INFORMATION HANDOUT

For Contract No. 07-2W5404
At 07-Ker-5725

Identified by
Project ID 0713000206

MATERIALS INFORMATION

FOUNDATION REVIEW
May 28, 2013

HAZARDOUS WASTE ASSESSMENT
August 13, 2013

SITE INVESTIGATION FOR HAZARDOUS MATERIALS / WASTE IN SOIL
August 5, 2013

State of California

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: MR. SEAN SAMUAL, Chief
Office of Transportation Architecture

Date: May 28, 2013
File: 07-Kern-005, PM 0.5
EA: 07-2W540
Proj. ID 0713000206

Attention: Edward Zhang

Wash Rack Improvement

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design – South 1
Branch D

Subject: Foundation Review for Wash Rack Improvement at Lebec Maintenance Station

Reference: Foundation Comments and Recommendations for Lebec Maintenance Station Special Designation L5725, dated September 2, 1998.

INTRODUCTION

As requested by Office of Transportation Architecture (OTA) in an email dated April 17, 2013, the Office of Geotechnical Design South 1 (ODGS1) has prepared a foundation review for the proposed Wash Rack Improvement located at Lebec Maintenance Station (MS) south of Lebec Overcrossing at Interstate 5 in Kern County, California. Due to constrains in both schedule and resources, OTA requested OGDS1 to review "Foundation Comments and Recommendations" prepared in 1998 (Reference) to confirm if the recommendations are still valid, and to provide updates if necessary.

SCOPE OF WORK

Tasks completed by OGDS1 included the following:

1. Review of pertinent information from previous geotechnical report (Reference), As-Built Log of Test Borings (LOTB) for Lebec Overcrossing (OC) Bridge No. 50-0270 (1963), and As-Built Plans for Lebec MS (1998).
2. Review of the regional geology and seismicity.
3. Review of existing site condition by OGDS1 representatives on May 14, 2013.

PROJECT DESCRIPTION

The proposed improvement at Lebec Maintenance Station includes demolishing the existing wash rack canopy and the adjacent equipment building, and replacing them with new wash rack housed in a new masonry building at the same site of existing wash rack.

As indicated in the draft typical wash rack plans (Sheet Nos. ST1-1 to ST1-4, forwarded to OGDS1 by Mr. Edward Zhang via email dated May 2, 2013), the proposed wash rack will be 56 ft by 44 ft supported by spread footings, with the bottom of footings at an elevation of about 3.5 ft below grade for the masonry bearing walls, and 6 ft below grade for sedimentation basin. OGDS1 understands that spread footings are designed with maximum allowable design bearing pressure not exceeding 2500 psf.

SITE GEOLOGY AND SUBSURFACE CONDITIONS

Regional Geology

The project lies within the Transverse Ranges Geomorphic Province. The Transverse Ranges Province is characterized by east-west trending mountain ranges unlike most of the other mountain ranges in California, which parallel the northwest-southeast trending San Andreas Fault.

The site is located within the Tejon Pass. The Tejon Pass is a mountain pass between the southwest end of the Tehachapi Mountains and northeastern San Emigdio Mountains.

Site Subsurface Conditions

Based on the Lebec OC As-Built LOTB (1963), subsurface soil consist of loose to slightly compact (medium dense) sandy silt, silty sand, and sand to 45 ft of depth (approximate elevation 3510 ft) underlain by a layer of dense to very dense silty sand, sand, and sand with gravel to 65 ft below grade (approximate elevation 3490 ft).

Groundwater

No groundwater was noted in Lebec OC As-Built LOTB (1963) to the maximum 65 ft depth drilled (approximate elevation 3490). No groundwater records were found in a search of the DWR or SWRCB records for the surrounding area. Nearby Castac Lake is approximately 0.7 miles from the site and has an elevation of approximately 3484 feet above mean sea level.

CORROSIVITION EVALUATION

No corrosion data was indicated in the As-Build information (Reference). Based on lithology, subsurface condition (Reference) and based on the existing site condition observation, it could be interpreted that site is non-corrosive for concrete and metal.

SEISMICITY

Faulting and Seismicity

The nearest fault to the site is the Garlock (West) Fault at a distance of 0.85 km. The Caltrans ARS online website lists the Garlock (West) Fault as a 90° strike-slip fault with an M_{Max}

(Maximum Magnitude) of 7.7. However, the fault that contributes the most ground acceleration hazard for the site is the San Andreas (Big Bend), which is at a distance of 3.41 km. The San Andreas (Big Bend) is a 90° strike-slip fault with an M_{Max} of 7.9.

Potential Seismic Hazards

Based on the 2010 CBC design code, ground motions were determined as per ASCE-7 using the USGS Ground Motion Calculator Tool accessed at http://geohazards.usgs.gov/designmaps/us/application.php on May 20, 2013. The tool uses 2008 USGS fault hazard data. The following parameters can be used for the site:

S_S – 2.620g
S_1 – 1.159g
S_{MS} – 2.620g
S_{M1} – 1.739g
S_{DS} – 1.746g
S_{D1} – 1.159g

These parameters were calculated using a site soil classification of "D" for stiff soil and a risk category of I/II/III.

The risk of liquefaction and lateral spreading at the site is low due to the depth to groundwater, and the risk of seismically induced landslides is very low due to the level topography of the site.

Surface Fault Rupture Hazard

The site is within an area zoned by the Alquist-Priolo Earthquake Fault Zone Act as at risk for surface rupture from the Garlock Fault (Figure 1). Fault rupture offset for the Garlock Fault is estimated to be on the order of 10-13.5 feet based on previous fault studies for bridges affected by the Garlock Fault.

FOUNDATION RECOMMENDATIONS

Based on OGDS1 review, the foundation recommendations provided in 1998 report (Reference) may be used for design of the proposed wash rack foundation considering the following:

1. **Design loads applied to proposed foundation (2010 CBC) are not available at the time of this review. This review will be revised upon receiving design loads from project designer.**

2. OGDS1 understands that proposed wash rack building will be supported by reinforced concrete spread footings, with the bottom of footings at an elevation of about 3.5 ft below grade for the masonry bearing walls, and 6 ft below grade for sedimentation basin.

3. In order to provide uniform support for the building slab and foundations, remedial grading consisting of overexcavation and backfilling is required. A minimum depth of 2 ft should be overexcaveted below bottom of the proposed building footings and floor slabs and backfilled with approved fill compacted to 95% relative compaction. Lateral extent of overexcavation should be 4 ft minimum beyond building perimeters and to at least 4 ft beyond footing edges, where possible.

4. Maximum allowable bearing pressure of 2500 psf may be used in the design of continuous and spread footings when supported on the above mentioned approved compacted fill.

5. Total static settlement for footings supporting column load of 20 kips and wall loads of 2500 psf are not anticipated to exceed one inch.

6. Percolation test may be required at the subject site.

7. Provisions should be made for control of drainage and surface water around buildings. Concentrated drainage, such as rainwater from gutter and downspouts, scuppers, and roof valleys should be diverted away from foundations by means of concrete splash blocks and/or other approved devices.

8. No vapor barrier is needed unless required by Design or Hydraulics Units.

CONSTRUCTION CONSIDERATIONS

1. Quality control should be practiced to ensure that bottom of the footing excavation is level and clear of any loose debris. Should any large rock/debris be found at the bottom of the footing elevations, the contractor should be prepared to remove, and replace with granular material at 95% relative compaction.

2. The fill is to be constructed in accordance with Section 19 of the Standard Specification and other requirements as directed by the Design Engineer.

3. Excavations of site soils should be temporarily shored or sloped in accordance with Cal OSHA requirements.

4. Caltrans Utilities should be consulted prior to commencement of earthwork relative to abandonment/relocation of the existing underground utilities within the zone of proposed construction.

For further information, contact M. Mushtaq Ahmed at 213-620-2132 or Shiva Karimi at 213-620-2146.

