PRELIMINARY ENVIRONMENTAL ASSESSMENT EQUIVALENT REPORT - FINAL

Crenshaw High School
5010 11th Avenue
Los Angeles, California 90043

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CRENSHAW HIGH SCHOOL
5010 11TH AVENUE
LOS ANGELES, CALIFORNIA 90043

SOIL ASSESSMENT FOR DEMOLITION AND NEW CONSTRUCTION

OPINION OF ENVIRONMENTAL PROFESSIONAL

Pinnacle Environmental Technologies has prepared this Preliminary Environmental Assessment (PEA) Equivalent Report for the above project area. This assessment was conducted using methods and professional experience consistent with the standard for the industry. The observations, interpretations and recommendations produced by this assessment are based on conditions that exist at the time the study is conducted. These interpretations are based upon Pinnacle's field observations, analytical results and specific field conditions.

Potential recognized environmental conditions were identified at Crenshaw High School by the original Phase I Environmental Assessment. This subsequent PEA Equivalent has revealed no additional evidence of specific recognized environmental conditions in connection with the project site. Based on the results of this assessment, no additional investigation is recommended at this time.

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LIST OF ACRONYMS

ABBREVIATION	DESCRIPTION
A-P Zone	Alquist-Priolo Fault Rupture Hazard Zone
APN	Assessors Parcel Number
bgs	below ground surface
CASGEM	California Statewide Groundwater Elevation Monitoring System
CDMG	California Department of Mines and Geology
CHHSL	California Human Health Screening Level
COPC	Contaminant of Potential Concern
CSM	Conceptual Site Model
DSA	California Department of General Services, Division of the State Architect
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EDR	Environmental Data Resources, Inc.
EMA	California Emergency Management Agency
EPA	United States Environmental Protection Agency
ERA	Ecological Risk Assessment
ESE	Ecological Screening Evaluations
ESNR	Environmentally Sensitive Natural Resources
HHSE	Human Health Screening Evaluation
LACDPW	Los Angeles County Department of Public Works
LADPW	City of Los Angeles Department of Public Works
LADWP	City of Los Angeles Department of Water and Power
LAFD	Los Angeles Fire Department
LAUSD	Los Angeles Unified School District
LBP	lead-based paint
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MPR	Multi-purpose Room
MSL	mean sea level
NIFZ	Newport-Inglewood Fault Zone
OWTS	On-Site Wastewater Treatment Systems
OCP	Organochlorine Persticide
OEHS	Office of Environmental Health and Safety
PEA	Preliminary Endangerment Assessment
REC	Recognized Environmental Condition
RSL	Regional Screening Level
SCG	Southern California Gas
UCL	upper confidence level
USGS	United States Geological Survey
WYCS	Whitney Young Continuation School
μg/kg	micrograms per kilogram

EXECUTIVE SUMMARY

This report summarizes the field procedures and observations, laboratory analytical procedures and results, and conclusions of a Preliminary Environmental Assessment (PEA) Equivalent completed by Pinnacle Environmental Technologies (Pinnacle) of a portion of Crenshaw High School in Los Angeles, California (the project area). The PEA Equivalent was performed as a preliminary task for the intended demolition and replacement of four structures within the project area.

- Based on historical and current land use data collected during a Phase I Environmental Assessment previously performed by Pinnacle, lead, arsenic and organochlorine pesticides (OCPs) were identified as chemicals of potential concern (COPCs) for subsequent assessment within the project area. Two stages of soil sample collection were completed during the PEA Equivalent.

- Fifty-seven soil Stage 1 and 2 borings were advanced by hand auger to depths of between 1.5 and 3.0 feet below ground surface (bgs). All of the 46 Stage 1 borings reached a target depth of 3.0 feet bgs. Six of the remaining 11 Stage 2 borings reached auger refusal at depths as shallow as 1.5 feet bgs. All of the borings reached an adequate depth to delineate vertical extent of the COPCs.

- A total of 326 soil samples were collected from the soil borings at depths between 0.5 and 3.0 feet bgs. Soil samples from the elevated planter on the western project area boundary and the elevated planters surrounding and within the quad were collected for compositing and analysis by the lab.

- Selected soil samples were analyzed for OCPs using United States Environmental Protection Agency (EPA) Method 8081A, arsenic using EPA Method 6010B and total lead for EPA Method 6010B.

- Since saturated conditions were not encountered in any of the boreholes, no groundwater grab samples were collected.

- Forty-five of the 73 soil samples analyzed for arsenic contained arsenic at a concentration ranging from 1 to 34 milligrams per kilogram (mg/kg). The 95% upper confidence level (UCL) of the mean for the arsenic data is 12.65 mg/kg, which is slightly above the accepted background concentration of 12 mg/kg for arsenic in southern California. The highest arsenic concentrations were located in areas of fills on the east side of the project area, below the access road. A smaller area of elevated arsenic was identified at the northwest corner of the project area near boring PB-1.

- Twenty-eight of the 30 soil samples analyzed for lead contained lead at a concentration ranging from 1 to 53 micrograms per kilogram (μg/kg). The 95% UCL of the mean for the lead data is 18.48 mg/kg. The higher lead concentrations are outliers that do not correlate with particular soil types or the project area location. None of the samples contained a total lead result above the residential California Human Health Screening Levels (CHHSL) for lead of 80 mg/kg or the United States Environmental Protection Agency (EPA) Region 9 residential Regional Screening Level (RSL) of 400 mg/kg.

- Two of the 26 analyzed soil samples contained chlordane at a concentration ranging from 11 and 26 μg/kg. One soil sample had a dieldrin concentration of 2 μg/kg. These concentrations are well below the residential RSLs for chlordane (1,670 μg/kg) and dieldrin (34 μg/kg).

- While there are well-defined areas of fill with arsenic concentrations slightly above the typical background level of 12 mg/kg, nearly all of these soils are currently below pavements. As such, they do not represent a current risk to students or staff, and they will not represent a risk to students, staff or construction crews in the future.

- Approximately 0.75 cubic yards of soil was excavated from boring location PB-1 to a depth of 2.5 feet. The soil was placed in drums and transported from the project area for disposal under a non-hazardous manifest.

- None of the soil sampled during this investigation meets the State of California or Federal definitions for hazardous waste.

Based on these results, Pinnacle provides the following recommendations.

- Based on the results of this additional soil sampling and health screening, Pinnacle does not recommend additional investigation for the identified COPCs.

- As a precaution, Pinnacle recommends removal and offsite disposal of approximately 525 cubic yards of material located on the east side of the project area. The area for soil removal is defined by arsenic concentrations above 24 mg/kg. Based on the latest analytical results, the soil should be accepted for reuse at Los Angeles County landfills. The recommended depth of removal is one foot below the base of the asphalt pavement, except at two locations. The soils at sampling locations PB-53 and PB-55 should be removed to a depth of 1.5 feet below the base of the current asphalt.

- No additional confirmation sampling should be required after recommended excavation and removal of soils from the project area.

1.0 INTRODUCTION

This report documents the scope of work, field procedures and observations, laboratory methods and results, and conclusions of a Preliminary Environmental Assessment (PEA) Equivalent completed by Pinnacle Environmental Technologies (Pinnacle) of a portion of Crenshaw High School (the school) in Los Angeles, California (Figure 1). The property occupied by the school is currently owned by the Los Angeles Unified School District (LAUSD) and operates as a high school on a year-round basis. This PEA Equivalent was conducted for LAUSD.

