016	2.0-2.5	---	**1.4**	**3.6**	**(3)**	ND	---	---	ND<2.0	**1.2**	**110**	**0.36J**	ND<1.0	**11**	**5.0**	**7.4**	**2.7**	**0.02J**	ND<1.0	**6.7**	ND<1.0	ND<1.0	ND<1.0	**26**	**28**	
CL1-1-5.0-5.5	10/22/2016	5.0-5.5	---	**1.2**	ND<1.0	ND	ND	---	---	ND<2.0	**2.0**	**39**	**0.13J**	ND<1.0	**4.2**	**2.0**	**3.5**	**0.96J**	ND<0.10	ND<1.0	**3.2**	ND<1.0	ND<1.0	ND<1.0	**19**	**9.6**	
CL1-1-9.5-10.0	10/22/2016	9.5-10.0	---	ND<1.0	ND<1.0	ND	ND	---	---	ND<2.0	**6.4**	**86**	**0.13J**	ND<1.0	**4.3**	**2.6**	**4.6**	**1.0**	**0.05J**	ND<1.0	**3.4**	ND<1.0	ND<1.0	ND<1.0	**32**	**12**	
CL1-2-0.5-1.0	10/22/2016	0.5-1.0	---	**2.6**	**7.3**	ND	ND	---	---	ND<2.0	**2.7**	**82**	**0.28J**	ND<1.0	**17**	**4.8**	**12**	**11**	**0.04J**	ND<1.0	**10**	ND<1.0	ND<1.0	**0.58J**	**22**	**28**	
CL1-2-2.0-2.5	10/22/2016	2.0-2.5	---	**4.2**	**1.6**	ND	**(4)**	---	---	ND<2.0	**1.2**	**80**	**0.36J**	ND<1.0	**12**	**6.4**	**6.2**	**2.9**	**0.03J**	ND<1.0	**6.1**	ND<1.0	ND<1.0	ND<1.0	**25**	**21**	
CL1-2-5.0-5.5	10/22/2016	5.0-5.5	---	**2.6**	**2.6**	ND	ND	---	---	ND<2.0	**2.6**	**50**	**0.25J**	ND<1.0	**11**	**4.6**	**4.5**	**1.7**	**0.03J**	ND<1.0	**4.9**	ND<1.0	ND<1.0	ND<1.0	**31**	**12**	
CL1-2-5.0-5.5 Dup	10/22/2016	5.0-5.5	---	**1.2**	ND<1.0	ND	ND	---	---	ND<2.0	**2.5**	**54**	ND<1.0	**0.09 J**	**12**	**8.4**	**5.4**	**1.9**	**0.03 J**	ND<1.0	**5.6**	ND<1.0	ND<1.0	ND<1.0	**34**	**15**	
CL1-2-9.5-10.0	10/22/2016	9.5-10.0	---	**1.4**	ND<1.0	ND	ND	---	---	ND<2.0	**1.5**	**87**	**0.11J**	ND<1.0	**3.7**	**1.9**	**3.1**	**1.0**	**0.02J**	**0.51J**	**2.1**	ND<1.0	ND<1.0	ND<1.0	**14**	**8.9**	

Table 2
Summary of Hoist and Clarifier Soil Sample Results - TPH, VOCs, OCPs, PCBs, and Metals
Preliminary Environmental Assessment Equivalent Report
LAUSD - Roosevelt High School
456 South Mathews Street
Los Angeles, California

Sample Location	Date	Depth (feet bgs)	Total Petroleum Hydrocarbons (TPH) EPA Method 8015					Organochlorine Pesticides (OCPs) EPA 8081A	Polychlorinated Biphenyls (PCBs) - EPA Method 8082	Metals - EPA Methods 6010B/7471A															Comments
			Gasoline Range	Diesel Range (C10-22)	Motor Oil Range (C23-C36)	VOCs EPA Method 8260B	SVOCs EPA Method 8270C			Antimony	Arsenic	Barium	Berrylium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	
Units:			mg/kg	mg/kg	mg/kg	(µg/kg)	(µg/kg)	µg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
Screening Level:			NA	NA	NA					12								80									
Undocumented Fill Samples																											
FILL-1-5.0-5.5	10/22/2016	5.0-5.5	ND<0.82	--	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	---	---	
Composite 1	N/A	N/A	---	**1.7**	**3.4**	---	ND	ND	ND<16	ND<2.0	**3.0**	**74**	ND<1.0	**0.13J**	**10**	**4.8**	**8.0**	**6.9**	**0.02J**	ND<1.0	**6.7**	ND<1.0	ND<1.0	ND<1.0	**33**	**23**	Composite of FILL-1-2.0-2.5, FILL-1-5.0-5.5, and FILL-1-10-10.5
FILL-2-10.0-10.5	10/22/2016	10.0-10.5	ND<1.0	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Composite 2	N/A	N/A	---	**1.5**	**1.8**	---	ND	ND	ND<16	ND<2.0	**3.5**	**42**	ND<1.0	**0.14J**	**10**	**2.6**	**5.1**	**1.3**	**0.02J**	ND<1.0	**5.6**	ND<1.0	ND<1.0	ND<1.0	**24**	**17**	Composite of FILL-2-2.0-2.5, FILL-2-5.0-5.5, FILL-2-10-10.5, and FILL-2-13.5-14.0
Equipment Blanks																											
Units:			mg/L	mg/L	mg/L	µg/L	µg/L		µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
EB-CL-10-22-16	10/22/2016	N/A	---	ND<0.05	ND<0.05	ND	ND	---	---	ND<0.010	ND<0.010	ND<0.0030	ND<0.0030	ND<0.0030	ND<0.0030	ND<0.0030	ND<0.0090	ND<0.0050	ND<0.00020	ND<0.0050	ND<0.0050	**0.0042J**	**0.0007J**	ND<0.015	ND<0.0030	**0.0075J**	
EB-HL-10-22-16	10/22/2016	N/A	---	ND<0.05	ND<0.05	---	---	---	ND	ND<0.010	ND<0.010	ND<0.0030	ND<0.0030	ND<0.0030	ND<0.0030	ND<0.0030	**0.0030J**	ND<0.0050	ND<0.00020	ND<0.0050	ND<0.0050	**0.0046J**	ND<0.0030	ND<0.015	ND<0.0030	**0.0042J**	
EB-UF-10-22-16	10/22/2016	N/A	ND<0.05	ND<0.05	ND<0.05	ND	ND	---	ND	**0.0028J**	ND<0.010	ND<0.0030	**0.0005J**	ND<0.0030	ND<0.0030	ND<0.0030	ND<0.0090	ND<0.0050	ND<0.00020	**0.0011J**	ND<0.0050	**0.0058J**	ND<0.0030	**0.0028J**	ND<0.0030	ND<0.025	
Trip Blanks																											
Units:			mg/L	mg/L	mg/L	µg/L	µg/L			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Trip Blank	10/22/2016	N/A	ND<0.05	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Trip Blank	10/22/2016	N/A	ND<0.05	---	---	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	

Notes:

Table summarizes TPH, VOC, PCB, and Metals laboratory analytical reports for all soil samples.
Samples with detectable concentrations presented in **bold** font.

Screening levels are based on Department of Toxic Substances Control (DTSC) Office of Human Ecological Risk (HERO) Human Health Risk Assessment (HRRA) Note Number 3-Table 1 Cancer Value (or Non-Cancer value, lowest value) (DTSC, 2015) or United States Environmental Protection Agency (US EPA) Regional Screening Level [carcinogenic or non-carcinogenic, lowest value) (EPA, 2015).

Samples exceeding the screening levels are highlighted yellow.
* Samples analyzed past holding time for confirmation only.

LAUSD = Los Angeles Unified School District
ID = Identification
bgs = Below ground surface
C4-C11 = Indicates the hydrocarbon chain range
EPA = Environmental Protection Agency
µg/kg = Micrograms per kilogram
mg/kg = Milligrams per kilogram
µg/L = micrograms per liter
PQL = Practical Quantitation Limit as identified in the laboratory reports
NA = US EPA Region IX Regional Screening Level Resident Soil not available
CS = Compound specific
ND<2.0 = Constituent not detected at or above the laboratory PQL shown
--- = Sample was not analyzed for the particular constituent

(1) = 6.7J µg/kg Aroclor 1254
(2) = 180J µg/kg Phenol
(3) = 1.5J µg/kg Carbon disulfide
(4) = 190J µg/kg bis(2-ethylhexyl)phthalate

Table 3A

SUMMARY OF FIELD MEASUREMENTS AND LABORATORY ANALYSIS OF VAPOR SAMPLES
METHANE, HYDROGEN SULFIDE, OXYGEN, AND CARBON DIOXIDE
LAUSD Roosevelt High School
456 South Mathews Street
Los Angeles, California

Methane Probe	Date	Depth (feet)	Field Measurements						Results of Laboratory Analysis of Soil Gas Samples				
			Sample Collection Time	Pressure (IWC)	Methane (ppmv)	Hydrogen Sulfide (ppmv)	Oxygen (percent)	Carbon Dioxide (percent)	Sample Collection Time	Methane (ppm)	Hydrogen Sulfide (ppm)	Oxygen (ppm)	Carbon Dioxide (ppm)
M1	10/15/2016	7	7:39	0.0	0	0.0	18.9	1.62	--	--	--	--	--
	10/15/2016	12	7:44	0.0	25.1	0.0	15.1	2.38	--	--	--	--	--
	10/15/2016	22	7:47	0.0	300	0.0	9.8	9,480 ppmv	--	--	--	--	--
M1	10/16/2016	7	7:22	0.0	0	0.0	19.6	2.05	--	--	--	--	--
	10/16/2016	12	7:26	0.0	10	0.0	20.2	2.75	--	--	--	--	--
	10/16/2016	22	7:28	0.0	5	0.0	19.8	1.88	15:30	17	ND<1.0	126,000	44,000
M2	10/15/2016	7	8:37	0.0	100	0.0	18.7	1.25	--	--	--	--	--
	10/15/2016	12	8:38	0.0	290	0.0	15.9	1.50	--	--	--	--	--
	10/15/2016	22	8:39	0.0	910	0.0	14.1	2.84	--	--	--	--	--
M2	10/16/2016	7	7:47	0.0	130	0.0	18.9	1.30	--	--	--	--	--
	10/16/2016	12	7:52	0.0	55	0.0	18.2	1.35	--	--	--	--	--
	10/16/2016	22	7:55	0.0	630	0.0	17.4	3.70	--	--	--	--	--
M3	10/15/2016	7	7:55	0.0	0	0.0	17.6	2.48	--	--	--	--	--
	10/15/2016	12	8:01	0.0	0	0.0	16.1	2.56	--	--	--	--	--
	10/15/2016	22	8:04	0.0	45	0.0	13.4	900 ppmv	--	--	--	--	--
M3	10/16/2016	7	7:34	0.0	0	0.0	17.5	2.80	--	--	--	--	--
	10/16/2016	12	7:36	0.0	20	0.0	19.0	2.30	--	--	--	--	--
	10/16/2016	22	7:39	0.0	65	0.0	19.3	1.20	--	--	--	--	--
M3	3/19/2017	7	8:08	0.0	0.0	0.0	12.7	--	--	--	--	--	--
	3/19/2017	12	8:17	0.0	0.0	0.0	20.1	--	--	--	--	--	--
	3/19/2017	22	8:21	0.0	35	0.0	11.7	--	--	--	--	--	--
M4	10/15/2016	7	8:26	0.0	0	0.0	16.9	1.75	--	--	--	--	--
	10/15/2016	12	8:27	0.0	75	0.0	15.2	1.27	--	--	--	--	--
	10/15/2016	22	8:29	0.0	130	0.0	13.9	9,560 ppmv	--	--	--	--	--
M4	10/16/2016	7	8:00	0.0	0	0.0	17.7	2.35	--	--	--	--	--
	10/16/2016	12	8:03	0.0	0	0.0	15.9	3.75	--	--	--	--	--
	10/16/2016	22	8:06	0.0	20	0.0	16.1	3.70	--	--	--	--	--

Table 3A

SUMMARY OF FIELD MEASUREMENTS AND LABORATORY ANALYSIS OF VAPOR SAMPLES
METHANE, HYDROGEN SULFIDE, OXYGEN, AND CARBON DIOXIDE
LAUSD Roosevelt High School
456 South Mathews Street
Los Angeles, California

Methane Probe	Date	Depth (feet)	Field Measurements						Results of Laboratory Analysis of Soil Gas Samples				
			Sample Collection Time	Pressure (IWC)	Methane (ppmv)	Hydrogen Sulfide (ppmv)	Oxygen (percent)	Carbon Dioxide (percent)	Sample Collection Time	Methane (ppm)	Hydrogen Sulfide (ppm)	Oxygen (ppm)	Carbon Dioxide (ppm)
M5	10/15/2016	7	13:09	0.0	0	0.0	8.7	> 5.0	--	--	--	--	--
	10/15/2016	12	13:12	0.11	12	0.0	5.8	> 5.0	--	--	--	--	--
	10/15/2016	22	13:16	0.23	800	0.0	7.2	> 5.0	--	--	--	--	--
M5	10/16/2016	7	12:05	0.0	55	0.0	18.3	> 5.0	15:03	ND<1.2	ND<1.0	110,000	133,000
	10/16/2016	12	12:07	0.015	20	0.0	12.5	> 5.0	15:09	ND<1.2	ND<1.0	88,100	147,000
	10/16/2016	22	12:09	0.05	0	0.0	9.9	> 5.0	15:13	ND<1.2	ND<1.0	98,300	128,000
M5	3/19/2017	7	13:57	0.0	75	0.0	3.9	--	--	--	--	--	--
	3/19/2017	12	14:10	0.0	100	0.0	4.1	--	14:10	ND<1.2	--	--	--
	3/19/2017	22	14:13	0.0	35	0.0	8.2	--	--	--	--	--	--
M6	10/15/2016	7	8:14	0.0	0	0.0	17.9	1.12	--	--	--	--	--
	10/15/2016	12	8:15	0.0	0	0.0	17.8	1.16	--	--	--	--	--
M6	10/16/2016	7	8:18	0.0	0	0.0	18.0	1.30	--	--	--	--	--
	10/16/2016	12	8:20	0.0	0	0.0	19.0	1.38	--	--	--	--	--
M6	3/19/2017	7	13:40	0.02	0.0	0.0	17.8	--	--	--	--	--	--
	3/19/2017	12	13:47	0.03	0.0	0.0	18.3	--	--	--	--	--	--
M7	10/15/2016	7	8:49	0.0	0	0.0	17.3	2.25	--	--	--	--	--
M7	10/16/2016	7	8:11	0.0	30	0.0	18.8	2.9	--	--	--	--	--
M8	10/15/2016	7	12:57	0.0	0	0.0	19.0	4,880 ppmv	--	--	--	--	--
	10/15/2016	12	12:59	0.05	0	0.0	17.1	2.34	--	--	--	--	--
	10/15/2016	16	13:01	0.07	0	0.0	16.6	3.2	--	--	--	--	--
M8	10/16/2016	7	11:52	0.0	25	0.0	20.0	8,800 ppmv	--	--	--	--	--
	10/16/2016	12	11:53	0.01	0	0.0	17.8	2.8	--	--	--	--	--
	10/16/2016	16	11:55	0.01	0	0.0	17.5	3.1	--	--	--	--	--
M8	3/19/2017	7	13:20	0.0	10	0.0	18.8	--	--	--	--	--	--
	3/19/2017	12	13:27	0.0	23	0.0	16.5	--	--	--	--	--	--
	3/19/2017	16	13:32	0.03	28	0.0	16.8	--	--	--	--	--	--

Table 3A

SUMMARY OF FIELD MEASUREMENTS AND LABORATORY ANALYSIS OF VAPOR SAMPLES
METHANE, HYDROGEN SULFIDE, OXYGEN, AND CARBON DIOXIDE
LAUSD Roosevelt High School
456 South Mathews Street
Los Angeles, California

Methane Probe	Date	Depth (feet)	Field Measurements						Results of Laboratory Analysis of Soil Gas Samples				
			Sample Collection Time	Pressure (IWC)	Methane (ppmv)	Hydrogen Sulfide (ppmv)	Oxygen (percent)	Carbon Dioxide (percent)	Sample Collection Time	Methane (ppm)	Hydrogen Sulfide (ppm)	Oxygen (ppm)	Carbon Dioxide (ppm)
M9	10/15/2016	7	12:43	0.0	150	0.0	15.6	2.30	--	--	--	--	--
	10/15/2016	12	12:45	0.04	1,800	0.0	15.0	2.02	--	--	--	--	--
	10/15/2016	22	12:47	0.02	2,400	0.0	13.4	1.82	--	--	--	--	--
M9	10/16/2016	7	11:39	0.0	30	0.0	17.1	2.50	--	--	--	--	--
	10/16/2016	12	11:42	0.0	800	0.0	20.3	2.80	15:49	1.3	ND<1.0	170,000	37,600
	10/16/2016	22	11:44	0.0	120	0.0	20.9	1.30	15:58	120	ND<1.0	179,000	39,800
M9	3/19/2017	7	12:50	0.0	43	0.0	19.5	--	12:50	ND<1.2	--	--	--
	3/19/2017	12	13:04	0.0	23	0.0	14.6	--	--	--	--	--	--
	3/19/2017	22	13:12	0.0	--	--	--	--	--	--	--	--	--
M10	10/15/2016	7	9:14	0.0	0	0.0	18.7	1.51	--	--	--	--	--
	10/15/2016	12	9:15	0.0	80	0.0	18.6	1.80	--	--	--	--	--
M10	10/16/2016	7	8:26	0.0	0	0.0	19.1	1.50	--	--	--	--	--
	10/16/2016	12	8:28	0.0	0	0.0	19.8	1.98	--	--	--	--	--
M10	3/19/2017	7	9:13	0.01	0.0	0.0	17.1	--	--	--	--	--	--
	3/19/2017	12	9:21	--	43	0.0	17.0	--	--	--	--	--	--
M11	10/15/2016	7	9:07	0.0	12	0.0	18.1	1.65	--	--	--	--	--
	10/15/2016	12	9:08	0.0	0	0.0	18.1	1.87	--	--	--	--	--
M11	10/16/2016	7	8:34	0.0	0	0.0	20.7	2.10	--	--	--	--	--
	10/16/2016	12	8:36	0.0	0	0.0	19.7	2.20	--	--	--	--	--
M11	3/19/2017	7	8:58	0.0	0.0	0.0	17.9	--	--	--	--	--	--
	3/19/2017	12	9:06	0.0	0.0	0.0	17.9	--	--	--	--	--	--
M12	10/15/2016	7	9:40	0.0	0	0.0	18.5	1.50	--	--	--	--	--
	10/15/2016	12	9:43	0.0	23	0.0	18.2	5,730 ppmv	--	--	--	--	--
	10/15/2016	16	9:45	0.0	10	0.0	17.8	1.67	--	--	--	--	--
M12	10/16/2016	7	8:45	0.0	0	0.0	18.5	1.80	--	--	--	--	--
	10/16/2016	12	8:48	0.0	15	0.0	18.8	1.90	--	--	--	--	--
	10/16/2016	16	8:50	0.0	15	0.0	19.0	1.70	--	--	--	--	--
M12	3/19/2017	7	9:35	0.0	0.0	0.0	18.0	--	--	--	--	--	--
	3/19/2017	12	9:41	0.0	13	0.0	17.9	--	--	--	--	--	--
	3/19/2017	16	9:44	0.0	12	0.0	18.3	--	--	--	--	--	--

Table 3A

SUMMARY OF FIELD MEASUREMENTS AND LABORATORY ANALYSIS OF VAPOR SAMPLES
METHANE, HYDROGEN SULFIDE, OXYGEN, AND CARBON DIOXIDE
LAUSD Roosevelt High School
456 South Mathews Street
Los Angeles, California

Methane Probe	Date	Depth (feet)	Field Measurements						Results of Laboratory Analysis of Soil Gas Samples				
			Sample Collection Time	Pressure (IWC)	Methane (ppmv)	Hydrogen Sulfide (ppmv)	Oxygen (percent)	Carbon Dioxide (percent)	Sample Collection Time	Methane (ppm)	Hydrogen Sulfide (ppm)	Oxygen (ppm)	Carbon Dioxide (ppm)
M13	10/15/2016	7	12:33	0.0	0	0.0	12.0	2.80	--	--	--	--	--
	10/15/2016	12	12:40	0.0	21	0.0	13.2	> 5.0	--	--	--	--	--
M13	10/16/2016	7	11:31	0.0	0	0.0	17.4	3.20	--	--	--	--	--
	10/16/2016	12	11:33	0.0	0	0.0	16.3	> 5.0	--	--	--	--	--
M13	3/19/2017	20	12:25	0.0	20	0.0	13.3	--	--	--	--	--	--
		33	12:30	0.0	33	0.0	14.4	--	--	--	--	--	--
M14	10/15/2016	7	9:55	0.0	0	0.0	17.7	2.48	--	--	--	--	--
	10/15/2016	12	9:58	0.0	0	0.0	17.1	2.70	--	--	--	--	--
M14	10/16/2016	7	8:58	0.0	50	0.0	17.3	2.80	--	--	--	--	--
	10/16/2016	12	9:06	0.0	15	0.0	17.5	3.10	--	--	--	--	--
M14	3/19/2017	7	10:13	--	0.0	0.0	17.9	--	--	--	--	--	--
	3/19/2017	12	10:18	--	0.0	0.0	16.0	--	--	--	--	--	--
M15	10/15/2016	7	11:28	0.0	0	0.0	10.0	> 5.0	--	--	--	--	--
	10/15/2016	12	11:31	0.0	2,200	0.0	2.3	> 5.0	--	--	--	--	--
	10/15/2016	22	11:33	0.0	6,050	4.0	3.6	> 5.0	--	--	--	--	--
M15	10/16/2016	7	11:09	0.0	10	0.0	8.8	4.85	--	--	--	--	--
	10/16/2016	12	11:10	0.0	1,050	0.0	16.3	> 5.0	14:46	11,000	ND<1.0	33,700	248,000
	10/16/2016	22	11:13	0.0	380	0.0	19.2	> 5.0	14:52	11,000	ND<1.0	23,400	329,000
M15	3/19/2017	--	12:35	--	--	--	--	--	--	--	--	--	--
	3/19/2017	--	12:37	--	--	--	--	--	--	--	--	--	--
	3/19/2017	--	12:40	--	--	--	--	--	--	--	--	--	--
M16	10/15/2016	7	11:44	0.0	0	0.0	18.8	2.20	--	--	--	--	--
	10/15/2016	12	11:45	0.0	0	0.0	18.5	2.30	--	--	--	--	--
M16	10/16/2016	7	11:21	0.0	0	0.0	18.4	2.10	--	--	--	--	--
	10/16/2016	12	11:24	0.0	20	0.0	19.1	2.05	--	--	--	--	--
M16	3/19/2017	7	12:10	0.0	0.0	0.0	19.0	--	--	--	--	--	--
	3/19/2017	12	12:15	0.0	15	0.0	19.3	--	--	--	--	--	--

Table 3A

SUMMARY OF FIELD MEASUREMENTS AND LABORATORY ANALYSIS OF VAPOR SAMPLES
METHANE, HYDROGEN SULFIDE, OXYGEN, AND CARBON DIOXIDE
LAUSD Roosevelt High School
456 South Mathews Street
Los Angeles, California

Methane Probe	Date	Depth (feet)	Field Measurements						Results of Laboratory Analysis of Soil Gas Samples				
			Sample Collection Time	Pressure (IWC)	Methane (ppmv)	Hydrogen Sulfide (ppmv)	Oxygen (percent)	Carbon Dioxide (percent)	Sample Collection Time	Methane (ppm)	Hydrogen Sulfide (ppm)	Oxygen (ppm)	Carbon Dioxide (ppm)
M17	10/15/2016	7	10:16	0.0	3,600	0.0	14.1	9,800 ppmv	--	--	--	--	--
	10/15/2016	12	10:22	0.0	120	0.0	12.1	3.20	--	--	--	--	--
	10/15/2016	19	10:24	0.0	1,000	0.0	18.8	8,800 ppmv	--	--	--	--	--
M17	10/16/2016	7	9:15	0.0	170	0.0	15.6	1.37	--	--	--	--	--
	10/16/2016	12	9:17	0.0	85	0.0	11.7	4.98	--	--	--	--	--
	10/16/2016	19	9:20	0.0	95	0.0	13.8	8,990 ppmv	--	--	--	--	--
M17	3/19/2017	7	10:31	0.0	210	0.0	13.0	--	10:31	ND<1.2	--	--	--
	3/19/2017	12	10:37	0.0	150	0.0	12.7	--	10:37	ND<1.2	--	--	--
	3/19/2017	22	10:42	0.0	--	--	--	--	--				--
M18	10/15/2016	7	10:35	0.0	0	0.0	20.8	4,350 ppmv	--	--	--	--	--
	10/15/2016	12	10:36	0.0	0	0.0	19.9	7,250 ppmv	--	--	--	--	--
	10/15/2016	22	10:38	0.0	7,210	0.0	19.3	4,800 ppmv	--	--	--	--	--
M18	10/16/2016	7	9:56	0.0	0	0.0	20.3	4,900 ppmv	--	--	--	--	--
	10/16/2016	12	9:59	0.0	0	0.0	20.1	7,500 ppmv	--	--	--	--	--
	10/16/2016	22	10:02	0.0	65	0.0	20.0	--	--	--	--	--	--
M19	10/15/2016	7	11:13	0.01	0	0.0	20.8	3,890 ppmv	--	--	--	--	--
	10/15/2016	12	11:15	0.015	0	0.0	20.4	2,850 ppmv	--	--	--	--	--
M19	10/16/2016	7	10:59	0.0	40	0.0	20.9	2,330 ppmv	--	--	--	--	--
	10/16/2016	12	11:02	0.0	0	0.0	20.9	3,280 ppmv	--	--	--	--	--
M19	3/19/2017	7	11:50	0.0	5.0	0.0	20.1	--	--	--	--	--	--
	3/19/2017	12	11:56	0.0	7.0	0.0	20.4	--	11:56	ND<1.2	--	--	--

Table 3A

SUMMARY OF FIELD MEASUREMENTS AND LABORATORY ANALYSIS OF VAPOR SAMPLES
METHANE, HYDROGEN SULFIDE, OXYGEN, AND CARBON DIOXIDE
LAUSD Roosevelt High School
456 South Mathews Street
Los Angeles, California

Methane Probe	Date	Depth (feet)	Field Measurements						Results of Laboratory Analysis of Soil Gas Samples				
			Sample Collection Time	Pressure (IWC)	Methane (ppmv)	Hydrogen Sulfide (ppmv)	Oxygen (percent)	Carbon Dioxide (percent)	Sample Collection Time	Methane (ppm)	Hydrogen Sulfide (ppm)	Oxygen (ppm)	Carbon Dioxide (ppm)
M20	10/15/2016	7	10:48	0.0	2,300	0.0	6.4	4.90	--	--	--	--	--
	10/15/2016	12	10:50	0.0	24,500	34.5	6.2	3.90	--	--	--	--	--
	10/15/2016	22	11:01	0.0	14,250	19.3	10.3	2,210 ppmv	--	--	--	--	--
M20	10/16/2016	7	10:08	0.0	500	0.0	10.7	> 5.0	14:22	ND<1.2	ND<1.0	83,100	156,000
	10/16/2016	12	10:13	0.0	7500	3.0	7.2	4.80	14:27	ND<1.2	ND<1.0	84,100	151,000
	10/16/2016	12 (DUP)	--	--	--	--	--	--	14:35	ND<1.2	ND<1.0	85,700	146,000
	10/16/2016	22	10:17	0.03	750	0.0	8.9	--	--	--	--	--	--
M20	3/19/2017	7	11:18	0.0	--	--	--	--	--	--	--	--	--
	3/19/2017	12	11:25	0.0	--	--	--	--	--	--	--	--	--
	3/19/2017	22	11:30	0.2	--	--	--	--	--	--	--	--	--

NOTES:

EPA = Environmental Protection Agency
ASTM = American Standard Test Method
ppm = part per million
ppmv = part per million by volume
IWC = inch of water column
feet = feet below ground surface
DUP = duplicate sample

ND = parameter not detected at limit indicated
-- = not measured, not analyzed, or not available

Methane analyzed using EPA Method TO3M
Hydrogen sulfide analyzed using EPA Method 6
Oxygen and carbon dioxide analyzed using ASTM Method D1946

Table 3B

LABORATORY ANALYSIS OF VAPOR SAMPLES - VOLATILE ORGANIC COMPOUNDS
LAUSD Roosevelt High School
456 South Mathews Street
Los Angeles, California

Methane Probe	Date	Depth (feet)	Sample Collection Time	Volatile Organic Compounds using EPA Method TO-15M															
				Benzene (µg/m3)	Toluene (µg/m3)	Ethylbenzene (µg/m3)	Total Xylenes (µg/m3)	MTBE (µg/m3)	PCE (µg/m3)	TCE (µg/m3)	2-Butanone (µg/m3)	Carbon Disulfide (µg/m3)	Chloroform (µg/m3)	Chloromethane (µg/m3)	Dichloro-difluoro-methane (µg/m3)	4-Ethyl-toluene (µg/m3)	4-Methyl-2-Pentanone (µg/m3)	1,3,5-TMB (µg/m3)	1,2,4-TMB (µg/m3)
M1	10/16/2016	22	15:30	8.0	41	9.0	40.9	ND<7.2	12	ND<2.7	ND<4.4	33	ND<2.4	6.0	ND<2.5	2.5	ND<6.1	2.5	ND<7.4
M5	10/16/2016	7	15:03	15	190	39	184	ND<7.2	9.4	ND<2.7	ND<4.4	ND<31	ND<2.4	ND<1.0	ND<2.5	11	ND<6.1	12	30
	10/16/2016	12	15:09	11	200	58	304	ND<7.2	ND<3.4	ND<2.7	24	42	ND<2.4	ND<1.0	2.7	24	26	29	70
	10/16/2016	22	15:13	2.8	57	16	93	ND<7.2	4.1	ND<2.7	11	ND<31	ND<2.4	ND<1.0	4.3	9.5	ND<6.1	8.6	27
M9	10/16/2016	12	15:49	37	360	86	397	ND<7.2	ND<3.4	ND<2.7	31	130	6.4	ND<1.0	ND<2.5	22	31	25	58
	10/16/2016	22	15:58	12	160	40	192	ND<7.2	ND<3.4	ND<2.7	15	53	10	ND<1.0	ND<2.5	13	ND<6.1	10	26
M15	10/16/2016	12	14:46	33	210	50	206	ND<7.2	ND<3.4	ND<2.7	9.0	260	ND<2.4	ND<1.0	ND<2.5	13	ND<6.1	15	35
	10/16/2016	22	14:52	89	510	79	294	ND<7.2	ND<3.4	ND<2.7	14	ND<31	ND<2.4	ND<1.0	ND<2.5	23	28	23	58
M20	10/16/2016	7	14:22	3.4	51	11	57	ND<7.2	ND<3.4	ND<2.7	ND<4.4	ND<31	ND<2.4	ND<1.0	ND<2.5	4.1	ND<6.1	4.4	10
	10/16/2016	12	14:27	17	190	35	173	ND<7.2	ND<3.4	ND<2.7	ND<4.4	32	ND<2.4	ND<1.0	ND<2.5	11	ND<6.1	11	24
	10/16/2016	12(DUP)	14:35	19	220	38	194	ND<7.2	ND<3.4	ND<2.7	ND<4.4	42	ND<2.4	ND<1.0	ND<2.5	11	ND<6.1	11	24

NOTES:

EPA = Environmental Protection Agency
feet = feet below ground surface
DUP = duplicate sample
µg/m3 = micrograms per cubic meter
ND = parameter not detected at limit indicated
MTBE = methyl tertiary butyl ether
PCE = tetrachloroethylene
TCE = trichloroethene
1,3,5-TBM = 1,3,5 trimethylbenzene
1,2,4-TBM = 1,2,4 trimethylbenzene

Table 4A

REVISED SUMMARY OF PROPOSED EXCAVATION VOLUMES
SCREENING LEVELS: 80 mg/kg LEAD AND 12 mg/kg ARSENIC
Preliminary Environmental Assessment Equivalent Report
LAUSD - Roosevelt High School
456 South Mathews Street
Los Angeles, California

Location ID	Chemicals of Concern	Length (feet)	Width (feet)	Depth (feet)	Volume (cubic yards)	Volume (tons)	Notes
AREA 2							
C-12	Lead (Pb)	20	20	2.5	37.04	55.56	
B-6	Lead (Pb)	40	30	4.5	200.00	300.00	Confirmation sample at 4.5 feet bgs. See Table 3A, includes CAL-HAZ lead-affected soil.
PE-3	Lead (Pb)	40	15	4.5	100.00	150.00	Confirmation sample at 4.5 feet bgs. See Table 3A, includes CAL-HAZ lead-affected soil.
H-2	Lead (Pb)	20	45	3.5	116.67	175.00	H-2 total volume: 204.17 cubic yards or 306.25 tons.
H-2	Lead (Pb)	27	25	3.5	87.50	131.25	
Area 2 Subtotal					***541.20***	***811.81***	
AREA 3							
C-17 / C-17b	Lead (Pb)	50	25	2.5	115.74	173.61	See Table 3A, includes CAL-HAZ lead-affected soil.
B-16 / B-16a	Arsenic (As) & Lead (Pb)	25	25	3.5	81.02	121.53	
B-15b	Lead (Pb)	25	25	2.5	57.87	86.81	
B-13b / B-14 / B-14a/b / B-15 / B-15a	Arsenic (As)	100	25	2.5	231.48	347.22	
B-13 / B-13a	Arsenic (As) & Lead (Pb)	20	25	4.5	83.33	125.00	Confirmation sample at 4.5 feet bgs. See Table 3A, includes CAL-HAZ lead-affected soil.
B-13c / C-13 / C-13c	Lead (Pb)	20	75	2.5	138.89	208.33	See Table 3A, includes CAL-HAZ lead-affected soil.
Area 3 Subtotal					***708.33***	***1062.50***	
AREA 5							
MB-6	Lead (Pb)	15	20	2.5	27.78	41.67	
AUD-3a / AUD-3a1	Lead (Pb)	55	55	2.5	280.09	420.14	See Table 3A, includes CAL-HAZ lead-affected soil.
AUD-3 /AUD-3b	Lead (Pb)	35	45	2.5	145.83	218.75	See Table 3A, includes CAL-HAZ lead-affected soil.
AUD-3c / AUD-3c1	Lead (Pb)	57	37	2.5	195.28	292.92	See Table 3A, includes CAL-HAZ lead-affected soil.
AUD-4/AUD-4c	Lead (Pb)	20	100	2.5	185.19	277.78	See Table 3A, includes CAL-HAZ lead-affected soil.
AUD-5 / AUD-5b	Lead (Pb)	35	53	2.5	171.76	257.64	See Table 3A, includes CAL-HAZ lead-affected soil.
AUD-5c / AA2038-9	Lead (Pb)	20	60	2.5	111.11	166.67	See Table 3A, includes CAL-HAZ lead-affected soil.
AUD-6 / AUD-6b	Lead (Pb)	35	62	2.5	200.93	301.39	See Table 3A, includes CAL-HAZ lead-affected soil.
AUD-6c	Lead (Pb)	60	58	2.5	322.22	483.33	See Table 3A, includes CAL-HAZ lead-affected soil.
Area 5 Subtotal					***1640.19***	***2460.28***	
AREA 6							
FS-2	Arsenic (As)	15	15	2.5	20.83	31.25	FS-2 total: 28.24 cubic yards or 42.36 tons
FS-2	Arsenic (As)	10	8	2.5	7.41	11.11	
AA1917	Lead (Pb)	20	15	4.5	50.00	75.00	Confirmation sample at 4.5 feet bgs
IM1	Arsenic (As)	30	17	3.5	66.11	99.17	
IM-2 / IM-2b	Lead (Pb)	45	17	3.5	99.17	148.75	See Table 3A, includes CAL-HAZ lead-affected soil.
IM-3 / IM-3c	Arsenic (As)	15	40	4.5	100.00	150.00	
IM-4	Arsenic (As)	20	10	3.5	25.93	38.89	
IM-5 / IM-5d	Arsenic (As)	35	10	4.5	58.33	87.50	
IM-6	Arsenic (As)	15	30	2.5	41.67	62.50	
CRA-2	Lead (Pb)	45	22	4.5	165.00	247.50	See Table 3A, includes CAL-HAZ lead-affected soil.
CRA-3	Arsenic (As)	25	22	2.5	50.93	76.39	
CR1-2	Lead (Pb)	50	15	2.5	69.44	104.17	See Table 3A, includes CAL-HAZ lead-affected soil.
CR1-4 / CR1-4b	Lead (Pb)	82	7	2.5	53.15	79.72	CR1-4 / CR1-4b total: 87.87 cubic yards or 131.80 tons. See Table 3A, includes CAL-HAZ lead-affected soil.
CR1-4 / CR1-4b	Lead (Pb)	15	25	2.5	34.72	52.08	
CR1-5 / CR1-5b	Arsenic (As) & Lead (Pb)	85	12	3.5	132.22	198.33	See Table 3A, includes CAL-HAZ lead-affected soil.
CR1-5d	Lead (Pb)	35	17	0.5	11.02	16.53	See Table 3A, includes CAL-HAZ lead-affected soil.
R-15	Lead (Pb)	40	22	2.5	81.48	122.22	See Table 3A, includes CAL-HAZ lead-affected soil.
Q-15b / Q-15d	Lead (Pb)	50	32	3.5	207.41	311.11	See Table 3A, includes CAL-HAZ lead-affected soil.
P-15 / P-15a/d / P-15d1 / Q-15a	Lead (Pb)	48	50	5.5	488.89	733.33	Confirmation sample at 5.5 feet bgs. See Table 3A, includes CAL-HAZ lead-affected soil.
P-15b / P-16 / P-16a/b/c	Lead (Pb)	48	38	2.5	168.89	253.33	Total: 196.67 cubic yards or 295 tons. See Table 3A, includes CAL-HAZ lead-affected soil.
P-15b / P-16 / P-16a/b/c	Lead (Pb)	25	12	2.5	27.78	41.67	

Table 4A

REVISED SUMMARY OF PROPOSED EXCAVATION VOLUMES
SCREENING LEVELS: 80 mg/kg LEAD AND 12 mg/kg ARSENIC
Preliminary Environmental Assessment Equivalent Report
LAUSD - Roosevelt High School
456 South Mathews Street
Los Angeles, California

Location ID	Chemicals of Concern	Length (feet)	Width (feet)	Depth (feet)	Volume (cubic yards)	Volume (tons)	Notes
AA2684-2 / AA2684-3 AA2684-6 / AA2543-1 AA2543-2	Arsenic (As)	60	30	4.5	300.00	450.00	Total: 337.50 cubic yards or 506.25 tons. Confirmation sample at 4.5 feet bgs
AA2684-2 / AA2684-3 AA2684-6 / AA2543-1 AA2543-2	Arsenic (As)	15	15	4.5	37.50	56.25	
AA2543-6	Arsenic (As)	10	28	3.5	36.30	54.44	Confirmation sample at 3.5 feet bgs
AA2543-5	Arsenic (As)	45	15	4.5	112.50	168.75	Confirmation sample at 4.5 feet bgs
AA2038-1 / AA2249-1	Arsenic (As)	70	18	4.5	210.00	315.00	Confirmation sample at 4.5 feet bgs
AA2038-3 / AA2038-4	Arsenic (As)	15	60	4.5	150.00	225.00	Confirmation sample at 4.5 feet bgs
AA2038-2	Arsenic (As)	30	15	4.5	75.00	112.50	Confirmation sample at 4.5 feet bgs
AA2249-2	Arsenic (As)	10	38	4.5	63.33	95.00	Confirmation sample at 4.5 feet bgs
Area 6 Subtotal					***2945.00***	***4417.50***	
AREA 9							
V-16	Lead (Pb)	25	25	2.5	57.87	86.81	
X-12	Arsenic (As)	12	50	2.5	55.56	83.33	
W-14 / W-14a	Lead (Pb)	25	60	3.5	194.44	291.67	See Table 3A, includes CAL-HAZ lead-affected soil.
X-14	Arsenic (As) & Lead (Pb)	62	62	3.5	498.30	747.44	
Y-17 / Y-17c	Arsenic (As)	25	48	2.5	111.11	166.67	
X-17 / X-17b / X-18 X-18 a/c	Arsenic (As)	30	25	2.5	69.44	104.17	X-17/X-18 total volume: 219.90 cubic yards or 329.86 tons.
X-17 / X-17b / X-18 X-18 a/c	Arsenic (As)	25	65	2.5	150.46	225.69	
Area 9 Subtotal					***1137.19***	***1705.78***	
HYDRAULIC HOISTS AND CLARIFIER							
HL2-2	Hydrocarbons	18	10	7	46.67	70.00	Confirmation sample at 7 feet bgs
Hydraulic Hoists and Clarifier Subtotal					***46.67***	***70.00***	
Total Proposed Excavation Volume					***7018.58***	***10527.87***	

Notes:

1 cubic yard = 1.5 tons
bgs = below ground surface
CAL-HAZ = California Hazardous Waste

Table 4B

SUMMARY OF CALIFORNIA HAZARDOUS LEAD EXCAVATION VOLUMES
SCREENING LEVEL 80 mg/kg LEAD
Preliminary Environmental Assessment Equivalent Report
LAUSD - Roosevelt High School
456 South Mathews Street
Los Angeles, California

Location ID	Chemicals of Concern	Length (feet)	Width (feet)	Depth (feet)	Volume (cubic yards)	Volume (tons)	Notes
AREA 2							
B-6b	CAL-HAZ Lead (Pb)	29	15	3.5	56.39	84.58	
PE-3 / PE-3b	CAL-HAZ Lead (Pb)	27	15	4.5	67.50	101.25	Confirmation sample at 4.5 feet bgs
Area 2 Subtotal					***123.89***	***185.83***	
AREA 3							
C-17b	CAL-HAZ Lead (Pb)	25	25	2.5	57.87	86.81	
B-13 / B-13a	CAL-HAZ Lead (Pb)	20	25	3.5	64.81	97.22	
C-13	CAL-HAZ Lead (Pb)	20	25	2.5	46.30	69.44	
Area 3 Subtotal					***168.98***	***253.47***	
AREA 5							
AUD-3a / AUD-3a1	CAL-HAZ Lead (Pb)	55	55	2.5	280.09	420.14	
AUD-3 / AUD-3b	CAL-HAZ Lead (Pb)	35	45	2.5	145.83	218.75	
AUD-3c	CAL-HAZ Lead (Pb)	35	37	2.5	119.91	179.86	
AUD-4	CAL-HAZ Lead (Pb)	20	50	2.5	92.59	138.89	
AUD-5 AUD-5b	CAL-HAZ Lead (Pb)	35	53	2.5	171.76	257.64	
AUD-5c / AA2038-9	CAL-HAZ Lead (Pb)	20	60	2.5	111.11	166.67	
AUD-6 AUD-6b	CAL-HAZ Lead (Pb)	35	62	2.5	200.93	301.39	
AUD-6c	CAL-HAZ Lead (Pb)	60	58	2.5	322.22	483.33	
Area 5 Subtotal					***1444.44***	***2166.67***	
AREA 6							
IM-2 / IM-2b	CAL-HAZ Lead (Pb)	45	17	3.5	99.17	148.75	
CRA-2 / CRA-2b CRA-2c	CAL-HAZ Lead (Pb)	45	22	4.5	165.00	247.50	
CR1-2 / CR1-2d CR1-2d1	CAL-HAZ Lead (Pb)	50	15	2.5	69.44	104.17	
CR1-4 / CR1-4b	CAL-HAZ Lead (Pb)	82	7	2.5	53.15	79.72	CR1-4 / CR1-4b total: 87.87 cubic yards or 131.80 tons
CR1-4 / CR1-4b	CAL-HAZ Lead (Pb)	15	25	2.5	34.72	52.08	
CR1-5	CAL-HAZ Lead (Pb)	40	12	2.5	44.44	66.67	
CR1-5b	CAL-HAZ Lead (Pb)	45	12	3.5	70.00	105.00	
CR1-5d	CAL-HAZ Lead (Pb)	35	17	0.5	11.02	16.53	
R-15d	CAL-HAZ Lead (Pb)	30	20	2.5	55.56	83.33	
Q-15	CAL-HAZ Lead (Pb)	20	25	2.5	46.30	69.44	
P-16	CAL-HAZ Lead (Pb)	20	20	2.5	37.04	55.56	
P-15b	CAL-HAZ Lead (Pb)	25	50	2.5	115.74	173.61	
P-15 / P-15d P-15d1 /Q-15a	CAL-HAZ Lead (Pb)	50	45	4.5	375.00	562.50	
Area 6 Subtotal					***1176.57***	***1764.86***	
AREA 9							
W-14	CAL-HAZ Lead (Pb)	25	25	3.5	81.02	121.53	
W-14a	CAL-HAZ Lead (Pb)	25	25	2.5	57.87	86.81	
Area 9 Subtotal					***138.89***	***208.33***	
Total Proposed Excavation Volume					***3052.78***	***4579.17***	

Notes:

1 cubic yard = 1.5 tons
bgs = below ground surface
CAL-HAZ = California Hazardous Waste

Table 5

Applicable or Relevant and Appropriate Requirements
Roosevelt High School
Los Angeles, California

ARAR Reference Number	Regulation, Standard or Level of Control	Description	Comments
Chemical-Specific Requirements			
1	RCRA, 40 CFR Part 261, 263, and 264 & Title 22 CCR Section 66261, 66263, and 66264, Hazardous Waste Identification, Transportation, and Disposal	Definition and identification of waste material as hazardous, and transporation and disposal criteria.	**Applicable** to waste transportation and disposal
2	California Proposition 65, No Significant Risk Levels (NSRLs) for Carcinogens and Maximum Allowable Dose Levels for Chemicals Causing Reproductive Toxicity	Proposition 65 requires notification of the public when the public may be exposed to listed chemicals known to the State of California to cause toxicity. The NSRLs provide "safe harbor" numbers below which public notification is not required.	**Applicable**
3	EPA Region 9 Preliminary Remediation Goals (PRGs) and Soil Screening Levels & California Modified PRGs	Risk-based tools for evaluating and cleaning up contaminated sites. They are being used to streamline and standardize all stages of the risk decision-making process. The risk-based concentrations presented in the Table may be used as screening goals or initial cleanup goals if applicable. Generally a screening goal is intended to provide health protection without knowledge of the specific exposure conditions at a site. PRGs may also be used as initial cleanup goals when the exposure assumptions based on site-specific data match up with the default exposure assumptions in the PRG Table.	**To be considered.** These values are relevant as baseline indicators of potential risk during the receptor pathway survey/risk assessment screening in order to determine whether or not additional site-specific, risk-based cleanup criteria are needed in the RI/FS.
4	National Ambient Air Quality Standards (NAAQS), 40 CFR Part 15	Establishes NAAQS for criteria pollutants: particulate matter (PM10), sulfer dioxide, carbon monoxide, nitrogen dioxide, ozone and lead.	**Applicable**
Location-Specific Requirements			
5	Endangered Species Act, 50 CFR Parts 200 and 402	Provides for the protection of endangered or threatened plant and animal species through an evaluation of affected habitats in the site area, as well as consultation with the appropriate government agencies.	**Applicable** if endangered or threatened species or their habitat are present at the Site. At this time, it appears that no endangered or threatened species or their habitats are present.
6	California Endangered Species Act, California Fish and Game Code Sections 2050 et seq.	Provides for the recognition and protection of rare, threatened and endangered species of plant and animals.	**Applicable** if endangered or threatened species or their habitat are present at the Site. At this time, it appears that no endangered or threatened species or their habitats are present.
7	Migratory Bird Act, 15 U.S.C. 703 et seq.	Protects certain migratory birds or their nests or eggs.	**Applicable** if nesting birds are present at the Site, and must be protected if present at the time of ground disturbing activities.
8	National Archaeological and Historic Preservation Act, 36 CFR Part 65	Provides for the protection of any historically significant artifacts that may be unearthed during excavation activities.	**Applicable.** Historic artifacts must be protected if observed during excavation.