Prepared by: Date:5/28/13

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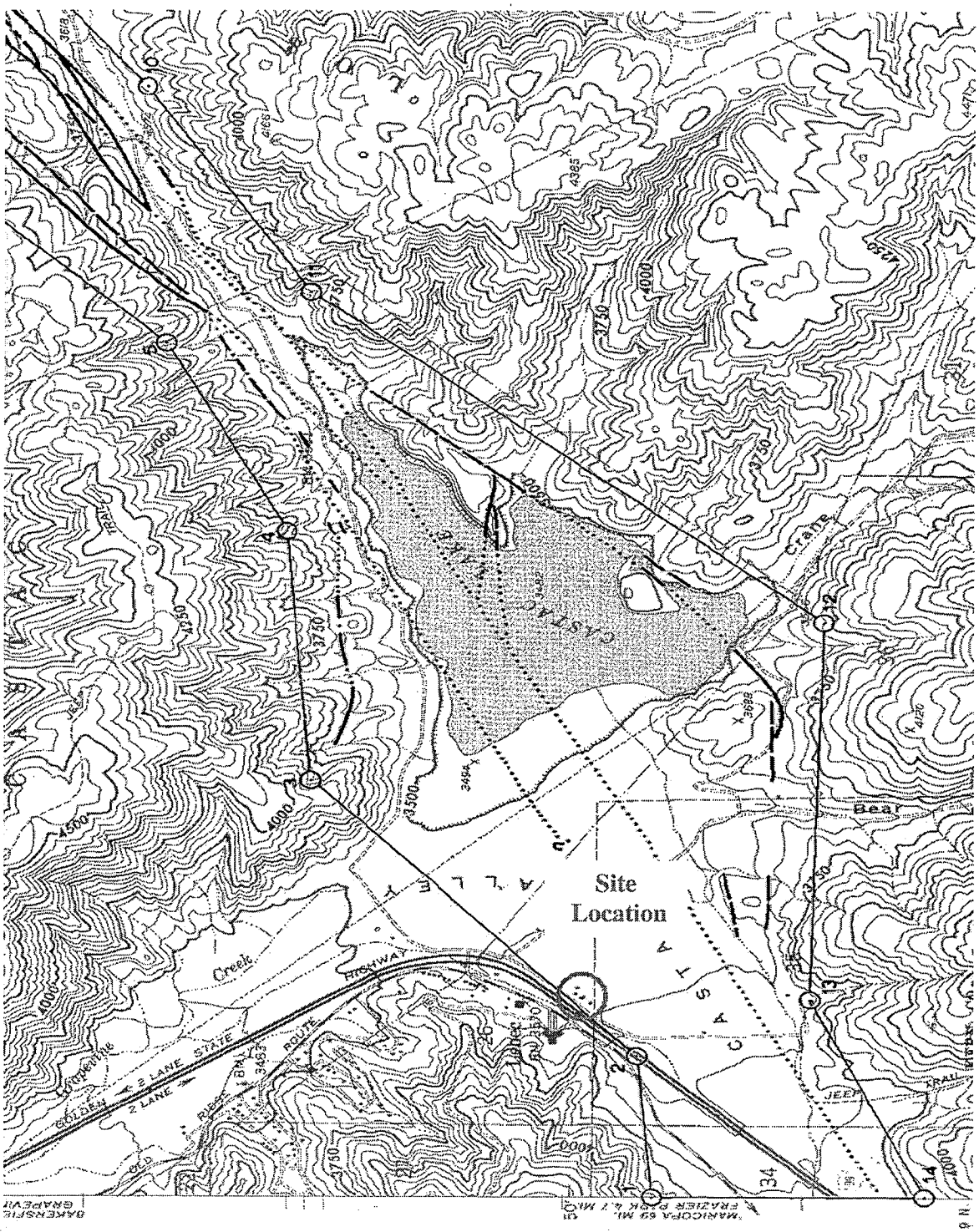
Figure 1 – Site Location within AP Zone



State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: SHAFIQUAL ISLAM
SENIOR TRANSPORTATION ENGINEER
OFFICE OF MAINTENANCE DESIGN

Date: August 13, 2013

File: 07-LA-5
07-L5551
EA: 2W5401

From: AYUBUR RAHMAN
Senior Transportation Engineer
Office of Environmental Design
District Hazardous Waste Coordinator - North Region

Subject: **Hazardous Waste Assessment for PS&E**

This is in response to your request dated April 24, 2013, requesting for Hazardous Waste Assessment for the above referenced project. Maintenance Design is in the process of preparing PS&E package for a HM-2 project at Lebec Maintenance Facility. This facility is located at 36282 Golden State Highway, Lebec, Kern County. This project proposes to remove and dispose existing Equipment Building and existing Washrack Building and construct a new Washrack/Basin Building approximately 2464 square foot. We have been informed that electrical components will require removal and all excavated soil will require disposal.

All the work is within State right-of-way.

We have been informed that the buildings requiring demolition were built in 1999. A recycling system installed in a building requiring demolition is not in operation for last one and half year. It is our understanding that maintenance clean clarifier sediment twice a year or as needed.

Based on the available information at this time, the project area within Caltrans Right of Way is given the hazardous waste assessment as noted below.

A Site Investigation (SI) was conducted by Stantec in June 2013 to evaluate the potential release of heavy metals and other chemicals from existing site operations and to make necessary recommendations for handling and/or disposal of impacted soil during construction. Soil samples were collected from rinse slab area, washrack area, equipment room and around lift station area at various depths from surface to 10 feet below ground surface (BGS). The soil samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), Title 22 metals and pH. The laboratory data do not indicate the existence of significant release of chemicals to the subsurface soils. However, low levels of TPH and elevated background concentrations of arsenic were reported. Impacted soils do not appear to exhibit characteristics of a hazardous waste. Therefore we recommend that all excavated soil can be managed as non-hazardous and should be disposed of at an appropriate permitted facility/landfill due to the presence of low level of TPH and arsenic. Attached please find a copy of HQ approved non Standard Special Provision for your PS&E.

Enclosed please find a Site Investigation report prepared by Stantec, dated August 5, 2013 for your use.

The concrete brick buildings with metal roof requiring demolition have no hazardous waste concern. However, there is a potential for exposure of hazardous materials associated with the existing electrical components such as florescent tubes, bulbs, lamps and mercury lamps requiring removal and disposal. Therefore, prior to starting demolition, the contractor shall inspect the existing electrical components to determine if any hazardous materials are present. All electrical equipment requiring disposal shall be packaged and transported to an appropriate permitted disposal facility. Attached please find a Head Quarter (HQ) approved non Standard Special Provision (nSSP) 14-11.10 for your PS&E package.

Please notify the Hazardous Waste Branch, if there is any change in the scope of work.

If you have any questions or need further information, please contact me at 213-897-0670 or Upa Patel of my staff at 213-897-8592.

Attachment:
1. Site Investigation Report prepared by Stantec, dated August 2013
2. Copy of e-mail approving nSSP 14-11.06
3. nSSP 14-11.06
4. Copy of e-mail from HQ approving nSSP 14-11.10
5. nSSP XE 14-11.10

Stantec

SITE INVESTIGATION FOR HAZARDOUS MATERIALS / WASTE IN SOIL

LEBEC MAINTENANCE STATION
36282 Golden State Highway/
1586 Lebec Service Road
Lebec, Kern County, California
LA-5, PM 1.6

E-FIS NUMBER: 0713000094
EA NUMBER: 2W5401
07A3322-07

STANTEC PROJECT NO.: 185832007

Submitted to:
California Department of Transportation,
District 7
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No. C48458
Exp. 6/14
CIVIL
STATE OF CALIFORNIA

August 5, 2013

EXECUTIVE SUMMARY

At the request of the California Department of Transportation (Caltrans) District 7 Environmental Design – North, a Site Investigation (SI) was conducted at the Caltrans Lebec Maintenance Station (LMS) located at 36282 Golden State Highway/1586 Lebec Service Road in the unincorporated community of Lebec, in Kern County, California (Site; Figure 1). This scope of work was conducted in support of Caltrans' plans to remove the existing rinse slab, wash rack, equipment room, and lift station at the LMS to prepare for the construction of a new washrack/basin building. The data from the SI will be used to evaluate the proper handling and disposal of impacted soil during construction activities and pursuant to the provisions in Stantec's Agreement 07A3322, and with the Task Order No. 07 request dated June 12, 2013.

The purpose and objective of the SI is to evaluate the potential release of heavy metals and other chemicals from existing Site operations (i.e.; rinse slab, washrack, equipment room and lift station), and to make necessary recommendations for handling or disposal of impacted soil during construction as appropriate.

Eight (8) soil borings (1213-102 to 1213-109) were advanced to total depths ranging from 4.5 to 10.5 feet below ground surface (bgs) near the rinse slab/washrack area, equipment room and lift station/clarifier area.

All soil samples were analyzed for pH, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), and Title 22 metals. Based on the field findings and laboratory results, the following are noted:

- pH: The reported soil pH levels are consistent with those in a semi-arid to arid environment.

- VOCs: None of the VOC analytes were reported above laboratory method detection limits (MDLs).

- SVOCs: Several polycyclic aromatic hydrocarbons (PAHs) and di-n-butyl phthalate were reported at very low J-flagged concentrations. None of the analytes was reported above the U.S. Environmental Protection Agency (EPA) industrial Regional Screening Level (RSL). However, benzo[b]fluoranthene was reported at a J-flagged estimated value (0.18 mg/kg) above the residential RSL (0.15 mg/kg). The very low J-flagged di-n-butyl phthalate concentrations are likely related to field or laboratory sampling artifact.

- TPH: TPH concentrations (max. TPH-diesel [TPH-d]=42 mg/kg and max TPH-oil [TPH-o]=230 mg/kg) did not exceed the RWQCB Soil Screening Level (SSL) of 1,000 mg/kg.