The purpose of this investigation was to assess suspected impacts to soil (if encountered) on a portion of the school intended for new construction (the project area). The scope for this PEA Equivalent was defined using potential recognized environmental conditions (RECs) generated by a Phase I Environmental Site Assessment Report prepared by Pinnacle, dated April 24, 2014 (Figure 2). The information produced by this investigation will be used by LAUSD for construction planning and budgetary purposes.

2.0 SITE DESCRIPTION

2.1 Site Identification Information

The school is located at 5010 Eleventh Avenue in the West Adams-Baldwin Hills-Leimert community of the City of Los Angeles. The West Adams-Baldwin Hills-Leimert Area of Los Angeles is located approximately seven miles southwest of downtown Los Angeles.

The Assessors Parcel Number (APN) for the school is 5014-001-922. The latitude and longitude for the approximate center of the school and the project area as shown on Figures 1 and 2 are as follows.

Latitude - North 33.996593 degrees
Longitude - West 118.327600 degrees

The legal information for the school is as follows.

Tract No. – TR 30215
Map Reference – M B 764 19/20
Block – None
Lot – 1
Map Sheet – 111B185

Crenshaw High School occupies the majority of a nearly square, residential city block (Figure 1). The block is bounded by West 50th Street to the north, West 52nd Street to the south, 8th Avenue to the east, and 11th Avenue to the west. This block occupies approximately 25.59 acres (1,114,700 square feet). Two other school facilities operate on the same block. The Whitney Young Continuation School (WYCS) is located at the southeast corner of the block. The View Park Preparatory Charter Middle School (View Park) occupies property near the southwest corner of the block. Sports fields for Crenshaw High School students are located on the western and southern portions of the school. An access road extends north to south from West 50th Street at the north through the center of the block to a paved playground at the southern end of the school. School classroom and support buildings [gymnasium, multipurpose building (MPR), auditorium, kitchen, lunch pavilion and quad] are located west of the access road on the west side of the block.

A roughly rectangular area at the center of Crenshaw High School was identifed as the portion of the campus intended for additional investigation (the project area) (Figure 2).

None of the property occupied by WYCS and View Park is within the demarked area of investigation. The project area was determined by LAUSD based on their plans to replace the Crenshaw High School MPR, kitchen, lunch pavilion, student store and quad, which are located within this outlined area, with new structures (Figure 3).

2.2 Site Geology and Hydrogeology

The school is located in the western margin of the Los Angeles Central Basin, in Los Angeles County. Surface soils in the area of the school belong to the Hanford soil series, which is well-drained, coarse sandy loam and gravelly loamy coarse sand. Soil belonging to this series has been identified below undisturbed areas to a depth of up to 60 inches. The soil horizon below the project area is expected to be significantly thinner than this maximum thickness due to grading prior to development.

The school is located in the northwestern Downey Plain, east of the Baldwin Hills, and is underlain by Holocene-age alluvial sediments consisting of gravel, sand, silt, and clay. The Pleistocene-age Lakewood Formation, which consists of unconsolidated marine and non-marine gravel, sand, sandy silt, silt, and clay with shale pebbles, underlies these sediments.

The faults grouped into Newport-Inglewood Fault Zone (NIFZ) are the nearest known potentially active faults to the school. Most of the faults of the NIFZ in the Baldwin Hills area are known due to geophysical studies and do not have surface expressions. As such, they are located approximately on geologic maps. The Potrero Fault, which lies approximately 1.2 miles southwest of the school, is the nearest named NIFZ fault. The Potrero Fault is an oblique fault having right-lateral and normal dip slip movement, and trends to the northwest, dipping steeply to the west. This fault acts as a barrier to subsurface groundwater flow where aquifers have been vertically offset. The inferred location of a minor fault related to the NIFZ that trends normal to the northwest trend of the NIFZ is located 0.3 miles west of the Site. The axis of the Paramount Syncline is about 0.4 miles northeast of the Site, but this feature has no effect on groundwater flow in the Site vicinity.

The Site is located in the northwestern portion of the Central Basin Pressure Area of the Los Angeles Central Basin, east of the Baldwin Hills, north of the Rosecrans Hills area, and west of the Los Angeles Forebay Area. This sub-basin is bounded on the north by a surface divide (the La Brea High), and on the northeast and east by emergent, less permeable Tertiary rocks of the Elysian, Repetto, Merced and Puente Hills. Throughout the Central Basin, groundwater occurs in Holocene- and Pleistocene-age sediments at relatively shallow depths. Throughout much of the sub-basin, the aquifers are confined, but areas with semipermeable aquicludes allow some interaction between the aquifers. The main productive freshwater-bearing sediments below the school are contained within Holocene alluvium and the Pleistocene Lakewood and San Pedro Formations. Recent site investigations performed in the vicinity of the school have encountered groundwater at a wide range of depths, from 45 to greater than 120 feet below ground surface (bgs). However, historical groundwater depths may have been as shallow as 10 feet bgs below the eastern margin of the school.

The Environmental Data Resources (EDR) Radius Map Report provided in Pinnacle's Phase I Environmental Assessment Report identified 13 groundwater wells within one mile of the school. All but one of the wells shown in the EDR Report are regarded as active. Groundwater well information was also researched at the following locations:

- United States Geological Survey (USGS) Waterdata database
- Los Angeles County Department of Public Works (LACDPW)
- California Department of Water Resources (DWR) California Statewide Groundwater Elevation Monitoring System (CASGEM)
- Geotracker

No wells within one mile of the school were identified on the Waterdata and CASGEM databases. The LACDPW database contained information on 14 additional wells within one mile of the school. Four of the wells on the LACDPW database are currently active. The closest well to the school (California American Water Company Well 2974) is located 0.3 miles to the northwest. It is an active production well. The latest information from this well is water quality data expected to be produced by a water production company. MCLs were met in the well. Depth to groundwater information was not published for this well on this date according to the EDR Report.

Depth to groundwater data available from these wells generally supports the wide range of depths to water over time and according to distance from the Baldwin Hills. Since the completion data for these wells is not available, it is not certain what aquifer they are screened in. As a result, drawing conclusions regarding the depth to groundwater data from these wells is uncertain.

2.3 Nearest Special Study (Alquist-Priolo) Zone

The school is not within an Alquist-Priolo Fault-Rupture Hazard Zone (A-P Zone). The nearest A-P Zone to the school is the Potrero Fault segment of the NIFZ, which is 1.2 miles southwest of the school.

Movement along NIFZ has been responsible for significant earthquakes in Inglewood in 1920 (magnitude 4.9) and in Long Beach in 1933 (magnitude 6.4). The damage to schools resulting from the 1933 Long Beach earthquake led to passage of the Field Act, which required retrofitting of public schools in California, and construction of new publics schools to best available engineering standards for withstanding seismic shaking. More recently, a 4.2 earthquake occurred on the NIFZ in Century City in 2001, and 4.7 and 4.0 earthquakes occurred on the NIFZ in the Lennox area in 2009. Faults along the NIFZ are capable of a maximum credble 7.5 magnitude earthquake.