Table 5

Applicable or Relevant and Appropriate Requirements
Roosevelt High School
Los Angeles, California

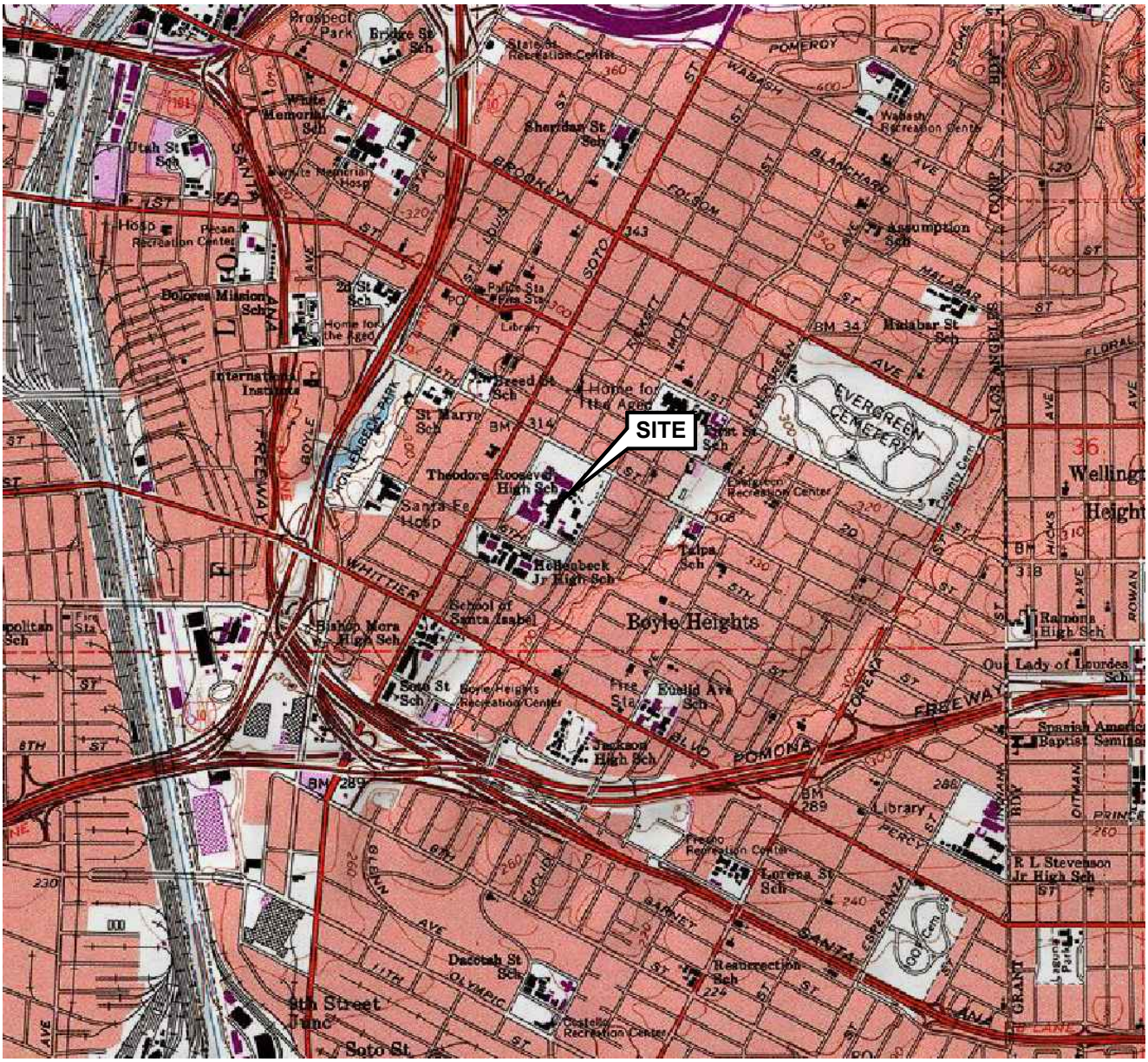
ARAR Reference Number	Regulation, Standard or Level of Control	Description	Comments
Action-Specific Requirements			
9	RCRA, Subtitle C & Title 22 CCR Division 4.5	Regulates the treatment, storage and disposal aspects of hazardous waste.	**Applicable**
10	CEQA, California Statute, Public Resources Code, Sections 21000 et seq.	Requires disclosure to the public and government decision-makers of the environmental effects of a proposed action that a government agency has the discretion to approve or disapprove.	**Applicable**
11	SCAQMD Rule 401 - Visible Emissions	Prohibits discharge of air contaminants based on "darkness in shade" measured by the Ringleman chart.	**Applicable** to soil excavation and handling operations during the removal action, as well as exhaust from construction equipment.
12	SCAQMD Rule 402 - Odor and Nuisance	Prohibits discharge of air contaminants or other materials that 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 may cause injury or damage to business or property.	**Applicable** to soil excavation and handling operations during the removal action, as well as exhaust from construction equipment.
13	SCAQMD Rule 403 - Fugitive Dust	The purpose is to reduce the amount of particulate matter entrained in the ambient air as a result of man-made fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust sources. Requires use of best available control measures to minimize fugitive dust emissions.	**Applicable** to soil excavation and handling operations during the removal action, as well as exhaust from construction equipment.
14	SCAQMD Rule 1166 - VOC Emissions from Decontamination of Soil	Imposes requirements to control the emission of VOCs from excavating, grading, handling, and treating VOC-contaminated soil (50 ppm or greater).	**Not Applicable** to soil excavation and handling operations during the removal action (no VOCs above removal action goals were identified during PEA)..
15	SCAQMD Rule 1466 - Control of Particulate Emissions from Soil with Toxic Air Contaminants	Imposes requirements to minimize the amount of off-site fugitive dust emissions containing toxic air contaminants by reducing particulate emissions associated with earth-moving activities, including soil excavation, handling, stockpiling, loading, etc.	**Applicable** to soil excavation and handling operations during the removal action.
16	OSHA, 29 CFR 1910	Establishes standards for worker protection, particularly for workers involved in hazardous waste operations.	**Applicable** to the regulation of worker safety throughout the removal action.

Table 6

Cost Estimate for Soil Excavation and Disposal
LAUSD Roosevelt High School
456 South Mathews Street
Los Angeles, California

Task	Description	Cost
1	Field Supervision and Project Management	$45,000
2	Excavation - mob/demob, permitting, excavation, and segregation	$217,000
3	Excavation - clean soil and gravel import. Assumes 11,581 tons of fill material from a clean, quarried source (includes an additional 10% volume for compaction).	$405,328
4	Excavation - backfill, compaction, and geotechnical testing (up to 11,581 tons of backfill material)	$138,972
5	Excavation - impacted soil loading/transport/recycling (non-hazardous; up to 5,949 tons)	$386,685
6	Excavation - impacted soil loading/transport/disposal (California hazardous; up to 4,579 tons)	$549,480
7	Excavation - soil analytical	$5,000
8	Reporting - Remedial Action Completion Report	$15,000
	Total	***$1,762,465***

FIGURES



N

0 1/4 1/2 3/4 1 MILE

SCALE 1:24,000

SOURCE:

United States Geological Survey
7.5 Minute Topographic Map:
Los Angeles Quadrangle

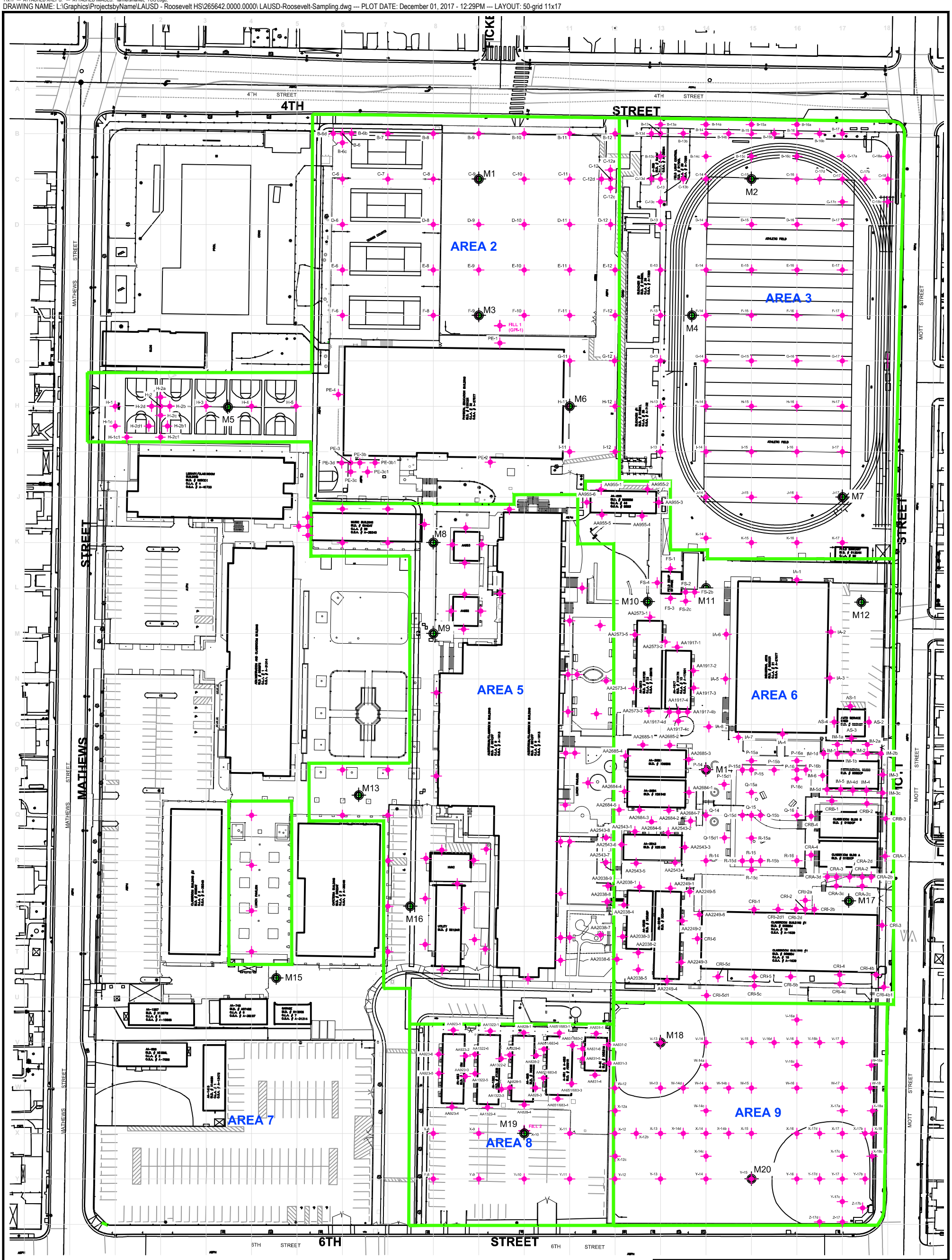
TRC
17911 Von Karman Avenue
Suite 400
Irvine, CA 92614
Phone: 949.727.9336

PROJECT:
LAUSD
ROOSEVELT HIGH SCHOOL
456 S. MATHEWS STREET
LOS ANGELES, CALIFORNIA

TITLE:
VICINITY MAP

DRAWN BY:	RMC
CHECKED BY:	JM
APPROVED BY:	JM
DATE:	11/03/2016
PROJ. NO.:	265642.0000.0000
FILE:	LAUSD-Roosevelt-VM.dwg

FIGURE 1



LEGEND

- Proposed LBP and OCP Sample Location
- Undocumented Fill Sampling Location
- Methane Probe Location

NOTES:

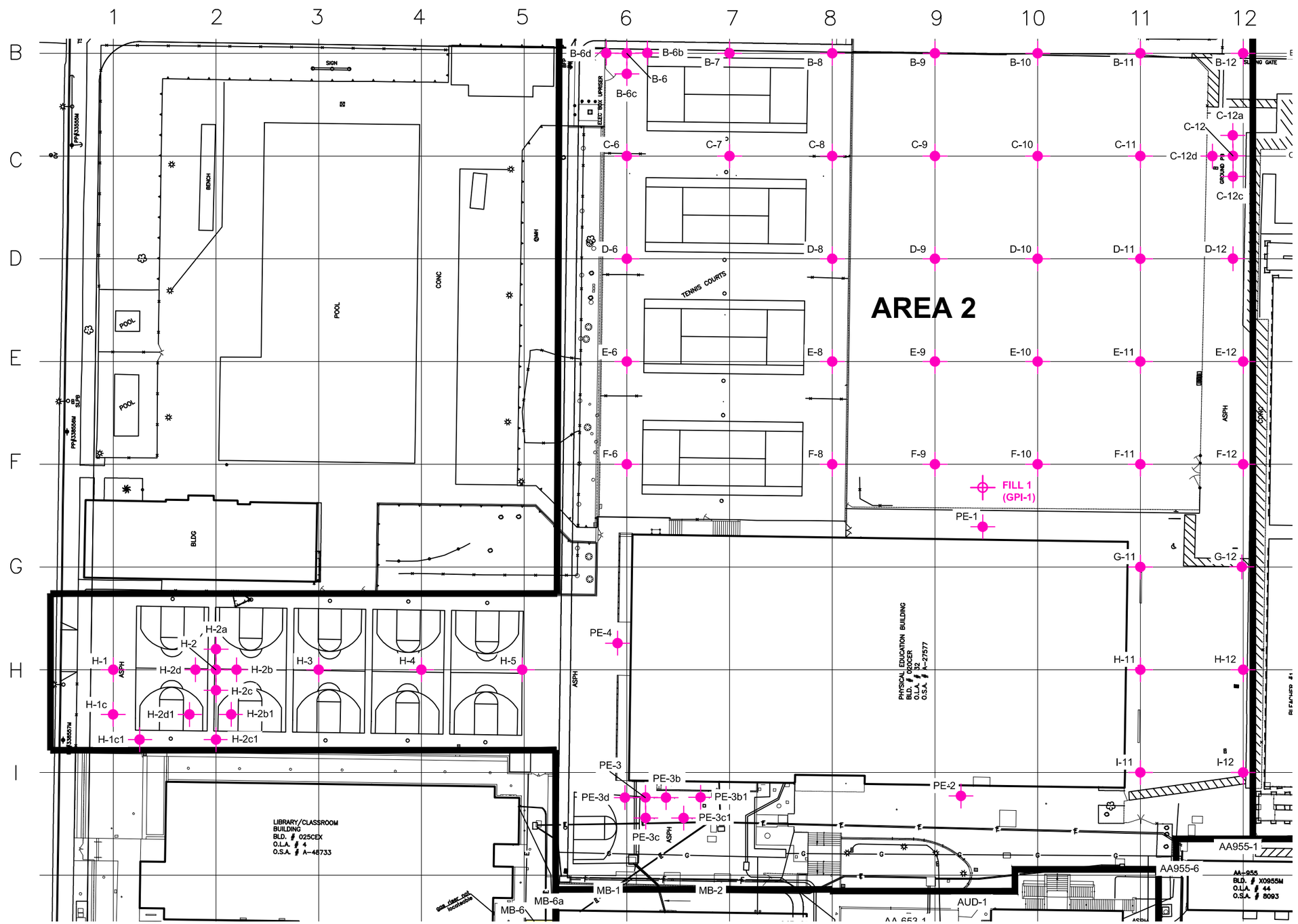
LBP = lead based paint.
OCP = organochlorine pesticides.

Source: Base map provided by Converse Consultants.

PROJECT:	LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA
TITLE:	SITE PLAN
DRAWN BY:	RMC
CHECKED BY:	JM
APPROVED BY:	JM
DATE:	November 2017
PROJ NO.:	265642.0000.0000
	FIGURE 2

TRC
17911 Von Karman Avenue
Suite 400
Irvine, CA 92614
Phone: 949.727.9336

FILE NO.: LAUSD-Roosevelt-Sampling.dwg



LEGEND

B-12 Sample Location

Undocumented Fill Sampling Location

N

APPROXIMATE SCALE (FEET)

0 50 100

Source: Base map provided by Converse Consultants.

PROJECT:	LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA
TITLE:	AREA 2 SAMPLING LOCATIONS

DRAWN BY:	RMC	PROJ NO.:	265642.0000.0000
CHECKED BY:	JM		FIGURE 3
APPROVED BY:	JM		
DATE:	November 2017		

TRC
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Suite 400
Irvine, CA 92614
Phone: 949.727.9336

FILE NO.: LAUSD-Roosevelt-Sampling.dwg

11:17 - - ATTACHED XREFS: - - ATTACHED IMAGES: - Innermarket, TCC Logo
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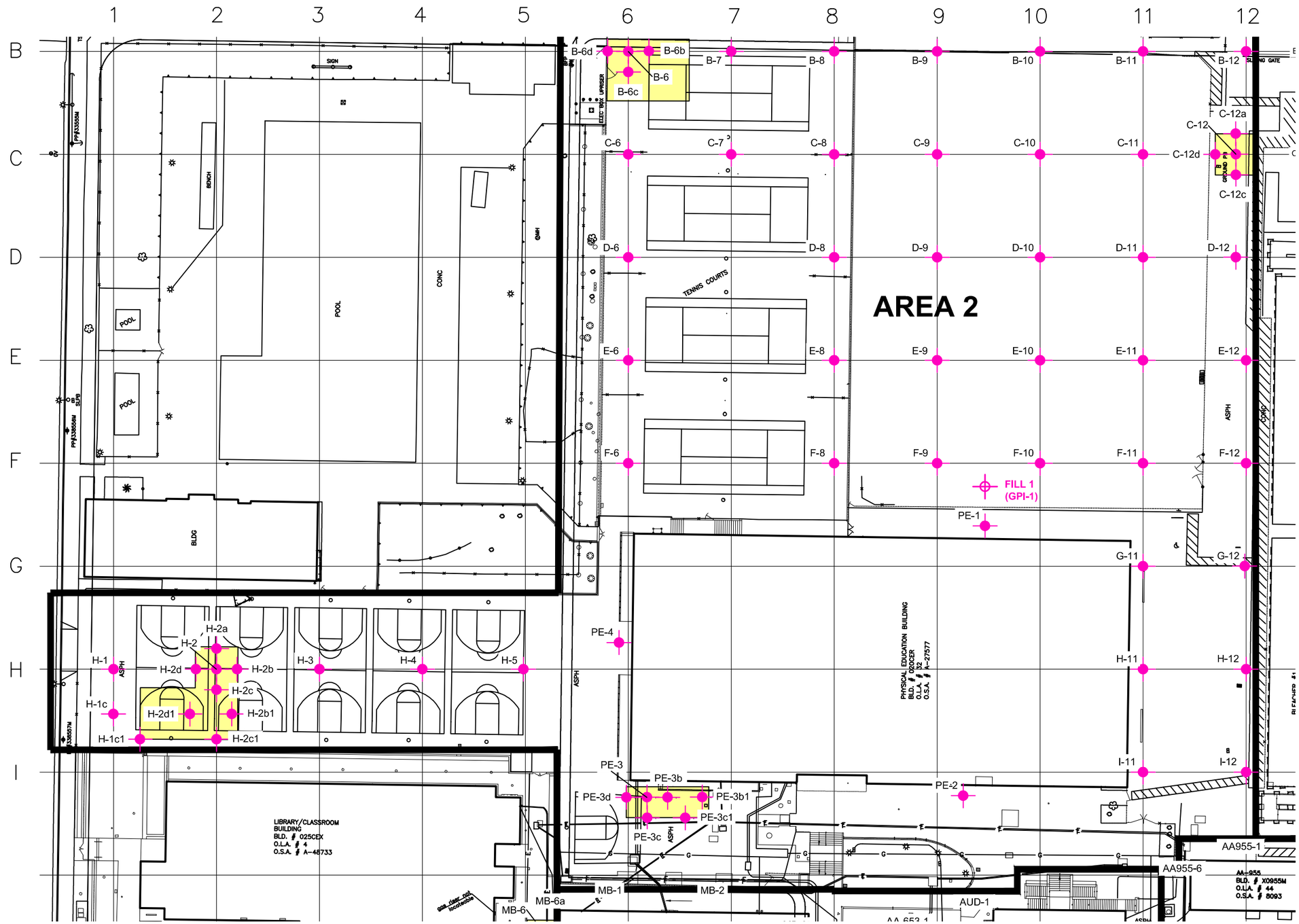

LEGEND

- B-12 — Sample Location
- Undocumented Fill Sampling Location
- Proposed Excavation Area for Lead

N

APPROXIMATE SCALE (FEET)

0 50 100

Source: Base map provided by Converse Consultants.

PROJECT:
LAUSD
ROOSEVELT HIGH SCHOOL
456 S. MATHEWS STREET
LOS ANGELES, CALIFORNIA

TITLE:
AREA 2
PROPOSED EXCAVATION LOCATIONS

DRAWN BY:	RMC	PROJ NO.:	265642.0000.0000
CHECKED BY:	JM		
APPROVED BY:	JM		**FIGURE 3A**
DATE:	June 2017		

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FILE NO.: LAUSD-Roosevelt-Sampling.dwg

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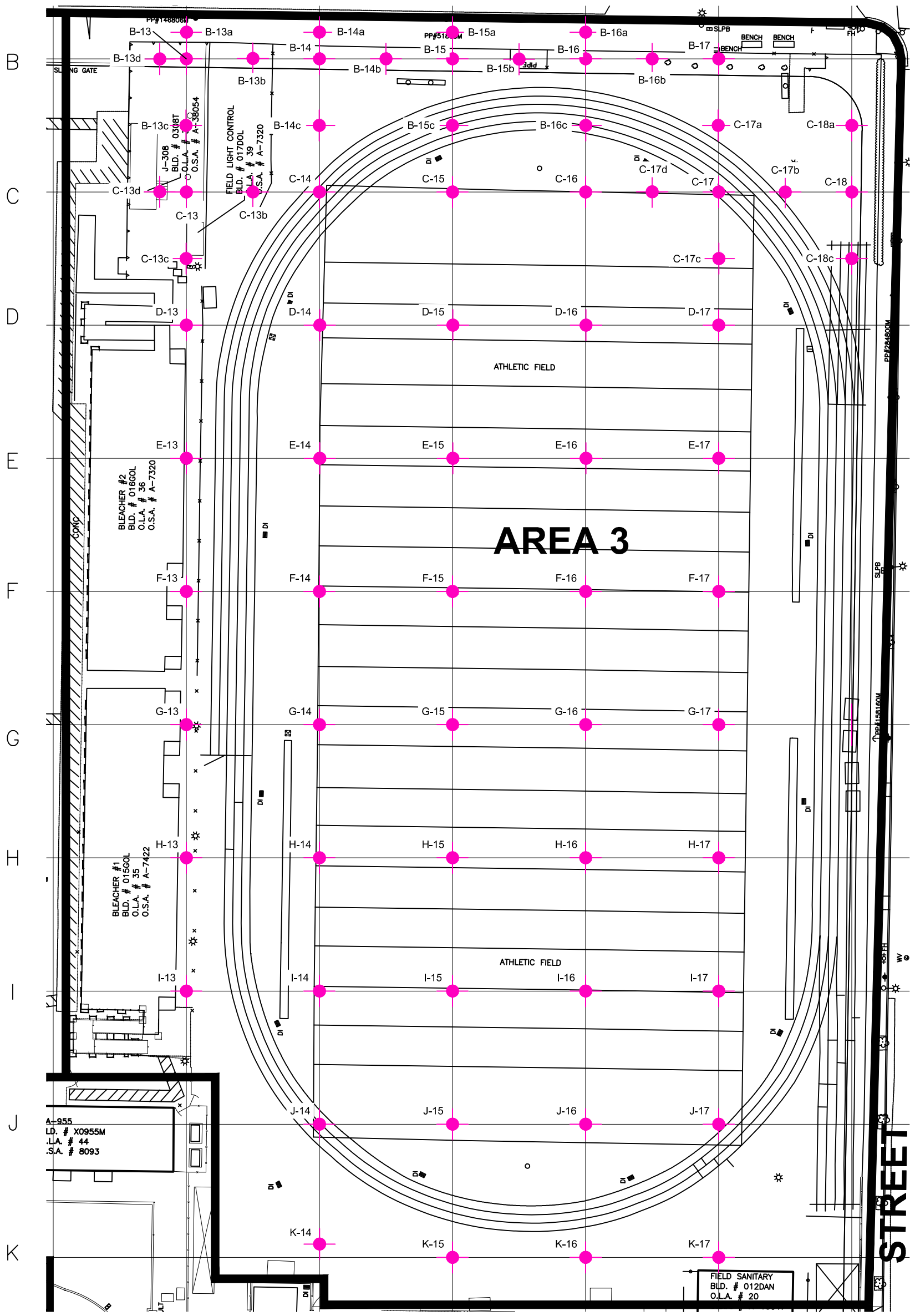
DRAWING NAME: L:\Graphics\Projects\Name\LAUSD - Roosevelt HS\265642.0000.0000 LAUSD-Roosevelt-Sampling.dwg — PLOT DATE: December 01, 2017 - 12:30PM — LAYOUT: AREA2-Excav



LEGEND

B-13 Sample Location

N

APPROXIMATE SCALE (FEET)

0 40 80

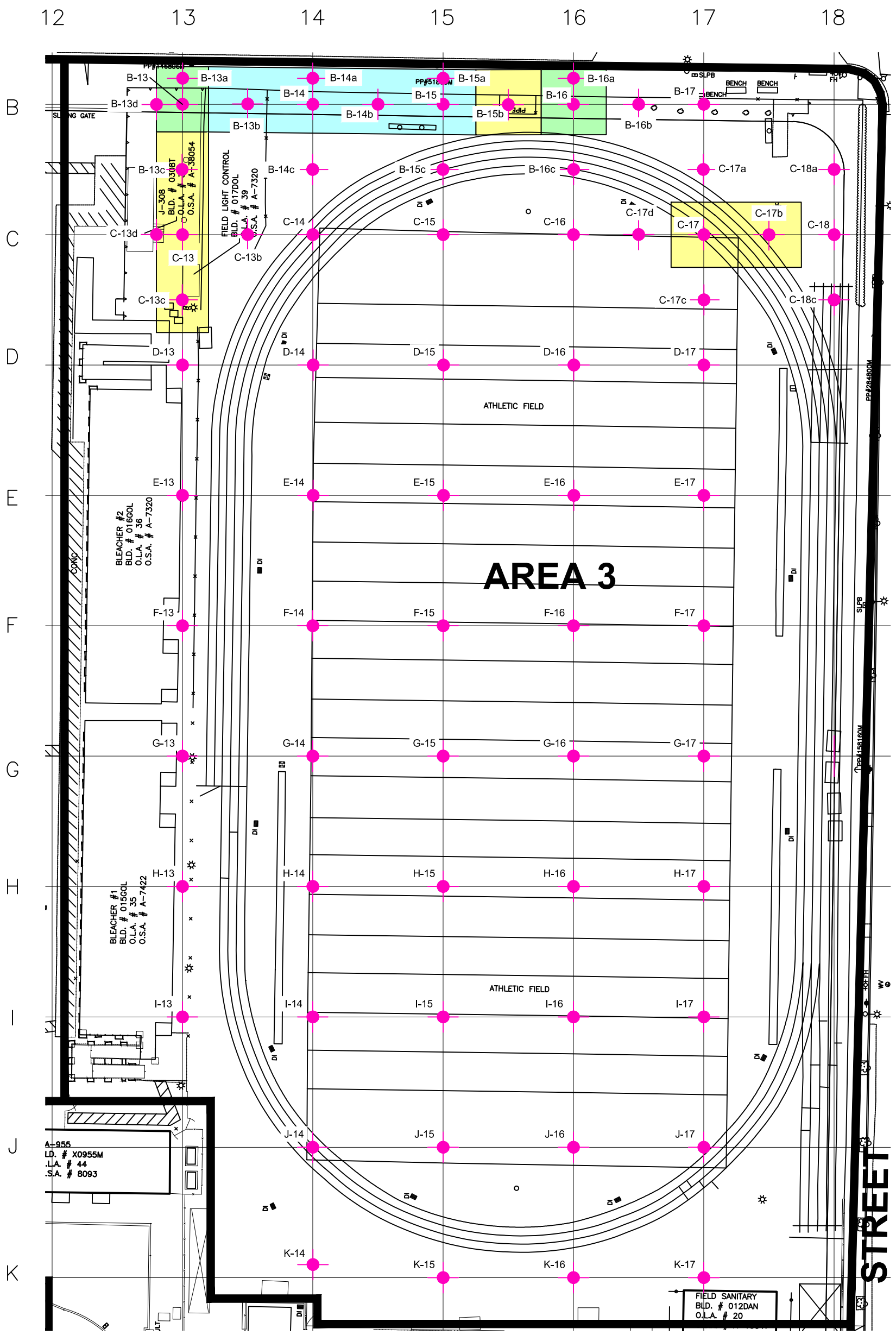
Source: Base map provided by Converse Consultants.

PROJECT:	LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA
TITLE:	AREA 3 SAMPLING LOCATIONS
DRAWN BY: RMC	PROJ NO.: 265642.0000.0000
CHECKED BY: JM	FIGURE 4
APPROVED BY: JM	
DATE: November 2017	

TRC
17911 Von Karman Avenue
Suite 400
Irvine, CA 92614
Phone: 949.727.9336

FILE NO.: LAUSD-Roosevelt-Sampling.dwg

11x17 --- ATTACHED XREF'S: --- ATTACHED IMAGES: farmersmarket; TCG Logo;
DRAWING NAME: L:\Graphics\ProjectsbyName\LAUSD - Roosevelt HS\265642.0000.0000\ LAUSD-Roosevelt-Sampling.dwg --- PLOT DATE: December 01, 2017 - 12:34PM --- LAYOUT: AREA3-Excav



LEGEND

B-13 Sample Location

Proposed Excavation Area for Lead

Proposed Excavation Area for Arsenic

Proposed Excavation Area for Lead and Arsenic

N

APPROXIMATE SCALE (FEET)

0 40 80

Source: Base map provided by Converse Consultants.

PROJECT:	LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA
TITLE:	AREA 3 PROPOSED EXCAVATION LOCATIONS
DRAWN BY:	RMC
CHECKED BY:	JM
APPROVED BY:	JM
DATE:	November 2017
PROJ NO.:	265642.0000.0000
	FIGURE 4A

TRC
17911 Von Karman Avenue
Suite 400
Irvine, CA 92614
Phone: 949.727.9336

FILE NO.: LAUSD-Roosevelt-Sampling.dwg

11x17 --- ATTACHED XREF'S: --- ATTACHED IMAGES: farmersmarket; TCG Logo;
DRAWING NAME: L:\Graphics\ProjectsbyName\LAUSD - Roosevelt HS\265642.0000.0000\ LAUSD-Roosevelt-Sampling.dwg --- PLOT DATE: December 01, 2017 - 12:35PM --- LAYOUT: AREA5-Sampling

AREA 5

MB-1 MB-2 MB-3 MB-4 MB-5 MB-6 MB-6a MB-6c MB-6d
P-6 P-7
Q-4 Q-6 Q-7
R-4 R-7
S-4 S-7
T-4 T-7
AUD-1 AUD-2 AUD-3 AUD-3a AUD-3a1 AUD-3b AUD-3b1 AUD-3c AUD-3c1 AUD-4 AUD-4b AUD-4c AUD-4c1 AUD-5 AUD-5b AUD-5c AUD-6 AUD-6b AUD-6c AUD-7 AUD-8 AUD-9 AUD-10 AUD-11 AUD-12
AA-653-1 AA-653-2 AA-653-3 AA-653-4 AA653
AA-652-1 AA-652-2 AA-652-3 AA-652-4 AA652
AA2543-8 AA2543-7 AA2038-9 AA2038-8 AA2038-7 AA2038-6
HVAC-1 HVAC-2 HVAC-3
UB-1 UB-2 UB-3 UB-4 UB-5 UB-6

LIBRARY/CLASSROOM BUILDING BLD. # 025CEX O.L.A. # 4 O.S.A. # A-46733
MUSIC BUILDING BLD. # 004DAT O.L.A. # 29 O.S.A. # A-38340
ADMINISTRATION AND CLASSROOM BUILDING BLD. # 005BFS O.L.A. # 1 O.S.A. # A-31314
CLASSROOM BUILDING #3 BLD. # 002DAT O.L.A. # 2 O.S.A. # A-38340
CAFETERIA BUILDING BLD. # 002DAT O.L.A. # 3 O.S.A. # A-38340
AUDITORIUM/CLASSROOM BUILDING BLD. # 001CFF O.L.A. # 9 O.S.A. # A-1613
UTILITY BLD. # 021DAR
LUNCH PAVILION

LEGEND

MB-1 Sample Location

N

APPROXIMATE SCALE (FEET)

0 50 100

Source: Base map provided by Converse Consultants.

PROJECT:	LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA
TITLE:	AREA 5 SAMPLING LOCATIONS
DRAWN BY:	RMC
CHECKED BY:	JM
APPROVED BY:	JM
DATE:	November 2017
PROJ NO.:	265642.0000.0000
	FIGURE 5

TRC
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Phone: 949.727.9336

FILE NO.: LAUSD-Roosevelt-Sampling.dwg

11x17 --- ATTACHED XREF'S: --- ATTACHED IMAGES: farmersmarket; TCG Logo;
DRAWING NAME: L:\Graphics\ProjectsbyName\LAUSD - Roosevelt HS\265642.0000.0000\ LAUSD-Roosevelt-Sampling.dwg --- PLOT DATE: December 01, 2017 - 12:36PM --- LAYOUT: AREA5-Excav

AREA 5

MB-1 MB-2 MB-3 MB-4 MB-5 MB-6 MB-6a MB-6c MB-6d
P-6 P-7
Q-4 Q-6 Q-7
R-4 R-7
S-4 S-7
T-4 T-7
AUD-1 AUD-2 AUD-3 AUD-3a AUD-3a1 AUD-3b AUD-3b1 AUD-3c AUD-3c1 AUD-4 AUD-4b AUD-4c AUD-4c1 AUD-5 AUD-5b AUD-5c AUD-6 AUD-6b AUD-6c AUD-7 AUD-8 AUD-9 AUD-10 AUD-11 AUD-12
AA-653-1 AA-653-2 AA-653-3 AA-653-4 AA653
AA-652-1 AA-652-2 AA-652-3 AA-652-4 AA652
AA2543-8 AA2543-7 AA2038-9 AA2038-8 AA2038-7 AA2038-6
HVAC-1 HVAC-2 HVAC-3
UB-1 UB-2 UB-3 UB-4 UB-5 UB-6

LIBRARY/CLASSROOM BUILDING
BLD. # 025CEX
O.L.A. # 4
O.S.A. # A-46733

MUSIC BUILDING
BLD. # 004DAT
O.L.A. # 29
O.S.A. # A-38340

ADMINISTRATION AND CLASSROOM BUILDING
BLD. # 005BFS
O.L.A. # 1
O.S.A. # A-31314

CLASSROOM BUILDING #3
BLD. # 002DAT
O.L.A. # 2
O.S.A. # A-38340

CAFETERIA BUILDING
BLD. # 002DAT
O.L.A. # 3
O.S.A. # A-38340

AUDITORIUM/CLASSROOM BUILDING
BLD. # 001CFF
O.L.A. # 9
O.S.A. # A-1613

UTILITY
BLD. # 021DAR

LUNCH PAVILION

gas riser not located/ale

ASPH

LEGEND

MB-1 Sample Location

Proposed Excavation Area for Lead

N

APPROXIMATE SCALE (FEET)

0 50 100

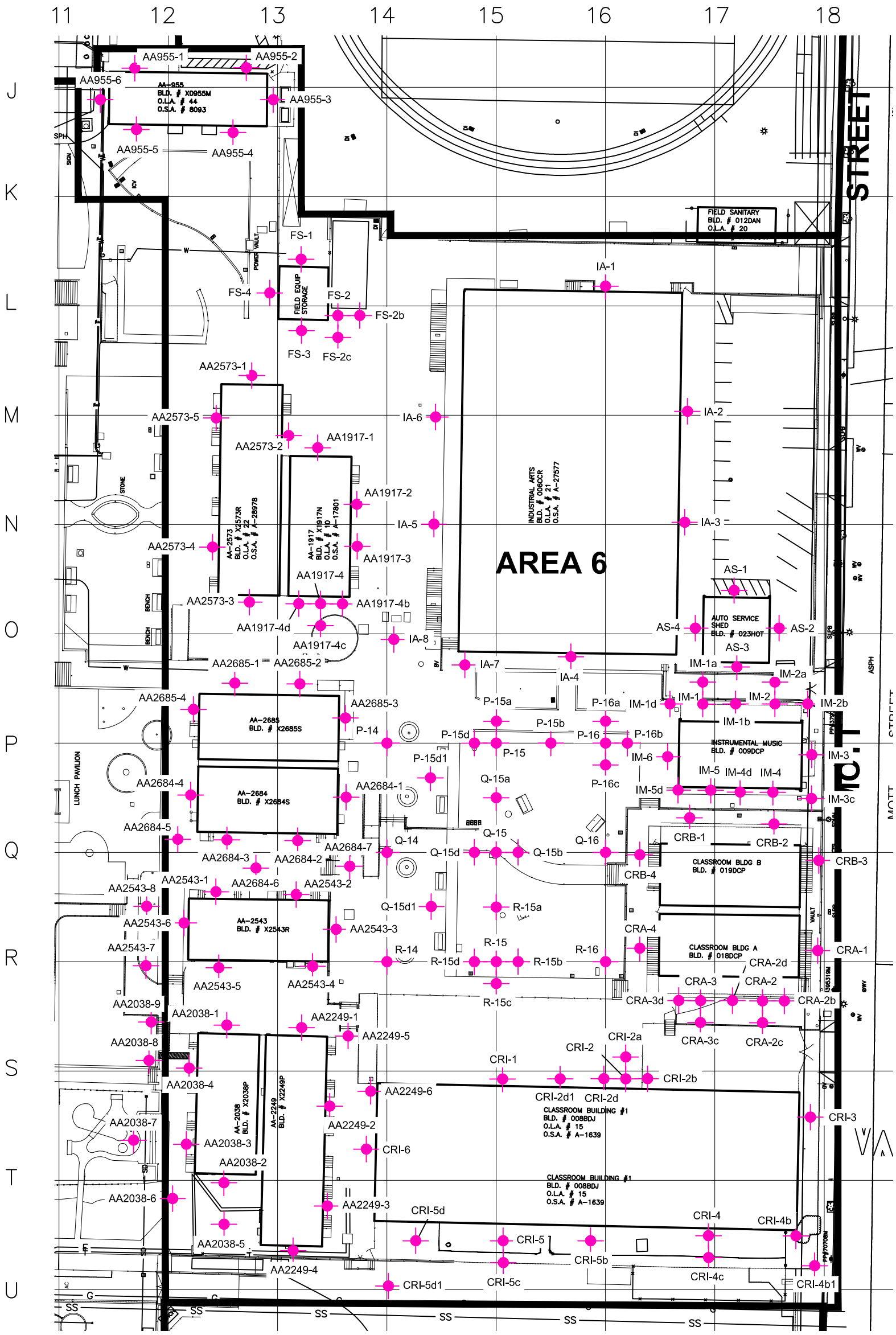
Source: Base map provided by Converse Consultants.

PROJECT:	LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA
TITLE:	AREA 5 PROPOSED EXCAVATION LOCATIONS
DRAWN BY:	RMC
CHECKED BY:	JM
APPROVED BY:	JM
DATE:	November 2017
PROJ NO.:	265642.0000.0000
	FIGURE 5A

TRC
17911 Von Karman Avenue
Suite 400
Irvine, CA 92614
Phone: 949.727.9336

FILE NO.: LAUSD-Roosevelt-Sampling.dwg

11x17 --- ATTACHED XREF'S: --- ATTACHED IMAGES: farmersmarket; TCG Logo;
DRAWING NAME: L:\Graphics\ProjectsbyName\LAUSD - Roosevelt HS\265642.0000.0000\ LAUSD-Roosevelt-Sampling.dwg --- PLOT DATE: December 01, 2017 - 12:37PM --- LAYOUT: AREA6-Sampling



LEGEND

FS-1 — Sample Location

N

APPROXIMATE SCALE (FEET)

0 50 100

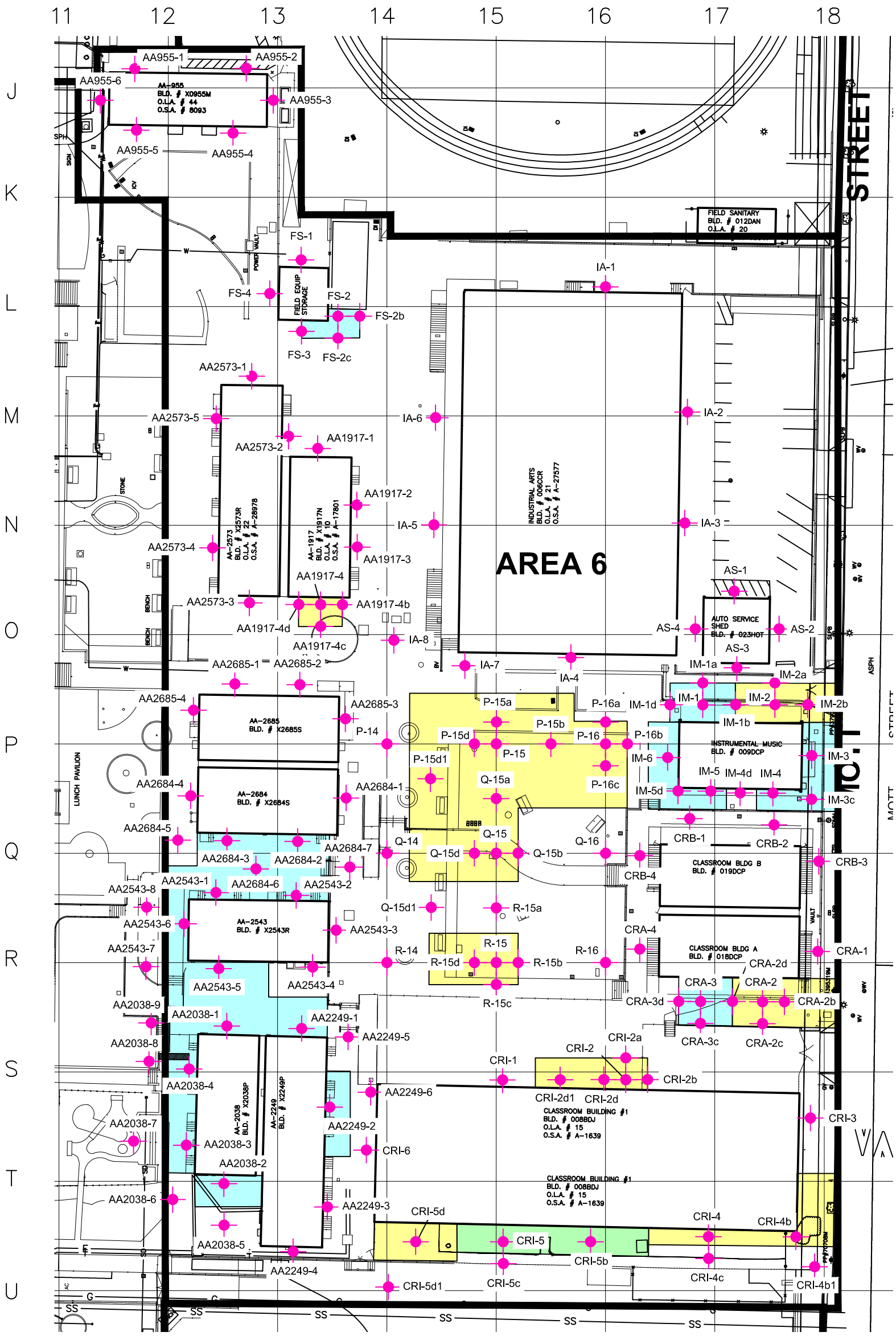
Source: Base map provided by Converse Consultants.