- Title 22 metals: All heavy metal analytes were reported well below their respective California total threshold limit concentrations (TTLC) and were less than 10 times the California soluble limit threshold concentration (STLC). Aside from arsenic, all heavy metals were reported at concentrations below their respective California Human Health Screening Level (CHHSL) and USEPA RSL for industrial soils and or they were within ranges typical of background concentrations for southern California soils (Table 3). Arsenic was detected in all samples submitted for analysis with concentrations ranging from 3.2 to 23 mg/kg.

As indicated above, arsenic levels were reported well above California and USEPA health risk-based screening level thresholds. Although elevated, the arsenic levels are within the range of background for soils at many locations in California. Studies conducted by Stantec and others in California have reported background arsenic levels at similar or greater concentrations (Diamond et al, 2009; Stantec, 2009).

Stantec conducted statistical analyses to evaluate whether the reported arsenic concentrations may be related to natural background, or impacted by contamination from an anthropogenic source. The statistical evaluations were conducted using the USEPA ProUCL algorithm (version 4.1).

An outlier test was conducted to evaluate whether the highest reported concentrations (up to 23 mg/kg) were statistical anomalies. The results (see Appendix D) show that there are no data outliers at the one and five percent significance level. Consequently, all 26 data points were considered in the statistical evaluation.

Normality testing was conducted using the Shapiro-Wilks test, to evaluate whether the data set are normally distributed. Data sets that are normally or log normally distributed are believed to represent populations from the same source, such as background. Data sets that are non-parametric, or show two distinct peaks, may indicate the existence of multiple sources. These sources could be related to geological or environmental differences, or may indicate anthropogenic contamination. As shown in the output provided in Appendix D (see normality test and Q-Q plots), the data are normally distributed at the five percent confidence level, suggesting that the data are likely representative of the same source. The 99th percentile was calculated to 21.6 mg/kg (slightly less than the maximum concentration of 23 mg/kg, which is often used as an upper bound for the background value. Given the limited number of data points, the natural heterogeneity in soil environments, and the uncertainty in laboratory analytical methods, Stantec opines that the reported arsenic data are representative of natural background. Regardless of the source, exposure to subsurface soils is limited by the fact that the Site is covered with pavement.

Based on these findings, Stantec concludes the following:

- The data do not indicate the existence of a significant release of chemicals to subsurface soils. Any impacts encountered below potential sources at the time of demolition are expected to be minor and limited in extent.
- Impacted soils do not appear to exhibit characteristics of a hazardous waste.
- Reported concentrations of TPH, SVOCs, and VOCs were reported below human health and groundwater protection screening thresholds.
- With the exception of arsenic, heavy metals were reported below California and Federal human health screening levels and at concentrations typical of regional urban background in California (Bradford, et al, 1991). Based on statistical evaluations the arsenic concentrations appear to be representative of natural background.

Based on the findings and conclusions of this investigation, the following are recommended:

1. In consideration of the reported analyte concentrations and assuming that the sample points in this study are representative of conditions throughout the study area, the soil may be managed as non-hazardous and reused on-site.
2. Given the low levels of TPH and elevated background concentrations of arsenic at the Site, surplus soil should be disposed as non hazardous waste to an appropriately permitted landfill.
3. If encountered during excavation, any stained or odorous soils should be segregated, stockpiled and characterized for disposition in accordance with local, state and federal regulation and requirements.

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APPENDICES

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

At the request of the California Department of Transportation (Caltrans) District 7 Environmental Design - North (Contract No. 07A3322), a Site Investigation (SI) was conducted at the Caltrans Lebec Maintenance Station (LMS) located at 36282 Golden State Highway in the unincorporated community of Lebec, in Kern County, California (Site; Figure 1). This scope of work was conducted in support of Caltrans' request to evaluate the potential presence of contamination in subsurface soils resulting from historical site operations beneath specific features at the LMS. Caltrans plans to remove the existing rinse slab, wash rack, equipment room, and lift station at the LMS to prepare for the construction of a new washrack/basin building. The data from the site investigation will be used to evaluate the proper handling and disposal of impacted soil during construction activities and pursuant to the provisions in Stantec's Agreement 07A3322, and with the Task Order No. 07 request dated June 12, 2013.

1.2 PURPOSE AND OBJECTIVES

The purpose and objective of the SI is to evaluate the potential release of heavy metals and other chemicals from existing Site operations (i.e.; rinse slab, washrack, equipment room and lift station), and to make necessary recommendations for handling or disposal of impacted soil during construction as appropriate.

1.3 BACKGROUND

According to the Task Order No. 07 Request, dated June 12, 2013, Caltrans is currently preparing the Plans, Specifications, and Estimates (PS&E) to remove the existing rinse slab, wash rack, equipment room, and lift station to support the construction of a new washrack/basin building. Site investigations are warranted to evaluate the potential environmental impacts associated with historical site usage and to assess alternatives for addressing potential impacts during demolition and construction.

The remainder of this report describes the scope of work, methodology, findings, results, conclusions and recommendations of the SI.

2.0 PROJECT SETTING

This section describes the project setting including a basic description of the study area, the physiographic setting of the study area, the geology and hydrogeology, and a description of the site vicinity.

2.1 SITE DESCRIPTION

The Site is located along Lebec Service Road, on the west side of Interstate 5 (I-5) near the area of Fort Tejon, in the unincorporated community of Lebec, California. The Site is currently a highway maintenance facility consisting of approximately seven structures including office space, various maintenance sheds, aboveground tank canopies, a wash area canopy, and maintenance garages. The entire site is predominantly paved with asphalt concrete with discrete Portland cement concrete slabs in maintenance and wash down areas.

2.2 PHYSIOGRAPHIC SETTING

The topography in the immediate area of the site is relatively level and gently sloping to the east towards Castac/Tejon Lake, with mountainous terrain to the north, west and south of the Site (Tehachapi Mountains) with elevations reaching in excess of 4,000 feet above mean sea level (amsl). The elevation in the immediate area of the Site is approximately 3,580 feet amsl (Lebec 7.5-Minute Quadrangle, photorevised 1995, United States Geological Survey (USGS)).

2.3 REGIONAL GEOLOGY AND HYDROGEOLOGY

The Site is located in the Castaic Valley and is surrounded by the Tehachapi Mountains. The Site is located within the Mojave Desert Geomorphic Province which is characterized with two prominent fault trends. The Garlock Fault marks the northern boundary of the province and the San Andreas Fault marks the southern boundary of the province. The western termination of the province is located where the Garlock and San Andreas Faults intersect in the area of Frazier Park located just southwest of the Site (USGS, 2002). According to the Geology of the Lebec Quadrangle published by the Department of Natural Resources, Division of Mines (Cromwell, 1952), the Site vicinity is underlain by recent alluvium of Quaternary age. According to the Fault Activity Map of the Lebec Quadrangle prepared by the USGS, July 1, 1974, the Site appears to be located within and near the northerly boundary of an Alquist Priolo Fault Zone associated with the Garlock Fault. The northwest/southeast trending San Andreas Fault Rift Zone is located approximately one mile south of the Site. According to the Southern California Earthquake Data Center website (SCEDC), the Garlock Fault is a left-lateral strike slip fault capable of generating magnitude 6.8-7.6 earthquakes (SCEDC, 2013). In addition, the San Andreas Fault is noted as a right-lateral strike slip fault capable of generating magnitude 6.8-8.0 earthquakes (SCEDC, 2013). According to a California Technology website (Caltech, 2013), one of the largest earthquakes occurring in Southern California in historic times was the Fort Tejon Quake. The earthquake occurred on January 9th, 1857, with an estimated 8.0 magnitude.

According to the groundwater data uploaded to the GeoTracker website for a Site located approximately half mile north of the Site (Geotracker, 2013), groundwater was measured at depth of approximately 12 feet below the ground surface (bgs). The groundwater in the area of

the Site would be expected to follow surface topography and flow to the east towards Castac/Tejon Lake.

2.4 SITE VICINITY

The area surrounding the site is comprised of the following uses:

- North: I-5 and the Tehachapi Mountains
- South: Tehachapi Mountains.
- East: Tejon Ranch; Castac/Tejon Lake.
- West: I-5; Frazier Park.

3.0 SCOPE OF WORK

The scope of the SI consisted of the following general elements:

- Pre-field activities:
  - Development and review of a project work plan to guide task order activities;
  - Development of a site specific health and safety plan;
  - Coordination of equipment and subcontractors;

- Field Investigations:
  - Geophysical survey at each of the proposed boring locations;
  - Concrete coring at each of the proposed boring locations;
  - Advancement of eight shallow soil borings:
    - Six borings to depths of up to five (5) feet below ground surface (bgs);
    - Two (2) borings to depths of approximately ten (10) feet bgs;
  - Collection and preservation of soil samples for chemical analysis;
  - Boring location survey using global positioning system (GPS);
  - Boring abandonment.