2.4 Liquefaction and Landslide Potential

According to the California Department of Mines and Geology (CDMG) Seismic Hazard Zone Map for the Inglewood Quadrangle, soils at the northeast corner of the project area are identified as potentially liquefiable during seismic events. The City of Los Angeles regards the soils below this area as liquefiable based on the findings represented on this map. However, only a portion of the school, as outlined, is at risk of liquefaction according to this map.

There is disagreement in the literature on the location of liquefable soils in the area of the school. For instance, the West Adams, New Community Plan Draft Environmental Impact Report produced in 2012 characterizes the whole school as susceptible to liquefaction during seismic events.

There is no landslide hazard identified on the school or on neighboring properties. The closest landslide hazards are in the northern Baldwin Hills, approximately two miles northwest of the Site.

2.5 Flooding and Inundation Potential

There are no major bodies of water or named drainage channels within one mile of the project area. The closest named or significant water body to the school is the Ballona Creek, an engineered channel for flood control that extends from the Pico area north of the project area, to the Pacific Ocean. It is located 3.1 miles northwest of the project area. Centinela Creek, another engineered channel, is located 3.6 miles west of the project area. The elevation at the northwest corner of the project area is approximately 137 feet above mean sea level (MSL) (Figure 1).

According to California Federal Flood Insurance Rate Map #06037C, panel 1780F, the southwest portion of the school is within Flood Zone X, indicating with less than a 0.2% annual chance for flooding. The northeast portion of the school has a special designation, corresponding with a higher flood risk. While it is still within Flood Zone X, it has a 0.2% chance for flooding, or an area with a 1% chance for flooding with an average depth of one foot. It is essentially equivalent to a 500-year flood zone. The closest 100-year flood zone to the school is approximately 0.6 miles to the southeast.

The Safety Element for the City of Los Angeles Master Plan shows the school within an area of potential inundation if a local dam failed. The Inundation Map for the Hansen Dam, produced by the California Emergency Management Agency (EMA), provides more detail. It shows the area immediately northeast of the project area within the area expected to be inundated if this dam failed. It shows the released water arriving at the school approximately 18 hours after the release, with the maximum height of three feet arriving at approximately 21 hours after the release.

3.0 BACKGROUND

3.1 Site Setting

The school and project area are located in a residential area and are surrounded by single-family or duplexes homes in all four directions. The closest commercial or other land uses are found on Crenshaw Boulevard, 500 feet west of the project area. Seventeen sensitive receptors (public buildings, other schools, parks, hospitals, convalescent homes, and churches), including Crenshaw High School, are co-located with or located within 0.25 miles of the project area.

The closest major highways to the school are Interstate 10, which is 2.6 miles north of the school, and Interstate 110, which is 2.7 miles east of the school. Interstate 405 is located 3.2 miles southwest of the school.

3.2 Description of Project Area Structures, Roads and Other Improvements

Crenshaw High School is a secured set of facilities that is surrounded by a chain-link fence and is monitored by a set of security personnel. Portions of the school facility are secured by individual fences. The primary parking area for the school is at the northeast portion of the campus located northeast of the project area. It is accessed from the north through two gates on West 50th Street. A second parking area used by staff for both Crenshaw High School and View Park is located directly south of the Main Building and west of the southwest corner of the project area. There is temporary parking within the boundary of project area, located east of the kitchen and quad (Figure 2).

There are 13 primary structures on Crenshaw High School. The largest structure within the project area boundary and at the Crenshaw High School campus is the Main Building, a U-shaped, three-story structure that opens toward the project area. It is not within the boundary of the project area.

A single classroom bungalow was previously located at the northeast corner of the Main Building and the northwest corner of the project area. The Physical Education Building is located immediately south of the project area. The two-story, "L"-shaped Industrial Arts Building (also called the S Building) is located north of the concrete quadrangle and the northern project area boundary. A new Wellness Center building is located between the

Industrial Arts Building and the track/football field, immediately northeast of the project area. The remainder of the eastern portion of the Crenshaw High School campus east and southeast of the project area is occupied by the football field/track and the baseball and softball fields at the southeast corner of the campus (Figure 2).

A rectangular, single-story Music Building is located immediately north of the Physical Education Building, and is within the boundaries of the project area. The Food Service and Multipurpose Room (MPR) Building is located at the center of the project area and is east of the Main Building. A multi-purpose auditorium is at the southern end of this building. It is a level, open area with a stage at the east end of the room for school presentations, plays and meetings. The western end of the auditorium has an elevated room for lighting and movie projection equipment. Meals are prepared in the attached Food Service area during the school day. It is also attached to a lunch pavilion located to the north where students can eat their meals. An open, concrete quadrangle with seating areas is located north of the Lunch Pavilion. It is within the project area boundaries. An area of dumpsters is located directly east of the Lunch Pavilion.

A classroom bungalow was previously located immediately east of the concrete quadrangle and within the project area. The bungalow was removed shortly after Pinnacle completed the Phase I Environmental Assessment. The area below the bungalow was repaved.

The parking areas within the project area are asphalt-paved. Fresh asphalt was placed at the former location of the bungalow at the northeast corner of the project area. The access road that extends along the east side of the project area is also asphalt-paved. The quad, lunch pavilion and walkways are concrete-paved. Landscaped areas within and adjacent to the project area, including lawns and mature trees, are located west of the Main Building, between the Music and Physical Education Buildings, and on the east side of the football field. Smaller tress and shrubs are located in elevated planters in the quad. The mature trees in these areas appear to be healthy.

The project area slopes to the northeast, so any precipitation not percolating into landscaped areas travels over paved portions of the project area (parking lots, driveways, quad areas) as sheet flow and is directed to the northeastern corner of the project area. Stormwater drains are located in the access road and in the quad area. A stormwater collection main is located below the center of the project area and the access road. This main is 42-inches in diameter as it enters the project area, where it bifurcates. One main then telescopes down to a diameter of 39 inches and continues south of the project area underneath the playground. The other main turns to the east and passes south of the football field/track. Another main, installed in June 1917, runs from east to west through southern end of the project area. It enters the school between the Main Building and the southern parking lot and continues along the south project area boundary until it reaches the track/football field. Stormwater in these mains flows offsite to the east and then north to Ballona Creek. No evidence of soil borings was observed in the project area prior to conducting this assessment.

The school is within the South Los Angeles Primary Sewer Drainage Basin and the S05 secondary sewershed. Wastewater from the Crenshaw High School is directed to the Hyperion Treatment Plant. The sewer system is operated by the City of Los Angeles Department of Public Works (LADPW). Evidence of a septic system was not observed within the project area boundaries. No private sewers or septic systems were identified within 0.5 miles of the school on the September 18, 2013 map of On-Site Wastewater Treatment Systems (OWTS) for Council District 8 produced by the Wastewater Engineering Services Division of the City of Los Angeles Bureau of Sanitation.

The City of Los Angeles Department of Water and Power (LADWP) supplies power to the school. A single power pole located at the north school boundary brings 34.5 kV power in from the north. No other high-voltage lines operated by either LADWP or Southern California Edison (SCE) are located within 350 feet of the school and project area.

Southern California Gas (SCG) supplies natural gas to the school. According to the Safety Element of the Los Angeles Master Plan and information available on the National Pipeline Mapping System, one in-service high-pressure natural gas transmission line is located within one mile of the school. This transmission line is operated by BP West Coast Products L.L.C. and is located 0.75 miles south of the school at West 60th Street. No gas transmission lines were identifed within the school boundaries.