PROJECT:	LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA
TITLE:	AREA 6 SAMPLING LOCATIONS
DRAWN BY:	RMC
CHECKED BY:	JM
APPROVED BY:	JM
DATE:	November 2017
PROJ NO.:	265642.0000.0000
	FIGURE 6

TRC
17911 Von Karman Avenue
Suite 400
Irvine, CA 92614
Phone: 949.727.9336

FILE NO.: LAUSD-Roosevelt-Sampling.dwg

11x17 --- ATTACHED XREF'S: --- ATTACHED IMAGES: farmersmarket; TCG Logo;
DRAWING NAME: L:\Graphics\ProjectsbyName\LAUSD - Roosevelt HS\265642.0000.0000\ LAUSD-Roosevelt-Sampling.dwg --- PLOT DATE: December 01, 2017 - 12:37PM --- LAYOUT: AREA6-Excav



LEGEND

FS-1 — Sample Location

Proposed Excavation Area for Lead

Proposed Excavation Area for Arsenic

Proposed Excavation Area for Lead and Arsenic

N

APPROXIMATE SCALE (FEET)

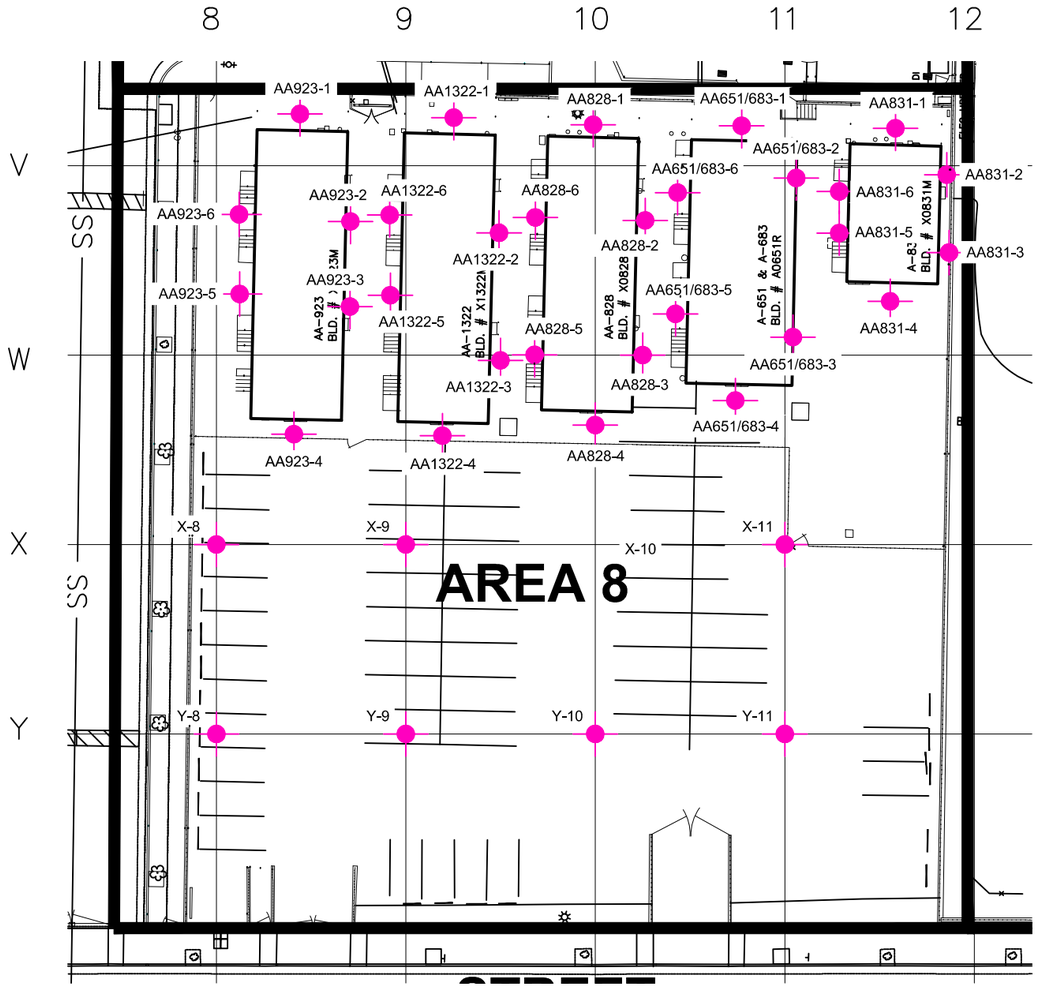
0 50 100

Source: Base map provided by Converse Consultants.

PROJECT:	LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA
TITLE:	AREA 6 PROPOSED EXCAVATION LOCATIONS
DRAWN BY: RMC	PROJ NO.: 265642.0000.0000
CHECKED BY: JM	FIGURE 6A
APPROVED BY: JM	
DATE: November 2017	

TRC
17911 Von Karman Avenue
Suite 400
Irvine, CA 92614
Phone: 949.727.9336

FILE NO.: LAUSD-Roosevelt-Sampling.dwg



LEGEND

Y-11 Sample Location

Undocumented Fill Sampling Location

N

APPROXIMATE SCALE (FEET)

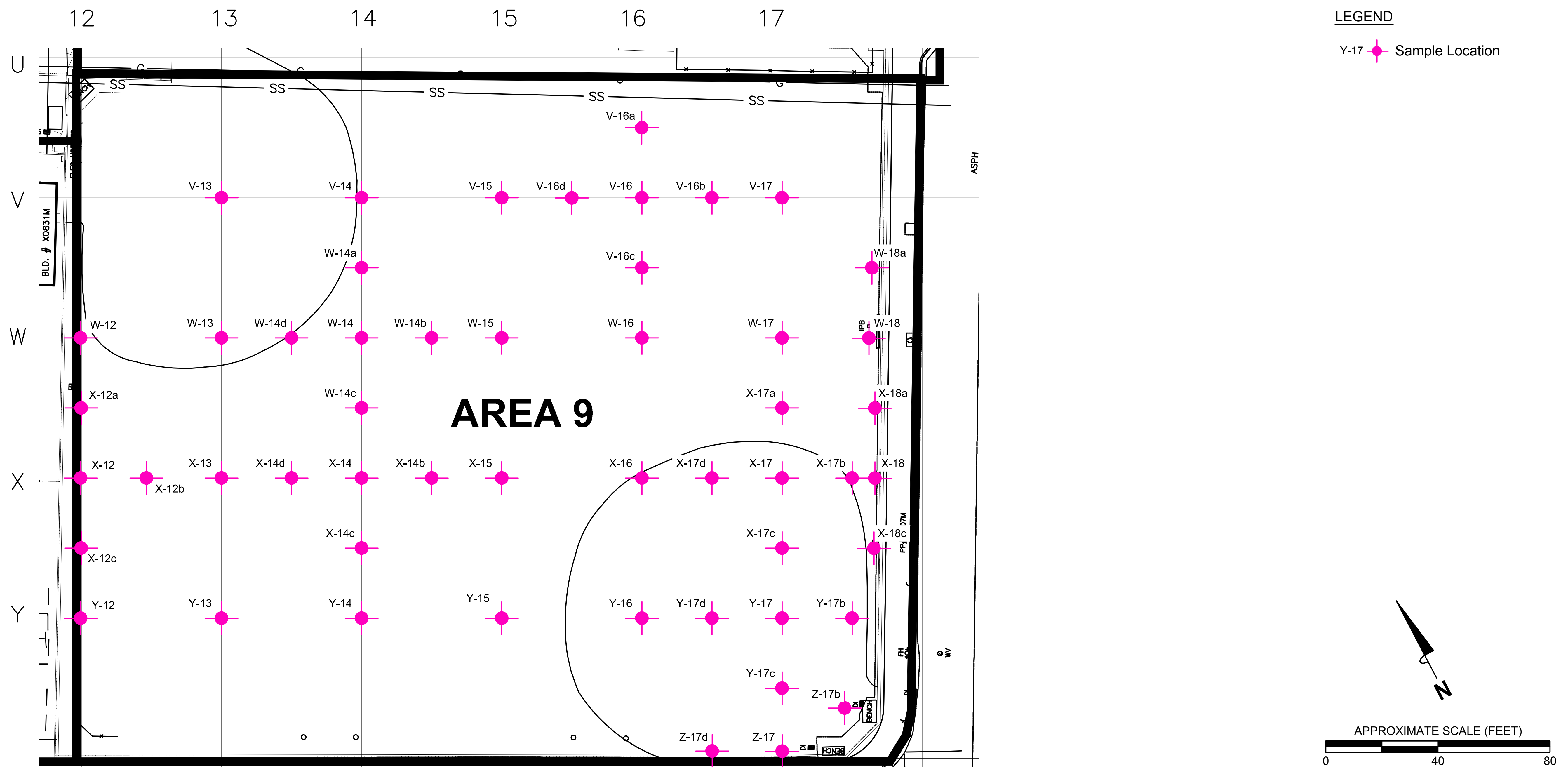
0 40 80

Source: Base map provided by Converse Consultants.

PROJECT:	**LAUSD** **ROOSEVELT HIGH SCHOOL** **456 S. MATHEWS STREET** **LOS ANGELES, CALIFORNIA**
TITLE:	**AREA 8 SAMPLING LOCATIONS**
DRAWN BY:	RMC
CHECKED BY:	JM
APPROVED BY:	JM
DATE:	November 2017
PROJ NO.:	265642.0000.0000
	FIGURE 7

TRC
17911 Von Karman Avenue
Suite 400
Irvine, CA 92614
Phone: 949.727.9336

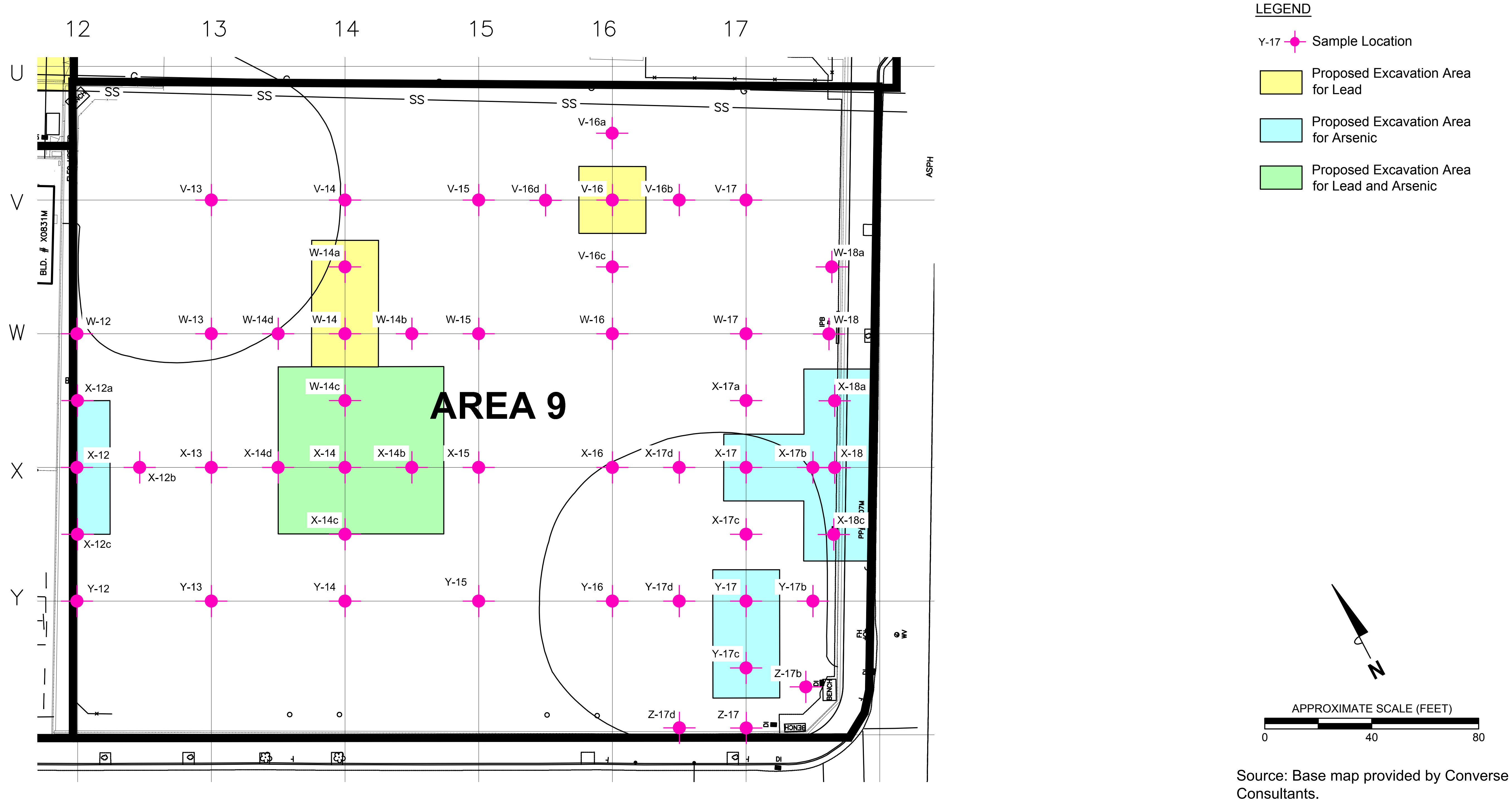
FILE NO.: LAUSD-Roosevelt-Sampling.dwg



Source: Base map provided by Converse Consultants.

PROJECT:	LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA		
TITLE:	**AREA 9 SAMPLING LOCATIONS**		
DRAWN BY:	RMC	PROJ NO.:	265642.0000.0000
CHECKED BY:	JM		**FIGURE 8**
APPROVED BY:	JM		
DATE:	November 2017		
TRC			17911 Von Karman Avenue Suite 400 Irvine, CA 92614 Phone: 949.727.9336
FILE NO.:			LAUSD-Roosevelt-Sampling.dwg

DRAWING NAME: L:\Graphics\ProjectsbyName\LAUSD - Roosevelt HS\265642.0000.0000\ LAUSD-Roosevelt-Sampling.dwg -- PLOT DATE: December 01, 2017 - 12:38PM -- LAYOUT: AREA9-Sampling

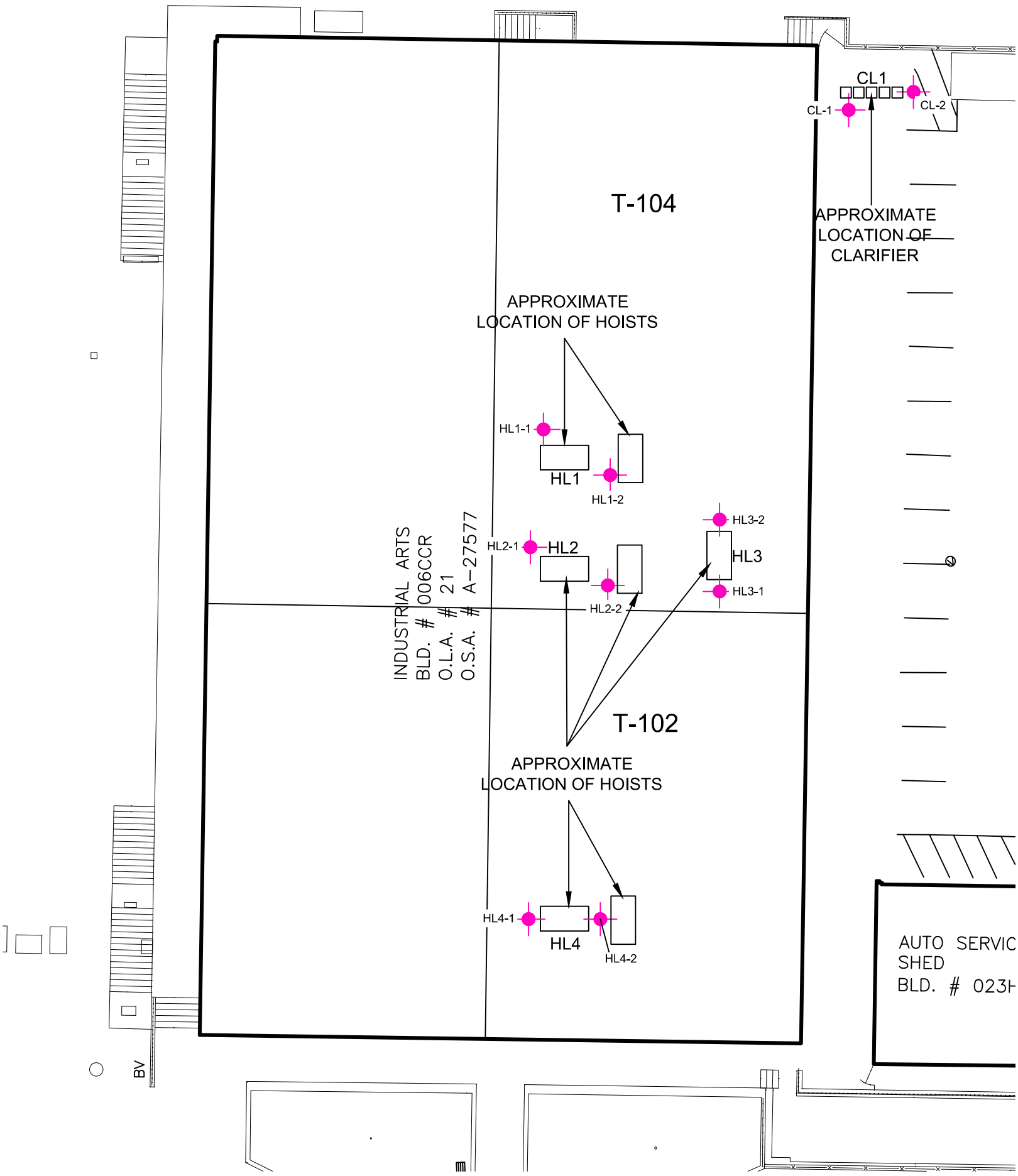


Source: Base map provided by Converse Consultants.

PROJECT: LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA	
TITLE: AREA 9 PROPOSED EXCAVATION LOCATIONS	
DRAWN BY: RMC	PROJ NO.: 265642.0000.0000
CHECKED BY: JM	FIGURE 8A
APPROVED BY: JM	
DATE: June 2017	
TRC	17911 Von Karman Avenue Suite 400 Irvine, CA 92614 Phone: 949.727.9336
FILE NO.: LAUSD-Roosevelt-Sampling.dwg	

DRAWING NAME: L:\Graphics\ProjectsbyName\LAUSD - Roosevelt HS\265642.0000.0000\ LAUSD-Roosevelt-Sampling.dwg --- PLOT DATE: December 01, 2017 - 12:39PM --- LAYOUT: AREA9-Excav

11x17 --- ATTACHED XREF'S: --- ATTACHED IMAGES: farmersmarket; TCG Logo;
DRAWING NAME: L:\Graphics\ProjectsbyName\LAUSD - Roosevelt HS\265642.0000.0000\ LAUSD-Roosevelt-Sampling-Hoist.dwg --- PLOT DATE: December 01, 2017 - 12:41PM --- LAYOUT: Samples



LEGEND

CL-1 ⊕ Sample Location

N

APPROXIMATE SCALE (FEET)

0 20 40

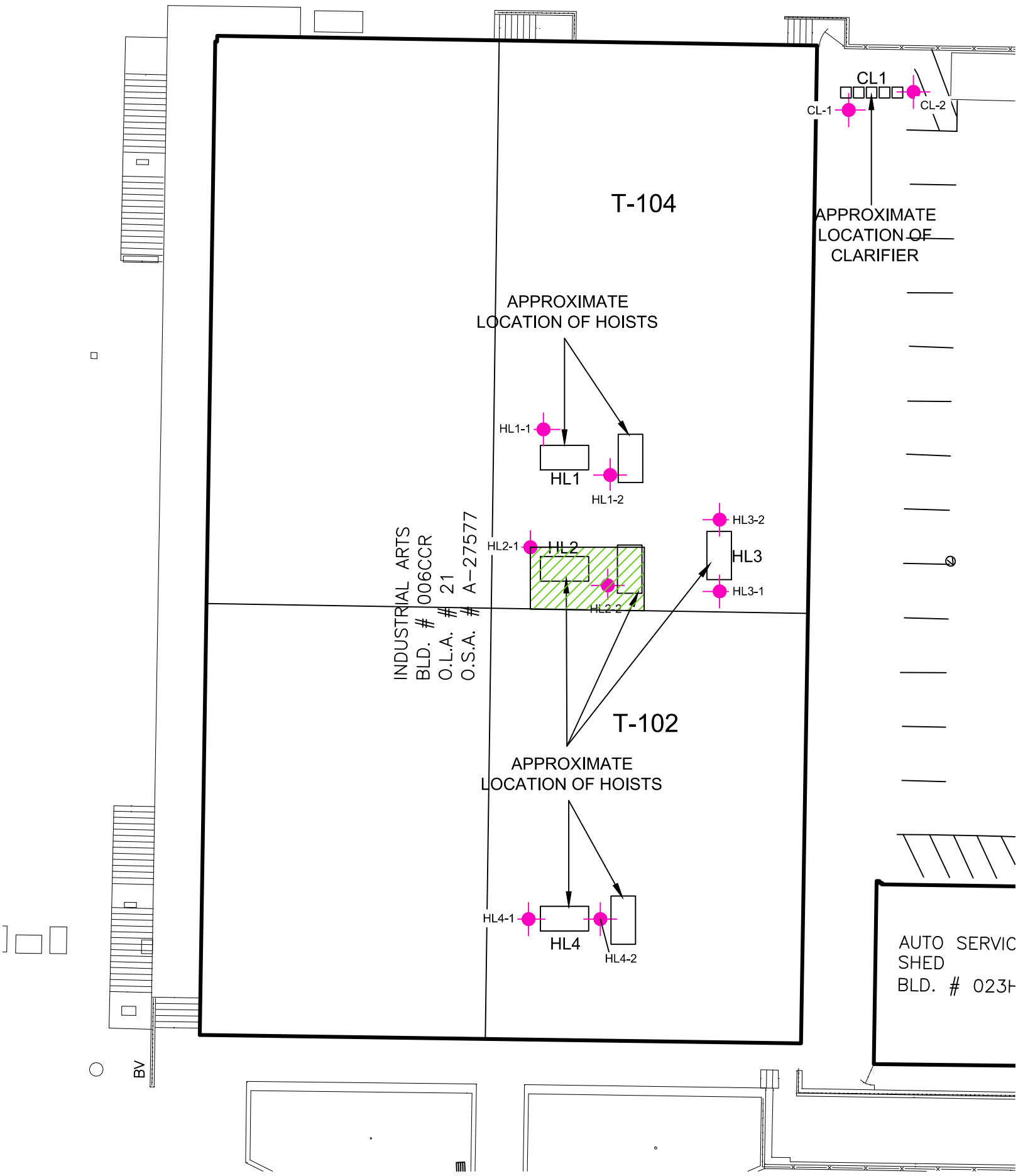
Source: Base map provided by Converse Consultants.

PROJECT:	LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA
TITLE:	HYDRAULIC HOIST AND CLARIFIER SAMPLING LOCATIONS
DRAWN BY: RMC	PROJ NO.: 265642.0000.0000
CHECKED BY: JM	FIGURE 9
APPROVED BY: JM	
DATE: 11/03/2016	

TRC
17911 Von Karman Avenue
Suite 400
Irvine, CA 92614
Phone: 949.727.9336

FILE NO.: LAUSD-Roosevelt-Sampling-Hoist.dwg

11x17 --- ATTACHED XREF'S: --- ATTACHED IMAGES: farmersmarket; TCG Logo;
DRAWING NAME: L:\Graphics\ProjectsbyName\LAUSD - Roosevelt HS\265642.0000.0000\ LAUSD-Roosevelt-Sampling-Hoist.dwg --- PLOT DATE: December 01, 2017 - 2:42PM --- LAYOUT: Excavation



LEGEND

CL-1 — Sample Location

Proposed Excavation Area for Hydrocarbons

N

APPROXIMATE SCALE (FEET)

0 20 40

Source: Base map provided by Converse Consultants.

PROJECT:	LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA
TITLE:	HYDRAULIC HOIST AND CLARIFIER PROPOSED EXCAVATION LOCATIONS
DRAWN BY: RMC	PROJ NO.: 265642.0000.0000
CHECKED BY: JM	FIGURE 9A
APPROVED BY: JM	
DATE: 11/03/2016	

TRC
17911 Von Karman Avenue
Suite 400
Irvine, CA 92614
Phone: 949.727.9336

FILE NO.: LAUSD-Roosevelt-Sampling-Hoist.dwg

APPENDIX A

QUALITY ASSURANCE PROJECT PLAN

APPENDIX A

QUALITY ASSURANCE PROJECT PLAN

November 2017

THEODORE ROOSEVELT SENIOR HIGH SCHOOL
456 South Mathews Street
Los Angeles, California 90033

Prepared for

LOS ANGELES UNIFIED SCHOOL DISTRICT
Office of Environmental Health and Safety
333 S. Beaudry Avenue, 21st Floor
Los Angeles, California 90017

Prepared by

17911 Von Karman Avenue, Suite 400
Irvine, California 92614

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(Continued)

FIGURE

ABBREVIATIONS AND ACRONYMS

BS	Blank Spike
COC	Chain of Custody Record
COPC	Chemical of Potential Concern
DQO	Data Quality Objectives
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSP	Health and Safety Plan
IDW	Investigation-Derived Waste
JSA	Job Safety Analysis
LAUSD	Los Angeles Unified School District
LCS	Laboratory Control Sample
MS	Matrix Spike
OSHA	Occupational Safety and Health Administration
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RAW	Removal Action Workplan
RPD	Relative Percent Difference
EPA	Environmental Protection Agency

1.0 PROJECT MANAGEMENT

This Quality Assurance Project Plan (QAPP) has been prepared on behalf of the Los Angeles Unified School District (LAUSD) to provide specific guidance and quality assurance (QA) requirements for activities associated with sampling, laboratory analyses, field measurements, and reporting to be conducted by the Environmental Consultant at Roosevelt High School (Site). This QAPP presents the purpose, organization, and technical procedures necessary to conduct the activities outlined in the Removal Action Workplan (RAW) in such a manner that data quality objectives with respect to the precision, accuracy, completeness, representativeness, and comparability are met.

This QAPP document is organized as follows:

1.0 Project Management – includes elements that cover project management, including project organization and responsibility, data quality objectives, documentation, and recordkeeping.

2.0 Data Generation and Acquisition – includes elements that cover all aspects of measurement design and implementation, including methods for sampling, analysis, data handling, and quality control requirements.

3.0 Assessment and Oversight – includes activities for assessing the effectiveness of sample collection and analysis, and quality assurance and quality control (QA/QC).

4.0 Data Validation and Usability – includes elements that cover the quality assurance activities that occur after data collection in order for the data to conform to specified criteria.

1.1 PROBLEM DEFINITION AND BACKGROUND

The project data quality objectives are discussed below in Section 1.4. Detailed descriptions of the Site, its history, and previous investigation results are provided in Section 3.0 of the RAW.

1.1.1 General Overview

Roosevelt High School is currently an operational LAUSD school scheduled for a comprehensive modernization project involving removal and/or renovation of multiple Site structures. The Site is a rectangular-shaped property consisting of approximately 23.70 acres. The current campus facilities consist of 16 structures, including an administration/classroom building, a lunch pavilion, a cafeteria, a library/classroom, a music building, a gymnasium, an auditorium/classroom building, an industrial arts building, a former auto shop building, and seven classroom buildings. The property also includes multiple portable classroom buildings. Athletic fields and facilities are located along the northeast portion of the property, as well as in the southeast corner of the property. New buildings proposed for construction will include a general classroom building, a science and specialty classroom building, a gymnasium, an auditorium, a lunch shelter, and a health/wellness clinic.

1.1.2 Project Objectives

The principal objective of this removal action is the mitigation of impacted soil from the Site to a level necessary to protect human health and the environment. This involves the removal or reduction of contaminants to prevent human exposure to chemicals of concern above applicable removal action goals.

Based on an analysis of the nature and extent of impact, and on the removal action goals for the Site, the RAW evaluated multiple alternatives appropriate for addressing the removal action objectives. The selected removal action alternative includes the excavation, transportation, and disposal of soil impacted with arsenic, lead, and/or petroleum hydrocarbons at concentrations above removal action goals. The estimated volume of soil to be remediated from six separate areas across the Site (Areas 2, 3, 5, 6, 9, and at the hydraulic hoists in Area 6) is approximately 7,019 cubic yards (10,528 tons; estimate includes 3,966 cubic yards of non-hazardous soil and up to 3,053 cubic yards of California hazardous lead-impacted soil). Confirmation soil samples will be collected at the excavation limits and from the excavation bottom to verify completion of soil removal. Upon completion, backfill and compaction of the excavation areas will be coordinated with a licensed soils engineer to assure that the backfilled areas meet minimum compaction requirements.

1.1.3 Schedule

The schedule of field activities and deliverables will be determined by the LAUSD following selection of an Environmental Consultant and Remediation Contractor.

1.2 PROJECT ORGANIZATION AND RESPONSIBILITY

Figure 1 illustrates the relationships and the lines of communication among all project participants, including project and quality control managers, quality assurance officers, and subcontractors (excavation subcontractor, analytical laboratory for soil analyses, excavation surveyor, and waste disposal services). The structure defined in this QAPP has been developed to enhance project control and obtain proper QA for the Site field activities.

1.2.1 Environmental Consultant

The LAUSD will select the Environmental Consultant for this project. The Environmental Consultant develops and manages the overall excavation activities, sampling and analysis effort, and implements the RAW. Specific activities that will be conducted by the Environmental Consultant include development and implementation of all project removal action plans, data acquisition, data interpretation, and preparation of the remediation reporting (Remedial Action Completion Report summarizing soil excavation, confirmation sampling, etc.). The Environmental Consultant will designate a Project Manager, Task Manager, QA/QC Officer, Project Health and Safety Officer, Site Coordinator, project staff, and Data Validation Officer for the field sampling activities.

1.2.2 Project Manager

The Project Manager has overall responsibility to LAUSD for the activities conducted on this project. Monitoring the Task Manager's activities and overseeing the preparation and implementation of the RAW are also the responsibility of the Project Manager.

1.2.3 Task Manager

The Task Manager has the responsibility for the completion of all project activities and deliverables associated with those activities. The Task Manager is responsible for the day to day control of planning, scheduling, cost control, and implementation of the scope of services. Additionally, the Task Manager monitors all project personnel including subcontractors' activities and project team coordination.

1.2.4 Project QA/QC Officer

The QA/QC Officer reports to the Task Manager. The QA/QC Officer is responsible for monitoring and verifying that the activities conducted on the Site are in accordance with the provisions of the RAW. The QA/QC Officer also has the responsibility for assessing the effectiveness of the field QA/QC procedures at the Site and shall recommend any modifications to the Task Manager.

1.2.5 Project Health and Safety Officer

The Project Health and Safety Officer reports to the Site Coordinator and coordinates with the Task Manager and project staff. The Project Health and Safety Officer has the responsibility of monitoring the implementation of the Site-Specific Health and Safety Plan (HSP) and Job Safety Analysis (JSA) and verifying that the activities conducted at this Site are in accordance with the provisions of the HSP. The Project Health and Safety Officer also has the responsibility of advising the Task Manager with regard to health and safety issues.

1.2.6 Task Leader/Site Coordinator

The Task Leader and Site Coordinator are jointly responsible for planning, scheduling, controlling, and completing assigned project tasks. The Site Coordinator is also responsible for implementing this QAPP and the RAW, including operations management and management of subcontractors.

1.2.7 Project Staff

Each member of the project staff is responsible for completion of assigned project activities. The project staff are responsible for understanding and implementing this QAPP as it relates to their respective assignment. Project staff also have the responsibility of ensuring that all subcontractors, staff, and visitors to the Site follow health and safety protocol according to the HSP.

1.2.8 Data Validation Officer

The Data Validation Officer is responsible for providing the Project Manager with a report on data reduction and data validation associated with field and laboratory activities.

1.2.9 Qualifications of Personnel

Individuals following this RAW (including the QAPP) must receive, at a minimum, orientation to the project's purpose, scope, and methods of implementation and must do so prior to commencing any field activities. The Project Manager will perform this orientation. All personnel must have documented experience or direct training in all procedures performed during all phases of the project, unless on-the-job training is provided by experienced personnel qualified to conduct each trainee's assignment and the results of that training are documented.

Field technicians will be trained in all Site-related field activities and safety protocols outlined in the RAW. Field activities include excavation oversight, air/dust monitoring, Site safety monitoring, soil sample collection and handling, and the handling of investigation-derived waste (IDW). Subcontractors are responsible for their own training, but will be reviewed by the Environmental Consultant personnel

prior to commencing work. The Environmental Consultant field technicians will monitor all field activities.

All field technicians, including subcontractor personnel, must be trained in the 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) course (including annual updates with 8-hour refresher courses), that are designed to meet the Occupational Safety and Health Administration (OSHA) training requirements for hazardous waste operations for general Site workers as required by 29 CFR 1910.120(e)(3). Proof that all required training has been completed must be maintained on the Site/project at all times, including:

- OSHA 40-Hour HAZWOPER Card
- OSHA 8-Hour Annual HAZWOPER Refresher Card

Verification of all cards will be determined during daily safety meetings prior to field activities.

1.2.10 Laboratory and Certifications

All laboratory technicians and analysts must be trained in processing and analyzing samples. All environmental soil samples will be analyzed by a State-certified analytical laboratory selected by the Environmental Consultant.

1.3 PROJECT/TASK DESCRIPTION

The project and task descriptions are presented in the RAW.

1.4 QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA

This section presents the Data Quality Objectives (DQOs) for the project and the performance criteria necessary to meet these DQOs. Five DQOs for the assurance of quality data – precision, accuracy, completeness, representativeness, and comparability - are defined, and the procedures to be followed to support and assess these objectives are presented. Taken together, the quality assurance objectives provide both quantitative and qualitative assessments of data collection and analytical procedures at the field and laboratory levels. The quality assurance goals for laboratory analysis will be provided by the Environmental Consultant following selection of the analytical laboratory.

1.4.1 Quantitative Objectives: Precision, Accuracy, and Completeness

Precision

Precision (reproducibility) is estimated by comparing the analytical results of duplicate samples. Precision is determined at both the field and laboratory levels. Duplicate samples will be collected in the field at the rate of one per 10 samples, excluding quality control samples, and analyzed for the same suite of analyses as their corresponding sample. Field duplicates will be submitted as blind samples (samples identified by increasing whole numbers, without reference to well locations or QC samples) to the analytical laboratory.

Precision is also measured as an internal laboratory batch QC check for all analytical methods. As described below (accuracy), matrix spikes (MS) and/or blank spikes (BS) are analyzed in duplicate. The analytical results are compared and reported by the laboratory as the relative percent difference (RPD):

$$RPD = \frac{2|C_1 - C_2|}{C_1 + C_2} x100$$

where C_1 and C_2 are the concentrations in the duplicate samples.

In addition to the MS and BS, the analytical laboratory may split an environmental sample from a single container to create a laboratory duplicate.

Precision goals (upper limits for the RPD) are established by the analytical laboratory for each method and detailed in the analytical reports. Precision goals vary by MS, BS, and laboratory duplicates, and they are updated annually. Out-of-range precisions are summarized by the laboratory in a case narrative for each analytical report. This information is used for data validation as described in Section 4.0.

The Environmental Consultant will calculate precision values for the field duplicates upon receipt of the analytical data. The precision goals established by the laboratory for the BS will be adopted for the field duplicates. Precision will only be calculated for analyte concentration at or above ten times the reporting limit. Out-of-range precision values for field duplicates will be used for data validation as described in Section 4.0.

Accuracy

Accuracy quantifies the extent to which a measurement agrees with a known reference or true value. It is determined in the analytical laboratory by "spiking" samples with a known concentration of analyte and comparing the measured concentration with the spiked value. Accuracy is expressed as a percentage, known as the recovery (R) of the measured concentration (C_m) less the sample or "background" concentration (C_b) to the spike concentration (C_s):

$$R = \frac{(C_m - C_b)}{C_s} x100$$

Accuracy is measured on both an individual sample basis with the use of surrogate spikes (organic analyses only) and for each group of samples analyzed together as a "batch". Surrogates are organic compounds that are similar to organic analytes of environmental interest in their behavior in the analytical process, but are rarely found in environmental samples. They are spiked into each laboratory sample, including quality control (QC) samples, and percent recoveries are calculated and reported for each surrogate.

For the batch QC, one or more of the following types of spiked samples are used to assess the accuracy of the method for the batch:

- Matrix or Sample Spike (MS): One sample in the batch is spiked and analyzed to determine R (usually analyzed with a matrix or sample spike duplicate; see Precision)

- Blank Spike (BS): A laboratory-prepared blank sample is spiked (C_b=0) and analyzed to determine R (usually analyzed with a blank spike duplicate; see Precision)

- Laboratory Control Sample (LCS): A laboratory-prepared blank sample is spiked (C_b=0) and analyzed to determine R (usually not analyzed with a duplicate)

Accuracy goals (acceptance limits for R) are established by the analytical laboratory for each method and detailed in the analytical reports. Accuracy goals vary by surrogate, MS, BS, and LCS, and they are updated annually. Out-of-range recoveries are summarized by the laboratory in a case narrative for the analytical report. This information is used for data validation as described in Section 4.0.

Completeness

Completeness (C) is the percentage of measurements planned (N_p) that are actually obtained and validated (N_v):

$$C = \frac{N_v}{N_p} x100$$

Each of the QC sample types (field duplicates, equipment rinse blanks, temperature blanks, method blanks, sample surrogates, and spiked samples/spiked sample duplicates) is used in the data validation process; consequently, each plays a role in assessing completeness. Completeness provides a final, overall measure of data quality for each monitoring event.

Completeness will be calculated for each analyte. A realistic project goal of 90 percent for each analyte is established.

1.4.2 Qualitative Objectives: Comparability and Representativeness

Comparability

Comparability describes the extent to which valid comparisons between measurements taken at different locations and different times can be made. Like representativeness, comparability can only be ensured in a qualitative fashion. Consistency in sampling methods, measurement devices, calibration practices, and reporting limits and units will help to ensure comparability. Deviations from protocols will be noted in field records and used for data validation as described in Section 4.0.

Representativeness

An important goal of the field sampling is to collect data that are representative of conditions at the Site. Since the true conditions, i.e., chemical concentrations, are not known in an absolute sense, they cannot be compared to the measured values in a quantitative fashion. Instead, quality control samples and other procedures are used to qualitatively assess data representativeness.

Field procedures, such as equipment decontamination before sampling and adherence to established practices for sample collection, help ensure that the data collected represent subsurface conditions at the Site and are not compromised by sampling methods or cross-contamination. As a check on cross-contamination from sampling equipment, equipment rinse blanks will be collected at a rate of one sample per field sampling crew per day of sampling. Rinse blanks will be submitted to the laboratory as blind samples. Analytical data from the rinse blanks will be used for data validation as described in Section 4.0.

Sample preservation and custody procedures, and adherence to method preservation and holding time requirements help ensure that subsurface analyte concentrations have not been altered in the storage and shipping process.

At the laboratory level, a QC check on cross-contamination from laboratory equipment is accomplished with a method blank, a laboratory-prepared blank sample analyzed with each sample batch. Positive results in a method blank are discussed in the laboratory analytical reports and are used for Environmental Consultant data validation as discussed in Section 4.0. Finally, analysis by a laboratory certified by the California Department of Health Services helps to ensure quality analytical results.

1.5 DOCUMENTATION AND RECORDS

The following general types of documents and records will be maintained for this project:

- RAW
- QAPP
- HSP and JSA
- Project field data sheets
- General field procedures
- Chain of custody (COC) forms
- General project correspondence
- Laboratory data reports
- Sampling and analysis reports

The Project Manager is responsible for maintaining the above records for QC reports, corrective actions, and other associated documentation. Documentation will be maintained for a minimum of 6 years following completion of the project.

2.0 DATA GENERATION AND ACQUISITION

This section describes the general procedures that are to be followed by all personnel involved in measurement systems design and implementation. Further details are provided in the RAW. Trained personnel are to be used during all investigation activities and must be familiar with the RAW and QAPP prior to initiation of the activities.

2.1 SAMPLING SUMMARY AND PROCEDURES

The following samples will be collected during removal action activities: 1) confirmation soil samples from individual excavations following removal of impacted soil; 2) stockpile soil samples from areas identified with potential elevated lead impacts to characterize potential California-hazardous, lead-impacted soil; and 3) import soil to be used for excavation backfill material. The soil samples will be analyzed as outlined in the RAW. QA/QC samples will be collected/submitted during removal action activities at an appropriate frequency.

2.2 SAMPLE HANDLING AND CUSTODY

2.2.1 Sample Containers, Preservation, and Holding Time

Sample containers for the soil samples will consist of 4-ounce glass sample jars. Holding time and preservation methods for analytical samples will conform to the specific EPA requirements for the analytical method. Where no requirements have been specified, EPA requirements for the method will be followed in conformance with EPA SW-846.

2.2.2 Sample Numbering and Labeling

All samples submitted for analysis, including quality control samples, will be assigned a consecutive and increasing whole number as the sample identification. The project number, sample depth (if soil), field staff's initials, and the date of collection will also be included on the sample label. Sample tracking will be accomplished via field notes and on the COC.

2.2.3 Sample Custody

All samples submitted to the analytical laboratory, including quality control samples, will be accompanied by a COC. COCs allow for the tracing of possession and handling of the samples from the time of field collection through laboratory analysis.

The person accepting custody of samples at the analytical laboratory will break the custody seals on the coolers and will check the samples against the COC. The receiving personnel will enter all arriving samples into a laboratory logbook and note any problems or discrepancies between the samples, the COCs, sample containers, and seal conditions and report them immediately. If no problems or discrepancies are apparent, the receiving personnel will sign the COCs. The samples will be assigned a unique lab number for analysis which will be cross-referenced to the original field sample number, recorded in the laboratory notebook, and reported in the laboratory report. The analytical laboratory retains one copy of the COC, and returns one copy of the COC to the Project Manager.

Chain of custody protocol is followed for all soil samples selected for laboratory analysis. The COC form(s) accompanies the samples from the sampling locality to the laboratory, providing a continuous record of possession prior to analysis.

2.2.4 Sample Packing & Shipment

After the samples have been labeled and documented in the COC, they are placed in a cooler with ice at approximately 4 degrees Celsius (ºC) prior to and during transport to a State-certified laboratory for analysis. Samples not selected for immediate analysis may be transported in a cooler with ice and archived in a frostless refrigerator at approximately 4ºC for possible future testing. It is anticipated that sample shipments may be picked up at the Site every day samples are collected for immediate transport to the laboratory.

2.2.5 Field Documents and Records

Field personnel will document all field activities during remediation activities. Documents to be retained on Site at all times include the Site HSP and JSA, daily field records, field record forms, and COCs.

Site HSP and JSA

A Site HSP must be on Site at all times. Every day, prior to commencement of the field activities, field staff will provide a Site health and safety briefing to all personnel involved (including Environmental Consultant staff, visitors, agency leaders, and subcontractors). Following the meeting, all personnel will sign and date that they have attended the meeting and they understand the scope of work and safety protocol involved in the field activities.

Daily Field Records

Field representatives will fill out a Daily Field Report sheet every day and include the job name, Project Number, date/day, location, weather conditions, list of personnel and visitors, and a reason for the Site visit. Other information to be recorded on this data sheet will include:

- Chronological record of activities and events
- Comments and variances from the RAW
- Telephone conversations
- Measurements (sample locations, air monitoring readings, distances, etc.)
- Equipment cleaning and calibration

Field Record Forms

Field record forms that will be used during field activities include (depending on the type of field activities):

- Field Logs of Soil Samples (Hand Auger or Grab Sample)
- Waste Inventory
- Field Monitoring Sheets
- Meter Calibration Log

Chain of Custody Record

All soil samples, including quality control samples, that will be transported and analyzed by the analytical laboratory will be accompanied by a COC.

2.3 ANALYTICAL METHODS

Based on the findings of previous investigations, the chemicals of potential concern (COPCs) for the Roosevelt High School removal action include arsenic, lead, and petroleum hydrocarons (diesel and oil range). The analytical methods to be employed to verify removal of these COPCs from the individual excavation areas include the following: 1) EPA Method 6020B for arsenic; 2) EPA Method 6010B for lead; and/or 3) EPA Method 8015B(M) for diesel- and oil-range petroleum hydrocarbons. Refer to the RAW for additional details regarding the proposed analyses for confirmation soil samples, stockpile soil samples, and borrow fill soil samples.

2.4 QUALITY CONTROL

Field duplicates and rinsate (equipment) blanks will be obtained and submitted to the analytical laboratory to provide a means to assess the quality of the data resulting from the field sampling program. Field duplicate samples will be analyzed to check for sampling and laboratory reproducibility. Rinsate samples will be analyzed to check for procedural contamination and cross-contamination. Matrix spike and laboratory control samples will be analyzed to assess if recoveries falling outside acceptance windows are attributable to sample matrix interferences and not to laboratory analytical errors. The matrix spike and laboratory control samples will also measure the accuracy of the analysis. Laboratory duplicates for inorganic analysis and matrix spike duplicates for organic analytes will be analyzed to evaluate laboratory reproducibility or precision.

2.5 INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

Various field instruments will be used during field activities at the Site including a dust/particulate monitor, a noise dosimeter, and a wind speed indicator. Field instrument maintenance will be documented in the field data sheet for each field instrument used during field activities. Field equipment will be maintained when routine inspections indicate the need for maintenance. In the event that a piece of equipment needs repair, a list of the field equipment manufacturers' addresses, telephone numbers, and points of contact will be maintained on Site during field activities. Field equipment routine maintenance may include:

- Calibrating equipment according to manufacturer's directions
- Removing surface dirt and debris
- Replacing/cleaning filters when needed
- Ensuring proper storage of equipment
- Inspecting instruments prior to use
- Charging battery packs when not in use
- Maintaining spare and replacement parts in the field to minimize downtime

The primary objective of a preventive maintenance program is to help ensure the timely and effective completion of a measurement effort by minimizing the downtime of crucial equipment due to expected or unexpected component failure. Laboratory instrument maintenance including standard preventive maintenance procedures and schedules are contained in, and will be performed in accordance with, the analytical laboratory's QA/QC Manual. Instruments will be constantly monitored by the use of daily standards, sensitivity, and response checks to determine if maintenance is required.