- Laboratory analysis of all soil samples pursuant to the requirements of Task Order No. 07 for,
  - Total petroleum hydrocarbons (TPH)
  - Volatile organic compounds (VOCs)
  - Semi-volatile organic compounds (SVOCs)
  - pH
  - Title 22 Metals

- Data evaluation and preparation of this report.

4.0 SOIL INVESTIGATION METHODOLOGY

The soil investigation was conducted in general accordance with the methods and requirements of Contract 07A3322, Task Order 07. The following subsections summarize the methodology implemented in completing the required scope of work. In addition, any deviations from the scope of work are also identified in the following subsections.

4.1 PRE-FIELD ACTIVITIES

Prior to beginning field work, the scope of work was reviewed and approved by Caltrans. Proposed sample locations designated on site plans by Caltrans were checked for accessibility in the field through Site reconnaissance with Caltrans and Stantec staff.

As required by Task Order 07, a site-specific Health and Safety Plan (HASP) was developed in accordance with California Occupational Safety and Health Administration (Cal OSHA) requirements to guide field sampling activities. The HASP describes health and safety procedures and was submitted to Caltrans for review and approval prior to initiating field activities. A pre-field tail gate health and safety meeting was conducted at the Site with field personnel prior to beginning work each day. During the tail gate meeting, daily work activities and health and safety issues were discussed, including the following:

- Field tasks to be conducted throughout the day,
- Project schedule,
- Hazard awareness,
- General health and safety practices, procedures and issues,
- Specific health and safety issues related to the day's work,
- Health and Safety procedures, controls, etc.;
- Engineering controls; personal protective equipment and monitoring;
- Traffic control and safety;
- Emergency procedures and contacts.

Field documentation of health and safety meetings and monitoring were maintained throughout the duration of field activities. A copy of the completed field forms are provided in Appendix A.

4.2 FIELD INVESTIGATIONS

Field investigations were conducted on July 3, 2013. The weather was warm and sunny throughout the day with no weather-related restrictions to field investigation. The following subsections describe field investigation methodology and procedures.

4.2.1 *Geophysical Survey*

A geophysical survey was conducted in the area of the proposed boring locations to identify potential subsurface structures that may be in conflict with the borings locations.

Two complimentary surface geophysical instruments (ground penetrating radar (GPR) and electromagnetics (EM)) were used to evaluate the potential presence of buried objects within the site boundaries. These instruments may detect the presence of objects buried as deep as 5 to 13 feet. The effectiveness of these geophysical survey techniques depends on a number of factors including geometry and composition of the buried object, burial depth, surface cover, soil type and density, hydrogeology, and potential interference from surrounding cultural features (e.g., fences, buildings, etc.). These limitations must be considered in the decision making process.

Underground utilities/obstructions were found in the general area of several of the proposed boring locations. As a result, the locations were shifted slightly (no more than 6 inches from the originally proposed location) in order to be further away from those utilities found during the survey.

4.2.2 *Borehole Drilling*

Soil borings were advanced in the areas described below using hand augers and Direct Push Technology (DPT) drill rig (Figure 2A and 2B):

- Rinse slab/wash rack area: four (4) hand auger borings (1213-102 to 1213-105) were advanced to approximately four (4) feet below the ground surface (bgs) with samples collected at one, two, and four feet bgs.
- Lift Station/Clarifier area: two (2) DPT borings (1213-106 and 1213-107) were advanced to ten (10) feet bgs with samples collected from one, three, seven, and 10 feet bgs.
- Equipment building: two (2) hand auger borings (1213-108 and 1213-109) were advanced to five (5) feet bgs with samples collected from one, three, and five feet bgs.

There were no accessibility issues with regards to the proposed boring locations.

4.2.3 *Sample Collection and Preservation*

Soil

Unless otherwise noted, soil samples were generally collected at depths of one, two, three, four, five, seven, and ten feet bgs. The sample depths represent the top depth of the sample which generally extended four to six inches below the top specified depth interval. Thus, samples were generally collected at the following depth intervals:

- One foot samples: 1 to 1.5 feet bgs
- Two foot samples: 2 to 2.5 feet bgs
- Three foot samples: 3.0 to 3.5 feet bgs
- Four foot samples: 4.0 to 4.5 feet bgs

- Five foot samples: 5.0 to 5.5 feet bgs
- Seven foot samples: 7.0 to 7.5 feet bgs
- Ten foot samples: 10.0 to 10.5 feet bgs.

It is noted that one sample, 1213-103-4.5, was collected at 4.5 to 5 feet bgs, due to the fact that the sample at 4 to 4.5 feet bgs was compromised. Prior to advancing the sampling equipment, the concrete surface at each location was cored to allow access to underlying soils. The concrete thickness was found to be approximately one-foot thick at each location. At the desired depth, soil samples were collected in six-inch stainless steel tubes or acetate sleeves via a slide hammer or by DPT, respectively. The tubes/sleeves were retrieved from the sampler, capped at both ends and sealed with non-VOC adhesive tape to secure the sample.

Each soil sample tube/sleeve was labeled with a specific sample I.D., boring I.D., project I.D., EA number, sample date, and sample time, and then placed in an ice-filled cooler. Each sample was also recorded on a chain-of-custody (CoC) form and delivered to an environmental laboratory for analysis in accordance with the methods described in Contract 07A3322, Task Order 07.

4.2.4 *Boring Locations*

Boring locations were identified and plotted on a field map with a unique boring identification (I.D.) number to represent each borehole/location. In addition, the spatial coordinates for each borehole were obtained using a handheld field GPS Trimble unit and recorded on field data sheets. The boring locations are shown on Figure 2A and 2B. The GPS latitude and longitude for each boring are provided in Table 1.

4.2.5 *Decontamination*

All soil sampling equipment was decontaminated prior to sampling at each sample interval using a non-phosphate detergent solution and rinsed with distilled water.

4.2.6 *Borehole Abandonment*

All borings less than five feet bgs and where field evidence suggested that the soil cuttings were not contaminated, were abandoned by filling the borehole with soil cuttings. Deeper DPT borings were backfilled with bentonite/cement grout mixture and capped to match the existing asphalt surface.

4.2.7 *Field Quality Assurance/Quality Control*

In accordance with Task Order 07, equipment blanks were collected to evaluate the adequacy of field decontamination efforts. Equipment blanks 1213-101-EB1a and 1213-101-EB2a were collected prior to beginning sampling activities. A second set of equipment blanks, 1213-110-EB1b and 1213-110-EB2b were collected at the completion of sampling activities. The equipment blanks were collected by pouring deionized water over the sampling equipment and collecting the water in appropriate sample containers for analysis. Equipment blank 1213-EB1

samples were collected from the slide hammer and hand auger; while equipment blank 1213-EB2 samples were collected from the DPT sampler.

4.3 FIELD DEVIATIONS FROM SCOPE OF WORK

The following narrative describes deviations from the proposed scope of work:

- Drilling method: The drilling subcontractor arrived at the Site with the incorrect size stainless steel tubes for use in the slide hammer. As a result, and in order to preserve the integrity of the samples for VOC analysis, the drillers used the DPT to advance the rods in several boreholes to collect the samples at the desired proposed depths using acetate sleeves. Samples from borehole 1213-102 and the first two samples from 1213-103 were collected with stainless steel tubes in the slide hammer. The bottom sample from 1213-103 (1213-103-4.5) and samples from the remaining borings, 1213-104 to 1213-109, were collected in acetate sleeves using the DPT rig.

- Sample 1213-103-4.5 was collected at 4.5 feet bgs instead of 4 feet bgs as specified in the work plan. A sample was collected at 4 to 4.5 feet bgs, however; the integrity of the sample was compromised by the drillers. Consequently, a sample was collected at 4.5 to 5 feet bgs and preserved for laboratory analysis.

- Boring location 1213-105A: Due to refusal to drilling in the initial borehole attempt (possibly on the wash rack canopy footing), boring 1213-105 was moved approximately 5 feet to the east of the original location and advanced to the proposed depth without incident .

5.0 LABORATORY ANALYSIS

Twenty-six (26) soil samples were submitted under CoC to Advanced Technology Laboratories (ATL). ATL is certified through the California Environmental Laboratory Accreditation Program (ELAP) to conduct the analyses required in this task order. The laboratory was directed to perform the following analyses based on Caltrans Task Order No. 07 request:

- *Total Petroleum Hydrocarbons (EPA test method 8015B)*—all samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-g), C5-C12, TPH as diesel (TPH-d) C8-C22, and TPH as oil (TPH-o), C23-40,.

- *Volatile Organic Compounds (EPA test method 8260B)*—all samples were analyzed for volatile organic compounds (VOCs).

- *Semi-Volatile Organic Compounds (EPA test method 8270)*—all samples were analyzed for semi-volatile organic compounds (SVOCs).

- *pH (EPA test method 9045C)*—all soil samples were analyzed for pH.