The Safety Element of the Los Angeles Master Plan and information available on the National Pipeline Mapping System show that no fuel product pipelines exist within one mile of the school. According to the California Division of Oil Gas and Geophysical Resources and information available on the National Pipeline Mapping System, no crude oil pipelines are located within 100 feet of the school.

Water to the school is provided by LADWP. Based on a five-year average of deliveries, approximately 36 percent of the LADWP supplies have been produced from the Eastern Sierra via the Los Angeles Aqueduct system. Approximately 11 percent of the supply has been pumped from wells in the San Fernando Valley. Recycled water accounted for 1 percent of the water delivered to customers over this period. The remainder of the City's supplies (approximately 52 percent) have been imported from Metropolitan Water District sources such as the Colorado River and Feather River.

An abandoned 4-inch LADWP water main and a working 8-inch water main are located in 11th Avenue. Eight-inch mains also run below West 50th and West 52nd Streets, along the north and south borders of the school, and 8th Avenue, along the east border of the school. Four-inch lines are located below 10th and 9th Avenues. They approach the school from the north and "T" into the 8-inch line in West 50th Street. Before construction at the school and the relocation of West 50th Street to the north, these 4-inch lines continued to the south below the former continuations of these streets. According to the LADWP maps, these lines were abandoned in place and they still exist below the school and the central access road that passes along the east side of the project area.

3.3 Previous Investigations

Pinnacle produced a Phase I Environmental Site Assessment Report for Crenshaw High School and adjacent schools dated April 24, 2014. This assessment did not identify any previously conducted environmental investigations for the project area or surrounding school property. However, it identified potential RECs within the project area that were used to produce this PEA Equivalent.

4.0 APPARENT PROBLEM

The earlier Phase I Environmental Site Assessment for the Site identified the following potential RECs:

- Based on the age of the project area buildings, soils may be impacted with lead due to the prior application of lead-based paints (LBP).

- Soils may be impacted with arsenic and OCPs as a result of possible pesticide application within the project area.

There are no known spills or releases of hazardous substances that have occurred at the Site. Due to the planned demolition and construction activities at the project area, soil disturbance could result in the completion of the potential exposure pathways (ingestion, inhalation, and dermal contact) described in Section 5.0.

5.0 ENVIRONMENTAL SETTING

5.1 Identification of Contaminants of Potential Concern

Pinnacle's Phase I Assessment identified a limited number of current and historical land uses within the project area boundaries. Based on this history, Office of Environmental Health and Safety (OEHS) and Pinnacle elected to analyze soil samples for a specific set of potential contaminants. These included the following compounds.

- Total Lead
- Arsenic
- Organochlorine Pesticides (OCPs)

These compounds of potential concern (COPCs) were selected primarily due to the possible use of LBP on buildings intended for demolition, and the possible application of a variety of pesticides (including those with lead and arsenic) in soils below pavements and in planters adjacent to project area buildings.

5.2 Conceptual Site Model

Jill Ryer-Powder, Ph.D., the Principal Health Scientist for Environmental Health Decisions (EHD), performed a Human Health Screening Evaluation (HHSE) as a task within this PEA Equivalent (Appendix A). EHD prepared a preliminary Conceptual Site Model (CSM) to use within their HHSE. The CSM identified potential receptors, exposure media, and exposure pathways within the project area. The COPCs identified above were utilized to prepare the CSM and HHSE.

The COPC concentrations were compared to screening values to assess whether Human Health Risk Assessment (HHRA) activities were needed. The screening level current used for arsenic is 12 milligrams per kilogram (mg/kg), which is the California Department of Toxic Substances Control's (DTSC's) upper bound estimate (95th percentile) for background concentrations in Southern California (DTSC, undated). Lead and OCPs were compared to the most recent versions of United States Environmental Protection Agency (EPA) Region 9 Regional Screening Levels (RSLs) (EPA, 2015). The current RSL for lead in a residential setting is 400 mg/kg. Various threshold concentrations apply to OCPs. These concentrations are consistent with and unmodified by the reviews described in the DTSC Office of Human and Ecological Risk (HERO) in *HERO HHRA Note Number: 3,* dated July 14, 2014 (DTSC, 2014). The maximum detected concentration of each COPC was used as the exposure point concentration in the risk assessment.

School sites are regarded as residential when selecting general environmental settings and risk parameters. Default exposure parameters that represent the reasonable maximum exposure in a residential setting were utilized in calculating risk and hazard.

An exposure pathway describes the route a chemical in a variety of forms may take from a source to an exposure point where a receptor can interact with the chemical. A complete exposure pathway includes five components.

- A primary source(s) of contamination (e.g., storage tanks, the land application of a pesticide)
- A secondary source(s) of contamination (e.g., COPC vapors, contaminated dust, subsurface soil contaminated by the migration of a release substance)
- Release mechanisms (e.g., direct contact of various media, wind-blown dust, stormwater erosion, leaching from various media)
- Transport media (e.g., surface soil, air, stormwater runoff)
- Receptors (e.g., persons or biota).

Typical exposure pathways include incidental ingestion of soil, dermal contact with soils, and inhalation of contaminated fugitive dust. Since volatile chemicals were not identified as COPCs within the project area, the CSM did not consider inhalation of chemical vapors in outdoor and indoor air. The CSM described the pathways by which receptors may have been and might be exposed to the COPCs within the project area.

A summary of the site-specific CSM criteria for the project area is provided below.

5.3 Potential Sources of Contamination

Based on research conducted during Pinnacle's Phase I Environmental Assessment, the potential sources that might result in a release of hazardous substances to the environment included the weathering of LBP (from pre-1979 structures), and lead, arsenic and OCPs as a result of possible pesticide application within the project area.

5.4 Release Mechanisms

The project area was a residential neighborhood prior to construction of the current buildings in 1968. Weathering, scraping, and chipping of potential LBP surfaces may have caused lead to be released and accumulate in soil around past and current structures. The use of lead arsenate and arsenic trioxide as a termiticide and general insecticides has been known to result in significant concentrations of these metals and OCPs in soils around structures with wood components built prior to January 1, 1989. Considering the age of existing structures within the project area and the initiation of residential development prior to the school, lead, arsenic and OCPs may have been released to near-surface soils.

5.5 Transport Mechanisms

Once released to soil, heavy metals and OCPs are relatively immobile. These substances are not easily soluble, and will not typically leach into surface water or migrate to groundwater. They will likely adsorb to soil particles, and they will not volatilize and migrate as vapors. Older releases of these COPCs, prior to school development, are less likely to be discovered in significant concentrations due to the grading for school construction.

5.6 Exposure Points

The primary exposure point currently and during future construction is expected to be dermal contact with surface soil with elevated COPCs. However, exposure could also occur through inhalation of dust, or incidental ingestion of dust.

5.7 Potential Receptors

The potential future receptors include construction workers involved in the demolition of current structures and development of the new structures. Current receptors are primarily students and staff at the school.

6.0 SAMPLING ACTIVITIES AND RESULTS

Pinnacle conducted soil sampling and analysis to assess whether past activities within and immediately adjacent to the project area resulted in environmental impairments. Preparations were also made to collect groundwater grab samples for analysis, but shallow groundwater was not encountered for assessment.