2.6 INSTRUMENT/EQUIPMENT CALIBRATION AND FREQUENCY

Methods for calibration of field instruments will follow the specific instrument manufacturer's recommendations. All field instruments will be calibrated before each day of use and a calibration check at the end of the day will be performed to verify that the instrument remained in good working condition throughout the day. If the calibration check at the end of the day does not meet acceptance criteria, then the day's data will be flagged and the instrument calibration checks will increase to the operator's satisfaction that the instrument remains true to the initial calibration.

Laboratory instrument calibration will be performed as specified in the method documentation. Specific laboratory calibration techniques are established for the EPA methods to demonstrate that the analytical

instrument is operating within the design specifications and that the quality of the data generated can be replicated (see EPA SW-846 for applicable EPA standard methods).

2.7 INSPECTION/ACCEPTANCE FOR SUPPLIES AND CONSUMMABLES

Supplies and consumables used during field sampling activities will be inspected prior to use. At a minimum, the Project Manager or field staff will inspect the materials for damage or broken seals.

2.8 DATA ACQUISITION REQUIREMENTS (NON-DIRECT MEASUREMENTS)

Data needed for project implementation or decision making that are obtained from non-direct measurements include databases, spreadsheets, programs, and literature files. Data from previous investigations/reports (i.e., lithology, soil analytical data, etc.) may be used as a reference for field implementation or field decision-making aspects of this project. The Project Manager will review all previous reports.

2.9 DATA MANAGEMENT

All technical data generated for the Site, including soil and groundwater quality data from both the field and analytical laboratory, will be preserved in Microsoft Excel databases. The database includes all Site historical data, and it is updated with each sampling event or field event in which new technical data are generated. The following data reduction and management procedure ensures that the data are not compromised by transcriptional errors, that invalid data are flagged, and that original field and laboratory reports are properly preserved:

1. Data from field notes and laboratory reports are entered into the database.

2. The data are organized logically into tables, usually grouped by media and analyte type (e.g., soil, arsenic, lead, petroleum hydrocarbons, etc.) and printed along with historical data.

3. A person other than the originator of the tables reviews the printed data, comparing present and historical values to identify anomalies that may indicate transcriptional errors. Additionally, a percentage of the data is compared with the field notes and laboratory reports as a check on data entry. Transcriptional errors, if any, are corrected in the database.

4. The data are validated as described in Section 4.0. Invalid data, if any, are flagged in the database.

5. The field notes, laboratory reports, and data validation notes are stored in the project file.

3.0 ASSESSMENT AND OVERSIGHT

Performance assessments of laboratory and field operations may be conducted to assess the effectiveness of the QAPP, identify any nonconformances, and verify correction of identified deficiencies. Assessments include, but are not limited to, technical systems audit (i.e., laboratory audits), field operations audits, and audits/assessment of data quality. The Site Coordinator is responsible for supervising and checking that samples are collected and handled in accordance with the approved RAW, and that documentation of activities is adequate and complete. The Task Manager is responsible for

overseeing that project efforts satisfy the QAPP. Reports and technical correspondence will be peer reviewed by an assigned, qualified individual before being finalized.

3.1 ASSESSMENTS AND RESPONSE ACTIONS

The QA/QC Officer, or QA/QC Officer designee, will evaluate the need for a performance audit of the laboratory with due consideration given to the recommendations of the Task Manager. Performance audits are utilized to quantitatively assess the accuracy of measurement data through the use of performance evaluation and blank samples.

System Audits may be conducted at the discretion of the QA/QC Officer or QA/QC Officer designee. The audits may be conducted of field operations to review the data generation process. The system audits may include review of the field operations, sampling activities, equipment, calibration procedures, or any other procedures described in this QAPP.

3.2 REPORTS TO MANAGEMENT

All audit/assessment reports will be prepared and submitted to the Project Manager, to inform management of the following:

- Status of the project
- Results of performance evaluations and system audits
- Results of periodic data quality assessments
- Significant quality assurance problems and recommended solutions

4.0 DATA VALIDATION AND USABILITY

This section of the QAPP addresses the final project QA to determine if the data collected during Site removal action activities conform to the specified criteria discussed in the RAW, and estimate the effects of any deviations. Field and laboratory data will be evaluated with respect to the DQOs discussed in Section 1.4 of this QAPP. In addition, the following quality control measures will be evaluated during data validation: holding times, instrument performance, calibration, blanks, surrogate recovery, matrix spike/matrix spike duplicate, field duplicates, internal standards performance, compound identification, compound quantitation, detection limits, and overall data assessment. The process presented below will invalidate data determined to be inaccurate, imprecise, unrepresentative, or incomparable. Completeness will be calculated for each analyte as the last step in the validation process.

Step 1 – Laboratory Evaluation
A laboratory evaluation will be completed for each final laboratory data package. Usually, one data package is returned for each COC submitted to the laboratory and includes all analyses requested on the COC.

First, the data package will be checked to ensure that the samples arrived intact and cold (temperature blank measure of 4±2°C). For each analyte, the sample collection dates and times will be compared to the dates of analysis to ensure that required hold times were not exceeded. Any non-conformances will be discussed with the laboratory to determine the effects on the validity of the analytical results. This discussion, along with a comparison of affected data with historical results, will be used to determine, on a case-by-case basis, if the data are unrepresentative and should be invalidated.

Second, each laboratory report will be reviewed for non-conformances in internal laboratory QC samples – positive detects in method blanks, surrogate or spiked sample recoveries that are out of the accepted accuracy range, and relative percent differences between spiked sample duplicates that may indicate an unacceptable method precision. Usually, any non-conformances will be noted in the laboratory report case narrative along with an assessment, based on internal laboratory procedures, of whether the batch data are acceptable. Any data deemed invalid by the laboratory will also be invalidated by the Environmental Consultant's validation process; conversely, data deemed acceptable by the laboratory will also be accepted by the Environmental Consultant.

Step 2 – Rinsate Blank Evaluation
Rinsate blanks collected during soil sampling activities will be assessed for detectable results. Rinsate blank detects may invalidate analytical results if similar concentration levels are detected in associated samples. However, if similar concentration levels have also been detected historically at the associated well locations, the sample data may still be valid. Rinsate blank detects may be much lower in concentration than associated samples; in this case, the analytical sample results are likely valid. The decision to invalidate data based on rinsate blank results is made on a case-by-case basis. Rinsate blanks will not be evaluated if they were determined to be invalid in Step 1.

Step 3 –Evaluation of Field Duplicates
To assess method precision, the RPD will be calculated for field duplicates as discussed in Section 1.4.1. Out-of-range precision values for field duplicates will invalidate the data for both samples.

Step 4 – Historical Data Review
All field and analytical data will be carefully compared with historical values. Anomalies not determined to be transcriptional errors (Section 2.9) will be discussed with field and/or laboratory personnel, as appropriate, to determine possible sources of error (e.g. improperly functioning field equipment, deviations from field protocols, laboratory sample container contamination). Data will be invalidated as appropriate. Field data values that were adjusted due to instrumentation calibration problems will be flagged. Data will be invalidated as appropriate.

Step 5 – Completeness
Completeness will be calculated for each analyte as outlined in Section 1.4.1 to provide a final, overall measure of data quality for each sampling event.

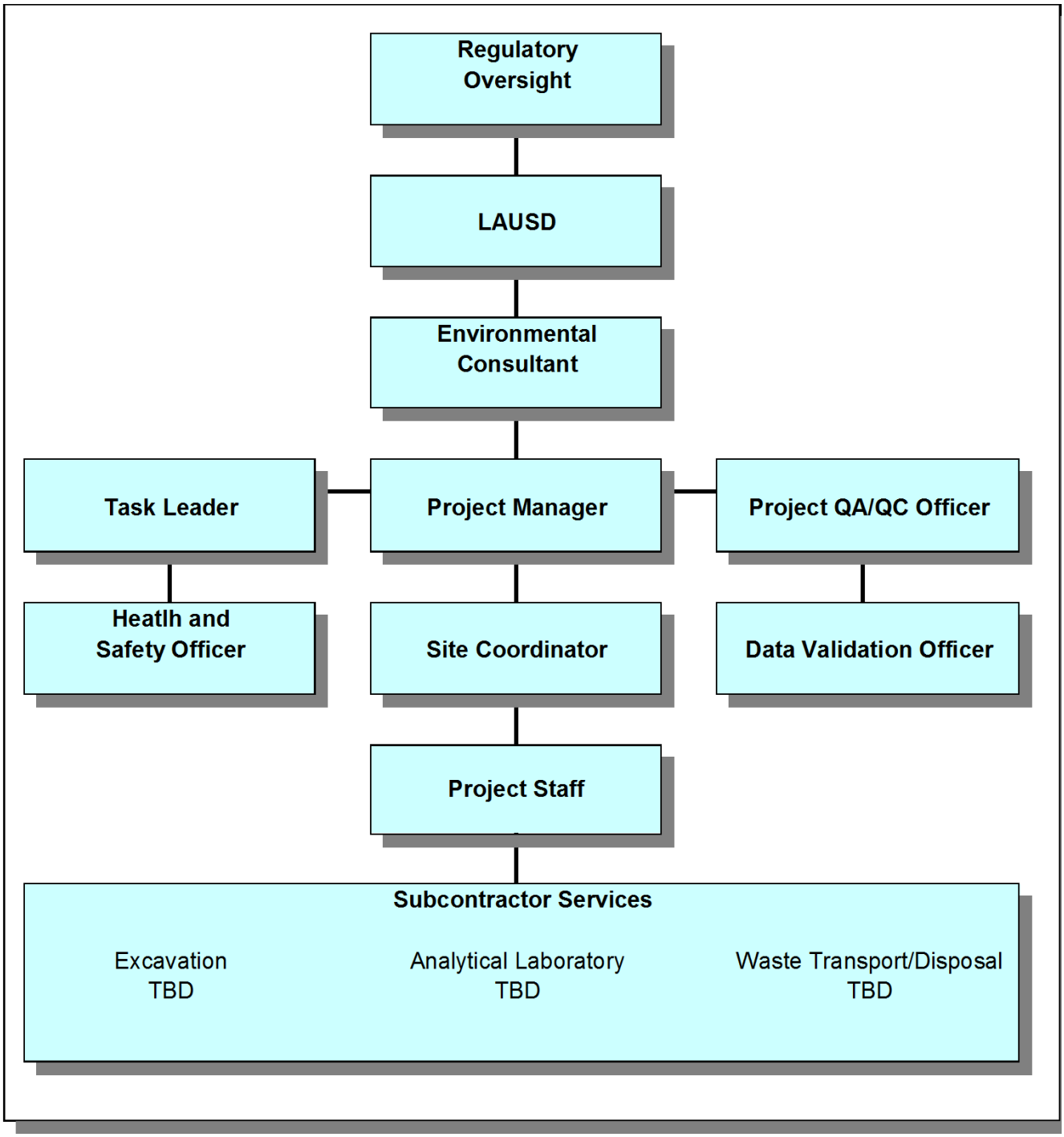

FIGURE 1
PROJECT ORGANIZATIONAL CHART

APPENDIX B

HEALTH AND SAFETY PLAN

SITE-SPECIFIC HEALTH & SAFETY PLAN

LAUSD Roosevelt High School
465 South Mathews Street
Los Angeles, California

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ATTACHMENTS

SITE-SPECIFIC HEALTH AND SAFETY PLAN (HSP)

LAUSD Roosevelt High School
465 South Mathews Street
Los Angeles, California

1.0 INTRODUCTION

The purpose of this Health & Safety Plan (HSP) is to establish responsibilities, procedures and contingencies for the protection of TRC employees, contractors, visitors and the public while performing activities at the Los Angeles Unified School District (LAUSD) Legacy High School site. This site-specific HSP is to be implemented in conjunction with the TRC Companies, Inc. (TRC) Health and Safety Management System (HSMS) and the Injury and Illness Prevention Program (IIPP).

The use of proper health and safety procedures in accordance with applicable OSHA regulations shall be required during site work. The procedures presented in this HSP are intended to serve as guidelines. They are not a substitute for sound judgment by site personnel.

1.1 Key Companies Involved In Project

CUSTOMER OR CLIENT:	LAUSD
CONTRACTOR:	TBD
SUBCONTRACTOR:	TBD

1.2 Scope of Work

The proposed work will be performed by TRC and will include but may not be limited to:

- Excavation, transportation, and disposal of soil impacted with arsenic, lead, and/or petroleum hydrocarbons. The estimated volume of soil to be remediated is approximately 7,019 cubic yards (10,528 tons; estimate includes 3,966 cubic yards of non-hazardous soil and up to 3,053 cubic yards of California hazardous lead-impacted soil).
- Collection and analysis of confirmation soil samples.
- Backfilling, compaction, and grading of excavation areas.

2.0 SITE INFORMATION

This HSP considers the physical, chemical, and biological hazards that may be encountered during work activities at the site. Operations associated with this HSP will be conducted in accordance with the scope of work and approved design drawings/specifications.

Summary information for this project is provided in the following table:

Table 1: Site Information

Anticipated Work Period: Site description (see Attachment A for site map):	Fall 2017 through Winter 2018 A Preliminary Environmental Assessment (PEA) Equivalent investigation conducted at the site has identified the following environmental conditions: - Arsenic was detected in soil at 48 boring locations across the Site (maximum 66 mg/kg). - Lead was detected in soil at 66 boring locations across the Site (maximum 6,300 mg/kg). - TPH-D and TPH-O were detected in soil in one sample collected at one of the four hydraulic hoists (maximum 1,900 mg/kg TPH-D and 4,700 mg/kg TPH-O). - The maximum concentrations of methane and hydrogen sulfide in soil gas measured in the field included 24,500 parts per million by volume (ppmv) and 34.5 ppmv, respectively. The maximum concentrations of methane and hydrogen sulfide in soil gas detected in the laboratory samples included 11,000 ppmv methane and no detectable hydrogen sulfide. Detectable VOCs were also reported at low concentrations in the soil gas samples collected for analysis.
Approximate depth to groundwater:	NA
Contaminants of concern:	Arsenic, lead, hydrocarbons, and methane. SDS's are available in **Attachment B**.

3.0 ROLES & RESPONSIBILITIES

Contact information and names of key project personnel are listed below. A description of their responsibilities follows.

Table 2: Key Project Personnel and Contact Information

Role	Name	Contact Information
TRC Personnel		
TRC Project Manager/Supervisor		
TRC Site Safety Officer (SSO)		
Customer/Client Contact		
Contractor/Subcontractor Personnel ☐ NA		
☐ Contractor / ☐ Subcontractor Company Name:		
Site Safety Officer (SSO)		
Assistant Site Safety Officer (SSO)		
☐ Contractor / ☐ Subcontractor Company Name:		
Site Safety Officer (SSO)		
Assistant Site Safety Officer (SSO)		

TRC Site Safety Officer or Assistant Safety Officer must report all site incidents immediately to the TRC Project Manager or their Supervisor

TRC PM/Supervisor must report all incidents/ significant near misses within 24 hours to:		
Safety Manager		
Safety Director		

3.1 TRC Project Manager/Supervisor

- Overall responsibility for development of a complete and accurate HSP. The HSP shall account for all foreseeable hazards.
- Responsible for the management and technical direction of all aspects of the project.
- Ensure the completion of periodic site inspections.
- Conduct incident investigations.
- Delegate responsibility for field implementation of the HSP to TRC Site Safety Officer.

3.2 Site Safety Officers (SSO) – TRC & Contractor Personnel

- Responsible for the daily implementation of the HSP.
- Ensures HSP is available onsite and that the plan is understood and signed by all personnel entering the site. (See **Attachment F** "Pre-job Safety Briefing").
- Conducts (or coordinates the completion of) Tailgate Safety Meetings and ensures documentation of these meeting is available for review.
- Uses JSAs to emphasize hazards and protective measures discussed in the HSP.
- Communicates any revisions to the scope of work or HSP to affected personnel and Project Manager/Supervisor.
- Implements emergency response procedures.

3.3 TRC Employees

- Responsible for understanding and complying with this HSP, including the JSAs.
- Are required to participate in Tailgate Safety Meetings prior to commencement of site work.
- Must acknowledge an understanding of the HSP by signing the "Pre-job Safety Briefing" (See **Attachment F**).

3.4 Contractors & Subcontractors

A copy of the HSP will be made available to each designated Contractor/Subcontractor (from now on to be referred to "Contractors") Site Health and Safety Officer (SSO) prior to coming to the site. Upon review or briefing of the HSP, each contractor and their personnel working at the site will be required to sign the "Safety Compliance Agreement" (See Appendix F) to verify their understanding and willingness to comply with the HSP.

TRC hires Contractors to apply their technical expertise to specific work tasks (i.e. construction, drilling, grading and heavy equipment operation/maintenance). Although TRC has a certain level of knowledge in these areas, the contractor is most knowledgeable of the hazards within their particular area of expertise and is in the best position to implement and monitor an effective H&S program. Contractors are required to follow and operate within their company's

health and safety program and policies. TRC will exercise reasonable care to prevent and detect safety violations on the site. However, direct supervision of contractor employee safety is the responsibility of the contractor.

Contractors are to designate a company representative as their own Site Safety Officer and, if applicable, Assistant Safety Officer. This individual shall monitor the contractor's employees and ensure that safe working procedures are being followed. The Site Safety Officer and, if applicable, Assistant Safety Officer shall be identified to the TRC in writing, either by email, letter or by having the individual sign and provide contact information on "Pre-job Safety Briefing"
(See **Attachment F**).

Contractors are to:

- Provide a copy of their HSP to the TRC SSO or Project Manager/Supervisor before work commences.
- Provide safety equipment and personal protective equipment for their employees.
- Ensure their equipment is in proper working order and their employees are trained and medically fit to complete the work assigned to them.
- Upon request, provide evidence that personnel working at the site have received the necessary training, certifications and, if applicable, medical surveillance.

The Contractor must inform the TRC SSO if the risks associated with a particular task exceed day-to-day safety requirements and necessitate additional safety precautions to protect the employees performing the particular task. In such cases, TRC may dictate that additional safety precautions be implemented. In the event a discrepancy arises between contractor safety procedures and those of TRC, the more stringent is to be implemented.

3.5 Visitors / Regulatory Agents

- Visitors / regulatory agents will be provided an overview of the basic site safety information. A copy of this HSP will be made available for review.
- All visitors / regulatory agents are required to sign-in on "Pre-job Safety Briefing" (See **Attachment F**) each time they enter the project site.
- Visitors / regulatory agents should be escorted by a TRC or designated contractor employee and should not be allowed to move about the site alone.

4.0 COMMUNICATION

Communication is an important aspect of project safety and this HSP. There are several processes incorporated in this HSP to ensure communication of health and safety hazards.

- Pre-job Project Planning meetings to discuss the scope of work, potential hazards, and Client/TRC Specific Health and Safety Programs (i.e., TRC Glove and Fixed Open Blade Knife policies).
- Site walkdowns with the TRC workgroup, subcontractors and the customer/client.
- Development of site-specific HSP and JSAs.
- Communication and acknowledgement of understanding of HSP & JSAs by signing the "Pre-job Safety Briefing" (See **Attachment F**).
- Tailgate meetings emphasizing that hazard assessment is a continuous process, and any potentially unsafe actions or condition are to be communicated immediately to the SSO.
- Communicating results of field observations/audits. Visual observations are to be conducted daily by the SSO. Periodic field observations will also be recorded on the TRC Safety Observation Form (TRC HSMS, CP015 Behavior Based Safety Program). Results from either observation will be communicated during Tailgate Safety Meetings.

5.0 REVISIONS TO HSP

If a situation arises where the HSP requires revision, the following option are available:

- Except in the case of emergency situations, no deviations from the HSP may be implemented without the prior notification and approval of the TRC Site Safety Officer (SSO).
- If HSP revisions are minor (i.e. not involving significant changes to the scope of work, associated hazards or PPE requirements), the TRC Site Safety Officer (SSO) can make hand-written revisions to the HSP in the field. HSP Revisions must then be communicated to affected personnel and the Project Manager/Supervisor.
- If HSP revisions are substantial (i.e. involving significant changes to the scope of work, associated hazards or PPE requirements), the TRC Site Safety Officer (SSO) must consult with the Project Manager/Supervisor before making revisions. The TRC Site Safety Officer (SSO) can make hand-written revisions to the HSP in the field. HSP Revisions must then be communicated to affected personnel and the Project Manager/Supervisor. It is up to the discretion of the Project Manager/Supervisor whether a revised HSP will be reissued to replace the original HSP on the work site.

6.0 HAZARD ASSESSMENT

Hazard assessment is essential for establishing hazard prevention measures. Below is a list of potential physical, chemical and biological hazards associated with various TRC project sites. Not all hazards apply to this site-specific HSP. In addition, the list is not all-inclusive and may require additional hazards associated with a particular project/site to be added.

Please check, or add applicable hazards or hazardous tasks, hazards associated with the scope of work described in this HSP (Section 1.2). A JSA shall be developed to address each of the indicated hazards or hazardous tasks. JSAs are included in **Attachment E** of this HSP.

6.1 Physical Hazards

☐ Excavation & Trenching (where personnel will be entering the excavation)
☒ Heavy Equipment (not drilling related)
☐ Drilling
☐ Overhead lines
☒ Underground utilities
☐ Energy Control – Lock out / Tag out
☐ Flammable Atmospheres (> 10% LEL)
☒ Traffic - vehicular and pedestrian
☒ Trips, Slips & Falls
☒ Head, foot, eye, and back injuries
☒ Falling objects
☐ Working from elevated surface (> 6ft); Fall Protection / Fall Arrest
☐ Ladders Use
☒ Sharp objects

Equipment

☒ Electrical equipment (including powered hand tools)
☒ Hydraulic equipment
☒ Pneumatic equipment

Non-Powered Hand Tool

☒ Cutting equipment
☐ Welding hazards
☐ Confined Spaces

6.2 Chemical Hazards

SDS are to be included with the HSP whenever a hazardous material (not waste) is stored or utilized at the work site. SDSs can be found in **Attachment B** after the Occupational Health Guidelines and Toxicological Information Table.

☒ Hydrocarbons
☒ Lead
☒ Arsenic
☐ PCBs
☐ Organochlorine Pesticides
☐ Metals
☒ Methane
☐ Environmental samples, soil cuttings, decontamination water, dust (nuisance, silica)

6.3 Biological Hazards

☒ Noise Exposure
☒ Heat Stress
☒ Cold Stress
☒ Weather - heat, cold, rain, fog
☐ Poisonous Plants
☒ Animals/Insects
☐ Misc Pathogens

7.0 GENERAL SAFETY RULES

This section presents general safety rules for all persons working at the project site. Failure to follow safety protocols and/or continued negligence of health and safety policies will result in expulsion of a worker or firm from the site and may result in termination of employment.

1. Horseplay, fighting, gambling or the possession of firearms are not permitted.
2. Work shall be well planned and supervised to prevent injuries. Supervisors shall assure that employees observe and obey safety rules and regulations.
3. An employee reporting for work who, in the opinion of his supervisor, is unable to perform his assigned duties in a safe and reasonable manner shall not be allowed on the job.
4. No employee shall be assigned a task without first having been instructed on proper methods, including safety training, of carrying out the task. Any employee who feels they have not received proper instruction shall notify their supervisor prior to carrying out the task.
5. Injuries and accidents shall be reported immediately to the immediate supervisor, who will then report it to the SSO.
6. There shall be no consumption of food or drink in operational areas of the site. Hands should be thoroughly cleansed prior to eating.

7. Smoking is not permitted on the site.
8. When personnel are conducting hazardous operations, there shall be at least one other person (buddy system) on duty in the immediate area as a backup in case of emergency.
9. Wear required personal protective equipment (PPE) in the workplace when appropriate and/or when specified in the site specific health & safety plan. Loose clothing and jewelry should not be worn when operating machinery.
10. Do not operate any machinery if you are not authorized or qualified to do so. If unsure how to operate a machine or perform any assigned task, ask the Project Manager/Supervisor before proceeding.
11. Do not operate motorized equipment until proper training and certification has been provided (e.g. forklifts, etc.)
12. No one shall knowingly be permitted or required to work while the employee's ability or alertness is so impaired by fatigue, illness or other causes that it might unnecessarily expose the employee or others to injury.
13. Alcohol and drugs are strictly prohibited on any TRC premises, customer property, and/or in Company vehicles. Employees shall not report to work under the influence of drugs or alcohol. Employees are prohibited from possessing, using, manufacturing, distributing, dispensing, selling or purchasing illegal drugs or other controlled substances (as defined under federal and state law).

8.0 PERSONAL PROTECTIVE EQUIPMENT

TRC and Contractor personnel are required to wear PPE appropriate for the task and potential physical, chemical and biological exposures. Selection of PPE is based on hazard assessment (i.e. JSAs) and air monitoring.

8.1 PPE Required by All Personnel at <u>All Times</u> on the work site

☒ Hard Hat
☒ Safety Shoes/Boots
☒ Safety Vest
☒ Eye Protection - ☒ glasses ☐ goggles ☐ face shield
☐ Hand Protection - ☐ Kevlar ☐ nitrile ☐ other _____
☐ Hearing Protection
☐ Respiratory Protection - ☐ APR Particulate ☐ APR Chemical cartridge ☐ other _____
☐ Protective Clothing - ☐ Tyvex ☐ Nomex ☐ Coveralls ☐ other _____

8.2 PPE which should be available at all times on the work site

☐ Hard Hat
☐ Safety Shoes/Boots
☐ Safety Vest
☐ Eye Protection - ☐ glasses ☐ goggles ☐ face shield
☒ Hand Protection - ☒ Kevlar ☒ nitrile ☐ other _____
☒ Hearing Protection
☒ Respiratory Protection - ☒ APR Particulate ☐ APR Chemical cartridge ☐ other _____
☐ Protective Clothing - ☐ Tyvex ☐ Nomex ☐ Coveralls ☐ other _____

8.3 PPE Required by a Specific Task

Task: Excavation Activities

☒ Hard Hat
☒ Safety Shoes/Boots
☒ Safety Vest
☒ Eye Protection - ☒ glasses ☐ goggles ☐ face shield
☒ Hand Protection - ☒ Kevlar ☐ nitrile ☐ other _____
☒ Hearing Protection
☐ Respiratory Protection - ☐ APR Particulate ☐ APR Chemical cartridge ☐ other _____
☐ Protective Clothing - ☐ Tyvex ☐ Nomex ☐ Coveralls ☐ other _____

9.0 RESPIRATORY PROTECTION

For operations that require the use of a respirator, the TRC and Contractor SSOs must verify that Field Personnel are medically approved to use respiratory equipment, fit tested, and trained in the proper use of respirators. Only respirators that are NIOSH/MSHA approved are to be used.

Respiratory protection is mandatory if workers are required to complete tasks within a hazardous atmosphere. According to OSHA, a hazardous atmosphere is defined as:

- Flammable gas, vapor, or mist in excess of 10% of LEL.
- Atmospheric oxygen is below 19.5% or above 23.5%.
- When concentration of a known contaminant is greater than the permissible exposure limit (PEL).
- Airborne combustible dust exceeds its LEL (approximated when dust obscures vision at a distance of 5 feet or less).

If conditions warrant, air monitoring may be required to verify the presence or absence of a hazardous atmosphere. Air monitoring is to be conducted whenever a situation or condition arises that could reasonably result in a hazardous atmosphere.

9.1 Air-Purifying Particulate Respirators

Employees involved in construction and earthmoving operations that result in nuisance dust and particulates may use air-purifying respirators. These are commonly referred to as "dust masks" and do not require fit testing. Particulate respirators can to be used in situations where nuisance dust and particulates are the only contaminants posing an inhalation hazard. Particulate respirators are not to be used in oxygen deficient atmosphere or if hazardous levels of gas/vapor contaminants are also present.

A high efficiency particulate air (HEPA), P100 respirator should be used in place of commercially available "dust masks".

9.2 Air-Purifying Gas/Vapor Respirators

TRC employees and Contractors are required to wear half-face, air-purifying respirators with the appropriate chemical cartridge under the following circumstances:

- When concentration of a known contaminant continuously exceeds permissible exposure limit (PEL) time-weighted average or the threshold limit value (TLV) time-weighted average.
- When volatile organic compound (VOC) vapors in the work area continuously exceed the threshold limit value- time-weighted average (TLV-TWA) for gasoline (300 parts per million [ppm]).
- When, at any time, VOC vapors in the work area exceed the threshold limit value - short-term exposure limit (TLV-STEL) for gasoline (500 ppm).

See **ATTACHMENT B** for additional information and regulatory exposure limits for chemicals of concern at this site.

Air purifying respirators (APRs) with chemical cartridges can be used under the following conditions:

- If the oxygen concentration is between 19.5% and 23.5%.
- If chemical contaminants have been identified.
- The toxic concentrations are known and the respirator cartridges are effective in removing the contaminants.
- The respirator and cartridges are NIOSH/MSHA approved.
- The contaminants have noticeable warning qualities such as odor and visibility characteristics including color.

In the event workers are required to wear air purifying respirators (APRs) with chemical cartridges, the following requirements must be met.

The TRC or Contractor SSO must verify that workers are:

  - Medically approved (within one year) to use respiratory protection.
  - Fit-tested for the specific respirator to be used.
  - Trained in the proper use and limitations of the respirator to be used.
- Contractors must provide proof of the above to the TRC SSO, upon request.
- If an employee or contractor has not cleared by the SSO to use a respirator, they will not be assigned tasks that may potentially expose them to contaminants.
- Personnel with interfering facial hair are not permitted to wear respirators and shall not be permitted in areas where respiratory protection is required.

9.3 Air-Supplied Respirators

Air-supplied respirators, such as SCBA or airline, full-face respiratory protection, are not anticipated to be required at the site. This level of respiratory protection is utilized in oxygen deficient atmospheres or atmospheres considered to be at or above immediately dangerous to life and health (IDLH) levels. These conditions will only occur in rare, if any, circumstances such as confined space entry or emergency situations. The use of air-supplied respiratory protection is not permitted without approval and guidance from the Project Manager.

10.0 AIR MONITORING

Air monitoring is required to verify the presence or absence of a hazardous gas/vapor atmosphere whenever a situation or condition arises that could reasonably result in a hazardous atmosphere.

Based on OSHA's definition of a hazardous atmosphere, there are 4 different hazards that require monitoring. The table below describes the type of hazard, what air monitoring equipment to use and what levels constitute a hazard. The information provided in the table does not take into consideration all the possible variations of hazardous atmosphere, however it will provide guidance when determining the presence of a hazardous atmosphere. Any questions or concerns should be directed to the SSO before work begins.

Table 3: Air Monitoring Guidance

Hazard	Appropriate Air Monitoring Equipment	Hazardous Levels	Comments
Flammability	Combustible gas indicators (CGI) are direct-reading instruments; measures % LEL and oxygen.	>25% of the LEL during cold work >10% of the LEL during hot work	Since many flammable vapors are heavier than air, be sure to take readings at ground level. Work be suspended if CGI readings exceed 10% of LEL.
Oxygen deficiency or abundance	Same as above or an Oxygen Meter	<19.5% and >23.5%	Concentrations >23.5% may present an increased flammability hazard.
Exceeding the permissible exposure limit (PEL)	Photoionization detector (PID) can detect organic and inorganic vapors/gases	Varies depending on chemical. See **Attachment B** for hazardous levels of common chemicals	It is impossible to differentiate the different chemicals using a PID meter. However, the PID will indicate whether chemicals are present and at what levels. Measurements taken within worker's breathing zone will be used to determine respiratory protection requirements.

Airborne combustible dust is not anticipated at the work site. When conducting, air monitoring the following actions should be considered:

- Be familiar with the proper use and limitations of the air monitoring equipment to be used.
- Ensure air-monitoring equipment (TRC's or otherwise) is in working order and has been properly calibrated. The TRC SSO is to document verification of calibration (i.e. in a field log book).
- Clearly document the results of air monitoring, including:
  - Equipment name / type and calibration data
  - Date, time and site location of air monitoring (use a site map to clarify the locations of readings.
  - Indication of what is being measured (LEL, oxygen, or ppm)
  - Results of the air monitoring
- Measurements for volatile organics should be taken at low point where vapors could accumulate.
- Measurements taken to determine the need for respiratory protection should be take within the worker's "breathing zone", keeping in mind the worker's closest proximity to the hazard source.

- An individual should never enter a confined area or excavation in order to conduct initial air monitoring. Instead, actions should be taken to lower the air monitoring equipment into the area to indicate the presence (or absence) of a hazardous atmosphere. Most air monitoring equipment has audible alarms.
- In the event that CGI readings on the site exceed 10 percent of the LEL, work will be suspended until the source can be eliminated or controlled.

11.0 SITE CONTROL

The primary objective of site control is to minimize the exposure to potentially hazardous substances and/or situations. Supervision and controlling access to the work site is necessary to protect site personnel, visitors and the public.

For the purposes of this HS, site control will be discussed under two circumstances; (1) work involving Physical Hazards and (2) work involving Chemical Hazards. In either case, site control areas are to be clearly identified and communicated by the SSO. Prior to beginning work, fencing will be installed around individual excavation areas to prevent unauthorized entry to the work areas and to minimize fugitive dust emissions during work activities. Per South Coast Air Quality Management District (SCAQMD) Rule 1466 requirements, the fencing shall be 6-foot tall, chain-link with wind screen. The hot zone must be clearly identified within the fenced area and should be isolated with cones, barricades, or high visibility caution tape within the fenced area. In addition, sufficient area also must be available to conduct operations while providing a protective buffer for persons and property outside the controlled areas.

For this site, the following areas will be designated as hot, warm and cold zones:

Hot Zone: Inside exclusion zone
Warm Zone: ☒ NA
Cold Zone: Outside of exclusion zone

Check which is applicable:

☒ Work involving Physical Hazards

Work does *not* involve direct contact with hazardous substances. However, if the scope of work primarily involves physical hazards (i.e. vehicular traffic, heavy equipment operation, etc.), the establishment of a warm zone may is not necessary. Instead, a hot zone must be established to surround all the physical hazards. The hot zone area shall provide enough room and buffer to protect both workers and the public. A cold zone is established outside the hot zone to allow "support" activities to be conducted in a safe location.

☒ Work involving Chemical Hazards

The concept of site control and the establishment of hot/warm/cold work zones are intended for work involving the exposure (or potential exposure) to hazardous chemical concentrations. Under these circumstances, the purpose of work zones is two-fold: 1) minimize the exposure to potentially hazardous substances and 2) minimize the spread of hazardous substances outside the immediate work area through decontamination procedures.

A brief overview of site control work zones is provided below:

Hot Zone

- Where personnel may be subject to chemical or physical hazards.
- Where known or suspected contamination exists and may also be where equipment operation and/or environmental sampling will take place.
- To be clearly identified and should be isolated with cones, barricades, or high visibility caution tape.
- Large enough to provide sufficient room and buffer to protect both workers and the public.

Warm Zone

- Located between the hot and cold zones; beginning at the edge of the hot zone and extends to the cold zone.
- Utilized as a control point or corridor for persons entering or exiting the hot zone.
- Where personnel and equipment are decontaminated.

Cold Zone

- Located outside the hot zone where administrative and other support functions are located.
- Where adverse exposure to contaminants and physical hazards are unlikely.

11.1 Decontamination

The purpose of decontamination is to:

(1) Remove chemical containments from personnel and/or equipment; and

(2) Significantly reduce the spread of chemical contaminants beyond the hot/warm zone.

Decontamination is intended to occur within the warm zone. Depending on the project, there may be a need to decontaminate both personnel and equipment. The decontamination process should be appropriate to the chemical hazards present. For example refined petroleum contaminated soil on work boots/shoes may only require physical removal of the soil with a sturdy brush. However, decontamination of equipment (i.e. drilling augers) may require additional steps to ensure contaminants are not spread beyond the hot/warm zones. Heavy equipment (i.e. excavators, trucks used for waste transportation, etc.) may require a combination of steps, including the placement of gravel at the entrance/exit of the site.

11.1.1 Personnel Decontamination Procedures ☐ NA

Remove contaminated items (i.e. gloves, tyvex, etc.) in an "inside out" manner. Contaminated garments are to be placed in designated trash receptacles for disposal offsite.

11.1.2 Equipment Decontamination Procedures ☐ NA

All sampling equipment will be properly decontaminated using the three wash system.

11.1.3 Heavy Equipment Decontamination Procedures ☐ NA

Remove loose dirt and debris from heavy equipment (i.e. excavators, trucks used for waste transportation, etc.) in a designated area using a broom or sturdy brush.

11.2 Site Security

Appropriate security measures will be established in coordination with the site owner/operator and communicated to site personnel. The objective of these measures is to (1) protect the public from potential exposure to physical/chemical hazards; (2) avoid public interference with personnel and safe work practices; and (3) prevent theft or vandalism of equipment at the site.

Site specific security measures include: ☐ NA

- Six-foot tall, chain-link with wind screen.

12.0 WORK AREA MONITORING

Due to the presence of arsenic and lead-impacted soil at the site and the possibility that site remediation could be associated with odors, noise, and dust/particulate emissions from the work areas, it is appropriate to provide monitoring for these issues in the hot zone and at the site perimeter and to establish procedures to provide mitigation to protect on-site workers, visitors, and the surrounding community. The following air and meteorological monitoring, dust control, and noise control plans address these issues for the remediation phases of work at the site.

12.1 Air and Meteorological Monitoring

12.1.1 Air Monitoring

Results of the PEA investigation identified soil impacted with arsenic, lead, and petroleum hydrocarbons (diesel and oil range) in multiple locations across the site. No VOCs above removal action goals were detected in subsurface soil. As a result, no air monitoring for VOCs per SCAQMD Rule 1166 (Excavation of Soil Contaminated with Volatile Organic Compounds) will be necessary. However, air monitoring will be conducted in accordance with SCAQMD Rules 401 (Visible Emissions), 402 (Odor and Nuisance), 403 (Fugitive Dust) and 1466 (Control

of Particulate Emissions from Soils with Toxic Air Contaminants). Odor monitoring and mitigation and the Dust Control Plan is discussed below.

The primary odor emission source at the site will be the petroleum hydrocarbon-impacted soil near one of the hydraulic hoists at the Industrial Arts Building in Area 6 that will be exposed and excavated; there are no odors associated with the arsenic and lead impacts. Use of construction equipment may also be considered as an odor source. Potential odor emission receptors include on-Site workers, faculty and students at the school, pedestrians, local residents, and vehicle drivers adjacent to the Site. Due to public perception issues, it will be very important to monitor and control odors at the site. It is not anticipated that off-site receptors will be significantly impacted by odors from this project.

Detection of strong odors within the work area or discernible odors above background at the perimeter of the work area will be used as triggers for odor mitigation measures as required by SCAQMD Rule 402. All excavated soil will be sprayed with water for odor and dust suppression, and impacted soil stockpiles will be covered with plastic sheeting while temporarily stored on site.

The following measures will be used to minimize odors from construction equipment:

- Reduce construction equipment emissions by shutting off all equipment not in use;
- Reduce construction-related traffic;
- Minimize traffic obstructions; and
- Maintain equipment regularly.

If sustained winds are in excess of 15 miles per hour averaged over a 15-minute period, or if instantaneous wind speeds exceed 25 miles per hour, work activities will be stopped until the winds subside.

12.1.2 Meteorological Monitoring

Ambient weather conditions (wind speed and direction, temperature, relative humidity, etc.) will be monitored using a portable weather station during performance of all site work activities and recorded on the field log. Information regarding prevailing wind patterns and daily wind direction observations will be used to assist with placement of monitoring stations, and information regarding wind speed will be used to facilitate decision-making regarding site controls.

12.2 Dust Control Plan

Dust control measures will be implemented to stabilize exposed surfaces and minimize activities that suspend or track dust particles. Soil excavation and handling shall be

accomplished in a manner that includes adequate measures to minimize and control dust and spillage of soil within the site.

All work shall be in compliance with applicable SCAQMD requirements. Specifically, the excavation contractor shall be responsible to meet requirements specified in SCAQMD Rules 401 (Visible Emissions), 403 (Fugitive Dust), and 1466 (Control of Particulate Emissions from Soils with Toxic Air Contaminants) and shall implement reasonable Best Available Control Measures (BACM) in accordance with Rules 403 and 1466 to minimize dust emissions.

12.2.1 Dust Monitoring

Dust and particulate monitoring will be conducted using a combination of three continuous, direct-reading particulate monitors (e.g., E-BAM Particulate Monitor or equivalent) and an MIE Personal DataRam Model PDR 1000 aerosol monitor (or equivalent). The three continuous, direct-reading particulate monitors will be placed around the excavation area(s) as work progresses (meters will be moved as work moves from location to location), with one meter located in the upwind direction and two meters located in the downwind location. The location of the downwind aerosol monitors will be adjusted daily based upon prevailing wind direction as indicated by a weather vane installed at the Site, weather station readings, or a hand-held wind speed meter. The use of three continuous, direct-reading particulate monitors will provide a greater degree of confidence in quantifying potential fugitive dust, provide better coverage for shifting wind patterns, and supply additional data to address potential community concerns. The monitors will provide concentrations of particulate matter in the size of 10 microns or less (PM_{10}). An exceedance will be defined as a PM_{10} level of greater than 25 micrograms per cubic meter ($ug/m^{3)}$ determined by simultaneous sampling, as the difference between the upwind and downwind samples collected by the continuous, direct-reading particulate monitors. Each unit will be set to record PM_{10} readings at minimum 10-minute intervals over the course of the working day. If the PM_{10} concentration averaged over 2 hours exceeds 25 ug/m^3, soil excavation and handling operations will be discontinued and appropriate dust control measures described below will be implemented (i.e., application of water to work areas). When the PM_{10} concentration is equal to or less than 25 ug/m^3 averaged over 30 minutes, work activities can resume. A portable Model PDR 1000 (or equivalent) will be used within and around each work area/hot zone to determine if dust suppression is needed or if worker protection action levels have been exceeded. If practicable, the data stored by each unit will be downloaded to a computer at the end of the day and printed out as a daily record (or at the end of each work week). The Environmental Consultant's personnel will also record the upwind, downwind, and work area PM_{10} concentration values every hour on a standard Field Parameter Data Sheet. All dust monitoring records will be retained on Site.

12.2.2 Dust Control Measures

Dust control measures will be specified based on the results of dust monitoring, on-site activities, type and location of operations, and the prevailing wind direction. Dust control measures shall include, but not be limited to, the following:

- Provide wet suppression of exposed soil during excavation, loading, and unloading of contaminated soil.
- Haul trucks transporting contaminated soil shall be adequately tarped before leaving the Site.
- Appropriate measures shall be implemented by the contractor to control track out of soil from the site onto adjacent paved roads.
- Reduce speed on unpaved areas, and limit on-site traffic speed.
- Cover and secure stockpiles and exposed areas at the end of each workday.
- Provide LAUSD/Remediation Contractor contact information and SCAQMD Rule 1466 warning statement on signs posted at the entrances and along the fence surrounding the property in the event of dust or other Site-related issues during work activities.

12.2.3 Worker Protection Requirements

Site workers will be required to have appropriate respiratory protection at all times within the exclusion zone. It may be appropriate to wear a particulate filter (dust mask) during dust producing activities.

12.3 Noise Monitoring and Control Plan

The objectives of the Noise Control Plan are to identify noise sources and receptors, to identify monitoring methods, to provide worker hearing protection requirements, and to provide mitigation methods.

12.3.1 Noise Sources and Receptors

Any noise above 85 decibels average (dBA) at the Hot Zone perimeter for mobile equipment will be considered a noise source (County of Los Angeles Code, *Title 12 Environmental Protection, Chapter 12.08 Noise Control, Section 440, Construction Noise*, 2001). General construction equipment noise levels at 50 feet have been summarized below (Bolt, Beranek, and Newman, *Noise from Construction Equipment and Operations Building Equipment, and Home Appliances.* Prepared for the U.S. Environmental Protection Agency, Office of Noise Abatement and Control, Washington, D.C., 1971):

- Truck - 91 dBA
- Crane - 83 dBA
- Roller - 89 dBA
- Bulldozer - 80 dBA
- Pickup Truck - 60 dBA
- Backhoe - 85 dBA
- Jack Hammer - 88 dBA
- Rock Drill - 98 dBA
- Pneumatic Tool - 86 dBA

Manufacturer specifications will be reviewed for noise levels produced by any on-site equipment. If necessary, mufflers or alternative equipment may be selected to minimize noise levels.

Potential noise receptors include on-site workers and visitors, pedestrians, vehicle drivers, and residents adjacent to the site. However, other than on-site workers, receptors are not anticipated to be significantly impacted by noise from this project.

12.3.2 Noise Monitoring

Noise monitoring will be conducted with a sound level meter as discussed in County of Los Angeles Code, *Title 12 Environmental Protection, Chapter 12.08 Noise Control, Section 340, Sound Level Meter*, 2001). A Quest Micro 14 hand-held noise dosimeter or equivalent will be used and will satisfy the requirements pertinent for Type 2 meters in the American National Standards Institute (ANSI) specifications for sound level meters.

Monitoring will occur within the hot zone and at the perimeters of the hot zone, and at the site perimeter. The monitoring frequency will be determined according to the type and location of operations.

12.3.3 Worker Protection Requirements

Site workers will be required to have appropriate hearing protection at all times within the hot zone. Also, appropriate worker hearing protection will be required for any anticipated noise exposure above 85 dBA for 8 hours of exposure.

12.3.4 Noise Mitigation Measures

Noise mitigation measures will be specified based on the results of the noise monitoring. If the noise levels exceed 85 dBA outside the hot zone, mitigation measures may include one or more of the following:

- Sound barriers will be placed around the work areas.
- Alternate low-noise-generating equipment will be specified.
- Mufflers will be used on selected equipment.
- Work areas will be expanded such that noise levels will be below 85 dBA at the perimeter.
- Reduce construction vehicle speed.
- Route construction-related traffic away from noise-sensitive areas.