- *Title 22 metals (EPA test method 6010B/7470)*—all samples were analyzed for the full suite of Title 22 metals.

Copies of the laboratory CoCs and analytical reports are attached in Appendix B.

6.0 INVESTIGATIVE RESULTS

6.1 FIELD FINDINGS

The soils encountered during sampling were generally dark grayish brown to olive brown in color and consisted primarily of sands with gravels. A photolog showing the boring locations is presented in Appendix C.

Groundwater was not encountered in any of the boreholes and not expected to be present in the upper 10 feet.

6.2 ANALYTICAL RESULTS

A summary of the analytical results is presented in Table 2 and 3. Boring locations are shown on Figure 2A and 2B. Copies of the laboratory reports and chain-of-custody forms are included in Appendix B.

6.2.1 *pH*

The pH ranged from 7.4 to 9.5 (Table 2).

6.2.2 *Title 22 Metals*

All soil samples were analyzed for the full suite of Title 22 metals. With the exception of arsenic, all heavy metals were reported at concentrations below their respective CHHSLs and United States Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs) for industrial soils and or they were within ranges typical of background concentrations for southern California soils (Table 3). Arsenic was reported at concentrations ranging from 3.2 to 23 mg/kg.

6.2.3 *Total Petroleum Hydrocarbons*

As directed in the Task Order No. 07 request, all soil samples were analyzed for TPH-g, TPH-d and TPH-o. The results are summarized below.

- TPH-g was not detected above the laboratory method detection limit (MDL) in any of the samples analyzed.
- TPH-d was detected in seven (7) samples submitted for analysis at low concentrations ranging from 17 to 42 mg/kg.
- TPH-o was detected in six (6) samples submitted for analysis at low concentrations ranging from 21 to 230 mg/kg.

The results are tabulated on Table 2.

6.2.4 *Volatile Organic Compounds Analysis*

All soil samples were analyzed for VOCs. VOCs were not detected above their respective MDLs in analyzed samples (Table 2).

6.2.5 *Semi-Volatile Organic Compounds Analysis*

Fifteen (15) of the twenty-six (26) samples submitted for analysis reported estimated concentrations of several SVOCs (benzo(a)anthracene, benzo(b)fluoranthene, chrysene, di-n-butylphthalate (DNBP), fluoranthene, phenanthene, and pyrene) at low concentrations between the MDL and the practical quantitation limit (PQL) (Table 2). All other SVOC analytes were not reported above the laboratory MDL.

6.3 DATA VALIDATION

6.3.1 *Field QA/QC*

Quality assurance and quality control (QA/QC) procedures were performed in general accordance with the Work Plan and Task Order No. 07 request. Field QA/QC procedures included analyses of equipment blanks and a trip blank. None of the analytes tested in the field equipment blanks reported analytes above laboratory reporting limits, with the exception of the following:

- Equipment Blanks:
  - Low levels of several metal analytes (antimony, barium, beryllium, cadmium, chromium, cobalt, lead, nickel and zinc) were reported at very low levels generally at or below the PQL, with the exception of antimony which was reported above the PQL. Barium was reported at similar concentrations in the laboratory method blank. The low levels are not unexpected as the equipment blank is obtained by pouring water over metal sampling equipment containing these elements.
  - Di-n-butyl phthalate was reported in the ending equipment blanks at estimated concentrations below the PQL. Phthalates are common field and laboratory contaminants associated with personal protection equipment (e.g.; gloves).
- Trip Blank: No analytes were detected in the trip blank sample.

6.3.2 *Laboratory QA/QC*

Laboratory quality assurance and quality control data (method blanks, laboratory control samples and duplicates, matrix spike samples and duplicates) were also reviewed for compliance with QA/QC objectives. As indicated in the laboratory reports, the following data qualifiers were noted:

- Method Blank:
  - Barium was reported at J-flagged concentrations between the MDL and PQL in method blanks B3G0097.

- Duplicate Samples:
  - The relative percent difference (RPD) was out of control for one or more metals analytes in B3G0097, B3G0120, B3G0126. This variability is not uncommon in soil samples and is the result of sample heterogeneity.

- Matrix Spike Samples:
  - The recovery was out of control high for trichloroethene in the matrix spike and matrix spike duplicate in B3G0117 due to matrix interference. The data were validated using the laboratory control sample.

- Barium Result
  - The reported barium result for sample 1213-107-7 was originally reported at 6,500 mg/kg. Although all QA/QC for this sample were in order, the value was significantly higher than those reported in other samples. The laboratory re-analyzed the sample for barium on July 25, 2013 and the reported result, 74 mg/kg, was consistent with other samples and expected background concentrations.

Based upon the results of validation, the data, as qualified, are acceptable for the purposes described in this document.

7.0 CONCLUSIONS

At the request of the California Department of Transportation (Caltrans) District 7 Environmental Design - North, a Site Investigation (SI) was conducted at the Caltrans Lebec Maintenance Station (LMS) located at 36282 Golden State Highway/1586 Lebec Service Road in the unincorporated community of Lebec, in Kern County, California (Site; Figure 1). This scope of work was conducted in support of Caltrans' plans to remove the existing rinse slab, wash rack, equipment room, and lift station at the LMS to prepare for the construction of a new washrack/basin building. The data from the SI will be used to evaluate the proper handling and disposal of impacted soil during construction activities and pursuant to the provisions in Stantec's Agreement 07A3322, and with the Task Order No. 07 request dated June 12, 2013.

The purpose and objective of the SI is to evaluate the potential release of heavy metals and other chemicals from existing Site operations (i.e.; rinse slab, washrack, equipment room and lift station), and to make necessary recommendations for handling or disposal of impacted soil during construction, as appropriate.

Eight (8) soil borings (1213-102 to 1213-109) were advanced to total depths ranging from 4.5 to 10.5 feet below ground surface (bgs) near the rinse slab/washrack area, equipment room and lift station/clarifier area.

All soil samples were analyzed for pH, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), and Title 22 metals. Based on the field findings and laboratory results, the following are noted:

- pH: The reported soil pH levels are consistent with those in a semi-arid to arid environment.

- VOCs: None of the VOC analytes were reported above laboratory method detection limits (MDLs).

- SVOCs: Several polycyclic aromatic hydrocarbons (PAHs) and di-n-butyl phthalate were reported at very low J-flagged concentrations. None of the analytes was reported above the U.S. Environmental Protection Agency (EPA) industrial Regional Screening Level (RSL). However, benzo[b]fluoranthene was reported at a J-flagged estimated value (0.18 mg/kg) above the residential RSL (0.15 mg/kg). The very low J-flagged di-n-butyl phthalate concentrations are likely related to field or laboratory sampling artifact.

- TPH: TPH concentrations (max. TPH-d=42 mg/kg and max TPH-o=230 mg/kg) did not exceed the RWQCB Soil Screening Level (SSL) of 1,000 mg/kg.

- Title 22 metals: All heavy metal analytes were reported well below their respective California total threshold limit concentrations (TTLC) and were less than 10 times the California soluble limit threshold concentration (STLC). Aside from arsenic, all heavy metals were reported at concentrations below their respective California Human Health Screening Level (CHHSL) and USEPA RSL for industrial soils and or they were within ranges typical of background concentrations for southern California soils (Table 3). Arsenic was detected in all samples submitted for analysis with concentrations ranging from 3.2 to 23 mg/kg.

As indicated above, arsenic levels were reported well above California and USEPA health risk-based screening level thresholds. Although elevated, the arsenic levels are within the range of background for soils at many locations in California. Studies conducted by Stantec and others in California have reported background arsenic levels at similar or greater concentrations (Diamond et al, 2009; Stantec, 2009).

Stantec conducted statistical analyses to evaluate whether the reported arsenic concentrations may be related to natural background, or impacted by contamination from an anthropogenic source. The statistical evaluations were conducted using the USEPA ProUCL algorithm (version 4.1).

An outlier test was conducted to evaluate whether the highest reported concentrations (up to 23 mg/kg) were statistical anomalies. The results (see Appendix D) show that there are no data outliers at the one and five percent significance level. Consequently, all 26 data points were considered in the statistical evaluation.

Normality testing was conducted using the Shapiro-Wilks test, to evaluate whether the data set are normally distributed. Data sets that are normally or log normally distributed are believed to represent populations from the same source, such as background. Data sets that are non-parametric, or show two distinct peaks, may indicate the existence of multiple sources. These sources could be related to geological or environmental differences, or may indicate anthropogenic contamination. As shown in the output provided in Appendix D (see normality test and Q-Q plots), the data are normally distributed at the five percent confidence level, suggesting that the data are likely representative of the same source. The 99th percentile was calculated to 21.6 mg/kg (slightly less than the maximum concentration of 23 mg/kg, which is often used as an upper bound for the background value. Given the limited number of data points, the uncertainty resulting from the natural heterogeneity in soil environments, and the uncertainty in laboratory analytical methods, Stantec concludes that the reported arsenic data are representative of background. Regardless of the source, exposure to subsurface soils is limited by the fact that the Site is covered with pavement.