6.1 Stage 1 Soil Sample Collection

The preliminary scope of work provided by OEHS for this investigation established a general sampling protocol based on grid sampling and proximity to project area structures. This preliminary scope of work incorporated 50-foot grid spacing for arsenic sampling and a 200-foot grid was used for LBP and OCP sampling. The lead and OCP sampling protocol added sampling at four locations around each of the four buildings within the project area boundaries. The sampling protocol included two stages of sampling. The second stage of sampling provided for lateral step out locations based on the results of Stage 1 sample analysis.

Pinnacle produced an initial map of 43 proposed Stage 1 sample locations on based on the preliminary scoping criteria. After generating several iterations of the map during discussions with OEHS, Pinnacle met with OEHS at the project area on May 12, 2015 to discuss the final sampling locations and to mark these final locations in chalk. A final proposed sampling map with 46 sampling locations was subsequently produced for performing Stage 1 fieldwork.

In addition to the 46 Stage 1 locations across the project area, four sets of surface soil samples were collected to produce four composite samples for analysis. Three sets were from the planter areas within the Quad. The other set consisted of four samples from a long planter on the west side of the project area (Figure 4).

The surrounding community was notified regarding the field work. A description of public notification efforts is provided in Section 9.0.

Pinnacle prepared a Workplan, Health and Safety Plan (HASP) and Quality Assurance Project Plan (QAPP) for the project. The final Workplan incorporated the Stage 1 sampling locations agreed upon by OEHS and Pinnacle the previous month. The documents were submitted to OEHS on June 19, 2015.

Pinnacle met Spectrum Geophysical (Spectrum) at the project area on July 10 and July 14, 2015 to perform a survey of subsurface utilities. At Pinnacle's request, Spectrum marked the utilities in the vicinity of boring locations in yellow grease pencil rather than colored paints. Several sampling locations were moved short distances to avoid utilities. Another utility locating firm was completing their work while Spectrum began their work for Pinnacle. They marked utilities in colored paints. Pinnacle marked the corners of the project area boundaries and each boring location on July 14, 2015, as required by Digalert. Digalert was notified on July 22, 2015 regarding the intended subsurface work and received number A52031358 to identify the intended subsurface work and to track the progress of notified locaters. None of the Stage 1 sampling locations needed to be moved based on the information generated by the Digalert locaters.

The soil sampling procedure used for the investigation followed suggested procedures for soil sampling and analysis for non-volatile compounds used by OEHS in the past. These procedures have been approved on projects overseen by DTSC. General Pinnacle sampling procedures are provided in Appendix B.

Stage 1 soil samples were collected on July 27 and July 28, 2015 by Strongarm Environmental Field Services, Inc. (Strongarm) using a hand auger. Surface asphalt and concrete was cored as needed prior to sampling. Loose material that entered the hole was removed prior to sampling.

Six soil samples were collected from each boring. The first sample was collected within the first 0.5 feet of soil. Subsequent samples were collected every 0.5 feet to a depth of 3 feet below ground surface (bgs). Auger refusal was encountered at one boring location, PB-25. Another hole was advanced three feet from the original location, and a set of samples was collected starting at the depth of auger refusal and continuing to a depth of 3 feet.

Soil collected from the auger head was transferred to clean 4-ounce glass jars. Disposable latex gloves were worn during sampling and were discarded after sampling each borehole. The filled jars were labeled and placed in a cooler with blue ice.

The following information was provided on each sample label.

- Project area name
- Borehole number (PB-1 through PB-46)
- Sample number (with depth)
- Sampling date and time

The auger heads were decontaminated between boreholes using a tap water/alconox wash, and two tap water rinses.

A chain-of-custody form was completed as sampling was performed. The samples were delivered to the analytical laboratory immediately after collection.

Boreholes were backfilled with hydrated bentonite and patched with asphalt or concrete to match the previous surface. Cuttings and decon water were placed in drums for later disposal. An additional sample was collected from the drums of cuttings for analysis of VOCs using EPA Method 8260B, Title 22 Metals and Total Petroleum Hydrocarbons using EPA Method 8015m. These analytical results were used to characterize the drummed soil for disposal.

6.2 Soil Sample Analytical Methods

Soil analyses were performed by Chemical and Environmental Laboratories, Inc. (C&E), a California state-certified hazardous waste laboratory. The four sets of individual soil samples collected from planters at and near the quad were composited at the lab.

Selected samples were analyzed for the following constituents, using a normal turnaround time.

- Total Lead - EPA Method 6010B
- Arsenic - EPA Method 6010B
- Organochlorine Pesticides - EPA Method 8081A

The shallowest soil sample was analyzed from each boring. Additional samples were analyzed from each boring until a sample achieved an arsenic concentration of 12 milligrams per kilogram (mg/kg) or less, a lead concentration of 80 mg/kg or less, and a non-detectable concentration of OCPs.

6.3 Stage 1 Soil Sample Analytical Results

Organochlorine Pesticides

Six-inch samples from 21 of the 46 Stage 1 soil borings were analyzed for OCPs. The four composite samples from the quad planters were also analyzed for OCPs. None of the planter soil samples contained OCPs. Two of the shallow soil samples, PB-36-6” and PN-33-6” contained two to three types of pesticides. Alpha-chlordane was detected in both of the samples at a concentration of 5 micrograms per kilogram (μg/kg). Gamma-chlordane was detected in sample PB-36-6" at a concentration of 3 μg/kg. Gamma-chlordane was identified in sample PB-33-6" at a concentration of 4 μg/kg. A dieldrin concentration of 2 μg/kg was also detected in sample PB-33-6" (Table 3).

The soil samples with detectable OCPs were located at the west side of the MPR building and did not correlate with any surface structures or depressions in the unpaved surface.

The maximum concentrations of the OCPs detected in the soil samples did not exceed the residential California Human Health Screening Levels (CHHSL) for chlordane (430 μg/kg) and dieldrin (35 μg/kg). In addition, the levels of the detected OCPs did not exceed the EPA Residential RSLs for chlordane (1,670 μg/kg) and dieldrin (34 μg/kg). Additional soil samples were not required to delineate the vertical extent of OCPs in the Stage 1 borings (Table 3).

Total Lead

The six-inch soil samples from 21 of the 46 Stage 1 borings and the four composite samples from the planters were analyzed for total lead. The lead results from the subsurface samples ranged from below the detection limit to 53 mg/kg in sample PB-44-6". The next highest result was 31 mg/kg in sample PB-18-6". These highest results were an outlier for this set of data. The remainder of the lead results did not exceed 15 mg/kg. The lead results from the planter samples ranged from 11 to 20 mg/kg (Table 4, Figures 4 and 5).

The borings with the highest three lead results were selected for additional analysis to delineate vertical extent. In borings PB-30 and PB-44, lead concentrations in the 12-inch samples were 2 and 8 mg/kg, respectively. In boring PB-18, the 12-inch sample contained a lead concentration of 18 mg/kg. The 18-inch sample was then analyzed. It contained a lead concentration of 11 mg/kg (Table 4).

None of the analyzed soil samples contained a total lead result above the residential CHHSL of 80 mg/kg and the EPA residential RSL for lead of 400 mg/kg.