13.0 PERSONNEL TRAINING

TRC and Contractor personnel are required to acknowledge their understanding and willingness to comply with this HSP before admission to the site by signing the "Pre-job Safety Briefing" (See **Attachment F**).

Site specific training requirements are indicated below:

☒ Personnel shall meet the training requirements specified in the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard [29 CFR 1910.120(e) and CCR Title 8 Section 5192(e)].

14.0 MEDICAL PROGRAM

TRC has established a medical surveillance program to assess, monitor, and help protect the health of employees, in particular, employees who may be exposed to potentially hazardous substances during site work. Personnel undergo medical examinations as follows:

- **Initial:** Pre-employment / prior to any assignment involving work in a hazardous or potentially hazardous environment. The initial examination is used to establish a baseline picture of health against which future changes can be measured, and to identify any underlying illnesses or conditions that might be aggravated by chemical exposures or job activities. This exam also certifies whether an employee is medically fit to wear a respirator.
- **Periodic:** At least once every 12 to 24 months (depending on the employees involvement in field activities) to measure changes in health status. This exam certifies whether an employee is still medically fit to wear a respirator.
- **Upon notification:** As soon as possible upon notification by an employee that they have developed signs or symptoms indicating possible overexposure to hazardous substances, or in response to an injury or exposure during an emergency situation.
- **Exit**: At termination of employment.

15.0 EMERGENCY RESPONSE PLAN

The TRC SSO (depending on which is present) will have controlling authority during an emergency. In the SSO's absence, the Alternate SSO will be in charge.

15.1 Evacuation Protocol

Evacuation protocol, routes and assembly areas from the site will be established by the SSO, and communicated to Field Personnel during the Tailgate Safety Meeting(s) prior to initiating work. In the event of an evacuation, personnel will meet at a pre-established assembly areas and the TRC

SSO conduct a "head count" to see that everyone is accounted for. Contractor SSO is responsible for being able to provide an accurate head-count of contractor personnel.

Primary assembly area = TBD
Secondary assembly area= TBD

15.2 First Aid & CPR

TRC employees and Contractors with current First Aid and CPR certification and who are willing to provide First Aid and CPR will be asked to identify themselves at Tailgate Safety Meetings. Their names will be documented on the Pre-job Safety Briefing (**Attachment F**).

15.3 Emergency Medical Assistance

A list of emergency medical assistance sources has been established as part of this HSP. ATTACHMENT C lists the names, locations, and telephone numbers of emergency response organizations in the vicinity of the project site, and a map to the nearest hospital(s) with an *emergency room*.

A vehicle shall be available onsite during work activities to transport injured personnel to the identified emergency medical facilities, if necessary. Company vehicles are to be equipped with a fire extinguisher and first aid kit.

15.4 Emergency Procedures

In the event of an accident, injury, or other emergency, remember to:

- **Stop work and REMAIN CALM.**
- **Move personnel to a safe location (evacuation plan).**
- **Call 911 or notify other emergency facilities, as necessary.**
- **Address medical emergencies and apply first aid, if necessary.**
  - Move injured or exposed person(s) from immediate area only if it is safe to do so.
  - If serious injury or life-threatening condition exists, call 911. Clearly describe the location, injury and conditions to the dispatcher. Designate a person to direct emergency equipment to the injured person.
- **Contain physical hazards.**
  - Act only if hazard is minimal and you are trained to deal with the situation. Otherwise evacuate and wait for emergency services to arrive.
- **Notify SSO and initiate incident reporting procedures.**
  - See page 2 of this HSP for contact information. In the event the SSO is not available, the order of notification should be 1) Assistant SSO, 2) TRC Project Manager, 3) Office Safety Coordinator, 4) ECR Safety Manager, and 5) National Safety Director.
  - TRC SSO is to notify TRC Project Manager/Supervisor as soon as reasonably possible.

- Do not resume work until the SSO has determined it is safe to do so.

15.5 Non-Emergency Medical Assistance

If an injury does occur and it is not life threatening, then the employee or employee's supervisor/project manager should contact WorkCare within the first hour after an injury. WorkCare information is proved in **Attachment G.** This information will help assist the injured employee by connecting them with instant access to a medically qualified professional in order to provide guidance on appropriate first aid measures and medications.

16.0 INCIDENT REPORTING

In case of an accident, TRC personnel are to immediately report the incident to their Project Manager/Supervisor and follow the TRC incident reporting procedures (CP019) detailed in the TRC HSMS.

TRC's incident reporting forms are available through the Project Manager/Supervisor and include:

- TRC Incident Notification Report
- TRC Motor Vehicle Incident Report
- TRC Safe Catch Report

All incidents and near misses are investigated in accordance with TRC's HSMS. The TRC Incident Notification Report and is to be completed and submitted to the TRC ECR Safety Manager and National Safety Director within 24 hours following any incident.

Contractor personnel are to report incidents to their SSO who is then required to report the incident to the TRC SSO, TRC Alternate SSO or TRC Project Manager immediately.

Some important information to include when reporting an incident are:

1. A description of the event (including date and time)
2. Details regarding personal injury and property damage, if any.
3. Whether emergency services were notified (i.e., medical facilities, fire department, police department) and the basis for that decision. Including time and names of persons/agencies notified, and their response.
4. Clarify the need for and type of TRC support.
5. Immediate corrective action(s) taken.

17.0 HEALTH AND SAFETY PLAN (HSP) SIGNATURE PAGE

Job Safety Analysis Author	**Date:**	**HSP Author**	**Date:**
_____	_____	_____	_____

Review/Approvals:

Site Safety Officer **Facility/Field Supervisor**	**Date:**	**Project Manager/Supervisor***	**Date:**
_____	_____	_____	_____
Office Safety Coordinator* ☐ **NA**	**Date**	**Safety Professional*** ☒ **NA**	**Date**
_____	_____	_____	_____

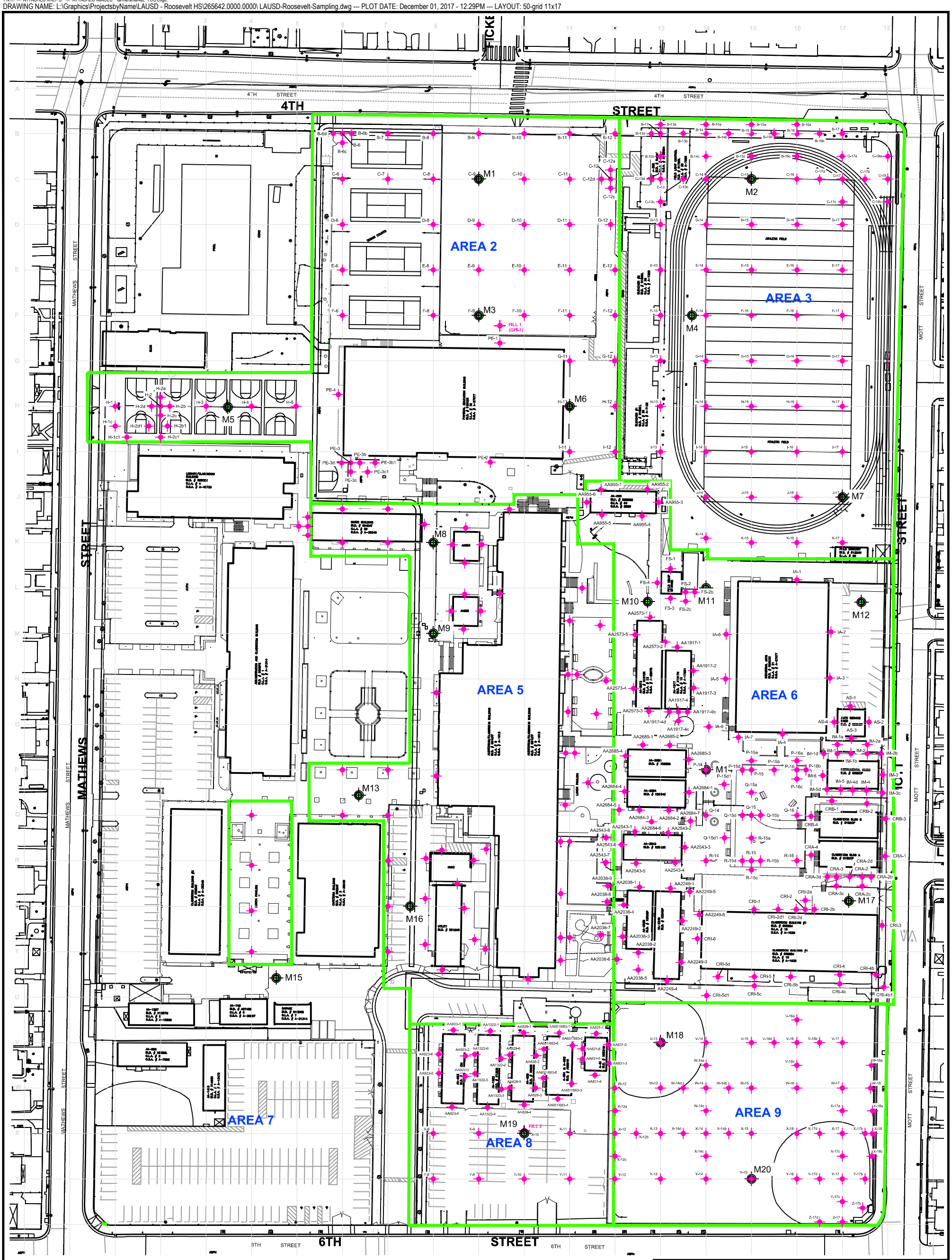
Additional Information or Instructions:

_____
_____
_____
_____

* Note: **For most projects, the Project Manager/Supervisor will review, approve and sign the HSP.** In the event the operations are beyond the normal scope of work, additional review is available upon the request from the PM/Supervisor. The Office Safety Coordinator is the first recourse for reviewing HSPs **not** involving high-risk operations. It is recommended that for HSPs involving high-risk operations (i.e. hazardous exposures to chemicals, large scale or deep excavations, confined space entry, etc.), the ECR Safety Coordinator and/or a Safety Professional [Certified Industrial Hygienist (CIH), Certified Safety Professional (CSP) or other professionally qualified person] be consulted for review of the HSP to ensure proper protective measures are being implemented.

ATTACHMENT A

SITE PLAN



LEGEND

- Proposed LBP and OCP Sample Location
- Undocumented Fill Sampling Location
- Methane Probe Location

NOTES:

LBP = lead based paint.
OCP = organochlorine pesticides.

Source: Base map provided by Converse Consultants.

PROJECT:	LAUSD ROOSEVELT HIGH SCHOOL 456 S. MATHEWS STREET LOS ANGELES, CALIFORNIA
TITLE:	SITE PLAN
DRAWN BY:	RMC
CHECKED BY:	JM
APPROVED BY:	JM
DATE:	November 2017
PROJ NO.:	265642.0000.0000
	FIGURE 2

TRC
17911 Von Karman Avenue
Suite 400
Irvine, CA 92614
Phone: 949.727.9336

FILE NO.: LAUSD-Roosevelt-Sampling.dwg

ATTACHMENT B

OCCUPATIONAL HEALTH GUIDELINES AND TOXICOLOGICAL INFORMATION

SAFETY DATA SHEET

SDS ID NO.: 0298MAR019
Revision Date: 05/22/2015

1. IDENTIFICATION

Product Name: Marathon Petroleum Premium AW II Hydraulic Oil

Synonym: Premium AW II ISO 32 Hydraulic Oil; Premium AW II ISO 46 Hydraulic Oil; Premium AW II ISO 68 Hydraulic Oil; Premium AW II ISO 100 Hydraulic Oil; ISO 32 Premium AW II Hydraulic Oil; ISO 46 Premium AW II Hydraulic Oil; ISO 68 Premium AW II Hydraulic Oil; ISO 100 Premium AW II Hydraulic Oil

Chemical Family: Hydrocarbon Mixture

Recommended Use: Hydraulic Fluid.
Use Restrictions: All others.

Supplier Name and Address:

MARATHON PETROLEUM COMPANY LP
539 South Main Street
Findlay, OH 45840

SDS information: 1-419-421-3070

Emergency Telephone: 1-877-627-5463

2. HAZARD IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute aquatic toxicity	Category 3
Chronic aquatic toxicity	Category 3

Hazards Not Otherwise Classified (HNOC)
Not applicable

Label elements

EMERGENCY OVERVIEW

Harmful to aquatic life with long lasting effects

Appearance Clear Liquid **Physical State** Liquid **Odor** Petroleum

Precautionary Statements - Prevention
Avoid release to the environment

Precautionary Statements - Response
Not applicable

Precautionary Statements - Storage
Not applicable

Precautionary Statements - Disposal
Dispose of contents/container at an approved waste disposal plant

Additional Information
Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Lube oil is a complex mixture of highly refined lubricating base stocks and additives.

Composition Information:

Name	CAS Number	Weight %
Solvent Refined, Hydrotreated Heavy Paraffinic Distillate	64742-54-7	98-99
2,6-di-tert-butylphenol	128-39-2	0.1-1

4. FIRST AID MEASURES

First Aid Measures

General advice In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation: Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). If symptoms occur get medical attention.

Skin Contact: Wash skin with plenty of soap and water. If irritation or other symptoms occur get medical attention. Wash contaminated clothing and clean shoes before reuse. Any injection injury from high pressure equipment should be evaluated immediately by a physician as potentially serious (See NOTES TO PHYSICIAN).

Eye Contact: Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.

Ingestion: Rinse mouth out with water. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. If symptoms develop, seek medical attention.

Most important signs and symptoms, both short-term and delayed with overexposure

Adverse Effects: Preexisting skin conditions and/or respiratory disorders may be aggravated by exposure to this product.

Indication of any immediate medical attention and special treatment needed

NOTES TO PHYSICIAN: SKIN: Leaks or accidents involving high-pressure equipment may inject a stream of material through the skin and initially produce an injury that may not appear serious. Only a small puncture wound may appear on the skin surface but, without proper treatment and depending on the nature, original pressure, volume, and location of the injected material, can compromise blood supply to an affected body part. Prompt surgical debridement of the wound may be necessary to prevent irreversible loss of function and/or the affected body part. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
For small fires, Class B fire extinguishing media such as CO2, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

Unsuitable extinguishing media
Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical
The product is not combustible per the OSHA Hazard Communication Standard, but will ignite and burn at temperatures exceeding the flash point.

Hazardous combustion products
Smoke, carbon monoxide, and other products of incomplete combustion.

Explosion data
Sensitivity to Mechanical Impact No.
Sensitivity to Static Discharge No.

Special protective equipment and precautions for firefighters
Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Use water spray to cool exposed surfaces from as far a distance as possible. Keep run-off water out of sewers and water sources.

NFPA:	Health 1	Flammability 1	Instability 0	Special Hazards -

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Keep public away. Isolate and evacuate area. Shut off source if safe to do so.

Protective Equipment: Use personal protection measures as recommended in Section 8.

Emergency Procedures: Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.

Environmental precautions: Avoid release to the environment. Avoid subsoil penetration.

Methods and materials for containment: Prevent further leakage or spillage if safe to do so.

Methods and materials for cleaning up: Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers.

7. HANDLING AND STORAGE

Safe Handling Precautions: Avoid contact with skin, eyes and clothing. Do not swallow. Avoid breathing vapors or mists. Use good personal hygiene practices. Wash thoroughly after handling. Use personal protection measures as recommended in Section 8. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

High-pressure injection of any material through the skin is a serious medical emergency even though the small entrance wound at the injection site may not initially appear serious. These injection injuries can occur from high-pressure equipment such as paint spray or grease or guns, fuel injectors, or pinhole leaks in hoses or hydraulic lines and should all be considered serious. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES (See First Aid Section 4).

Storage Conditions: Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store away from incompatible materials.

Incompatible materials Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	ACGIH TLV	OSHA PELS:	OSHA - Vacated PELs	NIOSH IDLH
Solvent Refined, Hydrotreated Heavy Paraffinic Distillate 64742-54-7	Mineral oil, highly/severely refined, inhalable fraction 5 mg/m³ TWA	-	-	-
2,6-di-tert-butylphenol 128-39-2	-	-	-	-

Notes: The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

Engineering measures: Local or general exhaust required when using at elevated temperatures that generate vapors or mists.

Personal protective equipment

Eye protection: Use goggles or face-shield if the potential for splashing exists.

Skin and body protection: Wear neoprene, nitrile or PVA gloves to prevent skin contact. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times. Wear appropriate protective clothing.

Respiratory protection: Use an approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible exposure limits or excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid
Appearance	Clear Liquid
Color	Clear
Odor	Petroleum
Odor Threshold	No available data.

Property	Values (Method)
Melting Point / Freezing Point	No available data.
Initial Boiling Point / Boiling Range	No available data.
Flash Point	> 220 °C / > 428 °F (Cleveland Open-Cup)
Evaporation Rate	No available data.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%)	
Upper Flammability Limit:	No available data.
Lower Flammability Limit:	No available data.
Vapor Pressure	No available data.
Vapor Density	No available data.
Specific Gravity / Relative Density	0.86-0.88
Water Solubility	No available data.
Solubility in other solvents	No available data.
Partition Coefficient	No available data.
Decomposition temperature:	No available data.
pH:	No available data.
Autoignition Temperature	No available data.
Kinematic Viscosity	≥ 28.8 mm2/s @ 40°C / 104°F (ASTM D445)
Dynamic Viscosity	No available data.
Explosive Properties	No available data.
Softening Point	No available data.
VOC Content (%)	0.12-37.7 (w/w)
Density	No available data.
Bulk Density	Not applicable.

10. STABILITY AND REACTIVITY

Reactivity The product is non-reactive under normal conditions.

Chemical stability Stable under recommended storage conditions.

Possibility of hazardous reactions None under normal processing.

Hazardous polymerization Will not occur.

Conditions to avoid Sources of heat or ignition.

Incompatible materials Strong oxidizing agents.

Hazardous decomposition products None known under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

Inhalation Overheating may produce vapors which may cause respiratory irritation, dizziness and nausea.

Eye contact Exposure to vapor or contact with liquid may cause mild eye irritation.

Skin contact Prolonged or repeated exposure may cause dermatitis, folliculitis or oil acne.

Ingestion May cause irritation of the mouth, throat and gastrointestinal tract.

Acute Toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50

Solvent Refined, Hydrotreated Heavy Paraffinic Distillate 64742-54-7	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.5 mg/l (Rat) 4 h
2,6-di-tert-butylphenol 128-39-2	> 5000 mg/kg (Rat)	> 10 g/kg (Rabbit)	-

Delayed and immediate effects as well as chronic effects from short and long-term exposure

This product is considered to have a low order of acute and chronic oral and dermal toxicity.

Adverse effects related to the physical, chemical and toxicological characteristics

Signs & Symptoms Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.

Sensitization Not expected to be a skin or respiratory sensitizer.

Mutagenic effects None known.

Carcinogenicity Cancer designations are listed in the table below.

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Solvent Refined, Hydrotreated Heavy Paraffinic Distillate 64742-54-7	Mineral oil, poorly/mildly refined Suspected Human Carcinogen (A2) Mineral oil, highly/severely refined, inhalable fraction Not Classifiable (A4)	Mineral oil, untreated or mildly treated Carcinogenic to humans (1) Mineral oil, highly refined Not Classifiable (3)	Mineral oil, poorly/mildly refined Known to be human carcinogen	Not Listed
2,6-di-tert-butylphenol 128-39-2	Not Listed	Not Listed	Not Listed	Not Listed

Reproductive toxicity None known.

Specific Target Organ Toxicity (STOT) - single exposure Not classified.

Specific Target Organ Toxicity (STOT) - repeated exposure Not classified.

Aspiration hazard Not classified.

12. ECOLOGICAL INFORMATION

Ecotoxicity Harmful to aquatic life with long lasting effects.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Solvent Refined, Hydrotreated Heavy Paraffinic Distillate 64742-54-7	-	96-hr LC50 = 5000 mg/L Rainbow trout	-	48-hr EC50 = 1000 mg/L Daphnia magna
2,6-di-tert-butylphenol 128-39-2	-	-	-	48-hr EC50 = 0.45 mg/l Daphnia magna

Persistence and degradability No information available.

Bioaccummulation Contains component(s) with the potential to bioaccumulate.

Mobility in soil No information available.

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Description of Waste Residues
No information available.

Safe Handling of Wastes
Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required.

Disposal of Wastes / Methods of Disposal
The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

Methods of Contaminated Packaging Disposal
Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT (49 CFR 172.101):

UN Proper shipping name:	Not Regulated
UN/Identification No:	Not applicable
Transport Hazard Class(es):	Not applicable
Packing group:	Not applicable

TDG (Canada):

UN Proper shipping name:	Not Regulated
UN/Identification No:	Not applicable
Transport Hazard Class(es):	Not applicable
Packing group:	Not applicable

15. REGULATORY INFORMATION

US Federal Regulatory Information:

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

EPA Superfund Amendment & Reauthorization Act (SARA):

SARA Section 302: This product may contain component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Solvent Refined, Hydrotreated Heavy Paraffinic Distillate	NA
2,6-di-tert-butylphenol	NA

SARA Section 304: This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Solvent Refined, Hydrotreated Heavy Paraffinic Distillate	NA
2,6-di-tert-butylphenol	NA

SARA: The following EPA hazard categories apply to this product:

None

SARA Section 313: This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
Solvent Refined, Hydrotreated Heavy Paraffinic Distillate	None
2,6-di-tert-butylphenol	None

State and Community Right-To-Know Regulations:
The following component(s) of this material are identified on the regulatory lists below:

Solvent Refined, Hydrotreated Heavy Paraffinic Distillate

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Carcinogen
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.

2,6-di-tert-butylphenol

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.

Canada DSL/NDSL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Canadian Regulatory Information: "This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations."

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
2,6-di-tert-butylphenol	D2B	1%

NOTE: Uncontrolled product according to WHMIS classification criteria.

16. OTHER INFORMATION

Prepared By Toxicology and Product Safety
Revision Date: 05/22/2015

Revision Note:

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

Methane

Section 1. Identification

GHS product identifier : Methane

Chemical name : methane

Other means of identification : Methane or natural gas; Marsh gas; Methyl hydride; CH4; Fire Damp;

Product use : Synthetic/Analytical chemistry.

Synonym : Methane or natural gas; Marsh gas; Methyl hydride; CH4; Fire Damp;

SDS # : 001033

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE GASES - Category 1
GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Extremely flammable gas.
May form explosive mixtures with air.
Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Approach suspected leak area with caution.

Prevention : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Response : Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.

Storage : Protect from sunlight when ambient temperature exceeds 52°C/125°F. Store in a well-ventilated place.

Disposal : Not applicable.

Hazards not otherwise classified : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : methane

Other means of identification : Methane or natural gas; Marsh gas; Methyl hydride; CH4; Fire Damp;

CAS number/other identifiers

CAS number : 74-82-8

Product code : 001033

Ingredient name	%	CAS number
methane	100	74-82-8

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Section 4. First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
methane	Oxygen Depletion [Asphyxiant]

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Section 8. Exposure controls/personal protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas. [Compressed gas.]

Color : Colorless.

Molecular weight : 16.05 g/mole

Molecular formula : C-H4

Boiling/condensation point : -161.48°C (-258.7°F)

Melting/freezing point : -187.6°C (-305.7°F)

Critical temperature : -82.45°C (-116.4°F)

Odor : Odorless.

Odor threshold : Not available.

pH : Not available.

Flash point : Closed cup: -188.15°C (-306.7°F)

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and oxidizing materials.

Lower and upper explosive (flammable) limits : Lower: 5%
Upper: 15%

Vapor pressure : Not available.

Vapor density : 0.55 (Air = 1) Liquid Density@BP: 26.5 lb/ft3 (424.5 kg/m3)

Specific Volume (ft ^{3}/lb) : 24.3956

Gas Density (lb/ft ^{3}) : 0.040991 (25°C / 77 to °F)

Relative density : Not applicable.

Solubility : Not available.

Solubility in water : 0.0244 g/l

Partition coefficient: n-octanol/water : 1.09

Auto-ignition temperature : 287°C (548.6°F)

Decomposition temperature : Not available.

SADT : Not available.

Section 9. Physical and chemical properties

Viscosity : Not applicable.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Oxidizers

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Section 11. Toxicological information

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
methane	1.09	-	low

Mobility in soil

Section 12. Ecological information

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1971	UN1971	UN1971	UN1971	UN1971
UN proper shipping name	Methane, compressed	Methane, compressed or Methane or Natural gas, compressed (with high methane content)	Methane, compressed	Methane, compressed	Methane, compressed
Transport hazard class(es)	2.1 	2.1 	2.1 	2.1 	2.1 
Packing group	-	-	-	-	-
Environment	No.	No.	No.	No.	No.
Additional information	-	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2). **Explosive Limit and Limited Quantity Index** 0.125 **ERAP Index** 3000 **Passenger Carrying Ship Index** Forbidden **Passenger Carrying Road or Rail Index** Forbidden	-	-	**Passenger and Cargo Aircraft**Quantity limitation: 0 Forbidden **Cargo Aircraft Only** Quantity limitation: 150 kg

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 14. Transport information

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

United States inventory (TSCA 8b): This material is listed or exempted.

Clean Air Act (CAA) 112 regulated flammable substances: methane

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
Sudden release of pressure

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
methane	100	Yes.	Yes.	No.	No.	No.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

International regulations

International lists

National inventory

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Japan : This material is listed or exempted.

Malaysia : This material is listed or exempted.

New Zealand : This material is listed or exempted.

Philippines : This material is listed or exempted.

Republic of Korea : This material is listed or exempted.

Section 15. Regulatory information

Taiwan : This material is listed or exempted.

Canada

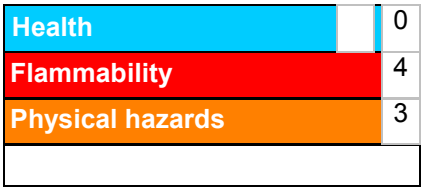
WHMIS (Canada) : Class A: Compressed gas.
Class B-1: Flammable gas.

CEPA Toxic substances: This material is listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

Canada Label requirements : Class A: Compressed gas.
Class B-1: Flammable gas.

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
Flam. Gas 1, H220 Press. Gas Comp. Gas, H280	Expert judgment According to package

History

Date of printing : 5/9/2016

Date of issue/Date of revision : 5/9/2016

Date of previous issue : No previous validation

Version : 0.01

Section 16. Other information

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Fisher Scientific

Part of Thermo Fisher Scientific

SAFETY DATA SHEET

Creation Date 22-Sep-2009 **Revision Date** 10-Dec-2015 **Revision Number** 2

1. Identification

Product Name **Arsenic, reference standard solution 1000 ppm in 7% nitric acid**

Cat No. : **SA449-100, SA449-500**

Synonyms None.

Recommended Use Laboratory chemicals.

Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Corrosive to metals	Category 1
Skin Corrosion/irritation	Category 1 A
Serious Eye Damage/Eye Irritation	Category 1
Carcinogenicity	Category 1A
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements
May be corrosive to metals
Causes severe skin burns and eye damage
May cause respiratory irritation
May cause cancer

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Use only outdoors or in a well-ventilated area
Keep only in original container
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
Spills
Absorb spillage to prevent material damage
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Store in corrosive resistant polypropylene container with a resistant inliner
Store in a dry place
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Harmful to aquatic life with long lasting effects
WARNING! This product contains a chemical known in the State of California to cause cancer, birth defects or other reproductive harm.
Unknown Acute Toxicity
.? percent of the mixture consists of ingredient(s) of unknown acute toxicity

3. Composition / information on ingredients

Component	CAS-No	Weight %
Water	7732-18-5	92 - 93
Nitric acid	7697-37-2	7
Arsenic trioxide	1327-53-3	< 0.5

4. First-aid measures

General Advice Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Immediate medical attention is required.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Remove and wash contaminated clothing before re-use. Call a physician immediately.

Inhalation If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Remove from exposure, lie down. Call a physician immediately.

Ingestion Do not induce vomiting. Never give anything by mouth to an unconscious person. Clean mouth with water. Call a physician immediately.

Most important symptoms/effects Causes burns by all exposure routes. . Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media CO_2, dry chemical, dry sand, alcohol-resistant foam.

Unsuitable Extinguishing Media No information available

Flash Point Not applicable
Method - No information available

Autoignition Temperature No information available
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes.

Hazardous Combustion Products
Nitrogen oxides (NOx) Thermal decomposition can lead to release of irritating gases and vapors
Protective Equipment and Precautions for Firefighters
Thermal decomposition can lead to release of irritating gases and vapors. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
4	0	0	N/A

6. Accidental release measures

Personal Precautions Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental Precautions Should not be released into the environment. Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information. Avoid release to the environment. Collect spillage.

Methods for Containment and Clean Up Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Do not ingest.

Storage Corrosives area. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labeled containers.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Nitric acid	TWA: 2 ppm STEL: 4 ppm	(Vacated) TWA: 2 ppm (Vacated) TWA: 5 mg/m³ (Vacated) STEL: 4 ppm (Vacated) STEL: 10 mg/m³ TWA: 2 ppm TWA: 5 mg/m³	IDLH: 25 ppm TWA: 2 ppm TWA: 5 mg/m³ STEL: 4 ppm STEL: 10 mg/m³
Arsenic trioxide	TWA: 0.01 mg/m³		IDLH: 5 mg/m³ Ceiling: 0.002 mg/m³

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Nitric acid	TWA: 2 ppm TWA: 5.2 mg/m³ STEL: 4 ppm STEL: 10 mg/m³	TWA: 2 ppm TWA: 5 mg/m³ STEL: 4 ppm STEL: 10 mg/m³	TWA: 2 ppm STEL: 4 ppm
Arsenic trioxide	TWA: 0.1 mg/m³	TWA: 0.5 mg/m³	TWA: 0.01 mg/m³ STEL: 0.05 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection Tightly fitting safety goggles. Face-shield.

Skin and body protection Long sleeved clothing.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Keep away from food, drink and animal feeding stuffs. When using, do not eat, drink or smoke. Contaminated work clothing should not be allowed out of the workplace. Provide regular cleaning of equipment, work area and clothing. Avoid contact with skin, eyes and clothing. For environmental protection remove and wash all contaminated protective equipment before re-use. Wear suitable gloves and eye/face protection.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Odorless
Odor Threshold	No information available

pH	2.0
Melting Point/Range	0 °C / 32 °F
Boiling Point/Range	100 °C / 212 °F
Flash Point	Not applicable
Evaporation Rate	> 1 (ether = 1)
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	14 mmHg @ 20 °C
Vapor Density	0.7 (Air = 1.0)
Specific Gravity	No information available
Solubility	miscible
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Excess heat. Exposure to air or moisture over prolonged periods.

Incompatible Materials Strong bases, Amines, Strong reducing agents

Hazardous Decomposition Products Nitrogen oxides (NOx), Thermal decomposition can lead to release of irritating gases and vapors

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Oral LD50 Category 4. ATE = 300 - 2000 mg/kg. Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.

Dermal LD50 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.

Vapor LC50 Category 2. ATE = 0.5 - 2 mg/l. Based on ATE data, the classification criteria are not met. ATE > 20 mg/l.

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	-	Not listed	Not listed
Nitric acid	Not listed	Not listed	LC50 = 2500 ppm. (Rat) 1h
Arsenic trioxide	LD50 = 20 mg/kg (Rat)	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Causes burns by all exposure routes

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Water	7732-18-5	Not listed	Not listed	Not listed	Not listed	Not listed
Nitric acid	7697-37-2	Not listed	Not listed	Not listed	Not listed	Not listed
Arsenic trioxide	1327-53-3	Group 1	Known	A1	X	A1

IARC: (International Agency for Research on Cancer)

NTP: (National Toxicity Program)

ACGIH: (American Conference of Governmental Industrial Hygienists)

Mexico - Occupational Exposure Limits - Carcinogens

IARC: (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans
NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)
Mexico - Occupational Exposure Limits - Carcinogens
A1 - Confirmed Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Confirmed Animal Carcinogen
A4 - Not Classifiable as a Human Carcinogen
A5 - Not Suspected as a Human Carcinogen

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Nitric acid	Not listed	LC50: = 72 mg/L, 96h (Gambusia affinis)	Not listed	Not listed
Arsenic trioxide	Not listed	LC50: > 1000 mg/L, 96h static (Oncorhynchus mykiss) LC50: 18.8 - 21.4 mg/L, 96h flow-through (Oncorhynchus mykiss) LC50: = 135 mg/L, 96h (Pimephales promelas)	EC50 = 31.43 mg/L 60 min EC50 = 33.39 mg/L 30 min EC50 = 43.56 mg/L 15 min EC50 = 73.73 mg/L 5 min	EC50 = 0.038 mg/L 24h EC50 = 0.96 mg/L 96h EC50 = 0.038 mg/L 24h

Persistence and Degradability Miscible with water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

Component	log Pow
Nitric acid	-2.3
Arsenic trioxide	18.1

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN2031
Proper Shipping Name NITRIC ACID
Hazard Class 8
Subsidiary Hazard Class 5.1
Packing Group II

TDG

UN-No UN2031
Proper Shipping Name NITRIC ACID
Hazard Class 8
Packing Group II

IATA

UN-No UN2031
Proper Shipping Name NITRIC ACID
Hazard Class 8
Packing Group II

IMDG/IMO

UN-No UN2031
Proper Shipping Name NITRIC ACID
Hazard Class 8
Packing Group II

15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Water	X	X	-	231-791-2	-		X	-	X	X	X
Nitric acid	X	X	-	231-714-2	-		X	X	X	X	X
Arsenic trioxide	X	X	-	215-481-4	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants

that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Nitric acid	7697-37-2	7	1.0
Arsenic trioxide	1327-53-3	< 0.5	0.1

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Nitric acid	X	1000 lb	-	-
Arsenic trioxide	X	1 lb	X	-

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Arsenic trioxide	X		-

OSHA Occupational Safety and Health Administration
Not applicable

Component	Specifically Regulated Chemicals	Highly Hazardous Chemicals
Nitric acid	-	TQ: 500 lb
Arsenic trioxide	10 µg/m³ TWA 5 µg/m³ Action Level	-

CERCLA
Not applicable

Component	Hazardous Substances RQs	CERCLA EHS RQs
Nitric acid	1000 lb	1000 lb
Arsenic trioxide	1 lb	1 lb

California Proposition 65 This product does not contain any Proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Arsenic trioxide	1327-53-3	Carcinogen Developmental	0.06 µg/day 10 µg/day	Developmental Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Water	-	-	X	-	-
Nitric acid	X	X	X	X	X
Arsenic trioxide	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Component	DHS Chemical Facility Anti-Terrorism Standard
Nitric acid	2000 lb STQ

Other International Regulations

Mexico - Grade No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class E Corrosive material
D2A Very toxic materials
D1A Very toxic materials

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 22-Sep-2009
Revision Date 10-Dec-2015
Print Date 10-Dec-2015
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

US – OSHA SAFETY DATA SHEET

Issue Date: 29-May-2015 **Revision Date:**

1. IDENTIFICATION

Product Name: Lead Products

Synonyms: Sheet lead, Strip lead, Lead plate, Lead flashings, Plumbing lead, Lead ingot, Lead pigs, Lead pipe, Lead bends, Lead wire, Came lead, Lead extrusions, Lead bricks, Lead wool, Lead anodes, Bullet lead, Lead bullets, Lead billets, Lead castings, Machined lead, Ballast lead, Other miscellaneous lead products. Powder-coated lead products and Painted lead products.

Recommended Uses: Roofing, non-potable plumbing, radiation shielding, ballast, nuclear shielding, etc.

Uses Advised Against: Jewelry, toys, potable plumbing

Manufacturer:

Mayco Manufacturing, LLC (d.b.a. Mayco Industries)
18 West Oxmoor Road
Birmingham, AL 35209
Ph: 205-942-4242

2. HAZARDS IDENTIFICATION

Classification

This product is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Carcinogenicity	Category 1B
Reproductive toxicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 1

Label elements

Danger

Hazard statements

Lead - May cause cancer.
May damage fertility or the unborn child.
May cause harm to breast-fed children.
Cause damage to central nervous system, blood formation and kidneys and cardiovascular system through prolonged or repeated exposure.

Antimony – Dust or fume will be irritant.
Antimony causes nasal septal ulceration and stomach lining irritation.

Appearance: Gray with bluish or silvery cast depending on alloy

Physical state: Solid
Odor: Odorless

Precautionary Statements – Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray

Precautionary Statements – Response
IF exposed or concerned: Get medical advice/attention
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Precautionary Statements – Storage
Store locked up

Precautionary Statements – Disposal
Dispose of contents/container to an approved waste disposal plant

Other information

- Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Material	% by Wt.	CAS #	OSHA EXPOSURE LIMIT
Lead	90 – 99.99	7439-92-1	0.05 mg/cubic meter
Antimony	0 – 9	7440-36-0	0.50 mg/cubic meter
Tin	0 – 2	7440-31-5	2.00 mg/m³

4. FIRST AID MEASURES

First aid measures

Eye Contact In case of eye contact, immediately flush eyes with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. Get medical attention if irritation persists. Do not rub affected area.

Skin Contact Wash off immediately with soap and plenty of water. If skin irritation persists, call a Physician.

Inhalation Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical Attention immediately. If conscious, have victim clear nasal passages.

Ingestion Seek immediate medical attention. Rinse mouth. Drink plenty of water. Induce Vomiting, but only if victim is fully conscious.

Most important symptoms and effects, both acute and delayed

Symptoms **Acute (short term) exposure:** Lead is a potent, systemic poison; taken in large enough Doses, lead can kill in a matter of days. Acute encephalopathy may arise which develops

Quickly to seizures, coma and death from cardiorespiratory arrest.
Chronic (long term) exposure: Chronic overexposure to lead may result in severe damage To blood forming. Nervous, urinary and reproductive systems. Some common symptoms Of chronic overexposure include loss of appetite, metallic taste in mouth, anxiety, Constipation, nausea, pallor, excessive tiredness, weakness, insomnia, headache, Nervous irritability, muscle and joint pain, fine tremors, numbness, dizziness, Hyperactivity, colic.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE – FIGHTING MEASURES

Suitable extinguishing media: Dry chemical, foam or CO2

Specific hazards arising from the chemical: May give off toxic fumes in a fire, including lead fumes.

Explosion data:

Sensitivity to Mechanical Impact: None known.

Sensitivity to Static Discharge: None known.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Lead is not considered to be a fire hazard. Powder/dust is flammable when heated or exposed to flame.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Evaluate personnel to safe areas. Avoid contact with skin, eyes and inhalation of dusts. Use personal protection recommended in Section 8.

For emergency responders Wear respiratory protection. Wear proper personal protective equipment (gloves and goggles). Wear appropriate outer garment to protect clothing.

Environmental precautions

Environmental precautions Prevent entry into waterways, sewers, surface drainage systems and poorly ventilated areas.

Methods and material for containment and cleaning up

Methods for containment Avoid creating dust. Safely stop source of spill. Restrict non-essential personnel from area. All personnel involved in spill cleanup should avoid skin and eye contact by wearing appropriate personal protection equipment. Do not breathe dust.

Methods for cleaning up Avoid dust formation. Clean up dusts with high efficiency particulate air (HEPA) filtered vacuum equipment or by wet cleaning.

Prevention of secondary hazards Clean contaminated objects and area thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Use personal protection recommended in Section 8. Avoid generation of dust. Be familiar with the requirements set forth in the OSHA Lead Standard, 29 CGR 1910.1025.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

Incompatible materials Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Lead 7439-92-1	TWA: 0.15 mg/m³Pb	TWA: 0.05 mg/m³Pb	IDLH: 100mg/m³Pb TWA: 0.050 mg/m³Pb
Antimony 7440-36-0	TWA: 0.5 mg/m³Sb	TWA: 0.5 mg/m³Sb	IDLH: 0.50 mg/m³Sb TWA: 0.5 mg/m³Sb
Tin 7440-31-5	TWA: 2.0 mg/m³Sn	TWA: 2.0 mg/m³Sn	IDLH: 100 mg/m³Sn TWA: 2.0 mg/m³Sn

Appropriate engineering controls

Engineering Controls Use contained process enclosures, local exhaust ventilation or other engineering controls to maintain aerosols below the exposure limit. If user operations generate dust, fume or mist use ventilation to keep exposure to airborne contaminates below the exposure limit.

Individual protection measures, such as personal protective equipment

Eye/face protection Use safety glasses with side shields or chemical goggles.

Skin and body protection Protective clothing is required if exposure exceeds the PEL or TLV or where possibility of skin or eye irritation exists. Full body cotton or disposable coveralls and disposable gloves should be worn during use and handling. Clothing should be left at work site and be properly disposed of or laundered after use. The wash water should be disposed of in accordance with local, state and federal regulations. Personal clothing should be protected from contamination.

Respiratory protection If engineering controls cannot maintain airborne concentrations below exposure limits, use appropriate, approved respiratory protection (a 42 CFR 84 class N, R, or P-100 particulate filter cartridge). When exposure levels are unknown, a self-contained breathing apparatus which supplies a positive air pressure within a full face-piece mask should be worn. Utilization of respiratory equipment should be in accordance with 29 CFR 1910.1025 and 29 CFR 1910.134.

General Hygiene Considerations	Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wear disposable gloves and eye/face protection. Wash face, hands and any exposed skin thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid
Appearance	Gray with bluish or silvery cast depending on alloy
Color	Odorless

Property	**Values**	**Remarks *Method**
pH	Not available	
Melting point/freezing point	>600°C	
Boiling point/boiling range	>600°C	
Flash Point	Not applicable (high-melting point solid)	
Evaporation rate	Not applicable (high-melting point solid)	
Flammability (solid, gas)	Not combustible	
Flammability Limit in Air		
Upper flammability limit:	Not combustible	
Lower flammability limit:	Not combustible	
Vapor pressure	Negligible	
Vapor density	Not applicable (high-melting point solid)	
Specific Gravity	9.96	
Water solubility	70.2 mg/L at 20°C	
Solubility in other solvents	Lead compounds, soluble in 0.07 M hydrochloric acid	
Partition coefficient	Not applicable (inorganic)	
Auto ignition temperature	Not combustible	
Decomposition temperature	>600°C	
Kinematic viscosity	Not applicable (solid)	
Dynamic viscosity	Not applicable (solid)	
Explosive properties	Not considered to be explosive	
Oxidizing properties	Not considered to be oxidizing	

Other information

Softening point	Not available
Molecular weight	Not available
VOC Content (%)	Not available
Bulk density	Not available

10. STABILITY AND REACTIVITY

Reactivity

Stable under normal conditions.

Chemical stability

Stable under normal conditions.

Possibility of Hazardous Reactions

None under normal processing.
Hazardous polymerization does not occur.

Conditions to avoid

Avoid excessive exposure to heat.

Incompatible materials

Strong oxidizing agents.

Hazardous Decomposition Products

Lead oxide fumes.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Hazardous exposure to lead compounds can occur only when product is heated, oxidized or otherwise processed or damaged to create dust, vapor or fume.

Inhalation	Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs
Eye contact	Lead compounds may cause eye irritation
Skin contact	Lead compounds are poorly absorbed through the skin
Ingestion	Acute ingestion of lead compounds may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping. This may lead to rapidly systemic toxicity and must be treated by a physician.
Component information	Lead is slowly absorbed by ingestion and inhalation and poorly absorbed through the skin. If absorbed, lead will accumulate in the body with low rates of excretion, leading to long-term build up. Part of risk management is to take blood samples from workers for analysis to ensure that exposure levels are acceptable.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Lead 7439-92-1	56 mg/m³ Rat	Not available	100 mg/m³Rat
Antimony 7440-36-0	7500mg Sb/kg Rat	Not available	720 mg Cu/m³ Rat
Tin 7440-31-5	2207mg Sn/kg Rat	Not available	Not available

Information on toxicological effects

Symptoms Not available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Lead metal granules or dust: May cause skin irritation by mechanical action. Lead metal foil, shot or sheets: Not likely to cause skin irritation.

Serious eye damage/eye irritation

Lead metal granules or dust: Can irritate eyes by mechanical action. Lead metal foil, shot or sheets: No hazard. Will not cause eye irritation.

Inhalation

In an industrial setting, exposure to lead mainly occurs from inhalation of dust or fumes. Lead dust or fumes: Can irritate the upper respiratory tract (nose, throat) as well as the bronchi and lungs by mechanical action. Lead dust can be absorbed through the respiratory system. However, inhaled lead does not accumulate in the lungs. All of an inhaled dose is eventually absorbed or transferred to the gastrointestinal tract. Inhalation effects of exposure to fumes or dust or inorganic lead may not develop quickly. Symptoms may include metallic taste, chest pain, decreased physical fitness, fatigue, sleep disturbance, headache, and irritability, reduces memory, mood and personality changes, aching bones and muscles, constipation, abdominal pains, decreasing appetite. Inhalation of large amounts may lead to ataxia, delirium, convulsions/seizures, coma, and death. Lead metal foil, shot, or sheets: Not an inhalation hazard unless metal is heated. If metal is heated, fumes will be released. Inhalation of these fumes may cause “fume metal fever”, which is characterized by flu-like symptoms. Symptoms may include metallic taste, fever, nausea, vomiting, chills, cough, weakness, chest pain, generalized muscle pain/aches, and increased white blood cell count.

Ingestion

Lead metal granules or dust: The Symptoms of lead poisoning include abdominal pain or cramps (lead colic), spasms, nausea, vomiting, headache, muscle weakness, hallucinations, distorted perceptions, “lead line” on the gums, metallic taste, loss of appetite, insomnia, dizziness and other symptoms similar to that of inhalation. Acute poisoning may result in high lead levels in the blood and urine, shock, coma and death in extreme cases. Lead metal foil, shot or sheets: Not an ingestion hazard for usual industrial handling.

Carcinogenic effects

Epidemiology studies or workers exposed to inorganic lead compounds have found a limited association with stomach cancer. This has led to the classification by IARC that inorganic lead compounds are probably carcinogenic to humans.