Based on these findings, Stantec concludes the following:

- The data do not indicate the existence of a significant release of chemicals to subsurface soils. Any impacts encountered below potential sources at the time of demolition are expected to be minor and limited in extent.

- Impacted soils do not appear to exhibit characteristics of a hazardous waste.

- Reported concentrations of TPH, SVOCs, and VOCs were reported below human health and groundwater protection screening thresholds.

- With the exception of arsenic, heavy metals were reported below California and Federal human health screening levels and at concentrations typical of regional urban background in California (Bradford, et al, 1991). Based on statistical evaluations the arsenic concentrations appear to be representative of natural background.

8.0 RECOMMENDATIONS

Shallow soils in the proposed construction zone are impacted with relatively low levels of TPH and background levels of heavy metals. Based on the findings and conclusions of this investigation, the following are recommended:

1. In consideration of the reported analyte concentrations and assuming that the sample points in this study are representative of conditions throughout the study area, the soil may be managed as non-hazardous and reused on-site.

2. Given the low levels of TPH and elevated background concentrations of arsenic at the Site, surplus soil should be disposed as non-hazardous waste to an appropriately permitted landfill.

3. If encountered during excavation, any stained or odorous soils should be segregated, stockpiled and characterized for disposition in accordance with local, state and federal regulation and requirements.

9.0 REFERENCES

California Department of Toxic Substances Control (DTSC), 2008, Determination of a Southern California Regional Background Arsenic Concentration in Soil, March.

California Department of Toxic Substances Control (DTSC), 2009, Variance No. V09HQSCD006, July 1.

California Environmental Protection Agency (Cal EPA), 2005, Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties, January.

Cal EPA, 2010, Soil Screening Numbers – Updated Table (9/23/10), online. http://oehha.ca.gov/risk/chhsltable.html

California Institute of Technology webpage: http://www.cco.caltech.edu/~meltzner/tejon.html

Cromwell, John (Department of Natural Resources, Division of Mines), 1952, Geology of the Lebec Quadrangle, August.

Diamond, David; D. Baskin, D. Brown, L. Lund, J. Najita and I. Javandel, Revised 2009, Analysis of Background Distribution of Metals in the Soil at Lawrence Berkeley National Laboratory. Revised April.

Southern California Earthquake Data Center (SCEDC) website: http://www.data.scec.org/significant/index.html

Kearny Foundation of Soil Science, 1996, Background Concentrations of Trace and Major Elements in California Soils, Division of Agriculture and Natural Resources, University of California, March.

Bradford, G.R., A.C. Chang, A.L. Page, D. Bakhtar, J.A. Frampton, and H. Wright, Background Concentrations of Trace and Major Elements in California Soils, March 1996.

Stantec Consulting Services Inc., 2009, Preliminary Background Metals Evaluation, Immediate Vicinity of Calico Ghost Town Park, San Bernardino County, California. June 25.

State of California Fault Activity Map:http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html

California Geological Survey, 2002, Note-36: California's Geomorphic Provinces, December.

State Water Resources Control Board GEOTRACKER website: http://geotracker.waterboards.ca.gov/

U.S. Environmental Protection Agency (U.S. EPA), 2008, U.S. EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review,

Final, Office of Superfund Remediation and Technology Innovation, Washington, D.C., June.

U.S. EPA, 2010, U.S. EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, Final, Office of Superfund Remediation and Technology Innovation, Washington, D.C., January.

United States Geological Survey (USGS) Topographic Map, 1995, 7.5-minute series, Lebec, California Quadrangle.

U.S. EPA, Region 9, 2013, Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites, May.

10.0 CLOSURE

The conclusions presented in this report are professional opinions based on data described in this report. The opinions of this report have been arrived at in accordance with currently accepted hydrogeologic and engineering standards and practices applicable to this location, and are subject to the following inherent limitations. Stantec makes no other warranty, either expressed or implied, concerning the conclusions and professional advice that is contained within the body of this report.

Inherent in most projects performed in a heterogeneous subsurface environment, continuing excavation and assessments may reveal findings that are different than those presented herein. This facet of the environmental profession should be considered when formulating professional opinions on the limited data collected on these projects.

This report has been issued with the clear understanding that it is the responsibility of the owner, or their representative, to make appropriate notifications to regulatory agencies. It is specifically not the responsibility of Stantec to conduct appropriate notifications as specified by current County and State regulations.

The information presented in this report is valid as of the date our exploration was performed. Site conditions may degrade with time; consequently, the findings presented herein are subject to change.

In the event of any conflict between the terms and conditions of this report and the terms and conditions of the consulting services agreement between the State of California Department of Transportation, District 7, and Stantec Consulting Services Inc., the consulting services agreement shall control.

TABLES

TABLE 1 - BORING GPS COORDINATES
TO-07: SI FOR HAZARDOUS MATERIALS/ WASTE IN SOIL
Location: 36282 GOLDEN STATE HIGHWAY, LEBEC, CA; LA-5, PM-1.6
E-FIS: 0713000094
(EA# 2W5401)

Boring ID	Latitude [1] (degrees north)	Longitude [1] (degrees west)
1213-102	34.83289	-118.86385
1213-103	34.83425	-118.86766
1213-104	34.82990	-118.86319
1213-105A	34.82394	-118.81931
1213-105	34.83287	-118.86394
1213-106	34.83269	-118.96380
1213-107	34.83278	-118.86389
1213-108	*NO READING**	
1213-109	*NO READING**	

Notes:

[1] North American Datum 83 (WPS 84)
AMSL = above mean sea level
*Boring locations 1213-108 and 1213-109 were located inside the equipment building where there was no GPS reception - as a result, no GPS readings were obtained for these two locations.

TABLE 2 - SUMMARY OF SOIL ANALYTICAL RESULTS
TPH, VOCs, SVOCs
TO-07: SI FOR HAZARDOUS MATERIALS/ WASTE IN SOIL
Location: 36282 GOLDEN STATE HIGHWAY, LEBEC, CA; LA-5, PM-1.6
E-FIS: 0713000094
(EA# 2W5401)