Arsenic

The six-inch samples from 36 of the 46 Stage 1 borings, and the four composite samples from the planters, were analyzed for arsenic. Sixteen of the 36 samples did not have a concentration of arsenic above the reporting limit of 1 mg/kg. The remaining samples contained arsenic concentrations from 1 to 34 mg/kg. Nine of these 20 samples contained arsenic concentrations above 12 mg/kg, which is the DTSC upper bound (95^{th} percentile) estimate for background arsenic concentrations in Southern California. Any of the samples with a detectable arsenic result potentially contain arsenic above the residential CHHSL for arsenic of 70 micrograms per kilogram (μg/kg), because the reporting limit for EPA Method 6010B is 1,000 μg/kg (1 mg/kg). However, this screening value is intended for assessing data gathered from property that is contaminated due to human activity (Table 4, Figure 6).

The four composite samples from the planters contained arsenic concentrations between 2 and 6 mg/kg (Table 5, Figure 5).

A screening level of 12 mg/kg was used to determine whether additional analyses were required to assess the vertical limit of arsenic above background levels. Based on the arsenic data generated from a depth of six-inches, nine additional soil samples collected at 12 inches were also analyzed to determine vertical extent. Seven of these deeper samples did not contain an arsenic concentration above the reporting limit of 1 mg/kg. One sample had an arsenic concentration of 4 mg/kg, and one sample (PB-1-12") had an arsenic concentration of 16 mg/kg. The 18-, 24- and 30-inch samples from boring PB-1 were also analyzed to reach a depth where the arsenic concentration did not exceed the target concentration of 12 mg/kg.

All of the boreholes near the access road were advanced through poorly-sorted silts, sands and gravels with no odor. Small bits of foreign material in this soil indicated that it was fill. Samples collected along the eastern curb at the northeast corner of the project area encountered well-sorted sands. This material was also characterized as fill, likely related to later pipeline/utility installations.

The soil analytical results for this assessment are summarized in Tables 2, 3 and 4. Appendix C contains the laboratory analytical reports, laboratory QA/QC documentation, and chain-of-custody records for the collected soil samples.

6.4 Stage 2 Soil Sample Analytical Results

A set of Stage 2 step out locations was proposed based on the analytical results of the Stage 1 boring analyses. The Stage 1 arsenic results required 11 additional sample locations to delineate lateral extent (Figure 6). Three of the borings were located at the northeast corner of the project area. The remaining eight boring locations were along the access road on the eastern side of the project area. The Stage 1 lead and OCP results did not require additional assessment based on the selected criteria.

The 11 additional Stage 2 soil borings were marked with chalk on September 28, 2015. Digalert was notified on that date regarding the additional subsurface work. Pinnacle received Digalert ticket number B052710310 to initiate marking the new boring locations and to perform the work. The soil sampling was performed on October 2, 2015 by Strongarm, using the same methods used to conduct Stage 1 sampling.

The 6-inch samples collected at seven of the Stage 2 locations contained arsenic concentrations of less than 12 mg/kg. The four other sampling locations (PB-52, PB-53, PB-55 and PB-56) contained arsenic concentrations between 12 to 23 mg/kg at a depth of 6 inches. Soil samples were analyzed to a depth of one foot at boring locations PB-52 and PB-56 to reach soil with an arsenic concentration of 12 mg/kg or less. Soil samples were analyzed to a depth of 1.5 feet at boring locations PB-53 and PB-55 to reach an arsenic concentration of 12 mg/kg or less. The highest Stage 2 arsenic concentration of 30 mg/kg was identified in sample PB-55-1.0" (Appendix C).

Figure 6 illustrates the final arsenic results for Stage 1 and 2 soil samples collected at a depth of 6 inches. Table 4 is a compilation of the Stage 1 and Stage 2 arsenic data.

6.5 Discussion of Stage 1 and 2 Sampling Results

None of the soil samples collected during Stage 1 and 2 sampling contained arsenic levels exceeding the TTLC for arsenic of 500 mg/kg, or a concentration 10 times above the STLC for arsenic of 5 mg/L (i.e. 50 mg/L). Similarly, none of the soil samples contained pesticide levels above the TTLC or STLC for these analytes.

None of the Stage 1 and 2 soil samples contained a lead level above the lead TTLC of 1,000 mg/kg. One soil sample (PB-44-6") contained a lead concentration that exceeded a concentration ten times the Soluble Threshold Limit Concentration (STLC) for lead of 5.0 milligrams per liter (mg/L). This sample was analyzed for soluble lead using a Waste Extraction Test (WET) procedure as a waste characterization for the soil. The analytical result of 3.9 mg/L did not exceed the STLC for lead. The cumulative Stage 1 and 2 analytical data indicates that the soil within the project area is not hazardous according to Title 22 of the California Code of Regulations.

The 95% upper confidence limit (UCL) of the mean for the accumulated Stage 1 and 2 arsenic data, 12.65 mg/kg, was slightly higher than the accepted background screening level of 12 mg/kg. Appendix A contains a summary of the calculations. Eighteen of the 73 analyzed soil samples had arsenic levels exceeding the LAUSD screening level. All but 3 of the 18 soil samples with arsenic concentrations above 12 mg/kg were collected at a depth of six inches. Two of the samples with arsenic exceeding 12 mg/kg were collected at a depth of one foot and one was collected at a depth of 1.5 feet.

The Stage 1 and 2 soil analyses identified two areas with elevated arsenic: a larger area below a portion of the access road and parking area along the eastern project area boundary, and two unpaved sample locations (PB-1 and PB-2) at the northwest corner of the project area (Figure 6). Since the asphalt within the project areas will be removed during demolition, it is recommended that the shallow soils below them with arsenic concentrations above 24 mg/kg be removed from the site as a precautionary measure. This soil is poorly sorted fill/base within the area outlined on Figure 6 in this report. A more detailed outline of the recommended excavation area on a plat map is provided in Appendix D. The soil within this marked area would be removed to a depth of one foot below the existing asphalt pavement with the exception of the following two locations. The soils at sampling locations PB-53 and PB-55 should be removed to a depth of 1.5 feet below the base of the current asphalt.

An estimated in-place volume of 525 cubic yards of material will be transported from the project area under this recommended scenario. This calculated volume assumes that the deeper excavations centered at locations PB-53 and PB-55 will each have a maximum area of approximately 100 square feet.

The analytical results generated during this PEA Equivalent indicate that any soil removed from the project area has been and will be transported as a non-hazardous waste. In addition, it may be suitable for disposal/reuse at the Los Angeles County landfills if asphalt and green waste are minimized. No additional confirmation sampling at the project area should be required after any future excavation of the material. Additional sampling and analysis of the transported material may be required, depending on the final destination and volume to be transported.

7.0 LOCAL EXCAVATION ACTIVITIES

7.1 Location PB-1

Arsenic concentrations above 12 mg/kg were observed at boring location PB-1 to a depth of 2 feet bgs. Since the soil at sample location PB-1 was not asphalt paved, it was determined that a limited removal of soil would be conducted as a task of this PEA Equivalent.

Pinnacle arranged for the removal of a small volume of soil from sampling location PB-1 to a depth of 2.5 feet below grade, which is the depth where an arsenic concentration of less than 1 mg/kg was encountered in the boring. Pinnacle marked the area of the excavation on January 12, 2016 and procured Digalert ticket number B60550300 for the subsurface work on February 24, 2016. Excavation of the soil at the boring location was performed by hand on March 2, 2016. Approximately 0.75 cubic yards of soil was removed. The excavated soil was placed in three sealed drums, which were sealed and moved to the dumpster area near the kitchen. The stored drums remained within the project area. The drums were transported for disposal under a non-hazardous waste manifest on March 8, 2016. Appendix X contains a copy of the manifest.