Chemical Name	ACGIH	IARC	NTP	OSHA
Lead 7439-92-1	A3	2B	Reasonably Anticipated	Category 1B
Antimony 7440-36-0	A2	2B	Not Listed	Category 2
Tin 7440-31-5	Not Listed	Not Listed	Not Listed	Not Listed

Reproductive toxicity

Exposure to high levels of lead may cause adverse effects on male and female, including adverse effects on sperm quality. Prenatal exposure to lead and its compounds is also associated with adverse effects on fetal development.

STOT – single exposure Lead has been found to be of relatively low acute toxicity by ingestion, in contact with skin, and by inhalation, with no evidence of any local or systemic toxicity from such exposures.

STOT – repeated exposure Lead is a cumulative poison and may be absorbed into the body through ingestion or inhalation. Inorganic lead compounds have been documented in observational human studies to produce toxicity in multiple organ systems and body function including the hematopoietic (blood) system, kidney function, reproductive function and the central nervous system. Postnatal exposure to lead compounds is associated with impacts on neurobehavioral development in children.

Chronic toxicity Lead is a cumulative poison. Increasing amounts of lead can build up in the body and may reach a point where symptoms and disabilities occur. Continuous exposure may result in decreased fertility. Lead is a teratogen. Overexposure of lead by either parent before pregnancy may increase the chances of miscarriage or birth defects. May cause cancer. Contains a known or suspected reproductive toxin. May cause adverse kidney effects.

Target Organ Effects Lead is a cumulative poison and may be absorbed into the body through ingestion or inhalation. Inorganic lead compounds have been documented in observational human studies to produce toxicity in multiple organ systems and body function including the hematopoietic (blood) system, kidney function, reproductive function and the central nervous system. Postnatal exposure to lead compounds is associated with impacts on neurobehavioral development in children.

Aspiration hazard Not available.

Numerical measures of toxicity – Product Information

The following values are calculated based on chapter 3.1 of the GHS document.

Inhalation LC50 850 mg/m³ Rat

12. ECOLOGICAL INFORMATION

Environmental Fate Lead is very persistent in soil and sediments. No data on environmental degradation. Mobility of metallic lead between ecological compartments is slow. Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants, but little bioaccumulation occurs through the food chain. Most studies include lead compounds and not elemental lead.

Environmental Toxicity Soluble lead compounds are listed as a marine pollution according to DOT.

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacean
Lead 7439-92-1	0.072-0.388: 72h Pseudokirchneriella subcapitatia, Chlorella kessierii mg/L ErC50 (pH 5.5-6.5)	0.298: 96h Pimephales promelas mg/L LC50 static 0.041-1.810: 96h Pimephales promelas, Oncorhynchus mykiss		0.074-0.656: 48h Daphnia magna, Ceriodaphnia dubia mg/L LC50 (pH 5.5-6.5)

	0.026-0.080: 72h Pseudokirchneriella subcapitatia, Chlorella kessierii mg/L ErC50 (pH >6.5-7.5) 0.021-0.050: 72h Pseudokirchneriella subcapitatia, Chlorella kessierii mg/L ErC50 (pH <7.5-8.5)	mg/L LC50 (pH 5.5-6.5)0.052-3.60: 96h Pimephales promelas, Oncorhynchus mykiss mg/L LC50 (pH >6.5-7.5) 0.114-3.25: 96h Pimephales promelas, Oncorhynchus mykiss mg/L LC50 (pH >7.5-8.5) 56000: 96h Gambusia affinis mg/L LC50 static		0.029-1.18: 48h Daphnia magna, Ceriodaphnia dubia mg/L LC50 (pH >6.5-7.5) 0.026-3.12: 48h Daphnia magna, Ceriodaphnia dubia mg/L LC50 (pH >7.5-8.5)
Antimony 7440-36-0	None listed	Cyprinodont variegates: LC50 = 6.2-8.3 mg/L/96h	None listed	None listed
Tin 7440-31-5	None listed	None listed	None listed	None listed

Bioaccumulation

While lead metal and its compounds are generally insoluble, its processing or extended exposure in aquatic and terrestrial environments may lead to the release of lead in bioavailable forms. Lead compounds are not particularly mobile in the aquatic environments, but can be toxic for organisms, especially fish, at low concentrations. Water hardness, pH and dissolved organic carbon content are factors which regulate the degree of toxicity. In soil, lead compounds are generally not very bioavailable.

Mobility

Lead and lead compounds will partially settle out due to their fairly low solubility and partially dissolve. In soil, lead and lead compounds are generally not very mobile or bioavailable, as they can be strongly absorbed on soil particles, increasingly over time. It also forms complexes with organic matter and clay minerals that limit its mobility. When released into the soil, this material is not expected to leach into groundwater.

Other adverse effects Not available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

Note: This product is not regulated for domestic transport by land, air or rail.

- Under 49 CFR 171.8, individual packages that contain lead metal (<100 micrometers) below the reportable quantity (RQ) are not regulated.
- Under 49 CFR 171.4, except when transporting aboard a vessel, the requirements of this subchapter specific to marine pollutants do not apply to non-bulk packaging transported by motor vehicles, rail cars and aircrafts.

DOT

Proper shipping name	Not applicable
Hazard Class	Not applicable
Packing Group	Not applicable
Reportable Quantity (RQ)	Not applicable
Marine pollutant	Soluble lead compounds are listed as a marine pollutant according to DOT.
Emergency Response Guide	Not applicable

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

Legend:

TSCA – United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL – Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS – European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS – Japan Existing and New Chemical Substances

IECSC – China Inventory of Existing Chemical Substances

KECL – Korean Existing and Evaluated Chemical Substances

PICCS – Philippines Inventory of Chemicals and Chemical Substances

AICS – Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Chemical Name	CAS No.	Weight - %	SARA 313 – Threshold Values %
Lead	7439-92-1	90 – 99.99	0.1
Antimony	7440-36-0	0 – 9	1.0
Tin	7440-31-5	0 – 2	Not Listed

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA – Reportable Quantities	CWA – Toxic Pollutants	CWA – Priority Pollutants	CWA – Hazardous Substances
Lead 7439-92-1	10 lb.	X	X	X
Antimony 7440-36-0	5000 lb.	X	X	X
Tin 7440-31-5	-	-	-	-

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

US State Regulations

California Proposition 65

This product contains a chemical known to the state of California to cause birth defects or other reproductive harm.

Chemical Name	California Proposition 65
Lead – 7439-92-1	Cancer
Antimony – 7440-36-0	Cancer
Tin – 7440-31-5	Not Listed

US State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Lead – 7439-92-1	X	X	X
Antimony – 7440-36-0	X	X	X
Tin – 7440-31-5	X	-	X

US EPA Label Information

EPA Pesticide Registration Number Not available

16. OTHER INFORMATION

Issue Date 29-May-2015

Revision Date

Revision Note None

Disclaimer

This information provided in this Safety Data Sheet is correct to the best of our knowledge, information and Belief at the date of its publication. The information given is designed only as guidance for safe handling, use, Processing, storage, transportation, disposal and release and is not to be considered a warranty or quality Specification. The information materials or in any process, unless specified in the text.

ATTACHMENT C

EMERGENCY SERVICES
PHONE NUMBERS, DIRECTIONS, AND LOCAL AREA MAP

EMERGENCY SERVICES

FACILITY / LOCATION	**TELEPHONE**
Emergency Situation	**911**

White Memorial Medical Center
1720 East Cesar E Chavez Avenue
Los Angeles, CA 90033
(323) 268-5000

Poison Control Center	(800) 222-1222
Office of Emergency Services (Spill Prevention and Response)	(800) 852-7550
USA Dig Alert of Southern California	(800) 422-4133
WorkCare (Non-emergency)	(888) 449-7787

ATTACHMENT D

LOCAL AREA MAP
with routes to hospital

Google Maps

465 South Mathews Street to White Memorial Medical Center

Drive 1.1 miles, 6 min

Imagery ©2016 Google, Map data ©2016 Google 500 ft

465 South Mathews Street

Los Angeles, CA 90033

1. Head northeast on S Mathews St toward E 4th St — 0.4 mi
2. Turn left onto E 1st St — 0.6 mi
3. Turn right onto Bailey St — 0.1 mi

White Memorial Medical Center

1720 East Cesar E Chavez Avenue, Los Angeles, CA 90033

ATTACHMENT E

JOB SAFETY ANALYSIS

Mob-Demob Job Safety Analysis (JSA)

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HASP:	☐ NEW ☐ REVISED
TRC/ LAUSD Roosevelt High School (Los Angeles, CA)		
JSA WORK ACTIVITY (Description): **Mob-Demob**	List of Contractor(s) and key work activity:	

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

TRC HEALTH AND SAFETY MANAGEMENT	POSITION / TITLE	APPROVAL DATE

PERSONAL PROTECTION EQUIPMENT (PPE) QUICK SUMMARY
Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

__R__ REFLECTIVE VEST __A__HARD HAT __R__GLOVES: **ANSI Cut Level 4** __A__SAFETY GLASSES _____GOGGLES _____FACE SHIELD	__A__ HEARING PROTECTION __R__SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____Coveralls ____Tyvek Suit ____Nomex ____Other (specify):	RESPIRATORY PROTECTION: ☒ NA _____Dust Mask ____½ face Air Purifying Respirator (APR) _____Particulate Mask: ☐ PM100 ☐ PM95 _____ Cartridge: ☐ P100-Multigas ☐ _____ _____Full face ARP; specify cartridge type: _____ Air Supplied Respirator ____SCBA _____Air-line	Additional PPE/Notes: As per defined in the job/site specific Health and Safety Plan (HASP) wear PPE at all times when performing site work.

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1) Inspect vehicle and equipment prior to mobilizing to and from site	a. Vehicle failures.	a1. Inspect tires and lights regularly. a2. Inspect gas tank level. a3. Walk around vehicle and note any hazards with vehicle and report to the appropriate employee/supervisor.
2) Loading/ unloading at office or jobsite	a. Cut/pinched fingers or toes; and strained muscles. b. Vehicle parked in high traffic area.	a1. See PPE Quick Summary. a2. Use proper lifting techniques and 2-man rule when moving heavy objects (>40 lbs). b1. Make sure vehicle is parked in an area that limits the employee from crossing roads or intersections. b2. Use high-visibility cones around vehicle if need.

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	**[2] POTENTIAL HAZARDS**	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
3) Driving	a. Incidents.	a1. Adjust mirrors and be familiar with controls before driving vehicle. a2. Pay attention to the task at hand. a3. Avoid/defer cell phone until destination is reached (or while not driving). Take note of jurisdictional laws pertaining to cell phone usage. a4. Obey traffic laws and drive defensively.
	b. Flat tire/engine trouble.	b1. If the problem requires you to stop the vehicle, make sure the vehicle is in a safe spot on the shoulder of the road. b2. Use flashers to alert other vehicles. b3. Only make repairs to the vehicle if the work can be done in a safe manner and away from traffic.
4) Arrival at site	a. Site conditions changed from plan.	a1. Observe traffic flow. a2. Modify traffic control plan if necessary. a3. Back into parking spots whenever possible. Employee spotter if available.
5) Inspect vehicle equipment	a. Vehicle failures.	a1. Inspect fluids, tires, connections and safety equipment regularly. a2. Inspect gas tank level. a3. Note any hazards with vehicle and report to the appropriate employee.
	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
1. Vehicle rolling: unattended.	a. When parked on slope or with engine idling.	a1. When parking on a hill or stopping with the engine idling, use parking brakes, parking gear if available, and use chocks immediately upon leaving the driver's compartment. If other personnel are available ask them do the chocking before the driver exits the vehicle, then the driver should double-check the chocks.

PID—photoionization detector; LEL—lower explosive limit; PPE—Personal Protective Equipment; ANSI—American National Standards Institute

Field Notes:

Driving Company Vehicle Job Safety Analysis (JSA)

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HASP:	☐ NEW ☒ REVISED
TRC/LAUSD Roosevelt HS (Los Angeles, CA)		
JSA WORK ACTIVITY (Description): **Driving Company Vehicle**	List of Contractor(s) and key work activity:	

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

TRC HEALTH AND SAFETY MANAGEMENT	POSITION / TITLE	APPROVAL DATE
	OSC	

PERSONAL PROTECTION EQUIPMENT (PPE) QUICK SUMMARY
Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

___ REFLECTIVE VEST ____HARD HAT _____GLOVES: **ANSI Cut Level 4 & 5 Kevlar** ____SAFETY GLASSES _____GOGGLES _____FACE SHIELD	____ HEARING PROTECTION ____SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____Coveralls ____Tyvek Suit ____Nomex ____Other (specify):	RESPIRATORY PROTECTION: ☐ NA _____Dust Mask ____½ face Air Purifying Respirator (APR) ____X_Particulate Mask: ☒ PM100 ☐ PM95 ____X_ Cartridge: ☒ P100-Multigas ☐ _____ _____Full face ARP; specify cartridge type: _____ Air Supplied Respirator ____SCBA _____Air-line	Additional PPE: .

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1) Have correct directions and know best route of travel to make it safely to intended destination.	a. Getting lost in a bad area or showing up at the wrong location. Having doubt about where you are exactly supposed to be could cause undo stress while driving.	a1. Ask questions and get safest route if destination is not known, use map quest or other online locators to assist with travel plans. Give other people your travel plans with addresses and phone numbers so you can be contacted.
2) Knowing what TRC's driving rules and policies are before getting behind the wheel on company time.	a. Driver using excuse that they didn't know the rules or policies and following common bad practices while driving.	a1. Strong Driver Training and Driving Safety Stewardship prior to personnel driving company owned vehicles or driving personal vehicles on company time. Certification of understanding through training documentations and TRC's CP016 Vehicle Safety Program.
3) Vehicle walk around and perimeter check.	a. Trip, slip, fall and possible human contact from unknown assailants. Also be aware of other vehicle activity in surrounding areas.	a1. Visual verification that vehicle tires are in safe working condition and that there are no sharp objects or foreign debris under the tires. Check for possible unsafe human interaction in the surrounding area and be conscious of other vehicle activity close by.

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
4) Unlock and open vehicle door, enter the vehicle and secure seatbelts.	a. This activity leaves driver open for a pinch or crush hazard if hand or fingers are not secured inside the vehicle before shutting vehicle door.	a1. Ensure driver's seatbelt is functioning properly and verify that passenger's seatbelt is also in good working condition then buckle up. If assessed lock vehicle doors once inside as added protection factor.
5) Interior visual inspection, rearview mirror, and visual checks of both side mirrors.	a. In areas of high crime, be sure to lock vehicle doors after entering besides that there aren't many other hazards during this activity.	a1. Ensuring that mirrors are properly adjusted to maximize visual indications of approaching vehicles from the rear, and checking for identified blind spots. Lock doors in areas of identified questionable areas for safety reasons.
6) Ensure mobile phone has been deactivated.	a. Drivers are easily distracted by mobile phones, either by answering or making calls.	a1. It is TRC's company policy, CP016 TRC Vehicle Safety Program, that all mobile phones be turned off prior to any vehicle trips, no exceptions.
7) If driving a company vehicle or personal vehicle on company time the headlamps will be turned on at all times. Also headlamps are required by CA Law to be activated if foul weather conditions warrant their use.	a. If driving in foul weather conditions such as heavy rain, fog or dusk, vehicles without headlamps on are more difficult to see.	a1. TRC's company policy, CP016 TRC Vehicle Safety Program, requires all employees driving company vehicles or personal vehicles on company time to have their headlamps on. No exceptions. This activity gives an extra line of defensive visual identification by allowing other vehicles to better see oncoming traffic that might otherwise blend into the poor weathered gray backgrounds.
8) Traveling safely at posted speed limits and following all road rules while driving on roadways or freeways.	a. Not obeying posted speed limits and following road rules can result in traffic violations and vehicle accidents involving all motor vehicle maneuvers. Watch for slower moving and fast approaching vehicles in roadway.	a1. Driver must maintain TRC policy, CP016 TRC Vehicle Safety Program, of allowing a 4 second gap between vehicles while driving, this supersedes California's DMV Best Practice of following a 3 second gap. Keep good visual contact of all lanes and identifying an out in case of emergency maneuver due to other vehicle hazards and poor driving.
9) Merging while entering multi-lane freeways and making lane changes while traveling on multi-lane freeways.	a. Struck from side, rear contact with other vehicles, struck from behind.	a1. Use vehicle signals, look over shoulder, check mirrors, be aware of fast approaching or slower moving vehicles and maintain speed while initiating merge, maintain speed and repeat same steps with all lane changes.

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
10) Exiting off of multi-lane freeways.	a. Changing the flow of traffic speed, slowing down to exit off ramps.	a1. Use vehicle signals, look over shoulder, check mirrors, be aware of fast approaching or slower moving vehicles and maintain speed while initiating merge. Slow at a gradual pace and maintain enough space between the vehicles in front of you to mitigate the necessity of braking quickly.
11) Stopping at posted stop signs, signal controlled intersections and cross walks while yielding right away to all oncoming traffic.	a. By not allowing enough space, a vehicle can be struck and pushed into an intersection or crosswalk, striking other vehicles or pedestrians.	a1. Keeping a full vehicle length away from intersections, crosswalks and stop signs gives a driver that extra cushion needed in case there is a strike from behind, pushing the vehicle forward.
12) Proceeding through marked or signal controlled intersections or crosswalks after coming to a full stop.	a. Driver should use good visual eye contact of all directions to the left and right and allow another vehicle to proceed first before accelerating forward. Watching for other vehicles crossing into other lanes.	a1. The driver carefully looking left and right should maintain lane selection through the intersection and proceed forward remaining in the same lane they stopped in. This prevents rear-end striking and side striking accidents and allows for better adjustments if a possible hazard is identified.
13) Staying aware of oversized and wide vehicles making wide and slow turns through intersections and regular turning maneuvers.	a. There are numerous blind spots that the driver of a loaded Semi has to deal with. They can occur at the beginning or the finishing of the turning maneuver.	a1. Using a 4 second rule while following a Semi is a must and leaving enough extra space to the sides and rear of the Semi when stopping behind it will prevent an avoidable strike from the trailer due to blind spots created by wide and large loaded vehicles.
14) Staying constantly aware of all surroundings and keeping identified routes of escape open when traffic conditions warrant added attention.	a. When driving a vehicle on roadways or freeways, we do not have control over all the other drivers in vehicles around us, therefore we must keep constant attention elevated to the poor driving skills of others.	a1. Understanding TRC's company policy, CP016 TRC Vehicle Safety Program, follow identified driving best practices and keep full attention of driving safely without rushing to get to destinations.
15) Reaching final destination in vehicle and coming to a complete stop while parking.	a. Striking other parked vehicles or striking a pedestrian walking, or the vehicle engine not completely stopping causing the vehicle to lunge forward.	a1. Pay full attention to the new surrounding areas where you'll park, ensure vehicle's engine has completely stopped and the parking break has been set. Look outside vehicle before jumping out into street traffic or parking lot traffic.

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	**[2] POTENTIAL HAZARDS**	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
16) Opening vehicle door and exiting.	a. Struck by other vehicles stepping onto uneven surface, approached by someone unwanted.	a1. Take a good look at surrounding areas and make sure there are no signs of oncoming traffic, take a look outside at the ground before you step out making sure surface is level and object free, keep aware of unwanted approaching personnel.

LOCATION(S) WHERE HAZARD IS TO BE EXPECTED		**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
1.	a.	a.
2.	a.	a.
3.	a.	a.

PID—photoionization detector; LEL—lower explosive limit; PPE—Personal Protective Equipment; ANSI—American National Standards Institute

Field Notes:

LIMITATION: As part of TRC's EHS Policy, a JSA is provided by TRC for its employees. The purpose of a JSA is NOT to identify all hazards associated with a task, but to identify key potential hazards to get TRC and other onsite personnel thinking about other potential safety hazards and mitigating actions for unsafe conditions and behavior during various works. TRC recognizes that JSA's may not cover every conceivable step or hazard that emerges during a job, so we've provided a "Field Change" section below to amend a JSA if required. The JSA does not supersede or replace any local, state or federal permit, regulation, statute or other entities policies and procedures but is simply a tool for enhancing the execution of safe work at a jobsite under TRC's supervision. Similarly, all subcontractors are required to provide their own JSA(s) for their specialty prior to performing any work for TRC or its customers in accordance with TRC's EHS Policy; however, any unsafe condition or hazard not covered in any JSA is ultimately the direct responsibility of the person or entity performing the work.

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HSP:	☐ NEW ☒ REVISED
TRC/ LAUSD Roosevelt High School (Los Angeles, CA)		
JSA WORK ACTIVITY (Description):	List of Contractor(s) and key work activity:	
Work Area and Exclusion Zone Set-up		

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

"TRC APPROVED" JSA DEVELOPMENT TEAM	POSITION / TITLE	APPROVAL DATE

Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

R REFLECTIVE VEST R HARD HAT R GLOVES **ANSI Cut Level 4** R SAFETY GLASSES _____GOGGLES _____FACE SHIELD	A HEARING PROTECTION R SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____Coveralls ____Tyvek Suit ____Nomex ____Other (specify):	RESPIRATORY PROTECTION: ☐ NA _____Dust Mask _____½ face Air Purifying Respirator (APR) _____Particulate Mask: ☐ PM100 ☐ PM95 ____ Cartridge: ☐ P100-Multigas ☐ _____ _____Full face ARP; specify cartridge type: ____ Air Supplied Respirator ____SCBA _____Air-line	Additional PPE:

Always perform a Safety Assessment: 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1. Pre-start Meeting and Site Safety Analysis	a. Bad organization creating confusion and hazard	a. Arrive at site prior to planned start time to evaluate vehicle and pedestrian traffic flow in the work area and in the site vicinity. a.. Review site plan with traffic control set-up. a. Identify staging area with good access lateral and vertical for loading and unloading of trucks. a. Identify material and equipment laydown areas.
2. Exclusion Zone Set-up	a. Physical injury or equipment damage from onsite and offsite traffic flow.	a. Use the 'buddy system (one person watching traffic, one person working) when working in a high-use traffic area. a. Use of cones/delineators and caution signs to alert foot traffic moving about the site of potential trip hazards. a . Utilize snow fencing, barricades, delineators, cones and caution tape to provide exclusion zone around proposed work locations. Set-up exclusion zone in accordance with TRC's Exclusion Zone Set-up procedures.
3. Control of Work Area and Exclusion Zone	a. Delivery vehicles b. Personnel/vehicle entry onto site c. Fatigue d. Noise and flying debris	a. All vehicles moving on site shall use reverse beepers or flaggers. b. Set-up fencing around entire site with gated entry points. Limit access to staging area by keeping gate to work area closed and check documents of all vehicles entering work area. b. Use visitor check-in log and allow no-one into an exclusion area with out proper PPE as designated on this JSA. b. All person onsite must wear proper work and protective clothing (long pants, sleeved-shirt, steel-toed boots, safety vest, safety glasses, and safety helmet, ANSI cut level 4 Kevlar gloves) at all times while on jobsite. b. Limit number of times materials, equipment and debris are handled by staging as close to work area as possible. c. Watch on-site personnel for signs of fatigue (shuffling, disorientation, small mistakes, sloppiness, etc.) and have them go to a shaded, protected area where they can rest and rehydrate. c. Set up and maintain rehydrating station. d. Always wear safety glasses and hearing protection working around operating heavy equipment.

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State) **TRC/ LAUSD Roosevelt High School (Los Angeles, CA)**	DATE PREPARED FOR HSP:	☐ NEW ☒ REVISED
JSA WORK ACTIVITY (Description): **Work Area and Exclusion Zone Set-up**	List of Contractor(s) and key work activity:	

4. Clean-up and overnight/over weekend storage	a. Slips, trips, and falls b. Bad organization creating confusion and hazard c. Run-off and soil cross-contamination d. Site Security and Anti-Thievery	a.Clean-up work area as you go. Maintain a clean, unobstructed work area by good house keeping and placing unused equipment away from work area. b. Delineate and block access to open pits/trenches with snow-fencing, delineators, and caution tape as a warning and prevent persons from falling into these items overnight. c. Place debris/detritus areas away from soil stockpile for future use. d. Do not leave expensive equipment in open. d. Lock all vehicles and large equipment. Do not leave keys in vehicles.

	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
1.	a.	a.
2.	a.	a.
3.	a.	a.

Field Notes:

LIMITATION: As part of TRC's EHS Policy, a JSA is provided by TRC for its employees. The purpose of a JSA is NOT to identify all hazards associated with a task, but to identify key potential hazards to get TRC and other onsite personnel thinking about other potential safety hazards and mitigating actions for unsafe conditions and behavior during various works. TRC recognizes that JSA's may not cover every conceivable step or hazard that emerges during a job, so we've provided a "Field Change" section below to amend a JSA if required. The JSA does not supersede or replace any local, state or federal permit, regulation, statute or other entities policies and procedures but is simply a tool for enhancing the execution of safe work at a jobsite under TRC's supervision. Similarly, all subcontractors are required to provide their own JSA(s) for their specialty prior to performing any work for TRC or its customers in accordance with TRC's EHS Policy; however, any unsafe condition or hazard not covered in any JSA is ultimately the direct responsibility of the person or entity performing the work.

Cold Illness Prevention Job Safety Analysis (JSA)

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HASP:	☐ NEW ☒ REVISED
TRC/LAUSD Roosevelt HS (Los Angeles, CA)		
JSA WORK ACTIVITY (Description): **Cold Illness Prevention**	List of Contractor(s) and key work activity:	

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

TRC HEALTH AND SAFETY MANAGEMENT	POSITION / TITLE	APPROVAL DATE

PERSONAL PROTECTION EQUIPMENT (PPE) QUICK SUMMARY
Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

__R__ REFLECTIVE VEST __R__ HARD HAT __R__ GLOVES: **ANSI Cut Level 4 & 5 Kevlar** __R__ SAFETY GLASSES _____ GOGGLES _____ FACE SHIELD	__R__ HEARING PROTECTION __R__ SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____Coveralls ____Tyvek Suit ____Nomex ____Other (specify):	RESPIRATORY PROTECTION: ☐ NA __A__ Disposable Particulate Respirator (N95) __A__ ½ face Air Purifying Respirator (APR) __X__ Particulate Mask: ☒ PM100 ☐ PM95 __X__ Cartridge: ☒ P100-Multigas ☐ _____ _____ Full face ARP; specify cartridge type: _____ Air Supplied Respirator ____SCBA _____Air-line	Additional PPE/Notes:

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1) Working in wind chill temperatures > 30 to < 65 degrees F	a. Trench foot.	a1. Avoid having feet immersed in cold water at temperatures above freezing for long periods. a2. Avoid continuous exposure to a wet, cold environment, or actual immersion in water. a3. Take frequent short-breaks in warm dry shelters—self paced. a4. Perform work during the warmest part of the day. a5. Keep a change of clothing available in case work clothes becomes wet. Maintain a dry environment within the shoe. a6. Rotate your shoes every other day to allow them to dry thoroughly. a7. Avoid synthetic materials like rubber or vinyl, wear leather or cloth that can absorb moisture.

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	**[2] POTENTIAL HAZARDS**	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
2) Working in temperatures < 30 degrees F or wind chill effects above freezing temperatures	a. Frost bite.	a1. Proper insulation (layered clothing to adjust to changing environmental temperatures). Keep clothing as dry as possible. a2. Perform work during the warmest part of the day. a3. Take frequent short-breaks in warm dry shelters-self paced. a4. Avoid exhaustion and fatigue because energy is needed to keep the muscles warm. a5. Use the "Buddy System" for working outdoors.
3) Working in temperatures above freezing > 30 degrees	a. Hypothermia.	a1. Proper insulation (layered clothing to adjust to changing environmental temperatures). Keep clothing as dry as possible. a2. Perform work during the warmest part of the day. a3. Take frequent short-breaks in warm dry shelters-self paced. a4. Pay special attention to protecting feet, hands, face, and head. Up to 40% of body heat can be lost when the head is exposed.
	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
1. Frost bite	a. Skin first turns red, then purple, later becomes pale, then waxy-white and is cold to the touch. b. Skin of body part affected becomes hard, cold, stinging or aching followed by numbness; affecting nose, ears, cheeks, forehead, wrists, toes and fingers.	a1. Unless the frostbite was very mild, call for emergency for special instructions. a2. A worker with warm hands may help thaw other's worker hands or fingers merely by enclosing them within the palms and exerting a very gentle pressure. a3. Try to elevate worker extremity to improve blood circulation. b1. Act immediately, call for emergency. Move the worker to a warm area. Do not leave the worker alone. b2. Remove any wet or tight clothing that may cut off blood flow to the affected area and DO NOT RUB affected area.

	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
2. Hypothermia	a. Uncontrolled shivering.	a1. Act immediately—Call for Emergency. a2. Move the victim to a warm, dry area. Do not leave the person alone and DO NOT RUB the person's body.
	b. Cool bluish skin.	b1. Loosen and remove any wet clothing and replace with warm, dry clothing or wrap the person in blankets.
	c. Dry tongue and thirst.	c1. Administer warm, sweet drinks (sugar water or sports-type drinks) if victim is alert.
	d. Slurred speech.	d1. Have the victim move their arms and legs to create muscle heat.
	e. Clumsy movements, irritable, irrational or confused behavior.	e1. Place warm bottles or hot packs in the arm pits, groin, neck, and head areas. Encourage the person to rest. e2. Monitor closely.
3. Trench foot	a. Initially appears wet, soggy, white, shriveled.	a1. Move individual with trench foot to a warm, dry area. a2. Rewarm by exposing to warm air.
	b. Sensations of pins and needles, tingling, numbness and then pain.	b1. Rewarm by exposing to warm air. b2. Seek medical assistance as soon as possible.
	c. Skin discoloration. Affected portions of foot and toes can appear gray and blotchy.	c1. Seek medical assistance as soon as possible.
	d. Becomes cold, swollen, and waxy appearance.	d1. Seek medical assistance as soon as possible. d2. Elevate feet to reduce swelling.
	e. May develop blisters, open weeping or bleeding in more extreme cases.	e1. Seek medical assistance as soon as possible. e2. DO NOT break blisters, apply lotions, massage, expose to heat, or allow to walk on injury.

PID—photoionization detector; LEL—lower explosive limit; PPE—Personal Protective Equipment; ANSI—American National Standards Institute

Field Notes:

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COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HSP:	☐ NEW ☒ REVISED
TRC/ LAUSD Roosevelt High School (Los Angeles, CA)		
JSA WORK ACTIVITY (Description):	List of Contractor(s) and key work activity:	
Heat Illness Prevention		

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

"TRC APPROVED" JSA DEVELOPMENT TEAM	POSITION / TITLE	APPROVAL DATE

Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

___R___ REFLECTIVE VEST ___A___HARD HAT ___R___GLOVES: **ANSI Cut Level 2,3, 4 or 5 Kevlar** ___R___SAFETY GLASSES _____GOGGLES _____FACE SHIELD	___A___ HEARING PROTECTION ___R___SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____Coveralls ____Tyvek Suit ____Nomex ____Other (specify):	RESPIRATORY PROTECTION: ☒ NA _____Disposable Particulate Respirator (N95) ____½ face Air Purifying Respirator (APR) _____Particulate Mask: ☐ PM100 ☐ PM95 ____ Cartridge: ☐ P100- Multigas ☐ _____ _____Full face ARP; specify cartridge type: ____ Air Supplied Respirator ____SCBA ____Air-line	Additional PPE:

Always perform a Safety Assessment: 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1. Working in temperatures > 80 to < 90 degrees F	a. Heat Cramps b. Heat Exhaustion c. Heat Stroke	a. Fluids mandatory every 60 minutes b. Rest breaks - self paced by time period worked c. Cool Device (bandana, headband, hardhat insert, poncho, etc.) – optional d. H.E.A.T. Kit with Heat Illness supplies.
1. Working in temperatures> 90 to < 100 degrees F	a. Heat Cramps b. Heat Exhaustion c. Heat Stroke	a. Fluids mandatory every 60 minutes b. Rest breaks - self paced c. Cool Device - optional d. H.E.A.T. Kit with Heat Illness supplies.
1. Working in temperatures > 100 degrees F	a. Heat Cramps b. Heat Exhaustion c. Heat Stroke	a. Fluids mandatory every 30 minutes b. Rest Breaks mandatory every 30 minutes c. Implement as least one of the following: • External Cool Device (AC) • Personal Cool Device (Cool Vest) • Rotate personnel, buddy system/add to work team d. Plan work at cooler time of day e. Contact supervisor frequently to give status reports. f. H.E.A.T. Kit with Heat Illness supplies.

GENERAL SAFETY HAZARDS	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1. Heat Cramps	a. Muscles most often affected include calves, arms, abdomen and back	a. Start slowly b. Stretch before working out c. Rest briefly and cool down d. Do range-of-motion stretching and massage of the affected muscle group e. Drink water or sports drinks
2. Heat Exhaustion	a. Cool, clammy and pale skin b. Profuse sweating c. Dry tongue and thirst d. Severe muscle fatigue, weakness e. Mood changes (e.g., confusion or inability to think straight and rapid pulse)	a. Act immediately – May lead to heat exhaustion, stroke or death. b. Move the victim to a cool, shaded area to rest. c. Loosen and remove any heavy clothing. d. Administer cool water (about a cup every 15 minutes) unless sick to the stomach. e. If symptoms continue (e.g., dizziness or lightheadedness), lay the victim on his/her back and raise the legs 6 to 8 inches.

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State) **TRC/ LAUSD Roosevelt High School (Los Angeles, CA)**		DATE PREPARED FOR HSP:	☐ NEW ☒ REVISED
JSA WORK ACTIVITY (Description): **Heat Illness Prevention**		List of Contractor(s) and key work activity:	
	f. Feeling weak, faint or dizzy with headache or nausea g. Loss of appetite h. Physical collapse and sometimes cramping i. Decreased or dark-colored urine	- If nausea or upset stomach exists, lay the person on his/her side. f. Cool the person's body by fanning, spraying with a cool mist of water, sponging with cool water and/or applying cool, wet cloths for an evaporative effect. g. Encourage the person to rest. h. Monitor closely. i. Obtain emergency medical care if condition does not improve.	
3. Heat Stroke	a. Very high temperature (104 degrees F or higher) b. Hot, dry, red skin c. Not sweating d. Deep breathing and fast pulse – Shallow breathing and weak pulse e. Dilated pupils f. Convulsions g. Loss of consciousness	a. Act immediately – inaction may lead to death or brain damage b. OBTAIN EMERGENCY MEDICAL CARE! c. Cool the individual as rapidly as possible: – Move victim to cool, shaded area. – Remove clothing – Spray with water – Fan – Apply cool, wet sheets – ice packs to groin, underarms, and neck	

Regardless of the Advisory Level, the following factors need to be considered:

Humidity
Medications that affect heat tolerance (diuretics, beta-blockers, antihistamines, antidepressants)
Lack of acclimatization (conditioning)
Obesity or other personnel medical issues (personal illnesses or disease)
History of previous heat-related disorders
Physical conditioning

Field Notes:

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Heavy Equipment and/or Vehicles Job Safety Analysis (JSA)

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HASP:	☐ NEW ☒ REVISED
TRC/ LAUSD Roosevelt HS (Los Angeles, CA)		
JSA WORK ACTIVITY (Description): **Heavy Equipment and/or Vehicles**	List of Contractor(s) and key work activity):	

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

TRC HEALTH AND SAFETY MANAGEMENT	POSITION / TITLE	APPROVAL DATE

PERSONAL PROTECTION EQUIPMENT (PPE) QUICK SUMMARY
Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

__R__ REFLECTIVE VEST __R__ HARD HAT __A__ GLOVES: **ANSI Cut Level 4** __R__ SAFETY GLASSES _____ GOGGLES _____ FACE SHIELD	__A__ HEARING PROTECTION __R__ SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____ Coveralls ____ Tyvek Suit ____ Nomex ____ Other (specify):	RESPIRATORY PROTECTION: ☒ NA _____ Dust Mask _____ ½ face Air Purifying Respirator (APR) _____ Particulate Mask: ☐ PM100 ☐ PM95 _____ Cartridge: ☐ P100-Multigas ☐ _____ _____ Full face ARP; specify cartridge type: _____ Air Supplied Respirator ____ SCBA _____ Air-line	Additional PPE:

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1) Set-up Activities	a. Lack of concentration or focus.	a1. Review all plans (HASP, Work, Utility, Site Plans, etc.), logs, and field notes prior to starting a new task. Identify daily tasks and required personnel actions. a2. Conduct safety tailgate meeting with contractor personnel prior to beginning work activities. Review the site safety hazards and work precautions.
	b. Fire and explosion.	b1. No smoking or open flame. Periodically monitor ambient air concentrations with PID/LEL Meters. Shut down job and move personnel and equipment upwind if hydrocarbon concentrations are HASP defined action levels.
	c. Malfunctioning heavy equipment safety devices.	c1. Inspect equipment to determine if in good condition. Perform all equipment and safety device checks prior to event startup (per operating manual).

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
2) Heavy Equipment and/or Vehicles	a. Physical injury from falling or flying objects.	a1. Always conduct Safe Performance Self-Assessment (SPSA) prior to start of, or change in each work procedure or task. a2. Wear appropriate PPE including hardhats, safety glasses, and any additional PPE as directed by the SSO.
	b. Noise.	b1. All personnel will use hearing protection within work area while heavy machinery is operating at >85 dB.
	c. Being struck by moving vehicles or equipment onsite.	c1. Always wear safety vest, establish eye contact with operators utilizing flag men wear appropriate. c2. Vehicles shall use reverse beepers or flagmen.
	d. Cut/pinched fingers or toes; and strained muscles.	d1. See PPE Quick Summary.
	g. Slips, trips, and falls.	g1. Maintain a clean, unobstructed work area by good housekeeping and placing unused equipment away from work area.
	h. Materials loading/unloading.	h1. Identify truck ingress/egress lanes. Keep loading area clear of debris and obstructions (including parked cars and overhead obstructions).
	i. Unauthorized personnel in exclusion zone.	i1. Use visitor check-in log and allow no-one in exclusion area without proper PPE (as defined on this JSA) and training documentation (e.g., HAZWOPER, other as defined in the HASP).

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	**[2] POTENTIAL HAZARDS**	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
3) Clean-Up	a. Slips, trips, and falls.	a1. Maintain a clean, unobstructed work area by good housekeeping and placing unused equipment away from work area.
	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
1.	a.	a.
2.	a.	a.
3.	a.	a.

PID—photoionization detector; LEL—lower explosive limit; PPE—Personal Protective Equipment; ANSI—American National Standards Institute

Field Notes:

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Job Safety Analysis (JSA)

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HASP:	☐ NEW ☒ REVISED
TRC/ LAUSD Roosevelt High School (Los Angeles, CA)		
JSA WORK ACTIVITY (Description):	List of Contractor(s) and key work activity:	
Excavation and Trench		

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

TRC HEALTH AND SAFETY MANAGEMENT	POSITION / TITLE	APPROVAL DATE

PERSONAL PROTECTION EQUIPMENT (PPE) QUICK SUMMARY

Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

__R__ REFLECTIVE VEST __R__ HARD HAT __R__ GLOVES: **Kevlar ANSI Cut Level 4 & 5** __R__ SAFETY GLASSES _____ GOGGLES _____ FACE SHIELD	__A__ HEARING PROTECTION __R__ SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____Coveralls ____Tyvek Suit ____Nomex ____Other (specify):	RESPIRATORY PROTECTION: ☒ NA _____½ face Air Purifying Respirator (APR) _____Particulate Mask: ☐ PM100 ☐ PM95 _____ Cartridge: ☐ P100-Multigas ☐ _____Full face ARP; specify cartridge type: ____ Air Supplied Respirator ____SCBA ____Air-line	Additional PPE: .

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1) Set-Up Activities	a. Lack of concentration or focus.	a1. Review all plans (HASP, Work, Utility, Site Plans, etc.), logs, and field notes prior to starting a new task. Identify daily tasks and required personnel actions. a2. Conduct safety tailgate meeting with subcontractor personnel prior to beginning work activities.
	b. Fire and explosion.	b1. No smoking or open flame. Periodically monitor ambient air concentrations with PID/LEL Meters.
	c. Electric shock/ electrocution.	c1. Review TRC's Pre-Job Safety Briefing for minimum approach distances on cranes and excavators.
	d. Malfunctioning heavy equipment safety devices.	d1. Inspect heavy equipment to determine if in good condition. Perform all equipment and safety device checks prior to event startup (per operating manual).

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	**[2] POTENTIAL HAZARDS**	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
2) Excavation of Soil	a. Physical injury from falling or flying objects.	a1. Stay out of the immediate excavation area and the excavator swing radius. a2. Wear appropriate PPE including hardhats, safety glasses, and any additional PPE as directed by the SSO.
	b. Noise.	b1. All personnel will use hearing protection within work area while heavy machinery is operating >85dB.
	c. Being struck by moving vehicles or equipment onsite.	c1. Always wear at a minimum, Class II safety vest, establish eye with operators utilizing flag men wear appropriate. c2. Vehicles shall use reverse beepers or flagmen. c3. Face the direction of oncoming traffic during work activities when possible.
	d. Cut/pinched fingers or toes; and strained muscles.	d1. See PPE Quick Summary.
	e. Equipment tip over.	e1. Watch equipment location & swing points; monitor live & dead loads. e2. If a crane is being used, make sure to take away from the operation at all times when the crane is in use.
	f. Toxic or explosive atmosphere.	f1. Periodically monitor ambient atmosphere with PID or LEL meter. upwind if concentrations are detected above HASP defined action levels.
	g. Slips, trips, and falls.	g1. Maintain a clean, unobstructed work area by good housekeeping and placing unused equipment away from work area.
	h. Cave-in	h1. Follow TRC's CP024 Excavation and Trench Program. h2. Never enter an excavation without the proper training, and a competent person documenting and monitoring the excavation. h3. Excavations must have be properly sloped or have shorting installed. Never enter an excavation that does not have either of these two engineering controls in place, and a documented and approved engineering drawings.
3) Staging and Dumping of HC Impacted Soil	a. Bad organization creating confusion and hazard.	a1. keep area clear of parked vehicles or stored materials/equipment. a2. Identify truck ingress/egress lanes and keep clear.
	b. Slips, trips, and falls.	b1. Maintain a clean, unobstructed work area by good housekeeping and placing unused equipment away from work area.

	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1.	a.	a.
2.	a.	a.
3.	a.	a.

PID—photoionization detector; LEL—lower explosive limit; PPE—Personal Protective Equipment; ANSI—American National Standards Institute

Field Notes:

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Soil/Debris Loading Job Safety Analysis (JSA)

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HASP:	☐ NEW ☒ REVISED
TRC/LAUSD Roosevelt HS (Los Angeles, CA)		
JSA WORK ACTIVITY (Description): **Soil/Debris Loading**	List of Contractor(s) and key work activity:	

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

TRC HEALTH AND SAFETY MANAGEMENT	POSITION / TITLE	APPROVAL DATE

PERSONAL PROTECTION EQUIPMENT (PPE) QUICK SUMMARY
Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

__R__ REFLECTIVE VEST __R__ HARD HAT __R__ GLOVES: **ANSI Cut Level 4 & 5 Kevlar** __R__ SAFETY GLASSES _____ GOGGLES _____ FACE SHIELD	__A__ HEARING PROTECTION __R__ SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____Coveralls ____Tyvek Suit ____Nomex ____Other (specify):	RESPIRATORY PROTECTION: ☐ NA __A__ ½ face Air Purifying Respirator (APR) ____X__ Particulate Mask: ☒ PM100 ☐ PM95 ____X__ Cartridge: ☒ P100-Multigas ☐ _____ _____ Full face ARP; specify cartridge type: _____ Air Supplied Respirator ____SCBA _____Air-line	Additional PPE: Level C PPE for asbestos debris handling (Asbestos trained workers only)

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1) Set-up Activities	a. Lack of concentration or focus.	a1. Review all plans (HASP, Work, Utility, Site Plans, etc.), logs, and field notes prior to starting a new task. Identify daily tasks and required personnel actions. a2. Conduct safety tailgate meeting with subcontractor personnel prior to beginning work activities. Explain the site safety hazards and work precautions outlined in the HASP and obtain signatures indicating the HASP was discussed.
	b. Fire and explosion.	b1. No smoking or open flame. Periodically monitor ambient air concentrations with PID/LEL Meters. Shut down job and move personnel and equipment upwind if hydrocarbon concentrations are HASP defined action levels. b2. Deploy 2-20lb ABC Fire extinguishers in accordance site safety officer's direction.
	c. Malfunctioning heavy equipment safety devices.	c1. Inspect drill rig to determine if in good condition. Perform all equipment and safety device checks prior to event startup (per operating manual).

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	**[2] POTENTIAL HAZARDS**	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
2) Staging Soil	a. Bad organization creating confusion and hazard.	a1. Identify staging area with good lateral and vertical access for loading and unloading of trucks.
	b. Physical injury from falling or flying objects.	b1. Always conduct Safe Performance Self-Assessment (SPSA) prior to start of, or change in each work procedure or task. b2. Wear appropriate PPE including hardhats, safety glasses, and any additional PPE as directed by the SSO.
	c. Noise.	c1. All personnel will use hearing protection within work area while heavy machinery is operating at >85 dB.
	d. Being struck by moving vehicles or equipment onsite.	d1. Always wear safety vest, establish eye contact with operators utilizing flag men wear appropriate. d2. Vehicles shall use reverse beepers or flagmen. d3. Create an exclusion zone at least 10-feet beyond the limits of the boring to limit access to staging/work area using snow fencing, barricades, delineators, cones and/or caution tape. d4. Face the direction of oncoming traffic during work activities when possible.
	e. Equipment tip over.	e1. Watch equipment location & swing points; monitor live & dead loads. e2. Use a crane that is adequate for the load (Check loading capacity with operator and manual).
	f. Toxic or explosive atmosphere.	f1. Periodically monitor ambient atmosphere with PID or LEL meter. Shut down job and move personnel and equipment upwind if concentrations are detected above HASP defined action levels.
	g. Slips, trips, and falls.	g1. Maintain a clean, unobstructed work area by good housekeeping and placing unused equipment away from work area.
	h. Unauthorized personnel in exclusion zone.	h1. Use visitor check-in log and allow no-one in exclusion area without proper PPE (as defined on this JSA) and training documentation (e.g., HAZWOPER, other as defined in the HASP).
3) Loading of Hydrocarbon Impacted Soil/Debris	a. Physical injury from falling or flying objects.	a1. Always conduct Safe Performance Self-Assessment (SPSA) prior to start of, or change in each work procedure or task. a2. Wear appropriate PPE including hardhats, safety glasses, and any additional PPE as directed by the SSO.
	b. Noise.	b1. All personnel will use hearing protection within work area while heavy machinery is operating at >85 dB.