CALTRANS UNIQUE SAMPLE ID[1]	SAMPLE DEPTH[2]	SAMPLE DATE	TOTAL PETROLEUM HYDROCARBONS[3]			VOLATILE ORGANIC COMPOUNDS[4] (mg/Kg)	pH[6]	SEMI-VOLATILE ORGANIC COMPOUNDS[5] (mg/Kg)						
			TPH-g (mg/Kg)	TPH-d (C8-C22) (mg/Kg)	TPH-o (C23-C40) (mg/Kg)			BENZO(A)ANTHRACENE	BENZO(B)FLUORANTHENE	CHRYSENE	DI-N-BUTYLPHTHALATE	FLUORANTHENE	PHENANTHRENE	PYRENE
SSLs for TPH[7] (20-150 feet above GW)			500	1,000	1,000	*VARIES*	—	—	—	—	—	—	—	—
USEPA RSL - Industrial Soils[8]			—	—	—	*VARIES*	—	2.1	2.1	210	—	22,000	—	17,000
USEPA RSL - Residential Soils[8]			—	—	—	*VARIES*	—	0.15	0.15	15	—	2,300	—	1,700
California TTLC			—	—	—	*VARIES*	—	—	—	—	—	—	—	—
Federal (RCRA) Hazardous Waste Thresholds			—	—	—	*VARIES*	—	≤2 ≥12.5	—	—	—	—	—	—
1213-102-1.0	1	7/3/2013	<0.72	29	230	ALL ND	9.5	<0.053	<0.053	<0.060	<0.058	<0.058	<0.058	<0.046
1213-102-2.0	2	7/3/2013	<0.72	24	92	ALL ND	9.4	<0.053	<0.053	<0.060	<0.058	<0.058	<0.058	<0.046
1213-102-4.0	4	7/3/2013	<0.72	38	94	ALL ND	8.7	<0.053	<0.053	<0.060	<0.058	<0.058	<0.058	<0.046
1213-103-1.0	1	7/3/2013	<0.72	<10	<10	ALL ND	8.8	<0.025	<0.021	<0.024	0.051 J	<0.020	<0.023	<0.018
1213-103-2.0	2	7/3/2013	<0.72	<10	<10	ALL ND	8.4	<0.025	<0.021	<0.024	0.046 J	<0.020	<0.023	<0.018
1213-103-4.5	4.5	7/3/2013	<0.72	<10	<10	ALL ND	8.2	<0.025	<0.021	<0.024	<0.023	<0.020	<0.023	<0.018
1213-104-1.0	1	7/3/2013	<0.72	<10	<10	ALL ND	8.5	<0.025	<0.021	<0.024	0.035 J	<0.020	<0.023	<0.018
1213-104-2.0	2	7/3/2013	<0.72	<10	<10	ALL ND	8.5	<0.025	<0.021	<0.024	0.051 J	<0.020	<0.023	<0.018
1213-104-4.0	4	7/3/2013	<0.72	<10	<10	ALL ND	8.4	<0.025	<0.021	<0.024	0.043 J	<0.020	<0.023	<0.018
1213-105-1.0	1	7/3/2013	<0.72	<10	<10	ALL ND	8.5	<0.025	<0.021	<0.024	<0.023	<0.020	<0.023	<0.018
1213-105-2.0	2	7/3/2013	<0.72	<10	<10	ALL ND	8.1	<0.025	<0.021	<0.024	0.044 J	<0.020	<0.023	<0.018
1213-105-4.0	4	7/3/2013	<0.72	<10	<10	ALL ND	8.4	<0.025	<0.021	<0.024	<0.023	<0.020	<0.023	<0.018
1213-106-1.0	1	7/3/2013	<0.72	38	190	ALL ND	8.4	0.120 J	0.180 J	0.140 J	<0.058	0.270 J	0.210 J	0.260 J
1213-106-3.0	3	7/3/2013	<0.72	<10	<10	ALL ND	8.8	<0.025	<0.021	<0.024	0.036 J	<0.020	<0.023	<0.018
1213-106-7.0	7	7/3/2013	<0.72	<10	<10	ALL ND	8.9	<0.025	<0.021	<0.024	0.039 J	<0.020	<0.023	<0.018
1213-106-10.0	10	7/3/2013	<0.72	<10	<10	ALL ND	8.4	<0.025	<0.021	<0.024	<0.023	<0.020	<0.023	<0.018
1213-107-1.0	1	7/3/2013	<0.72	<10	<10	ALL ND	8.4	<0.025	<0.021	<0.024	0.049 J	<0.020	<0.023	<0.018
1213-107-3.0	3	7/3/2013	<0.72	<10	<10	ALL ND	8.3	<0.025	<0.021	<0.024	0.057 J	<0.020	<0.023	<0.018
1213-107-7.0	7	7/3/2013	<0.72	<10	<10	ALL ND	8.4	<0.025	<0.021	<0.024	0.059 J	<0.020	<0.023	<0.018
1213-107-10.0	10	7/3/2013	<0.72	<10	<10	ALL ND	8.4	<0.025	<0.021	<0.024	0.049 J	<0.020	<0.023	<0.018
1213-108-1.0	1	7/3/2013	<0.72	24	13	ALL ND	7.4	<0.025	<0.021	<0.024	<0.023	<0.020	<0.023	<0.018
1213-108-3.0	3	7/3/2013	<0.72	17	<10	ALL ND	8.1	<0.025	<0.021	<0.024	<0.023	<0.020	<0.023	<0.018
1213-108-5.0	5	7/3/2013	<0.72	<10	<10	ALL ND	8.3	<0.025	<0.021	<0.024	0.038 J	<0.020	<0.023	<0.018
1213-109-1.0	1	7/3/2013	<0.72	<10	<10	ALL ND	8.0	<0.025	<0.021	<0.024	0.034 J	<0.020	<0.023	<0.018
1213-109-3.0	3	7/3/2013	<0.72	42	21	ALL ND	8.3	<0.025	<0.021	<0.024	<0.023	<0.020	<0.023	<0.018
1213-109-5.0	5	7/3/2013	<0.72	<10	<10	ALL ND	8.2	<0.025	<0.021	<0.024	<0.023	<0.020	<0.023	<0.018

NOTES:
SSL = Soil Screening Level
RSL = Regional Screening Level
TTLC = Total Threshold Limit Concentration
RCRA = Resource Conservation and Recovery Act
ND = not detected above the laboratory method detection limit (MDL)
(1) - Boring identification number/Caltrans Unique ID assigned
(2) - Sample depth reported in feet below the ground surface
(3) - Total Petroleum Hydrocarbons (TPH): TPH-g by EPA Test Method LUFT/GCMS; TPH-d and TPH-o by EPA Test Method 8015M
(4) - Volatile Organic Compounds (VOCs) by EPA Test Method 8260B
(5) - Semi-Volatile Organic Compounds (SVOCs) by EPA Test Method 8270C
(6) - pH by EPA Test Method 9045C
(7) - Regional Water Quality Control Board (RWQCB) Maximum Soil Screening Levels (SSLs) for TPH above Drinking Water Aquifers, May 1996, in mg/Kg.
(8) - United States Environmental Protection Agency (Region 9) Regional Screening Levels (RSLs; in mg/Kg) for VOCs for industrial and resi
BOLD values are concentrations detected above the MDL
<10 - analyte not reported at or above stated MDL
— No regulatory threshold established for this constituent.

TABLE 3 - SUMMARY OF ANALYTICAL RESULTS
METALS
TO-07: SI FOR HAZARDOUS MATERIALS/ WASTE IN SOIL
Location: 36282 GOLDEN STATE HIGHWAY, LEBEC, CA; LA-5, PM-1.6
E-FIS: 0713000094
(EA# 2W5401)

Caltrans Unique Sample ID:	Sample Depth (feet bgs)	Sample Date	TITLE 22 METALS by EPA Test Method 6010/7470															
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (III)	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
CHHSLs - Residential Use (1)			*30*	*0.07*	*5,200*	*16*	*1.7*	*100,000*	*660*	*3,000*	*80*	*380*	*1,600*	*380*	*380*	*5*	*520*	*23,000*	*18*
CHHSLs - Industrial Use (1)			*380*	*0.24*	*63,000*	*190*	*7.5*	*100,000*	*3,200*	*38,000*	*320*	*4,800*	*15,000*	*4,800*	*4,800*	*63*	*6,700*	*100,000*	*180*
USEPA RSLs - Residential Use (2)			*31*	*0.61*	*15,000*	*150*	*70*	*120,000*	*23*	*3,100*	*400*	*390*	*1,500*	*390*	*390*	*0.78*	*1900*	*23,000*	*10*
USEPA RSLs - Industrial Use (2)			*410*	*2.4*	*190,000*	*2,000*	*800*	*1,500,000*	*300*	*41,000*	*800*	*5,100*	*20,000*	*5,100*	*5,100*	*10*	*5,100*	*310,000*	*43*
Expected Background Concentrations (3)			*0.15-1.95*	*12 (4)*	*133-1400*	*0.25-2.70*	*0.05-1.70*	*33-1579*	*2.7-46.9*	*9.1-98.4*	*12.4-97.1*	*0.1-3.5*	*5-508*	*0.015-0.430*	*13.2-39.4*	*0.6-16.2*	*25-288*	*133-236*	*0.05-0.90*
California TTLC			*500*	*500*	*10,000*	*75*	*100*	*2,500*	*8,000*	*2,500*	*1,000*	*3,500*	*2,000*	*100*	*500*	*700*	*2,400*	*5,000*	*20*
10 x California STLC			*150*	*50*	*1,000*	*7.5*	*10*	*50*	*800*	*250*	*50*	*3,500*	*200*	*10*	*50*	*70*	*240*	*2,500*	*2*
SOIL SAMPLES																			
1213-102-1.0	1	7/3/2013	<0.22	4.5	46	<0.02	0.22 J	15	5.9	5.9	8.5	0.49 J	7.7	<0.24	<0.06	<0.30	20	47	0.05 J
1213-102-2.0	2	7/3/2013	<0.22	3.5	34	<0.02	0.16 J	7.6	4.4	3.1	7.3	0.49 J	3.7	<0.24	<0.06	<0.30	17	39	0.04 J
1213-102-4.0	4	7/3/2013	<0.22	3.2	34	<0.02	0.19 J	7.5	4.3	3.8	8.2	0.34 J	3.9	<0.24	<0.06	<0.30	16	41	0.03 J
1213-103-1.0	1	7/3/2013	<0.22	9.1	69	<0.02	0.45 J	15	7.7	10	25	0.74 J	12	<0.24	<0.06	<0.30	24	82	0.03 J
1213-103-2.0	2	7/3/2013	<0.22	12	81	<0.02	0.41 J	19	8.8	15	9.7	0.92 J	15	<0.24	<0.06	<0.30	28	69	0.05 J
1213-103-4.5	4.5	7/3/2013	<0.22	9.2	82	<0.02	0.34 J	15	6.7	10	4.1	0.55 J	10	<0.24	<0.06	<0.30	27	48	0.03 J
1213-104-1.0	1	7/3/2013	<0.22	15	110	<0.02	0.41 J	18	9.4	10	7.9	0.84 J	14	<0.24	<0.06	<0.30	29	86	0.04 J
1213-104-2.0	2	7/3/2013	<0.22	12	76	<0.02	0.37 J	16	7.8	8.6	5.0	0.76 J	12	<0.24	<0.06	<0.30	28	59	0.04 J
1213-104-4.0	4	7/3/2013	<0.22	12	72	<0.02	0.36 J	14	7.4	7.6	6.3	0.76 J	9.8	<0.24	<0.06	<0.30	25	53	0.03 J
1213-105-1.0	1	7/3/2013	<0.22	13	97	<0.02	0.41 J	18	8.3	11	5.9	0.79 J	15	<0.24	<0.06	<0.30	29	64	0.06 J
1213-105-2.0	2	7/3/2013	<0.22	9.2	72	<0.02	0.33 J	12	6.4	8.1	3.7	0.58 J	8.7	<0.24	<0.06	<0.30	25	45	0.02 J
1213-105-4.0	4	7/3/2013	<0.22	8.3	59	<0.02	0.31 J	11	5.9	5.8	3.3	0.55 J	8.0	<0.24	<0.06	<0.30	22	44	0.03 J
1213-106-1.0	1	7/3/2013	<0.22	23	70	<0.02	0.38 J	14	7.6	12	39	0.77 J	9.8	<0.24	<0.06	<0.30	25	77	0.03 J
1213-106-3.0	3	7/3/2013	<0.22	14	40	<0.02	0.25 J	8.3	4.7	5.0	5.3	0.56 J	5.2	<0.24	<0.06	<0.30	19	44	0.03 J
1213-106-7.0	7	7/3/2013	<0.22	4.2	39	<0.02	0.20 J	6.7	3.9	3.2	1.7	0.35 J	4.3	<0.24	<0.06	<0.30	15	31	0.02 J
1213-106-10.0	10	7/3/2013	<0.22	18	84	<0.02	0.42 J	17	9.1	9.8	5.0	0.75 J	13	<0.24	<0.06	<0.30	31	67	0.06 J
1213-107-1.0	1	7/3/2013	<0.22	13	75	<0.02	0.34 J	14	7.3	7.7	4.5	0.80 J	10	<0.24	<0.06	<0.30	26	55	0.04 J
1213-107-3.0	3	7/3/2013	<0.22	14	89	<0.02	0.40 J	16	8.3	10	5.2	0.84 J	14	<0.24	<0.06	<0.30	29	63	0.04 J
1213-107-7.0	7	7/3/2013	<0.22	4.8	74*	<0.02	0.12 J	4.9	1.2	9.2	1.8	0.41 J	4.4	<0.24	<0.06	<0.30	7.4	11	0.03 J
1213-107-10.0	10	7/3/2013	<0.22	9.9	69	<0.02	0.33 J	16	7.2	7.2	3.8	0.57 J	12	<0.24	<0.06	<0.30	27	52	0.04 J
1213-108-1.0	1	7/3/2013	<0.22	13	67	<0.02	0.33 J	12	6.5	6.3	3.4	0.73 J	8.3	<0.24	<0.06	<0.30	25	47	0.04 J
1213-108-3.0	3	7/3/2013	<0.22	9.0	73	<0.02	0.32 J	13	6.7	6.4	3.7	0.65 J	8.5	<0.24	<0.06	<0.29	24	50	0.02 J
1213-108-5.0	5	7/3/2013	<0.22	12	84	<0.02	0.37 J	15	7.8	8.9	4.4	0.73 J	11	<0.24	<0.06	<0.29	25	57	0.05 J
1213-109-1.0	1	7/3/2013	<0.22	16	88	<0.02	0.40 J	19	9.0	10	5.9	0.75 J	14	<0.24	<0.06	<0.30	33	69	0.05 J
1213-109-3.0	3	7/3/2013	<0.22	9.0	66	<0.02	0.30 J	12	6.2	6.2	3.3	0.58 J	7.9	<0.24	<0.06	<0.29	24	45	0.07 J
1213-109-5.0	5	7/3/2013	<0.22	9.6	74	<0.02	0.34 J	13	7.1	7.1	3.9	0.68 J	9.4	<0.24	<0.06	<0.30	26	50	0.02 J