7.2 Location PB-2

The soil at sampling location PB-2 and some immediate areas was excavated for a utility repair project after Stage 1 soil sampling was conducted. The soil from these excavations was stockpiled on the asphalt adjacent to the excavations. It is assumed that the disturbed soil from these excavations was used as backfill.

8.0 HUMAN HEALTH SCREENING EVALUATION

Jill Ryer-Powder, Ph.D., the Principal Health Scientist for Environmental Health Decisions (EHD), performed a Human Health Screening Evaluation (HHSE) as a task within this assessment. The HHSE was required to evaluate whether an additional Human Health Risk Assessment (HHRA) would be required prior to construction activities. The results of the EHD HHSE are provided in Appendix A.

The list of COPCs was generated while developing the scope of work for this assessment addendum. The EHD HHSE provided a Conceptual Site Model (CSM) that identified the potential receptors (residential), the exposure media (soil), and the exposure pathways (dermal, inhalation of outdoor air, vapors and dust, and potential ingestion) for these COPCs within the project area boundaries.

The HHSE compared the accumulated Stage 1 and 2 laboratory data against recognized appropriate screening values. As discussed earlier, the current screening level for arsenic is 12 mg/kg. Lead and OCPs were compared to the most recent versions of EPA Region 9 RSLs. The current RSL for lead in a residential setting is 400 mg/kg. OCPs have individual, specific RSLs. These concentrations were modified when needed, based on discussions in the DTSC Office of Human and Ecological Risk (HERO) in *HERO HHRA, Note Number 3*. The maximum detected concentration of each COPC was used as the exposure point concentration in the HHSE.

The EHD HHSE considered both cancer risks from carcinogens, and noncancer health effects from other chemicals. The cumulative cancer risk calculated by EHD for the project area was 1.4×10^{-7}, which does not exceed the *di minimus* risk value of 1×10^{-6}. The calculated noncancer hazard index of 0.002 did not exceed the acceptable value of 1. No additional investigation is indicated based on these results.

9.0 ECOLOGICAL SCREENING EVALUATION

Ecological Screening Evaluations (ESEs) are conducted to determine whether an Ecological Risk Assessment (ERA) or eventual remedial actions are required in environmentally sensitive natural resources (ESNR) associated with contaminated sites, and to provide the means to determine ecological risk-based remediation goals. ESNRs are defined as environmentally sensitive areas on or adjacent to contaminated sites. More specifically, an ESE calculates risk factors for non-domesticated terrestrial and aquatic plants and animals, but can also include domesticated species, such as livestock.

An ecological risk evaluation was not deemed necessary or conducted for the project area because Crenshaw High School is located in a fully-developed urban setting, is occupied predominately by commercial and residential building structures, and does not maintain natural resources required to support wildlife habitats.

10.0 COMMUNITY PROFILE AND OUTREACH

10.1 Community Profile

Crenshaw High School is surrounded by a residential neighborhood consisting primarily of single-family homes.

Crenshaw High School is located within ZIP Code 90043. According to 2010 Census data the population for this ZIP code is 44,789. This population is broken down into White (11%), Black or African American (66%), Hispanic or Latino (29%) and Some Other Race (17%, note that perentages exceed 100 due to individuals identifying with more than one classification). Spanish or Spanish Creole is the most common non-English language spoken in this ZIP code (29% and 56% of Spanish speakers also speak English). After Spanish, the next most spoken non-English language is African (1% with 89% also speaking English).

10.2 Notice of Fieldwork

The Community Relations Group at LAUSD provided a general notification that was edited by the OEHS Project Manager and Pinnacle to describe the work to be conducted at the project area. The Community Relations Group at LAUSD provided a spanish translation of the final notification. The following groups were provided with a copy of the notification.

- Surrounding Residences (737 total) – Mailed on May 29, 2015 to those on a list generated by the LAUSD Community Relations Group.
- School Teachers and Staff (88 total) – Placed in school mailboxes.
- Parents of School Students (400 total) – Distributed to students on June 2, 2015 by the school.
- Posted Notices – Placed at visible locations on fences and walls surrounding the project area.

Copies of the notification were also left for review in the Main Office at the school. A copy of the notice is provided as Appendix F.

10.3 Public Comment Period

A draft version of this PEA Equivalent report was available for public comment between April 28 and May 30, 2016 at the following locations:

- **Crenshaw High School:** 5010 11th Street, Los Angeles, CA
- **Angeles Mesa Library:** 2700 W 52nd Street, Los Angeles, CA
- **LAUSD OEHS:** 333 S Beaudry Avenue, Los Angeles, CA
- **LAUSD Website:** http://achieve.lausd.net/Page/3660

Notices containing the above information and that a Public Meeting was held on May 10, 2016 were published in the Sentinel (English) and La Opinión (Spanish) newspapers. In addition, a flyer was prepared and distributed announcing the Public Meeting. Copies of these newspaper notices (published on April 28th), the proof of publication, the proof of mailing to surrounding properties, the Agenda for the Public Meeting (in English and Spanish), and a summary of the memorandum on the Public Meeting have been included in Appendix F of this report.

No public comments were received during the public comment period. E-mails to this effect are included in Appendix F. Therefore, updating this section and Appendix F are the main revisions of the "Draft" document to produce this "Final" document.

11.0 CONCLUSIONS AND RECOMMENDATIONS

Pinnacle has completed the following work at the project area.

- Fifty-seven soil borings were advanced by hand auger to depths of between 1.5 and 3.0 feet bgs. All of the 46 Stage 1 borings reached a target depth of 3.0 feet bgs. Six of the remaining 11 Stage 2 borings reached auger refusal at depths as shallow as 1.5 feet bgs. All of the borings reached an adequate depth to delineate vertical extent of the COPCs.

- A total of 326 soil samples were collected from the soil borings at depths of between 0.5 and 3.0 feet bgs. Soil samples from the elevated planter on the western project area boundary and the elevated planters surrounding and within the quad were collected for compositing and analysis by the lab.

- Selected soil samples were analyzed for OCPs using EPA Method 8081A, arsenic using EPA Method 6010B and total lead for EPA Method 6010B.

- Since saturated conditions were not encountered in any of the boreholes, no groundwater grab samples were collected.

- Twenty-nine of the 56 soil samples analyzed for arsenic contained arsenic at concentrations ranging from 1 to 34 mg/kg. The highest arsenic concentrations are located in areas of fills on the east side of the project area, below the access road. A smaller area of elevated arsenic was identified at the northwest corner of the project area.

- Twenty-eight of the 30 soil samples analyzed for lead contained lead at concentrations ranging from 1 to 53 mg/kg. The higher lead concentrations are outliers that do not correlate with particular soil types or the project area location.

- Two of the 26 analyzed soil samples contained chlordane at concentrations ranging from 11 and 26 μg/kg. One soil sample had a dieldrin concentration of 2 μg/kg. These concentrations are well below the residential RSLs for chlordane (1,670 μg/kg) and dieldrin (34 μg/kg).

- While there is a well-defined area of fill on the east side of the project area with arsenic concentrations slightly above the typical background level of 12 mg/kg, these soils are currently below pavements. As such, they do not represent a current risk to students or staff, and they will not represent a risk to students, staff or construction crews in the future.