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	**[2] POTENTIAL HAZARDS**	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
3) Cont'd	c. Being struck by moving vehicles or equipment onsite.	c1. Always wear safety vest, establish eye contact with operators utilizing flag men wear appropriate. c2. Vehicles shall use reverse beepers or flagmen. c3. Create an exclusion zone at least 10-feet beyond the limits of the boring to limit access to staging/work area using snow fencing, barricades, delineators, cones and/or caution tape. c4. Face the direction of oncoming traffic during work activities when possible.
	d. Cut/pinched fingers or toes; and strained muscles.	d1. See PPE Quick Summary. d2. Use proper lifting techniques and 2-man rule as outlined in TRC's Employee IIPP Handbook and "Back Safety: A User's Guide" training module" handbook, when moving heavy objects (>40 lbs).
	e. Equipment tip over.	e1. Watch equipment location & swing points. Monitor live & dead loads adjacent to the excavation. e2. Maintain 2-foot safety buffer at edge of excavation.
	f. Toxic or explosive atmosphere.	f1. Periodically monitor ambient atmosphere with PID or LEL meter. Shut down job and move personnel and equipment upwind if concentrations are detected above HASP defined action levels.
	g. Slips, trips, and falls.	g1. Maintain a clean, unobstructed work area by good housekeeping and placing unused equipment away from work area.
	h. Unauthorized personnel in exclusion zone.	h1. Use visitor check-in log and allow no-one in exclusion area without proper PPE (as defined on this JSA) and training documentation (e.g., HAZWOPER, other as defined in the HASP).
4) Clean-up	a. Slips, trips, and falls.	a1. Maintain a clean, unobstructed work area by good housekeeping and placing unused equipment away from work area.
	b. Storm water run-off.	b1. Cover all impacted spoils piles and berm to contain storm water run-off.
	c. Soil cross contamination.	c1. Ensure downhole sampling equipment is cleaned between samples. c2. Create a clean sample collection area with removable poly sheeting/aluminum foil or other method ensure a clean work surface that is refreshed between each sample.
	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
1.	a.	a.
2.	a.	a.
3.	a.	a.

PID—photoionization detector; LEL—lower explosive limit; PPE—Personal Protective Equipment; ANSI—American National Standards Institute

Field Notes:

LIMITATION: As part of TRC's EHS Policy, a JSA is provided by TRC for its employees. The purpose of a JSA is NOT to identify all hazards associated with a task, but to identify key potential hazards to get TRC and other onsite personnel thinking about other potential safety hazards and mitigating actions for unsafe conditions and behavior during various works. TRC recognizes that JSA's may not cover every conceivable step or hazard that emerges during a job, so we've provided a "Field Change" section below to amend a JSA if required. The JSA does not supersede or replace any local, state or federal permit, regulation, statute or other entities policies and procedures but is simply a tool for enhancing the execution of safe work at a jobsite under TRC's supervision. Similarly, all subcontractors are required to provide their own JSA(s) for their specialty prior to performing any work for TRC or its customers in accordance with TRC's EHS Policy; however, any unsafe condition or hazard not covered in any JSA is ultimately the direct responsibility of the person or entity performing the work.

Soil Sampling Job Safety Analysis (JSA)

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HASP:	☐ NEW ☒ REVISED
TRC/ LAUSD Roosevelt High School (Los Angeles, CA)		

JSA WORK ACTIVITY (Description):	List of Contractor(s) and key work activity:
Soil Sampling	

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

TRC HEALTH AND SAFETY MANAGEMENT	POSITION / TITLE	APPROVAL DATE

PERSONAL PROTECTION EQUIPMENT (PPE) QUICK SUMMARY
Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

__R__ REFLECTIVE VEST __R__ HARD HAT __R__ GLOVES: **ANSI Cut 4 Kevlar** __R__ SAFETY GLASSES _____ GOGGLES _____ FACE SHIELD	__A__ HEARING PROTECTION __R__ SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____ Coveralls ____ Tyvek Suit ____ Nomex ____ Other (specify):	RESPIRATORY PROTECTION: ☒ NA _____ Dust Mask _____ ½ face Air Purifying Respirator (APR) _____ Particulate Mask: ☐ PM100 ☐ PM95 _____ Cartridge: ☐ P100-Multigas ☐ _____ _____ Full face ARP; specify cartridge type: _____ Air Supplied Respirator ____ SCBA _____ Air-line	Additional PPE/Notes:

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1) Set-up	a. Slips, trips, and falls.	a1. Maintain a clean, unobstructed work area by good housekeeping and placing unused equipment away from work area.
	b. Being struck by moving vehicles or equipment onsite.	b1. Always wear safety vest, establish eye contact with operators utilizing flag men wear appropriate. b2. Vehicles shall use reverse beepers or flagmen. b3. Face the direction of oncoming traffic during work activities when possible.
	c. Contamination.	c1. Wear nitrile or latex gloves with ANSI cut level 4 Kevlar gloves underneath when handling soil.
	d. Fire and explosion.	d1. No smoking or open flame. Periodically monitor ambient air concentrations with PID/LEL Meters. Shut down job and move personnel and equipment upwind if hydrocarbon concentrations are HASP defined action levels.

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	**[2] POTENTIAL HAZARDS**	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
2) Soil Sampling	a. Slips, trips, and falls.	a1. Maintain a clean, unobstructed work area by good housekeeping and placing unused equipment away from work area.
	b. Being struck by moving vehicles or equipment onsite.	b1. Always wear safety vest, establish eye contact with operators utilizing flag men wear appropriate. b2. Vehicles shall use reverse beepers or flagmen. b3. Create an exclusion zone at least 10-feet beyond the limits of the boring to limit access to staging/work area using snow fencing, barricades, delineators, cones and/or caution tape. b4. Face the direction of oncoming traffic during work activities when possible.
	c. Contamination.	c1. Wear nitrile or latex gloves with ANSI cut level 3 or 4 Kevlar gloves underneath when handling soil. Wear Safety glasses with splash guards when handling groundwater.
	d. Potential cross-contamination of soil sampling equipment	d1. Collect soil samples (if possible) from mounded soil that is not in contact with metal. d2. Ensure soil samples are capped and placed in a clean, secure area after collection
	c. Fire and explosion.	c1. No smoking or open flame. Periodically monitor ambient air concentrations with PID/LEL Meters. Shut down job and move personnel and equipment upwind if hydrocarbon concentrations are HASP defined action levels. c2. Deploy a 10 or 20lb ABC Fire extinguishers.
	d. Inhalation/ingestion/ thermal contact	d1. No food or drinks in work zone.
	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
1.	a.	a.
2.	a.	a.
3.	a.	a.

PID—photoionization detector; LEL—lower explosive limit; PPE—Personal Protective Equipment; ANSI—American National Standards Institute

Field Notes:_____

_____

Backfilling and Compaction Job Safety Analysis (JSA)

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HASP:	☐ NEW ☒ REVISED
TRC/LAUSD Roosevelt HS (Los Angeles, CA)		
JSA WORK ACTIVITY (Description): **Backfilling and Compaction**	List of Contractor(s) and key work activity:	

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

TRC HEALTH AND SAFETY MANAGEMENT	POSITION / TITLE	APPROVAL DATE
	OSC	

PERSONAL PROTECTION EQUIPMENT (PPE) QUICK SUMMARY
Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

__R__ REFLECTIVE VEST __R__ HARD HAT __R__ GLOVES: **ANSI Cut Level 4 & 5 Kevlar** __R__ SAFETY GLASSES _____ GOGGLES _____ FACE SHIELD	__A__ HEARING PROTECTION __R__ SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____Coveralls ____Tyvek Suit ____Nomex ____Other (specify):	RESPIRATORY PROTECTION: ☐ NA __A__ Dust Mask __A__ ½ face Air Purifying Respirator (APR) __X__ Particulate Mask: ☒ PM100 ☐ PM95 __X__ Cartridge: ☒ P100-Multigas ☐ _____ _____ Full face ARP; specify cartridge type: _____ Air Supplied Respirator ____SCBA _____Air-line	Additional PPE: .

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1) Set-up Activities Backhoe/ Excavator (Compactor & Material Delivery)	a. Lack of concentration or focus.	a1. Review all plans (HASP, Work, Utility, Site Plans, etc.), logs, and field notes prior to starting a new task. Identify daily tasks and required personnel actions. a2. Conduct safety tailgate meeting with subcontractor personnel prior to beginning work activities. Explain the site safety hazards and work precautions outlined in the HASP and obtain signatures indicating the HASP was discussed.
	b. Fire and explosion.	b1. No smoking or open flame. Periodically monitor ambient air concentrations with PID/LEL Meters. Shut down job and move personnel and equipment upwind if hydrocarbon concentrations are HASP defined action levels. b2. Deploy 2-20lb ABC Fire extinguishers in accordance site safety officer's direction.
	c. Electric shock/ electrocution.	c1. De-energize all circuits/power sources and follow TRC's CP005 Lockout-Tagout Program for circuits within 3-feet of boring location or 10-feet' of overhead utilities.
	d. Malfunctioning heavy equipment safety devices.	d1. Inspect drill rig to determine if in good condition. Perform all equipment and safety device checks prior to event startup (per operating manual).

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State) **TRC/LAUSD Roosevelt HS (Los Angeles, CA)**	DATE PREPARED FOR HASP:	☐ NEW ☒ REVISED
JSA WORK ACTIVITY (Description): **Backfilling and Compaction**	List of Contractor(s) and key work activity:	

1) Cont'd	e. Being struck by moving vehicles or equipment onsite.	e1. Always wear safety vest, establish eye contact with operators utilizing flag men wear appropriate. e2. Vehicles shall use reverse beepers or flagmen. e3. Create an exclusion zone at least 10-feet beyond the limits of the boring to limit access to staging/work area using snow fencing, barricades, delineators, cones and/or caution tape. e4. Face the direction of oncoming traffic during work activities when possible.
	f. Bad organization creating confusion and hazard.	f1. Identify staging area with good lateral and vertical access for loading and unloading of trucks.
2) Compacting Soil	a. Physical injury from equipment.	a1. Wear appropriate ANSI cut level 4 Kevlar gloves when working around moving equipment.
	b. Physical injury from falling or flying objects.	b1. Always conduct Safe Performance Self-Assessment (SPSA) prior to start of, or change in each work procedure or task. b2. Wear appropriate PPE including hardhats, safety glasses, and any additional PPE as directed by the SSO.
	c. Being struck by moving vehicles or equipment onsite.	c1. Always wear safety vest, establish eye contact with operators utilizing flag men wear appropriate. c2. Vehicles shall use reverse beepers or flagmen. c3. Create an exclusion zone at least 10-feet beyond the limits of the boring to limit access to staging/work area using snow fencing, barricades, delineators, cones and/or caution tape. c4. Face the direction of oncoming traffic during work activities when possible.
	d. Poor or miscommunications.	d1. Review and use hazard communications contained HASP to prepare for working in loud or hazardous environment.
	e. Cut/pinched fingers or toes; and strained muscles.	e1. See PPE Quick Summary. e2. Use proper lifting techniques and 2-man rule as outlined in TRC's Manual Lifting Policy and "Back Safety: A User's Guide" training module", when moving heavy objects (>40 lbs).

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
2) Cont'd	f. Equipment tip over.	f1. Watch equipment location & swing points; monitor live & dead loads. f2. Use a crane that is adequate for the load (Check loading capacity with operator and manual).
	g. Noise.	g1. All personnel will use hearing protection within work area while heavy machinery is operating at >85 dB.
	h. Cuts and abrasions.	H1. Wear ANSI cut level 4 or 5 Kevlar gloves when working with hand tools or picking up debris.
	b. Physical injury from equipment.	b1. Wear appropriate ANSI cut level 4 Kevlar gloves when working around moving equipment.
	i. Backfilling and compaction.	i1. Clear unusable detritus (roots, trash, concrete chunks, etc.) from soil to be reused as backfill to allow for proper compaction. i2. Support all exposed utilities and hand fill around piping runs. i3. When backfilling, place at least 1-foot of backfill over utility line before compacting to prevent crushing/breaking utility line. i4. Wet soil down to properly compact, do not over saturate.
	j. Back strain, muscle fatigue objects.	j1. Use proper lifting techniques and 2-man rule when moving heavy objects (>40 lbs). j2. When hand digging, use the leverage in the shovel handle to break the soil loose, and don't force it out.
	d. Cut/pinched fingers or toes; and strained muscles.	d1. See PPE Quick Summary. d2. Use proper lifting techniques and 2-man rule as outlined in TRC's Manual Lifting Policy and "Back Safety: A User's Guide" training module", when moving heavy objects (>40 lbs).
3) Clean-up and Overnight/ Over Weekend Storage	a. Slips, trips, and falls.	a1. Maintain a clean, unobstructed work area by good housekeeping and placing unused equipment away from work area.
	b. Bad organization creating confusion and hazard.	b1. Identify staging area with good lateral and vertical access for loading and unloading of trucks.
	c. Run-off.	c1. Cover all soil stockpiles with plastic-sheeting overnight. c2. Delineate and block access to open pits/trenches with snow-fencing, delineators, and caution tape. c3. Cover open trenches with plastic sheet and berm around to reduce water run-off in the case of rain.

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1.	a.	a.
2.	a.	a.
3.	a.	a.

PID—photoionization detector; LEL—lower explosive limit; PPE—Personal Protective Equipment; ANSI—American National Standards Institute

Field Notes:

LIMITATION: As part of TRC's EHS Policy, a JSA is provided by TRC for its employees. The purpose of a JSA is NOT to identify all hazards associated with a task, but to identify key potential hazards to get TRC and other onsite personnel thinking about other potential safety hazards and mitigating actions for unsafe conditions and behavior during various works. TRC recognizes that JSA's may not cover every conceivable step or hazard that emerges during a job, so we've provided a "Field Change" section below to amend a JSA if required. The JSA does not supersede or replace any local, state or federal permit, regulation, statute or other entities policies and procedures but is simply a tool for enhancing the execution of safe work at a jobsite under TRC's supervision. Similarly, all subcontractors are required to provide their own JSA(s) for their specialty prior to performing any work for TRC or its customers in accordance with TRC's EHS Policy; however, any unsafe condition or hazard not covered in any JSA is ultimately the direct responsibility of the person or entity performing the work.

Compaction Testing Job Safety Analysis (JSA)

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HASP:	☐ NEW
TRC/LAUSD Roosevelt HS (Los Angeles, CA)		☒ REVISED
JSA WORK ACTIVITY (Description):	List of Contractor(s) and key work activity:	
Compaction Testing		

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

TRC HEALTH AND SAFETY MANAGEMENT	POSITION / TITLE	APPROVAL DATE
	OSC	

PERSONAL PROTECTION EQUIPMENT (PPE) QUICK SUMMARY
Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

__R__ REFLECTIVE VEST __R__ HARD HAT __R__ GLOVES: **ANSI Cut Level 4 & 5 Kevlar** __R__ SAFETY GLASSES _____ GOGGLES _____ FACE SHIELD	__A__ HEARING PROTECTION __R__ SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____Coveralls ____Tyvek Suit ____Nomex ____Other (specify):	RESPIRATORY PROTECTION: ☐ NA __R__ ½ face Air Purifying Respirator (APR) __X__ Particulate Mask: ☒ PM100 ☐ PM95 __X__ Cartridge: ☒ P100-Multigas ☐ _____ _____ Full face ARP; specify cartridge type: _____ Air Supplied Respirator ____SCBA ____Air-line	Additional PPE/Notes: As per defined in the job/site specific Health and Safety Plan (HASP) wear PPE at all times when performing site work.

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1) Set-up Activities (Compactor & Material Delivery)	a. Physical Injury or equipment damage from lack of concentration or focus.	a1. Review all plans (HASP, Work, Utility Plans, etc.) and logs in field notebook prior to starting a new task.
	a. Lack of concentration or focus.	a1. Review all plans (HASP, Work, Utility, Site Plans, etc.), logs, and field notes prior to starting a new task. Identify daily tasks and required personnel actions. a2. Conduct safety tailgate meeting with subcontractor personnel prior to beginning work activities. Explain the site safety hazards and work precautions outlined in the HASP and obtain signatures indicating the HASP was discussed.
	b. Physical injury from equipment.	b1. Wear appropriate ANSI cut level 4 Kevlar gloves when working around moving equipment.

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	**[2] POTENTIAL HAZARDS**	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
1) Cont'd	b. Being struck by moving vehicles or equipment onsite.	b1. Always wear safety vest, establish eye contact with operators utilizing flag men wear appropriate. b2. Vehicles shall use reverse beepers or flagmen. b3. Create an exclusion zone at least 10-feet beyond the limits of the boring to limit access to staging/work area using snow fencing, barricades, delineators, cones and/or caution tape. b4. Face the direction of oncoming traffic during work activities when possible.
	c. Bad organization creating confusion and hazard.	c1. Identify staging area with good lateral and vertical access for loading and unloading of trucks.
2) Compaction Testing	a. Physical injury from falling or flying objects.	a1. Always conduct Safe Performance Self-Assessment (SPSA) prior to start of, or change in each work procedure or task. a2. Wear appropriate PPE including hardhats, safety glasses, and any additional PPE as directed by the SSO.
	b. Being struck by moving vehicles or equipment onsite.	b1. Always wear safety vest, establish eye contact with operators utilizing flag men wear appropriate. b2. Vehicles shall use reverse beepers or flagmen. b3. Create an exclusion zone at least 10-feet beyond the limits of the boring to limit access to staging/work area using snow fencing, barricades, delineators, cones and/or caution tape. b4. Face the direction of oncoming traffic during work activities when possible.
	c. Poor or Miscommunications.	c1. Review and use hazard communications contained HASP to prepare for working in loud or hazardous environment.
	d. Cut/pinched fingers or toes; and strained muscles.	d1. See PPE Quick Summary. d2. Use proper lifting techniques and 2-man rule as outlined in TRC's Manual Lifting Policy and "Back Safety: A User's Guide" training module", when moving heavy objects (>40 lbs).
	e. Equipment tip over.	e1. Watch equipment location & swing points. Monitor live & dead loads adjacent to the excavation. e2. Maintain 2-foot safety buffer at edge of excavation.

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
2) Cont'd	f. Noise.	f1. All personnel will use hearing protection within work area while heavy machinery is operating at >85 dB.
LOCATION(S) WHERE HAZARD IS TO BE EXPECTED		**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
1.	a.	a.
2.	a.	a.
3.	a.	a.

PID—photoionization detector; LEL—lower explosive limit; PPE—Personal Protective Equipment; ANSI—American National Standards Institute

Field Notes:

LIMITATION: As part of TRC's EHS Policy, a JSA is provided by TRC for its employees. The purpose of a JSA is NOT to identify all hazards associated with a task, but to identify key potential hazards to get TRC and other onsite personnel thinking about other potential safety hazards and mitigating actions for unsafe conditions and behavior during various works. TRC recognizes that JSA's may not cover every conceivable step or hazard that emerges during a job, so we've provided a "Field Change" section below to amend a JSA if required. The JSA does not supersede or replace any local, state or federal permit, regulation, statute or other entities policies and procedures but is simply a tool for enhancing the execution of safe work at a jobsite under TRC's supervision. Similarly, all subcontractors are required to provide their own JSA(s) for their specialty prior to performing any work for TRC or its customers in accordance with TRC's EHS Policy; however, any unsafe condition or hazard not covered in any JSA is ultimately the direct responsibility of the person or entity performing the work.

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State) **TRC/ LAUSD Roosevelt High School (Los Angeles, CA)**	DATE PREPARED:	☐ NEW ☒ REVISED
JSA WORK ACTIVITY (Description): **55 Gallon Drum Transport/Handling**	List of Contractor(s) and key work activity:	

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

"TRC APPROVED" JSA DEVELOPMENT TEAM	POSITION / TITLE	APPROVAL DATE

Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

__R__ REFLECTIVE VEST __A__ HARD HAT __R__ GLOVES: **ANSI Cut Level 4 & 5 Kevlar** __R__ SAFETY GLASSES _____GOGGLES _____FACE SHIELD	____ HEARING PROTECTION __R__ SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____Coveralls ____Tyvek Suit ____Nomex ____Other (specify):	RESPIRATORY PROTECTION: ☒ NA _____½ face Air Purifying Respirator (APR) _____Particulate Mask: ☐ PM100 ☐ PM95 ____ Cartridge: ☐ P100-Multigas ☐ _____ _____Full face ARP; specify cartridge type: _____ Air Supplied Respirator ____SCBA _____Air-line	Additional PPE:

Always perform a Safety Assessment: 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1. Setup	a. Slip/trips/falls	a. Maintain a clean, unobstructed work area by good house keeping. Move unused equipment away from designated work area.
	b. Drum Condition	b. Inspect all drums prior to use. Make sure that drums do not have any defect and lids fit tightly.
2. Drum opening/ closing	a. Cut/pinched fingers or toes	a. Utilize proper PPE (see above), ANSI cut level 4 or 5 Kevlar gloves, safety shoes and safety glasses are minimum required protection. a. Wear ANSI cut level 4 or 5 Kevlar gloves during the opening and closing of drums to protect fingers.
3. Transport/handling drums	a. Physical injury (back strain, moving vehicles, pinch points)	a. Make sure to utilize drum dolly when handling drums with soil, grout, concrete or water (or any other material). a. If moving drum on an uneven, inclined or declined surface, utilize a spotter to assist. a. Have one person watch traffic while the other exits exclusion zone. a. Always wear safety vest, establish eye contact with vehicle/equipment operators, utilizing flag men where appropriate.
	b. Environmental Hazard	b. Once material is placed in drum, inspect for leaks. b. Before transporting/handling drum, make sure that the lid is fully secure. b. Make sure to properly label drum (i.e., hazardous, non-hazardous labels, etc.)
4. Drum Storage	a. Security	a. Drums that are left onsite need to be stored in safe location (i.e., away from traffic, pedestrian walkways, etc.). Do not leave drums in handicap parking stalls. a. If drums are stored in an area that is accessible, delineate storage area with caution tape.

LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	POTENTIAL HAZARD	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1.	a.	a.
2.	a.	a.
3.	a.	a.

Field Notes:

LIMITATION: As part of TRC's EHS Policy, a JSA is provided by TRC for its employees. The purpose of a JSA is NOT to identify all hazards associated with a task, but to identify key potential hazards to get TRC and other onsite personnel thinking about other potential safety hazards and mitigating actions for unsafe conditions and behavior during various works. TRC recognizes that JSA's may not cover every conceivable step or hazard that emerges during a job, so we've provided a "Field Change" section below to amend a JSA if required. The JSA does not supersede or replace any local, state or federal permit, regulation, statute or other entities policies and procedures but is simply a tool for enhancing the execution of safe work at a jobsite under TRC's supervision. Similarly, all subcontractors are required to provide their own JSA(s) for their specialty prior to performing any work for TRC or its customers in accordance with TRC's EHS Policy; however, any unsafe condition or hazard not covered in any JSA is ultimately the direct responsibility of the person or entity performing the work.

ATTACHMENT F

PRE-JOB SAFETY BRIEFING

Daily Pre Job Safety Briefing

Project Name: LAUSD Roosevelt High School Project Number: _____

Work Location: 456 Mathews Street, Los Angeles, CA Date: _____

Tasks Performed: _____ Time: _____ AM PM

Client Name: LAUSD Submitted By: _____

HASP Available Onsite: Yes ☐ No ☐ Emergency Meeting Location: _____

Emergency Facility(s): White Memorial Medical Center Number(s): 310.900.8900

Physical Address: 1720 East Cesar E Chavez Avenue, Los Angeles, CA

First Aid/CPR Persons: _____

For Emergencies Dial 911/For Non-Emergencies Dial WorkCare (888) 449-7787

Personal Protective Equipment Required	Yes	No	Type
Fall Protection	☐	☐	_____
body harness, lifelines, barricades, other (specify)			
Eye/Face	☐	☐	_____
goggles, face shield, hood, other (specify)			
Respirator	☐	☐	_____
SCBA, supplied air, HEPA, dust, other (specify)			
Foot Protection	☐	☐	_____
safety toe, EH rated, rubber boots, other (specify)			
Hand Protection	☐	☐	_____
leather, cut resistant, chemical, EH, other (specify)			
Head Protection	☐	☐	_____
hard hat, helmet, electrical hazard, other (specify)			
Clothing	☐	☐	_____
coveralls, welding, sleeves, rain, FR, reflective vest, chemical, other (specify)			
Hearing Protection	☐	☐	_____

Procedures/Programs Required	Yes	No
Hot Work	☐	☐
LOTO/Energy Control	☐	☐
Trenching/Excavation	☐	☐
Signs/Barricades	☐	☐
Confined Space	☐	☐
Cranes/Critical Lifts	☐	☐
Line Breaking/Hot Tap	☐	☐
Scaffolds/Aerial Lifts	☐	☐
System Testing/ Grounding	☐	☐
Employee Certification/Training Required		
Crane Operator	☐	☐
Forklift Operator	☐	☐
Mobile Equipment Operator	☐	☐
Railroad/eRailsafe	☐	☐
OSHA 10/30	☐	☐
HAZWOPER	☐	☐
MSHA	☐	☐

Additional Considerations

Work Procedures:

☐ Check for utility clearance ☐ Adequate work zone

☐ Vehicle grounds ☐ Working clearances

☐ Discuss potential exposure to hazards

People: ☐ Worker fatigue ☐ Other work groups

☐ Public safety ☐ Pedestrian control ☐ Experience

☐ Traffic control ☐ Other utilities ☐ Spec. Training

Tools/Equipment: ☐ Inspection of drilling equipment

☐ Inspection of hoses

☐ Inspection of tools

☐ Specialized tools/equipment

☐ Correct tool/equipment for the job

Special Precautions: ☐ Adjacent structures

☐ Condition of structures ☐ Weather conditions

☐ Lighting conditions ☐ Terrain ☐ Water bodies

☐ Spills and leaks ☐ Environmental ☐ Cultural

Other: _____

If Conditions CHANGE…Stop Work, Review, and Revise the Plan!!

Daily Pre Job Safety Briefing

Hazards Associated with the Job (focus on the GEMS)

Gravity	Electrical	Mechanical	Kinetic	Other/Environmental
☐ Falling from a height	☐ Electrical contact	☐ Equipment failure	☐ Traffic	☐ Asbestos/Lead
☐ Falling objects	☐ Flash potential	☐ Cable tension	☐ Driving conditions	☐ Animals/Insects
☐ Falling structures	☐ Induced voltage	☐ Moving parts	☐ Moving/Shifting loads	☐ Confined space
☐ Climbing obstructions	☐ Utility strike	☐ Crane/Rigging	☐ Rotating machinery	☐ Excavations
☐ Dangerous trees			☐ Vehicle stability	☐ Heat/Cold
			☐ Heavy equip. operation	☐ Poisonous Plants

List all hazards associated with this task

Barriers to eliminate/control above hazards?

Supervisor Signature Date

Signatures of Crew Members Present

OSHA's Unqualified Minimum Clearances

Powerline Voltage Phase to Phase (kV)	Minimum Safe Clearance (ft.)
50 or below	10
Over 50 to 200	15
Over 200 to 350	20
Over 350 to 500	25
Over 500 to 750	35
Over 750 to 1,000	45

Post Task Safety Analysis

Did any injuries or incidents occur today? If yes, explain.

☐ Yes ☐ No

Was the injury or incident reported to the safety department?

☐ Yes ☐ No ☐ N/A

What problems did you have with today's work assignment?

What can we do tomorrow to improve performance?

Site-Specific Health & Safety Plan (HSP)
LAUSD Roosevelt High School
November 2017

ATTACHMENT G

WORKCARE PROGRAM INFORMATION

EARLY INCIDENT INTERVENTION®

Immediate Access to Medical Advice for Work Related Incidents

(888) 449-7787

INTRODUCTION

WorkCare, Inc. (WorkCare) and TRC have partnered together to promote Incident Intervention®, a resource designed to support company safety goals/targets—while reducing runaway-costs associated with workplace injuries and illnesses.

PURPOSE

Early Incident Intervention provides TRC employees with **IMMEDIATE** telephonic access to WorkCare clinicians at the time of a presumed, non-emergency workplace injury or illness. Clinicians provide expert guidance on the evaluation of symptoms, appropriate first aid, and the need for additional medical evaluation or treatment.

When utilizing this service within the first hour of an incident, known as the "Golden Hour," licensed medical staff can guide the case so that medical evaluation and treatment are rendered appropriately.

> ***"…helps the worker traverse the unpredictable terrain of work-related injuries and illness."***

PRINCIPLES OF EARLY INCIDENT INTERVENTION

- Utilizes principles of the "Golden Hour."
- Provides workers immediate clinician support at the time of an incident.
- Focuses on providing the right care, at the right time in the proper setting.

BENEFITS FOR EMPLOYEES

- Instant access to a medically qualified professional for evaluation of symptoms and possible outcomes.
- Professional guidance on appropriate first aid measures and medications.
- Professional advice regarding the need for additional medical evaluation or treatment.

BENEFITS FOR TRC

- Point of contact for emergency and non-emergency medical clinicians.
- Triages the incident to determine risk and urgency, delivering interventions that are consistent with medical guidelines for the specified injury and illness.
- Maintains communication with clinicians to ensure accurate and timely reporting.

Site-Specific Health & Safety Plan (HSP)
LAUSD Roosevelt High School
November 2017

ATTACHMENT H

TRC's CP024 TRENCH AND EXCAVATION PROGRAM

1. PURPOSE

TRC's Trench and Excavation Compliance Program has been developed based on the Occupational Safety and Health Administration (OSHA) standards for the construction industry (29 CFR 1926, Subpart P – Excavations).

2. SCOPE

This Compliance Program applies to all open excavations made in the earth's surface. Excavations are defined to include trenches. These guidelines apply to all Operating Unit facilities and project sites.

3. DEFINITIONS

Accepted engineering practices: Those requirements which are compatible with standards of practice required by a registered professional engineer.

Aluminum Hydraulic Shoring: A pre-engineered shoring system comprised of aluminum hydraulic cylinders (cross braces) used in conjunction with vertical rails (uprights) or horizontal rails (wales). Such system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.

Bell-bottom pier hole: A type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a belled shape.

Benching (Benching system): A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

Cave-in: The separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.

Competent person: One who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Cross braces: The horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.

Excavation: Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

Faces or Sides: The vertical or inclined earth surfaces formed as a result of excavation work.

Failure: The breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.

Hazardous atmosphere: An atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.

Kick-out: The accidental release or failure of a cross brace.

Protective system: A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

Ramp: An inclined walking or working surface that is used to gain access to one point from another, and is constructed from earth or from structural materials such as steel or wood.

Registered Professional Engineer: A person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.

Sheeting: The members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

Shield (Shield system): A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either premanufactured or job-built in accordance with 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."

Shoring (Shoring system): A structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation, and which is designed to prevent cave-ins.

Sloping (Sloping system): A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

Stable rock: Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

Structural ramp: A ramp built of steel or wood, usually used for vehicle access. Ramps made of soil or rock are not considered structural ramps.

Support system: A structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

Tabulated data: Tables and charts approved by a registered professional engineer, and used to design and construct a protective system.

Trench (Trench excavation): A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m). If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

Trench box: See Shield.

Trench shield: See Shield.

Type A soil: Cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (tsf) or greater. Examples of cohesive soils are clay, silty clay, sandy clay, clay loam, and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hard pan are also considered Type A. However, no soil is Type A if:

- The soil is fissured.
- The soil is subject to vibration from heavy traffic, pile driving, or similar effects.
- The soil has been previously disturbed.
- The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater.
- The material is subject to other factors that would require it to be classified as a less stable material.

Type B soil**:** Cohesive soil with an unconfined compressive strength greater than 0.5 tsf but less than 1.5 tsf; granular cohesion less soils including angular gravel (similar to crushed rock), silt, silt loam, sandy loam, and in some cases, silty clay loam and sandy clay loam; previously disturbed soils except those that would otherwise be classed as Type C soil; soil that meets the unconfined compressive strength or cementation requirements for Type A but is fissured or subject to vibration; dry rock that is not stable; material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.

Type C soil: Cohesive soil with an unconfined compressive strength of 0.5 tsf or less; granular soils, including gravel, sand, and loamy sand; submerged soils, including soil from which water is freely seeping; submerged rock that is not stable; material in a sloped, layered system where the layers dip into the excavation at a slope of four horizontal to one vertical (4H:1V) or steeper.

Uprights**:** The vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other. Uprights placed so that individual members are closely spaced, in contact with or interconnected to each other, are often called "sheeting."

Wales: Horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

4. RESPONSIBILITIES

4.1 TRC's National Safety Director is responsible for establishing the Trench and Excavation Program requirements and providing/communicating them to the Health and Safety Network. The National Safety Director will review contract documents as required that include project and Client-Specific Requirements.

4.2 The Health and Safety Network is responsible for the Trench and Excavation Program implementation including, but not limited to:

- Qualifying or identifying Competent Person(s) for trench and excavation safety.
- Training new and existing TRC employees.
- Communicating and coordinating TRC's Trench and Excavation Program requirements with all TRC subcontractors, including identification of Subcontractor(s) Competent Person(s).
- Procuring TRC health and safety equipment (harnesses, lanyards, vertical and horizontal lifeline and other materials).
- Working in conjunction with identified Competent Person(s) to provide on-site direction on Trench and Excavation issues.
- Leading all investigations along with the Competent Person, Project Manager, Field Team Leader, and subcontractor health and safety representative or their designees, if a Trench and Excavation Program violation occurs on-site.
- Assisting in Trench and Excavation Program audits in conjunction with on-site TRC subcontractor, and the health and safety representatives or their designees.
- Maintaining records for health and safety activities on-site including equipment inspections and procedural audits of employee Trench and Excavation Program implementation.
- Coordinating assistance during emergency situations.

4.3 OSHA defines a Competent Person as one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, who has authorization to take prompt corrective measures to eliminate them (29 CFR 1926.32[f]). By way of training and/or experience, a Competent Person is knowledgeable of applicable standards, and is capable of identifying workplace hazards related to the specific operation. Under TRC's Trench and Excavation Program the Competent Person will:

- Perform all duties as specified in the Trench and Excavation Program.

- Review and approve all Health and Safety Plans (HASPs) and Job Safety Analyses (JSAs) that include work in and around trenches and excavations.
- In the event of simultaneous operations, cooperate fully with the Subcontractor's Person in Charge.
- Communicate with performing authorities (i.e., employees working in or around trenches or excavations) regarding the presence of other operations on-site.
- Work with Project Manager and/or Field Team Leader to identify and manage the risks associated with the project site.
- Assist in the training of employees who will be performing tasks in and around a trench or excavation.
- Ensure that a rescue plan is established by working with the Project Manager and/or facility safety personnel prior to any employees entering or working around a trench or excavation.
- Provide guidance as required for Trench and Excavation Program issues and questions.
- Coordinate with Project Managers and Health and Safety Network on trench and excavation audits.
- Observe the implementation of Trench and Excavation Program and conduct audits as required or directed.

4.4 The Project Manager is responsible for assisting the Health and Safety Network in the implementation of the Trench and Excavation Program. Project Managers must hold all TRC and other project employees working on-site accountable (zero tolerance policy) for maintaining a safe work environment.

4.5 Project Managers and site employees shall be held accountable for performing work in a safe manner according to the requirements of the Trench and Excavation Program.

4.5.1 The Field Team Leader shall:

- Participate in Trench and Excavation Awareness training.
- Confirm that Competent Personnel prepared and/or reviewed the Site-Specific Rescue Plan if required.
- When required, confirm that everyone working under a specific permit adheres to the permit's documented conditions.

5. PROCEDURE

5.1 General Requirements Permit labor

The following guidelines establish the minimum requirements of the applicable state and federal safety regulations for all work in excavations and trenches that might expose employees to the hazards of moving ground:

- All surface encumbrances adjacent to an excavation that might create a hazard to employees must be removed, secured, or supported as necessary to protect employees.
- The estimated location of underground installations, such as sewer, telephone, electric, water, or other underground utilities must be identified before opening an excavation. Utility companies, owners, and local One Call locator services must be contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of the utility underground installations before the work begins.
- When excavations approach the estimated location of underground installations, the exact location is determined by probing or hand digging, as necessary, to prevent accidental contact with the underground installations. While the excavation is open, underground installations that create a hazard to employees will be supported, protected, or removed as necessary to protect employees.

5.1.1 Access and Egress - Structural ramps.

- Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in structural design, and shall be constructed in accordance with the design.
- Ramps and runways constructed of two or more structural members shall have the structural members connected together to prevent displacement.
- Structural members used for ramps and runways shall be of uniform thickness.
- Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.
- Structural ramps used in lieu of steps shall be provided with cleats or other surface treatments o the top surface to prevent slipping.
- Appropriate access and egress in the form of a stairway, ladder, or ramp must be provided in all excavations deeper than 4 feet (1.23 m). In trenches, the stairway, ladder, or ramp must be installed so that a worker does not have to travel farther than 25 feet (7.62 m) in any direction to exit.

- Employees exposed to vehicular traffic must wear safety vests or other equivalent apparel marked with or made of reflectorized or high-visibility material.
- No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped, in accordance with 1926.601(b)(6), to provide adequate protection for the operator during loading and unloading operations.
- A warning system must be provided when mobile equipment is operated adjacent to an excavation and the operator does not have a clear and direct view of the edge of the excavation. The warning system may include barricades, signals, stop logs, or other authorized methods. If possible, the grade should be away from the excavation.
- When deemed necessary by a competent person, excavations where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet (1.22 m) in depth.
- When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted as often as necessary to ensure that the atmosphere remains safe.
- Emergency rescue equipment, such as rescue breathing apparatus, a safety harness and line, or a basket stretcher must be available where a hazardous atmosphere exists or could be expected to develop in an excavation.
- Employees entering bell-bottom pier holes, or other similar deep and confined footing excavations, shall wear a harness with a lifeline securely attached to it. The lifeline shall be separate from any line used to handle materials, and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.
- Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and lifeline.

- If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a competent person to ensure proper operation.
- Inspection of an excavation shall be made by a competent person when accumulation of water is present.
- If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains will require an inspection by a competent person.
- The stability of adjacent structures, such as buildings, walls, and sidewalks must be maintained using a support system as necessary to protect employees.
- Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted except when:
    - A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure; or
    - The excavation is in stable rock; or
    - A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity; or
    - A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.
- Sidewalks, pavements and appurtenant structure shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.
- Employees must be protected from loose rock or soil that could fall or roll into the excavation by placing and keeping such material at least 2 feet (0.61 m) from the edge of the excavation.
- A competent person must make daily inspections of excavations to identify and eliminate conditions that could result in cave-ins, failure of support systems, hazardous atmospheres, or other unsafe conditions. Inspections must be conducted before the start of work each day and after every rainstorm or other occurrence that might increase the hazard of moving ground. If problems are found, provisions should be made for immediate removal of personnel.

- Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.
- Where employees or equipment are allowed or required to cross over excavations that are 6 feet
- (1.83 m) or greater in depth, appropriate fall protection in the form of walkways or bridges with standard guardrails must be provided.
- An open excavation or trench that is left open overnight must be barricaded, covered, and secured in a manner that prevents anyone from entering the excavation intentionally or accidentally.

5.2 Protective Systems

Sloping, shoring, or shielding will be provided in excavations, except where the excavation is made in stable rock or the excavation is less than 5 feet (1.52 m) deep and an examination by a competent person does not indicate a potential for cave-in.

5.3 Sloping

When sloping or benching is chosen as the method to protect employees in an excavation, one of the following optional designs of sloping and benching systems must be used:

- Option 1 – Slope the excavation at an angle not steeper than one and one-half horizontal to one vertical (34 degrees measured from the horizontal).
- Option 2 – Perform a soil classification and determine the acceptable slopes required.
- Option 3 – Use a project-specific design prepared by a registered professional engineer.

  Engineered designs must be in writing, be rubber stamped, and must include the name and registration number of the engineer, detailed plans, the calculations used in the design, the magnitude of slopes, and the configurations determined to be safe. A copy of the design will be maintained at the jobsite during the use of the engineered system.

5.4 Shoring or Shielding

Only the following methods for support systems, shield systems, and other protective systems can be used at a TRC jobsite:

- Option 1 – Perform a soil classification and determine the appropriate support, shield or other protective system configuration using the shoring manufacturer’s tabulated data.

When using the manufacturer's tabulated data, the shoring system must be installed in accordance with all the specifications, recommendations, limitations, or approvals to deviate issued by the manufacturer. The manufacturer's tabulated data, specifications, recommendations, limitations, and any approval to deviate must be in writing, and maintained at the jobsite during the use of the shoring system.

- Option 2 – Use a project-specific design prepared by a registered professional engineer.

  Engineered designs must be in writing, be rubber stamped, and include the name and registration number of the engineer, detailed plans, the calculations used in the design, and the sizes, types, and configurations of materials to be used in the support system. A copy of the design must be maintained at the jobsite during the use of the engineered system.

5.5 General Guidelines

The materials and equipment used for protective systems must be free of damage or defects that might impair their proper functions. Manufactured materials and equipment must be used and maintained in accordance with the recommendations of the manufacturer. If material or equipment used in a protective system is damaged, it must be inspected by a competent person before being reused.

The installation and removal of protective systems must be performed in accordance with all of the following guidelines:

- Members of support systems must be securely fastened together to prevent sliding, falling, kick-outs, or other predictable failures.
- Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or being struck by members of the support system.
- Individual members of support systems must not exceed their design capacities.
- Before individual members can be removed, additional precautions must be taken to protect employees, including installing other structural members to support any additional load imposed on the support system.
- Removal begins at, and progresses from, the bottom of the excavation. Members must be released slowly to reduce the likelihood of failure of the remaining members or a cave-in.
- Backfilling must progress with the removal of support systems.
- Support systems must be coordinated with the excavation of trenches and must extend to within 2 feet (0.61 m) of the bottom of the trench, but only if the system is designed to resist the forces calculated for the full depth of trench, and there is no indication of a loss of soil from behind or below the bottom of the support system.

- Employees shall not be permitted to work on the faces of sloped or benched excavations at levels above other employees except when employees at the lower levels are adequately protected from the hazard of falling, rolling, or sliding material or equipment.
- Shield systems must not be subjected to loads exceeding their design capacities. Shields must be installed in a manner that restricts lateral or hazardous movement in the event that a lateral load is applied suddenly. Employees must be protected when entering or exiting the areas protected by a shield. Employees are not allowed within the shield during installation, removal, or vertical movement.
- When shield systems are used in trenches, excavation of material may proceed 2 feet (0.61 m) below the bottom of the shield only if the shield is designed to resist the forces calculated for the full depth of trench and there is no indication of a loss of soil from behind or below the bottom of the shield.

5.6 Soil Classification

This section describes a method of classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth deposits.

- Each soil and rock deposit shall be classified by a competent person as Stable Rock, Type A, Type B, or Type C, in accordance with the definitions set forth in this compliance program.
- Soil and rock deposits are classified based on the results of at least one visual and one manual analysis. These analyses must be conducted by a competent person using the tests described in this chapter or other approved methods of soil classification, such as those adopted by the American Society for Testing Materials (ASTM) or the United States Department of Agriculture (USDA).
- The methods used for visual and manual analyses must provide quantitative and qualitative information sufficient to identify the properties, factors, and conditions of the deposits.
- A layered system must be classified based on the weakest layer. However, each layer may be classified individually when a more stable layer lies below a less stable layer.
- If, after classifying a deposit, the properties, factors, or conditions change in any way, the changes must be evaluated by a competent person. The deposit must be reclassified as necessary to reflect the new circumstances.

5.7 Visual Analysis

The visual analysis is conducted to collect qualitative information about the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the excavation, and soil samples taken from the excavated material. The visual analysis includes:

- Observing samples of the soil that are excavated and soil in the sides of the excavation to estimate the range of particle sizes and the relative amounts of particle sizes. Fine-grained material is cohesive.
- Observing the soil as it is excavated to determine if it stays in clumps. Soil that breaks up easily and does not stay in clumps is granular.
- Observing sides of the opened excavation and the surface area adjacent to the excavation to identify tension cracks or fissured material.
- Observing the area adjacent to the excavation and the excavation itself to identify existing underground utilities, structures, or previously disturbed soils.
- Observing the opened sides of the excavation to identify layered systems. Examine layered systems to determine if the layers slope toward the excavation, and to estimate the degree of slope in the layers.
- Observing the area adjacent to the excavation and the areas within the excavation to identify potential sources of vibration that might affect the stability of the excavation.
- Observing the area adjacent to the excavation and the sides of the opened excavation for evidence of surface water, water seeping from the sides of the excavation, or the location of the water table.

5.8 Manual Analysis

Manual analysis is conducted to collect quantitative and qualitative information about the properties of the soil, and to provide more information to properly classify the soil. The manual analysis includes some or all of the following methods:

- Evaluating the plasticity of the soil by molding a moist or wet sample of soil into a ball and attempting to roll it into threads as thin as 1/8 inch (0.32 cm) in diameter. Cohesive material can be rolled into a thread at least 2 inches (5.08 cm) long without crumbling or breaking.
- Evaluating the cohesiveness of the soil. If the soil is dry and crumbles into individual grains or fine powder with little or moderate pressure, it is granular. If the soil is dry and falls into clumps that break into smaller clumps but the smaller clumps can only be broken up with difficulty, it might be clay in combination with gravel, sand, or silt. If the dry soil breaks into small clumps that can only be broken with difficulty and there is no visual indication the soil is fissured, the soil may be considered unfissured.

- Applying the thumb penetration test to estimate the unconfined compressive strength of cohesive soils. Type A soils with an unconfined compressive strength of 1.5 tsf can be readily indented by the thumb; however, they can be penetrated by the thumb only with very great effort. Type C soils with an unconfined compressive strength of 0.5 tsf can be easily penetrated several inches by the thumb and can be molded by light finger pressure.
- The thumb test should be conducted on an undisturbed soil sample, such as a large clump of soil, as soon as possible after excavation to minimize the effects of drying. If the excavation is later exposed to rain, flooding, or other moisture, the classification of the soil must be changed accordingly.
- Estimating the unconfined compressive strength of soils by using a pocket penetrometer or a hand-operated shear vane in accordance with the manufacturer's recommendations.
- Performing a drying test to differentiate among cohesive material with fissures, unfissured cohesive material, and granular material. After thoroughly drying a sample of soil that is approximately 1 inch (2.54 cm) thick and 6 inches (15.24 cm) in diameter, evaluate the results as follows:
    - If the sample develops cracks as it dries, significant fissures are indicated.
    - If the sample dries without cracking and can be broken by hand, then the material is either unfissured cohesive or fissured cohesive.
    - If considerable force is necessary to break the sample, the soil has significant cohesive material content. The soil can be classified as unfissured cohesive material, and the unconfined compressive strength should be determined.
    - If the sample breaks easily by hand, it is either a fissured cohesive material or a granular material. To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures. If they pulverize easily into very small fragments, the material is granular.

5.9 Sloping and Benching Specifications

This section contains the specifications for using sloping and benching to protect employees working in excavations.

- These slope and bench specifications only apply if a soil classification has been conducted and the excavation will be 20 feet (6.10 m) deep or less.
- Determine the maximum allowable slope and configuration based on the soil classification by using the information in table(s) 1, 2 and 3.

Table 1 Maximum Allowable Slope Based on Soil Classification

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V)[(1)] FOR EXCAVATIONS LESS THAN 20 FEET DEEP[(3)]
STABLE ROCK	VERTICAL (90º)
TYPE A[(2)]	3/4:1 (53º)
TYPE B	1:1 (45º)
TYPE C	1½:1 (34º)

1. The numbers shown in parentheses next to the maximum allowable slopes are angles expressed in degrees from the horizontal. The angles have been rounded off.
2. A short-term, maximum slope of 1/2:1 (63 degrees) is allowable in excavations in Type A soil less than 12 feet (3.66 m) deep. The short-term maximum allowable slopes for excavations deeper than 12 feet (3.66 m) is 3/4 (53 degrees).
3. Sloping or benching for excavations deeper than 20 feet (6.10 m) must be designed by a registered professional engineer.

Table 2 Excavations in Type A, B, and C Soils

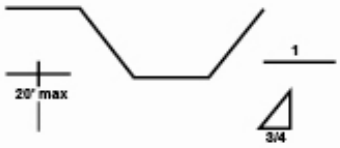
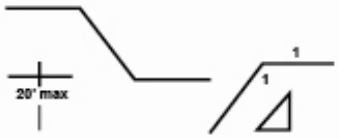
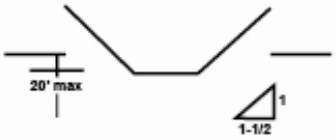
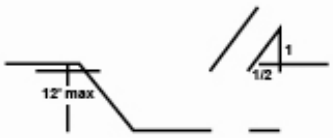
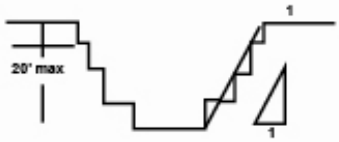
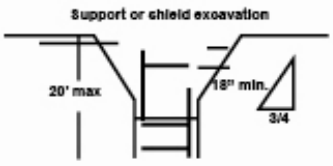
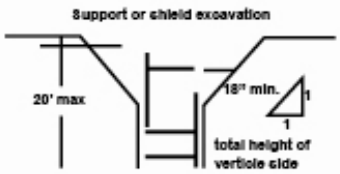
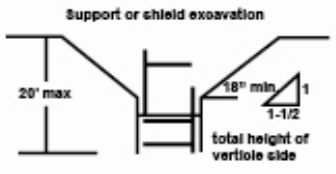
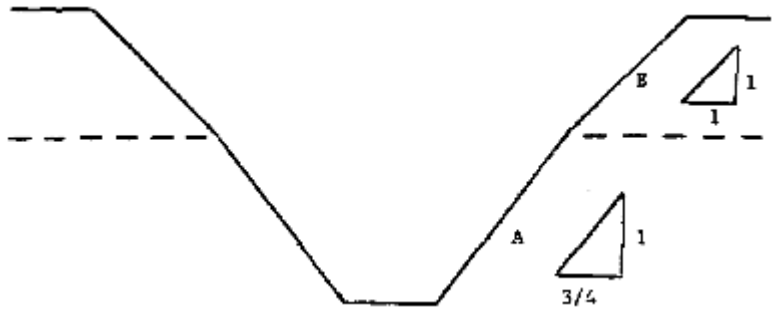
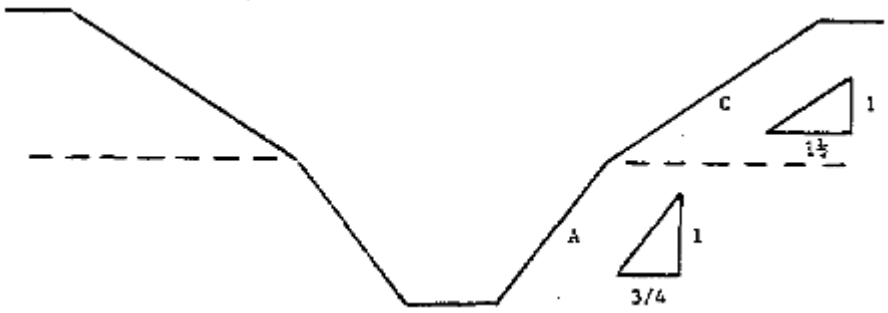
EXCAVATIONS IN TYPE A SOIL	EXCAVATIONS IN TYPE B SOIL	EXCAVATIONS IN TYPE C SOIL
SIMPLE SLOPES LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 3/4:1  SIMPLE SLOPE	SIMPLE SLOPES LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 1:1  SIMPLE SLOPE	SIMPLE SLOPES LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 1-1/2:1  SIMPLE SLOPE
EXCEPTION: SHORT-TERM SIMPLE SLOPES LESS THAN 12 FEET DEEP HAVE A MAXIMUM SLOPE OF 1/2:1  SIMPLE SLOPE SHORT-TERM		
BENCHED EXCAVATIONS LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 3/4:1  SIMPLE BENCH	BENCHED EXCAVATIONS LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 1:1  SIMPLE BENCH	BENCHED EXCAVATIONS ARE NOT ALLOWED
 MULTIPLE BENCH	 MULTIPLE BENCH	BENCHED EXCAVATIONS ARE NOT ALLOWED
SUPPORTED OR SHIELDED EXCAVATIONS LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 3/4:1.  SUPPORTED LOWER PORTION	SUPPORTED OR SHIELDED EXCAVATIONS LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 1:1.  SUPPORTED LOWER PORTION	SUPPORTED OR SHIELDED EXCAVATIONS LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 1-1/2:1.  SUPPORTED LOWER PORTION
THE SUPPORT OR SHIELD MUST EXTEND AT LEAST 18 INCHES ABOVE THE VERTICAL SIDE.	THE SUPPORT OR SHIELD MUST EXTEND AT LEAST 18 INCHES ABOVE THE VERTICAL SIDE.	THE SUPPORT OR SHIELD MUST EXTEND AT LEAST 18 INCHES ABOVE THE VERTICAL SIDE.

Table 3 Excavations Made in Layered Soils

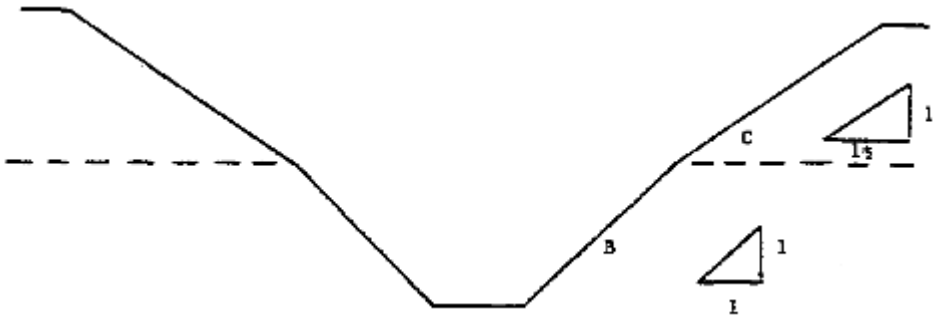
1. All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth below.



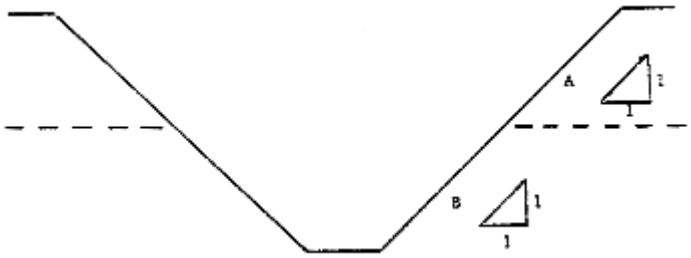
B OVER A



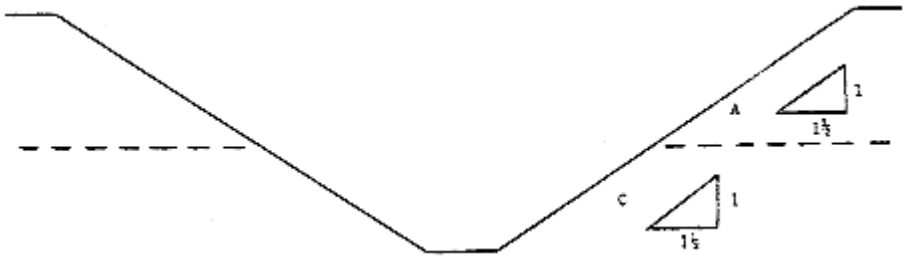
C OVER A



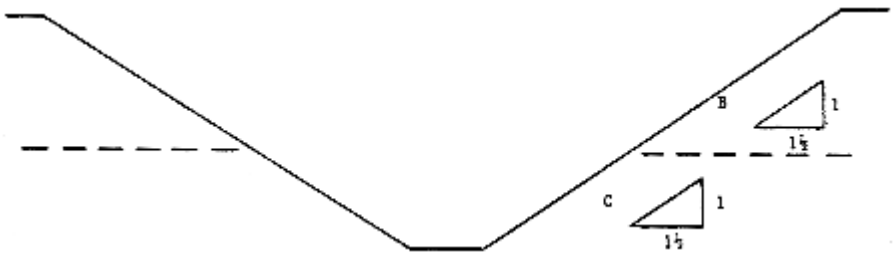
C OVER B



A OVER B



A OVER C



B OVER C

2. All other sloped excavations shall be in accordance with the other options permitted in §1926.652(b).

6. REFERENCES / RELATED DOCUMENTS:

29 CFR 1926 Subpart P, Excavations

CP002 – Risk Analysis Site Specific Health and Safety Program

CP003 – Personal Protective Equipment Program

CP008 – Confined Space Entry Program

CP009 – Health and Safety Training Program

7. APPENDICES

Forms

A. TRC Site-Specific Excavation Plan
B. TRC Pre-Excavation Checklist
C. TRC Excavation Inspection Form
D. TRC Protective Systems Selection Flow Chart

FORMS

A. **TRC SITE-SPECIFIC EXCAVATION PLAN**
B. **TRC PRE-EXCAVATION CHECKLIST**
C. **TRC EXCAVATION INSPECTION FORM**
D. **TRC PROTECTIVE SYSTEMS SELECTION FLOW CHART**

Site Specific Excavation Plan

Project Name: **Project #:**

Location: **Date:**

Company:

Submitted By:

Surface Encumbrances

Have Surface encumbrances that may create a hazard been removed or supported?

☐ Yes

☐ N/A

Underground Installations

Have Utility companies or owners been contacted? ☐ Yes ☐ N/A

By whom: Work Order #: Date:

When excavation operations approach the estimated location of underground installations, how will the exact location of the installations shall be determined?

☐ Probing ☐ Hand digging ☐ Detecting equipment ☐ Other

How will underground installations be protected?

☐ Support ☐ Removal ☐ Other

Access and Egress

Will structural ramps be used? ☐ Yes ☐ N/A

Designed by a competent person? ☐ Yes ☐ N/A

Will excavations be 4 feet in depth or more? ☐ Yes ☐ N/A

Means of egress (requiring no more than 25 feet of lateral travel) ☐ Yes ☐ N/A

☐ Stairway(s) ☐ Ramp(s) ☐ Ladder(s) ☐ Other

Exposure to vehicular Traffic? ☐ Yes ☐ N/A (If yes workers shall wear warning vests or other suitable garments.)

Exposure to falling loads? ☐ Yes ☐ N/A

☐ No workers permitted underneath loads

☐ Workers shall be required to stand away from any vehicle being loaded or unloaded. (Operators may remain in cabs)

Warning System for Mobile Equipment

Will mobile equipment operated adjacent to, or approaching the edge of, excavations have a clear and direct view of the edge of the excavation?

☐ Yes ☐ N/A If yes what warning system will be utilized?

☐ Barricade(s) ☐ Hand Signals ☐ Stop logs ☐ Other

Hazardous Atmospheres

Can oxygen deficiency or a hazardous atmosphere reasonably be expected to exist? ☐ Yes ☐ N/A

If yes, how will atmospheres in excavations greater than 4 feet in depth be tested?

If atmospheres contain less than 19.5% oxygen or other hazardous substance how will it be remediated?

When controls are intended to reduce the level of contaminants to acceptable levels, testing shall be conducted:

☐ Continuously ☐ Periodically

Will emergency rescue equipment be utilized? ☐ Yes ☐ N/A If yes what type?

☐ SCBA ☐ Harness and line ☐ Basket stretcher ☐ Other

Site Specific Excavation Plan

Water Accumulation

Will workers work in excavations in which there is accumulated water? ☐ Yes ☐ N/A

If yes is water controlled or prevented from accumulating by water removal equipment? ☐ Yes ☐ N/A

Equipment type: Competent Person:

Does excavation work interrupt the natural drainage of surface water (such as streams)? ☐ Yes ☐ N/A

Method used to divert water:

Stability of Adjacent Structures

Will the stability of adjacent structures be endangered by excavation operations? ☐ Yes ☐ N/A

If yes, what type of support structure will be used?

☐ Shoring ☐ Bracing ☐ Underpinning ☐ Other

If yes, but support structures will not be used, one of the following must apply:

☐ The excavation is in stable rock

☐ A registered professional engineer has determined that such work will not pose a hazard.

Name of registered professional engineer:

Protection from Loose Rock or Soil

How will workers be protected from materials or equipment that could fall or roll into excavations?

☐ Material placed > 2 feet from edge Retaining devices

Inspections

☐ Inspections of all excavations, adjacent areas and protective systems shall be made by a competent person.

☐ Inspections shall be conducted by the competent person daily, prior to the start of work and as needed throughout the shift. Inspections shall be documented on a Daily Excavation Inspection Form.

☐ Inspections shall be made after every rainfall or other hazard increasing occurrence.

☐ Where the competent person finds evidence of hazardous conditions, workers shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

Fall Protection

Will excavations be 6 feet or greater in depth? ☐ Yes ☐ N/A

If yes, fall protection will consist of:

☐ Barricades ☐ Fall restraint ☐ Harness ☐ Other

Will workers be required or permitted to cross over excavations? ☐ Yes ☐ N/A

If yes, guardrails shall be provided.

SIGNATURES

Supervisor General Supervisor

Project/Construction Manager Safety Representative

Pre-Excavation Checklist

Project Name:	**Project #:**
Location:	**Date:**
Company:	**One Call #**
Submitted By:	

The following procedures are mandatory. Failure to complete this check list could result in disciplinary action or termination:

Complete a pre-excavation walk-out of the entire job site. Your objective is to visually inspect the dig area to ensure all utilities are marked. Look for obvious signs of utilities in the immediate work area that may not be marked such as, above-ground pedestals, gas meters, man-hole covers, drains, or utility poles with cable risers. If you find these indicators and suspect that there is an unmarked utility DO NOT PROCEED**. Call your General Foreman or Locate Ticket Coordinator immediately.**

When you have completed your walk-out, complete the following check list:

1. Verify that the One-Call ticket covers the 'Scope of work' and 'Work to begin' date:
   I have verified the One-Call ticket covers the 'Scope of work' &'Work to begin' date ☐
2. What marked utilities did you observe?
   ☐Gas (Yellow) ☐Electric (Red) ☐Telephone (Orange) ☐Cable TV (Orange) ☐Water (Blue) ☐Sewer (Green)
3. Based on visual observation, did you see any obvious signs of unmarked utilities in the immediate work area?
   ☐Yes ☐No If Yes, please identify?
   ☐Gas (Yellow) ☐Electric (Red) ☐Telephone (Orange) ☐Cable TV (Orange) ☐Water (Blue) ☐Sewer (Green)
4. I have notified my Supervisor and Locate Ticket Coordinator ☐
5. Photograph the entire proposed work area including all locate marks.
   I have photographed the entire site including existing locate/markings prior to excavation ☐
6. Advise your crew members of the following: If they have to cross a marked Utility they must HAND DIG ONLY within 18" of the locate marks. For gas lines add half the diameter of the buried facility to the 18''. If necessary, dig a test-hole (pothole) using hand tools to determine the location of the facility.
   I have advised my crew of this rule ☐
7. When possible, all directional boring / drilling routes must be potholed every 50-80 feet prior to drilling.
   I have advised my crew accordingly and test-holes (potholes) have been dug ☐

~~~~~~~~~~~~~~~~~~~~~~~~~~~~ RESPECT THE MARKS! ~~~~~~~~~~~~~~~~~~~~~~~~~~~~

IN THE EVENT OF DAMAGE

- Notify your Supervisor and Locate Ticket Coordinator
- Complete the TRC Incident Notification Form
- Photograph entire area and damage location

PHOTOGRAPHY TIPS

- Make sure the correct date & time stamp is active on your camera
- Photograph the excavation itself (damage location) and cable depth (include tape measure in hole)
- Take photos from multiple vantage points and of surrounding area (360 degrees)
- If the utility was miss-marked, photograph the locate marks/flags (include tape measure in photo)
- If the utility was not marked, photograph the entire area and approaches to the cut site
- Show a quantifiable location/address (street sign, house number, mail box number etc.)
~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Excavation Flow Diagram

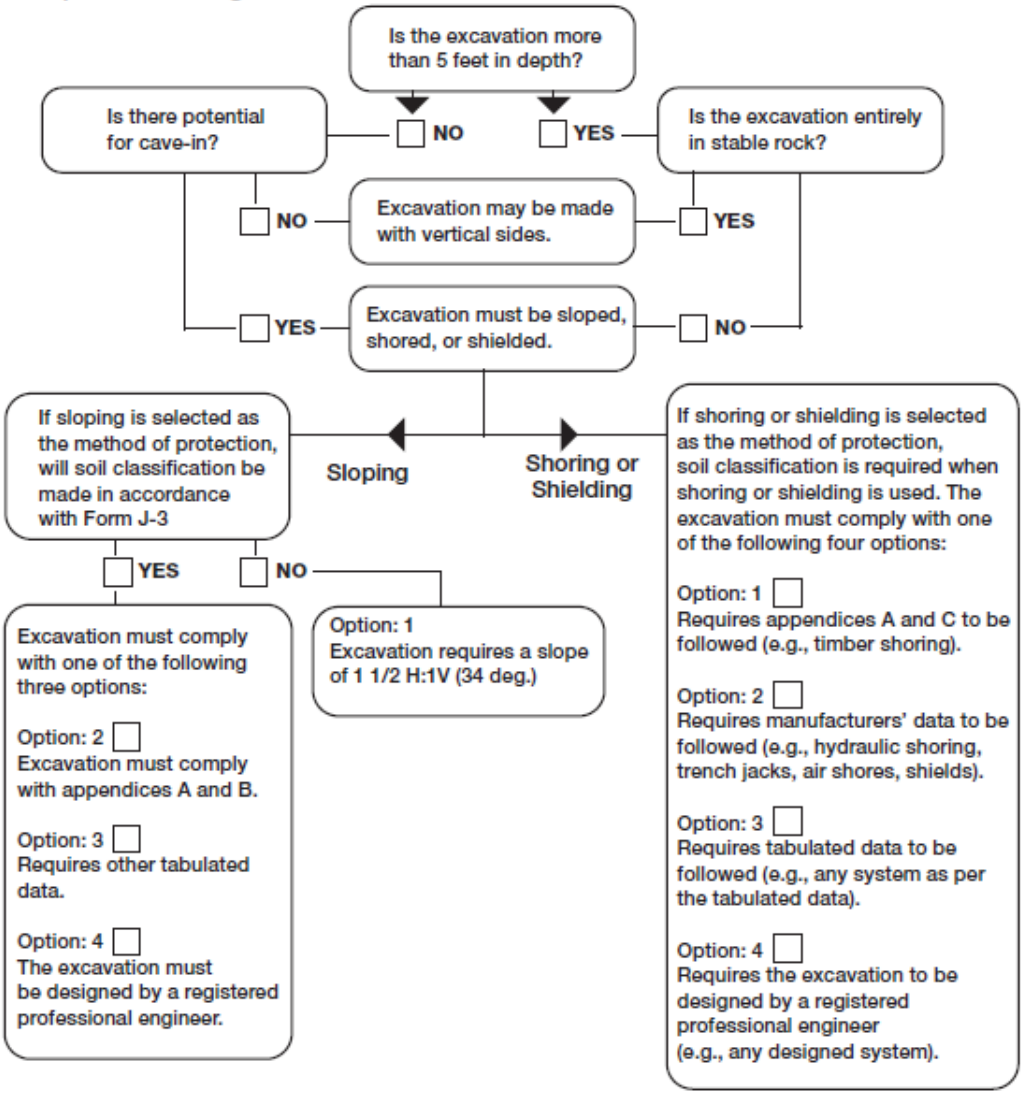
Project Name: **Project #:**

Location: **Date:**

Company:

Submitted By:

The following is a graphic summary of the requirements for excavations 20 feet or less in depth. Protective systems for use in excavations more than 20 feet in depth must be designed by a registered professional engineer.



Excavation Daily Inspection

Project Name: **Project #:**
Location: **Date:**
Company:
Submitted By:

Depth: _____ **Width:** _____ **Date Opened:** _____

Soil classification: ☐ A ☐ B ☐ C

Indicate how the classification was made:

Manual test(s)

a) plasticity			
b) dry strength			
c) thumb penetration			
d) pocket penetrometer			
e) other			

Visual test(s) **Do as many as possible**	**Cohesive Soil**	**Granular Soil**
a) Spoil pile	☐ **Remains in clumps**	☐ **Breaks up easily**
b) Trench Side	☐ **Stands vertical >2 hours**	☐ **Sloughs into trench**

The excavation is properly (circle one):

Shored/Shielded	**(indicate type of shoring)**	☐ **closed**	☐ **open**	☐ **wood**	☐ **metal**	☐ **shield**
Sloped/benched	**(indicate the slope)**	☐ **vertical sides**	☐ **3/4:1**	☐ **1:1**	☐ **1 1/2: 1**	☐ **2:1**

Excavation Checklist:	Morning	Mid-Day	Afternoon
Time:			
Weather:			
Was atmospheric testing required?	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**
Was atmospheric testing done?	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**
Is the spoil pile back 2' from the edge?	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**
Have surface encumbrances been removed?	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**
Are there any signs of sloughing or cave-in?	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**
Is there water accumulation in the bottom?	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**
Are there vibration sources near the excavation?	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**
Is there adequate access/egress (ladder, ramp, etc.)	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**
Has the soil been disturbed previously?	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**
Sides	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**
Top	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**
If the excavation is > 20 feet deep, have engineering designs been documented and complied with?	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**	☐ **yes** ☐ **no**

SIGNATURES

Supervisor General Supervisor

Project/Construction Manager Safety Representative

APPENDIX C

TRANSPORTATION PLAN

APPENDIX C

TRANSPORTATION PLAN

November 2017

THEODORE ROOSEVELT SENIOR HIGH SCHOOL
456 South Mathews Street
Los Angeles, California 90033

Prepared for

LOS ANGELES UNIFIED SCHOOL DISTRICT
Office of Environmental Health and Safety
333 S. Beaudry Avenue, 21st Floor
Los Angeles, California 90017

Prepared by

17911 Von Karman Avenue, Suite 400
Irvine, California 92614

TABLE OF CONTENTS

SECTION **PAGE**

ABBREVIATIONS AND ACRONYMS

DTSC	Department of Toxic Substances Control
EPA	Environmental Protection Agency
HSP	Health and Safety Plan
LAUSD	Los Angeles Unified School District
OCPs	Organochlorine Pesticides
OPPs	Organophosphorous Pesticides
PCBs	Polychlorinated Biphenyls
RAW	Removal Action Workplan
RCRA	Resource Conservation and Recovery Act
STLC	Soluble Threshold Limit Concentration
SVOCs	Semi-Volatile Organic Compounds
TPH	Total Petroleum Hydrocarbons
TPH-G	Total Petroleum Hydrocarbons as Gasoline
VOCs	Volatile Organic Compounds
WATCH	Work Area Traffic Control Handbook

1.0 INTRODUCTION

This document presents a Transportation Plan for the removal of impacted soil from Los Angeles Unified School District (LAUSD) Roosevelt High School (Site), located at 456 South Mathews Street, Los Angeles, California. Previous site investigations have identified and assessed the extent of soil impacted with arsenic, lead, and petroleum hydrocarbons beneath the Site, and a Removal Action Workplan (RAW) has been prepared to address the excavation and off-site disposal of impacted soil. This Transportation Plan is a key component of the RAW. Removal, transportation, and disposal activities will be performed in accordance with applicable Federal, State, and local laws, regulations, and ordinances. Excavated soils will be shipped by a qualified (licensed/registered and insured) waste hauler in tarped trucks under manifests or proper shipping documents to proper disposal facilities.

Amendments to this Transportation Plan will be made, as appropriate, following selection of an Environmental Consultant and Remediation Contractor by the LAUSD to implement the RAW work scope.

1.1 BACKGROUND

1.1.1 Site Description

Roosevelt High School is currently an operational LAUSD school scheduled for a comprehensive modernization project involving removal and/or renovation of multiple site structures. The proposed renovation will include demolition of the music building, gymnasium, auditorium/classroom building, industrial arts building, four classroom buildings, and 19 portable classroom buildings. New buildings proposed for construction will include a general classroom building, a science and specialty classroom building, a gymnasium, an auditorium, a lunch shelter, and a health/wellness clinic.

The Site is a rectangular-shaped property consisting of approximately 23.70 acres. The property is bounded by South Mathews Street on the northwest, East 4th Street on the northeast, South Mott Street on the southeast, and East 6th Street on the southwest. Properties immediately surrounding the Site to the north across East 4th Street, west across South Mathews Street, and east across South Mott Street consist primarily of residential neighborhoods. The property south of the Site across East 6th Street is developed with the Hollenbeck Middle School. The overall area surrounding the school consists primarily of residential development with some commercial development.

1.1.2 Current Site Use

The Site is currently owned by the LAUSD and operated as Roosevelt High School. The current campus facilities consist of 16 structures, including an administration/classroom building, a lunch pavilion, a cafeteria, a library/classroom, a music building, a gymnasium, an auditorium/classroom building, an industrial arts building, a former auto shop building, and seven classroom buildings. The property also includes multiple portable classroom buildings. Athletic fields and facilities are located along the northeast portion of the property, as well as in the southeast corner of the property.

1.1.3 Proposed Remedial Action

The principal objective of this removal action is the mitigation of impacted soil from the Site to a level necessary to protect human health and the environment. This involves the removal or reduction of contaminants to prevent human exposure to chemicals of concern above applicable removal action goals. Based on an analysis of the nature and extent of impact, and on the removal action goals for the Site, the RAW evaluated multiple alternatives appropriate for addressing the removal action objectives. The selected removal action alternative includes the excavation, transportation, and disposal of soil impacted with arsenic, lead, and/or petroleum hydrocarbons at concentrations above removal action goals. The estimated volume of soil to be remediated from six separate areas across the Site (Areas 2, 3, 5, 6, 9, and at the hydraulic hoists in Area 6) is approximately 7,019 cubic yards (10,528 tons; estimate includes 3,966 cubic yards of non-hazardous soil and up to 3,053 cubic yards of California hazardous lead-impacted soil). Confirmation soil samples will be collected at the excavation limits and from the excavation bottom to verify completion of soil removal. Upon completion, backfill and compaction of the excavation areas will be coordinated with a licensed soils engineer to assure that the backfilled areas meet minimum compaction requirements.

1.2 PURPOSE AND OBJECTIVE

The objective of the proposed remedial action is the removal of approximately 7,019 cubic yards (10,528 tons) of impacted soil from the Site to a level necessary to protect human health and the environment.

2.0 WASTE CHARACTERIZATION AND QUANTITY

2.1 WASTE PROFILE

Soils exceeding the removal and cleanup goals for the Site will be excavated and transported to facilities permitted to process or dispose of the impacted soil. Based on evaluation of available analytical data, the petroleum hydrocarbon-impacted soil has been characterized as non-hazardous and will be transported to a facility permitted to dispose of the soil. Arsenic- and lead-impacted soil removed from each area will be stockpiled and sampled to characterize for disposal. Department of Toxic Substances Control (DTSC) requirements of hazardous waste generation, temporary on-site storage, transportation, and disposal will be followed. Approval from the disposal facilities will be obtained before any excavation commences.

2.2 WASTE QUANTITY

Estimated Quantity of Arsenic- and Lead-Impacted Soils: 6,972 cubic yards or 581 truckloads
Estimated Number of Truckloads per Day to Treatment Facility: up to 30 truckloads

Estimated Quantity of Petroleum Hydrocarbon-Impacted Soils: 47 cubic yards or 4 truckloads
Estimated Number of Truckloads per Day to Disposal Facility: 4 truckloads

See Figures 3A, 4A, 5A, 6A, 8A, and 9A in the RAW for the proposed excavation areas. Additional soil removal may be necessary depending on confirmation sampling results.

2.3 IMPORT FILL MATERIAL

Estimated Quantity of Import Fill Material: maximum 7,721 cubic yards or 643 truckloads if all backfill material must be imported
Estimated Number of Truckloads per Day: up to 30 to 40 truckloads

Areas excavated as a result of removal activities will be backfilled with approved clean fill. The clean fill may consist of one or more of the following sources: 1) clean quarried material; 2) imported material from an off-Site source; and 3) clean soil generated on Site in the course of exposing and removing soil impacts. Debris, plant matter, and other deleterious material shall not be present in soils used for fill. Backfilling and compaction of excavated areas shall be in conformance with City of Los Angeles requirements, and compaction certification will be provided by the LAUSD Geotechnical Engineer of Record.

Prior to using fill material on Site, the soil quality data of the source material will be reviewed. Sampling of fill material intended for use at the Site shall be conducted to verify the quality of the material, unless the fill material originates from a clean, quarried source, in which case no sampling will be conducted. Imported fill will be free of contamination and non-soil material. Clean soil generated on Site from excavation activities must be less than the removal action goals and must comply with LAUSD soil reuse criteria. Soils treated at another site undergoing remediation will not be used as backfill material at the Site.

Sampling of the backfill soils shall be conducted in accordance with the LAUSD Environmental Import/Export Materials Testing (Guidance Section 01 4524) requirements. Soil sample collection shall be performed as described in the RAW. At a minimum, backfill materials will be sampled (discrete and composite samples) at a frequency consistent with the volume-specific sampling criteria outlined in LAUSD Guidance Section 01 4524.

Discrete soil samples will be analyzed for the following:

- Total Petroleum Hydrocarbons with gasoline distinction (TPH-G) using Environmental Protection Agency (EPA) Methods 8015B(M)/5035; and
- Volatile Organic Compounds (VOCs) using EPA Methods 8260B/5035.

Composite soil samples will be analyzed for the following:

- TPH - Full Carbon Speciation using EPA Method 8015B(M);
- Polychlorinated Biphenyls (PCBs) using EPA Method 8082;
- Semi-Volatile Organic Compounds (SVOCs) using EPA Method 8270C;
- Organochlorine Pesticides (OCPs) using EPA Method 8081A;
- Organophosphorus Pesticides (OPPs) using EPA Method 8141A;
- Chlorinated Herbicides using EPA Method 8151A;
- California Title 22 Metals using EPA Methods 6010B/7471A;
- Hexavalent Chromium using EPA Method 7199; and
- Arsenic and Thallium using EPA Method 6020.

The Remediation Contractor will be responsible for providing documentation of the source of clean fill material and for performing and/or providing documentation of the geotechnical suitability and environmental analysis of the clean import fill material.

3.0 SOIL LOADING OPERATIONS

Soil will be removed with earth moving equipment (e.g., backhoe, excavator), as necessary. As soil is excavated, it will be temporarily stored in soil staging areas on Site until off-site transportation for disposal is available. Waste soils will be stockpiled in soil staging areas. As an alternate, excavated soils may be loaded directly onto transportation trucks. A Site-specific plan identifying proposed access points (entrance and exit), truck loading areas, stockpile locations, and the vehicle decontamination area for the majority of the proposed excavation work at the Site will be prepared by the Environmental Consultant following selection by LAUSD, in consultation with the Remediation Contractor selected by LAUSD. The site access plan and soil staging/loading locations may be modified based on field considerations at the time remedial excavation begins and as work progresses.

3.1 SOIL SEGREGATION CONSIDERATION

For each excavation area, soil will be segregated based on the type of impacts. The excavated soil will initially be segregated according to existing soil analytical data, field observation, and field monitoring results.

Five distinct and separate stockpiles will be created:

- Non-hazardous arsenic- and lead-impacted soil;
- California hazardous (non-Resource Conservation and Recovery Act; RCRA) lead-impacted soil;
- Non-hazardous petroleum hydrocarbon-impacted soil;
- Non-impacted soil; and
- Demolition debris (e.g., steel, concrete, asphalt, etc.).

The soil will be stockpiled and managed according to the following criteria:

- Impacted soil (arsenic, lead, and petroleum hydrocarbons) will be segregated from non-impacted soil in separate stockpiles so that mixing of the stockpiles does not occur. The soil will be segregated based on previous analytical data and field observations (e.g., soil staining or discoloration for petroleum hydrocarbon-impacted soil). Soil suspected of being impacted with arsenic, lead, and petroleum hydrocarbons based on previous investigations will be stockpiled in appropriate staging areas for waste characterization and off-site disposal. Soil that is suspected of being clean will be stockpiled separately and samples will be collected for analysis. If results of analyses confirm the soil is clean, it will be transferred to clean stockpile areas for future reuse on Site as fill material. If the suspected clean soil is determined to be impacted, it will be transferred to the impacted soil stockpile to await off-Site transport and disposal. Soil with suspected elevated lead impacts in excess of Soluble Threshold Limit Concentration (STLC) lead limits (based on previous investigation findings) will be stockpiled separately and samples will be collected for analysis. Based on analytical results, this soil will either remain in a separate stockpile to be handled and transported off Site as a California hazardous waste, or be transferred to the non-hazardous soil stockpile to await off-Site transport and disposal.
- The soil stockpile locations will vary depending upon the excavation work area(s). In general, impacted soil stockpiles will be in close proximity to the excavation area(s) for staging and loading for off-Site transport. Clean soil and demolition debris will be stockpiled separately in each area for reuse and off-Site disposal, respectively.

- Soil stockpiles will be placed on top of and covered with plastic sheeting. The plastic sheeting seams will overlap a minimum of 24 inches and be secured with duct tape.
- All soil stockpiles will be visually inspected to ensure integrity of the plastic covered surfaces.
- There is no limitation on the volume of non-VOC-contaminated or clean soil that can be stockpiled on Site. The stockpiles will not exceed 10 feet in height.
- Soil loading into trucks for off-Site transport will be conducted either directly during soil excavation or from the stockpiles of soil. All transportation and disposal activities will be performed in accordance with applicable Federal, State, and local laws, regulations, and ordinances.
- Impacted soil will be removed from the Site no greater than 30 days from the time of excavation.
- A record of the identification and business addresses of the generator, transporter, and storage/treatment facilities will be maintained. Such record (manifest) will be signed by each party at the time custody is transferred.

Soil sampling and analysis shall be performed as described in Section 7.7 of the RAW.

3.2 TRUCK LOADING OPERATIONS

Trucks will be loaded in the designated areas and driven to the designated disposal facilities. The impacted soil from each stockpile or excavation area will be loaded into trucks using a front-end loader.

3.3 DUST CONTROL DURING SOIL LOADING OPERATIONS

The waste hauler is required to provide a bin/truck that does not allow soil to be spilled or blown out from the bottom, sides, or tops of the bin/truck. During soil loading operations, dust suppression will be performed by lightly spraying or misting the work area with water, as necessary. Efforts will be made to minimize the soil drop height from the loader's bucket into the bin/truck. The loader will be positioned to load soil from the leeward side of the bin/truck, if possible. By loading in the designated area, the trucks will not have to drive on impacted soil, thereby avoiding the creation of dust in the air or dirt in the truck tires.

4.0 TRANSPORTATION CONTROL

Soil for off-Site disposal will be transported in end-dump trailers/trucks to designated facilities.

4.1 DUST CONTROL DURING TRANSPORTATION

Vehicles will be decontaminated in a track-out prevention zone. This will consist of a rumble plate or asphalt pad along construction/work exits. Stray waste material on vehicles and the tires that cannot be covered or protected, will be cleaned off manually. The dump truck portion of the truck will then be covered with a tarp to prevent soil and/or dust from spilling out of the truck during transport to the disposal facility.

Prior to leaving the load-out area, each transportation truck will be inspected by the Remediation Contractor to ensure that the payload is adequately covered, the truck is cleaned of overburdened soil, and the shipment is properly manifested. If so, the truck will be cleared for departure and the contact phone number of the Remediation Contractor will be provided. The truck driver will be directed to contact the Remediation Contractor at the given phone number if problems arise after leaving the Site.

4.2 TRAFFIC CONTROL

4.2.1 Truck Staging Area

Designated Truck Staging Areas: Varies depending upon the location of on-site soil excavation and loading operations.

Prior to loading, all trucks will be staged in the designated area to avoid impacts on the local streets. Careful coordination of trucks will be exercised to help avoid staging off Site and long wait times for trucks. Trucks will not be allowed to sit idling for more than a few minutes to avoid unnecessary exhaust fumes.

4.2.2 Site Access Control

Location of Designated Site Access Gate: Varies by excavation area:

- Area 2 – East 4th and South Mathews Streets
- Area 3 – East 4th and South Mott Streets
- Area 5 – East 6th Street
- Area 6 – South Mott Street
- Area 9 – East 6th Street

Construction access to the Site will be from the existing gates on South Mathews Street, East 4th Street, East 6th Street, and South Mott Street. Construction traffic must utilize these points of access throughout the duration of the work.

In general, the proposed remedial action incorporates the following Site access controls:

- Site will be enclosed by chain-link fencing at all times.
- Access to the Site will be limited to the gates along South Mathews Street, East 4th Street, East 6th Street, and South Mott Street. The gates will be locked after work hours.
- Site access will be limited to authorized personnel.
- All personnel entering the Site will be required to have appropriate health and safety training and will sign the site-specific health and safety plan each morning.
- All visitors will be registered and must sign in upon entering the Site.
- Access to the excavation areas with exposed impacted soils will be restricted in accordance with the site-specific health and safety plan.

Vehicles and equipment used in the handling of impacted soil will be decontaminated before leaving the Site.

Trucks to be loaded will only access the Site through the designated gate and will not be allowed to cross soil removal or staging areas. A flag person will be located at the gate to assist the truck drivers to safely enter and depart the Site. As the truck leaves, the flag person will assist the truck driver to safely merge into street traffic.

4.2.3 On-Site Traffic Flow

Maximum Number of Onsite Waste Transportation Trucks: Five (5)

Traffic will be coordinated in such a manner that, at any given time, no more than the maximum number of waste transportation trucks specified above will be on the Site to reduce truck traffic on surrounding surface streets and reduce dust generation during on-site transportation.

4.2.4 Speed Limit

While on Site, all vehicles will be required to maintain slow speeds (e.g., less than 5 miles per hour [mph]) for safety purposes and dust control measures. While on the road, all waste transporters will follow the speed limit requirements and defensive driving techniques (over traffic or road conditions) for traffic safety.

4.2.5 Rush Hours

Transportation trucks will be timed to avoid rush-hour traffic time periods.

4.2.6 Local Traffic Control

Transportation of impacted soils will be on arterial streets and/or freeways, approved for truck traffic, to minimize any potential impact on the local neighborhood. Traffic control for the Site shall conform to the ordinances and regulations of the jurisdictional agency having authority over traffic control and shall conform to the latest edition of the *Work Area Traffic Control Handbook (WATCH)*, 2016 (BNI Publications, 2016). All necessary permits will be obtained.

Specific traffic control patterns will be established on a day-to-day basis, responsive to work location and access needed during the construction period. Traffic flow patterns will be coordinated to ensure safe flow of traffic along streets surrounding the Site. These flow patterns will be established through portable traffic signs and/or flagmen posted at the Site entrance and exit. The number of daily truckloads during implementation of the RAW is not expected to cause a disruption in local traffic.

4.3 TRANSPORTATION ROUTES

Transportation in the Site area consists of residential and commercial traffic. Access to four major interstate freeways (5, 10, 60, and 101) is available within a 1-mile radius of the Site. The proposed routes of transportation for off-Site shipment of impacted soil will be finalized and included as part of this Transportation Plan following selection of the Environmental Consultant and Remediation Contractor by LAUSD, and agreement on the disposal facilities. The routes will be selected to minimize the truck travel time on surface streets and to provide the shortest distance traveled.

5.0 OFF-SITE LAND TREATMENT OR DISPOSAL FACILITIES

Based on the results of waste profiling and classification, the excavated soil will be transported to proper off-site treatment or disposal facilities. Transportation and disposal activities will be performed in accordance with applicable Federal, State, and local laws, regulations, and ordinances. Excavated soils will be shipped by a qualified (licensed/registered and insured) waste hauler in tarped trucks under manifests or proper shipping documents to a proper disposal facility.

Non-hazardous petroleum hydrocarbon-, arsenic-, and lead-impacted soil will be transported to:

Simi Valley Landfill & Recycling Center (owned by Waste Management, Inc.)
2801 Madera Road
Simi Valley, California 93065
Phone: (805) 579-7267

California hazardous (non-RCRA) lead-impacted soil will be transported to:

South Yuma County Landfill (owned by CR&R Incorporated)
19536 South Avenue 1 E
Yuma, Arizona 85365
Phone: (928) 341-9300

6.0 SHIPMENT DOCUMENTATION

6.1 CALIFORNIA HAZARDOUS WASTE SHIPMENT

If the suspected lead-impacted soil is profiled as a California hazardous waste, the Uniform Hazardous Waste Manifest form will be used to track the movement of hazardous waste soils from the point of generation to the point of ultimate disposition. Prior to transporting the excavated soil off Site, an authorized representative of LAUSD or its designated representative will sign each hazardous waste manifest. The hazardous waste hauler will then sign the manifest and distribute one signed copy to the Remediation Contractor's site manager. The Remediation Contractor's site manager will maintain a copy of the hazardous waste manifest for each truckload until completion of the excavation.

6.2 NON-HAZARDOUS WASTE SHIPMENT

For excavated soil that is profiled as non-hazardous waste, a proper shipping document (such as a non-hazardous waste manifest) of the hauler will be used to document and accompany each truck shipment. At a minimum, the shipping document will include the following information:

- Name and Address of Waste Generator
- Name and Address of Waste Transporter
- Name and Address of Disposal Facility
- Description of the Waste
- Quantity of Waste Shipped

The Remediation Contractor's site manager will maintain a copy of the shipping document on Site for each truckload until completion of the excavation.

7.0 RECORD KEEPING

Project documentation and record keeping will be conducted as outlined in Section 7.2 of the RAW. The environmental consultant and Remediation Contractor will work jointly to maintain a field log and take photographs during the excavation activities. The field logs and photographs will serve to document observations, personnel on Site, truck count, and other vital project information.

8.0 HEALTH AND SAFETY

A site-specific health and safety plan (HSP) has been prepared and included as Appendix B of the RAW. Everyone working at the Site will be required to be familiar with the HSP, attend or be briefed on the daily tailgate meeting, and sign the HSP Acceptance Form.

9.0 REQUIREMENTS OF TRANSPORTERS

Qualified transporters will be hired for hauling the excavated soil off Site. The hauling contractor(s) used to transport impacted soil to the off-Site disposal facilities will be fully licensed and permitted by the EPA and the State of California. Contractors shall comply with the City of Los Angeles Truck Route Ordinance and use City-approved truck routes.

Trucks used for the off-Site transportation of impacted soil will remain in clean areas at all times to minimize the need to decontaminate the truck tires. During loading, noise, odor, and dust emissions will be monitored and mitigated as outlined in the RAW.

9.1 LICENSE AND INSURANCE

The selected transporters will be fully licensed and insured for hauling the excavated soils off Site. For transportation of hazardous wastes, the selected transporter will be a registered hazardous waste hauler. Prior to hiring, the Remediation Contractor will verify that the selected transporter has a valid registration/license and insurance policy for transporting wastes and that the transporter will not release waste soil during transport.

9.2 CONTINGENCY PLAN

Each waste hauler is required to have a contingency plan prepared to deal with the following conditions:

a. When there are emergency situations (vehicle breakdown, accident, waste spill, waste leak, fire, explosion, etc.) during transportation of excavated soils from the Site to the designated disposal facility;
b. When the volumes of excavated soil change; or
c. When waste characteristics change.

The contingency plan will be prepared in accordance with DTSC's guidance for preparing transportation plans for site remediation (DTSC, May 1994). Once the waste hauler is selected, a copy of its contingency plan will be attached to this Transportation Plan.