- Soil with elevated arsenic was identified at boring PB-1 to a depth of 2 feet bgs. It was excavated and transported from the project area. A second area of arsenic at boring PB-2 was excavated during a utility repair project. It is assumed that the disturbed soil, which was mixed with soil from another nearby excavation, was returned to the excavation.

- None of the soil sampled during this investigation meets the State of California or Federal definitions for hazardous waste.

Based on these results, Pinnacle provides the following recommendations.

- Based on the results of this additional soil sampling and health screening, Pinnacle does not recommend additional investigation for the identified COPCs.

- As a precaution, Pinnacle recommends removal and offsite disposal of approximately 525 cubic yards (in place) of fill material located the east margin of the project area. This area is defined by arsenic concentrations above 24 mg/kg. Based on the latest analytical results, the soil should be accepted for disposal/reuse at Los Angeles County landfills. The recommended depth of removal is one foot below the base of the current asphalt pavement, except at the following locations. The soils at sampling locations PB-53 and PB-55 should be removed to a depth of 1.5 feet below the base of the current asphalt.

- No additional confirmation sampling should be required after recommended excavation and removal of soils from the project area.

REFERENCES

California Code of Regulations, Title 22, Chapter 11, Article 3 (i) and (iii).

California Environmental Protection Agency, Department of Toxic Substance Control, February, 1997, *Selecting Inorganic Constituents as Chemicals of Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities, Final Policy*.

California Environmental Protection Agency, Department of Toxic Substances Control, January 16, 2009, *Arsenic Strategies: Determination of Arsenic Remediation, Development of Arsenic Cleanup Goals*.

California Office of Environmental Health Hazard Assessment, *Soil Screening Numbers – Updated Tables*, September 23, 2010.

Kearney Foundation of Soil Science, 1996, *Background Concentrations of Trace and Major Elements in California Soils*.

National Center for Environmental Assessment, 1996, Cited in USEPA's *Region 9 Preliminary Remediation Goals (PRGs),* San Francisco, CA.

Sanitation Districts of Los Angeles County, *Sampling Frequencies and Contamination Concentration Limits for the Sanitation Districts' Soil Acceptance Program*, DOC# 2070074.

Sanitation Districts of Los Angeles County, January 6, 2015, *Simplified Dirt Acceptance Procedures at the Puente Hills, Calabasas and School Canyon Landfills,* DOC# 3174055.

Teaf, C.M., et al, 2010, "Arsenic Cleanup Criteria for Soils in the US and Abroad: Comparing Guidelines and Understanding Consistencies," *Proceedings of the Annual Conference on Soils, Sediments, Water and Energy*, Volume 15, Article 10.

United States Census Bureau, American Fact Finder, 2010 Demographic Profile for ZIP code 90043, Accessed June 2010.

United States Environmental Protection Agency, 1999, *U.S. EPA Region IX Preliminary Remediation Goals*.

United States Environmental Protection Agency, Ocotber 14, 2015, *Screening Tools for Chemical Contaminants – RSL Calculator*.

APPENDIX A

HUMAN HEALTH SCREENING EVALUATION
PREPARED BY
ENVIRONMENTAL HEALTH DECISIONS

APPENDIX B

GENERAL FIELD PROCEDURES

The following sections outline the general field procedures and protocols followed by Pinnacle Environmental Technologies (Pinnacle) in the completion of field tasks. Some but not necessarily all of these procedures were used during this investigation. Any deviation from the procedures outlined here due to unique or unforeseen circumstances will be noted in the body of the applicable report. The following tasks are detailed:

- Soil Sample Collection - Direct Push Rigs, Hollow Stem Auger Sampling
- Soil Classification and Logging
- Chain-of-Custody Protocol

Soil Sample Collection

Soil samples are collected to allow soil description/classification and for laboratory analysis. Samples may be collected using a variety of different techniques including: hollow stem auger rigs (drop hammer samplers), direct push rigs, composite grab samplers, or excavation samples. The sampling technique utilized will be selected based on the particular phase of work and sample requirements. All soil samples collected during drilling operations are also monitored for volatile organic vapors. This is accomplished using a photo-ionization detector (PID) and LEL meter to monitor the soil either at the ends of sample tubes or after it has been placed in sealed Ziploc bags. The maximum PID and LEL readings are recorded on the boring log. Field headspace readings are also used to determine if a soil sample will be analyzed in the laboratory.

Direct-Push Drill Rigs

Samples collected using direct-push techniques are collected in either brass/stainless steel tubes or acetate sleeves. The sampling device is advanced using hydraulic pressure and a hammer into undisturbed soil ahead of the sampler. The sleeves or tubes are removed from the sampling device after retrieving the sampler from the boring. If acetate sleeves are used, the sleeve is examined and the sample portion selected for laboratory analysis is cut off from the main sleeve. A 4 to 6-inch portion is typically removed for laboratory analysis. After the sample tubes are retrieved from the sampler, each tube is sealed using Teflon tape and plastic end caps. Each sample tube is labeled with the sample identification, date and time of sampling, and sample site identification. The sample is then placed in a cooler chilled with either blue ice or “wet” ice for transport to the laboratory.

Hollow Stem Auger Sampling

Hollow stem auger samples are typically collected in split tube samples, "California" samplers, or Shelby tubes. When a sample for laboratory analysis or standard penetration test (SPT) data is required, the sampler is driven into undisturbed soil with a down hole or standard 140 pound geotechnical hammer. The sampler is lined with brass/stainless steel (if required for metal analysis) tubes for handling the undisturbed samples at the surface. Tubes are not used for SPTs. After bringing the sampler to the surface and removing the tubes with sample, they are handled as described earlier in this section. Samples for description are released from the sampler shoe and placed into a Ziploc bag for headspace analysis and visual inspection. Disturbed samples for geotechnical analysis are placed in Ziploc bags.

All augers, rods and/or samplers used to collect soil at the Site were steam-cleaned between locations.

Soil Classification and Logging

Soils are classified in the field in conformance with the Unified Soil Classification System (USCS-ASTM D2487).

A boring log is maintained for soil borings and well installations. Each log records the sample identification, collection location, depth and interval; number of blows required for sample collection (drop hammer samplers only); USCS soil type, color, field density estimation, field moisture content estimation, physical characteristics (grain size, sorting, roundness, odors, and other distinguishing characteristics); and, time of sample collection.

If a boring is not converting to a well, it is backfilled with either hydrated bentonite chips, Volclay grout, bentonite cement, Portland cement, or a combination of the above. Borings are backfilled in accordance with any prevailing local standards and regulations.

Chain-of-Custody Protocol

All soil samples that are collected are documented using chain-of-custody (COC) procedures. Each sample is identified and entered onto the COC record along with the date and time of collection and the type and number of sample containers. COC documents also typically used to document which analyses are completed on each sample. The COC follows the samples from the field to the laboratory and is a legal document recording who had possession of the samples at all times.

The soil samples were delivered to the laboratory on the day of sample collection. They were immediately put into a refrigerator after acceptance by the laboratory.

APPENDIX C

LABORATORY REPORTS AND CHAIN-OF-CUSTODY RECORDS FOR SOIL SAMPLES

APPENDIX D

MAP OFAREA RECOMMENDED FOR SHALLOW FILL REMOVAL

APPENDIX E

MANIFEST FOR EXCAVATED SOIL REMOVAL

APPENDIX F

PUBLIC PARTICIPATION