NOTES:

All soil results in mg/Kg

CHHSLs = California Human Health Screening Levels

RSLs = Regional Screening Levels

TTLC = Total Threshold Limit Concentration

STLC = Soluble Threshold Limit Concentration

bgs = below ground surface

Sample depth in feet below the ground surface

<0.5 - Analyte not reported at or above stated method detection limit

(1) Soil, California Human Health Screening Levels for Commercial/Industrial and Residential Land Use, California Environmental Protection Agency, January 2005; updates 2009 & 2010 Office of Environmental Health Hazard Assessment, Table 1.

(2) United States Environmental Protection Agency (Region 9) Regional Screening Levels (RSLs; in mg/Kg) for VOCs for industrial and reside

(3) G.R. Bradford, A.C. Chang, A.L. Page, D. Bakhtar, J.A. Frampton, and H. Wright, Background Concentrations of Trace and Major Elements in California Soils, March 1996.

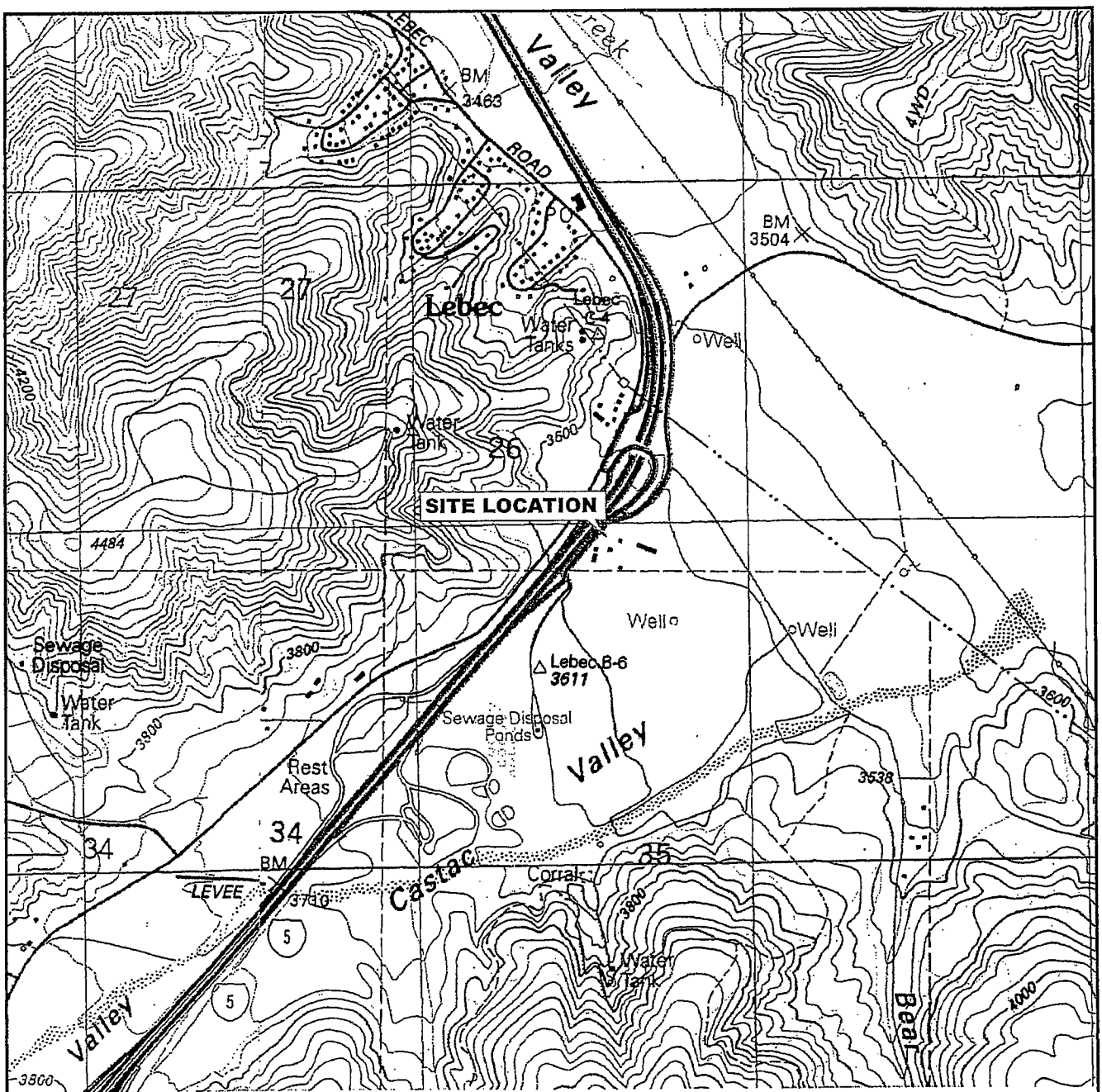
(4) California Department of Toxic Substances Control (DTSC), 2008, Determination of a Southern California Regional Background Arsenic Concentration in Soil, March.

= Shaded cells indicate a concentration that exceeds either the RSL, CHHSL, and/or the background concentration for that particular metal.

J - Concentration is reported between the practical quantitation limit and the method detection limit.

* The reported barium result for sample 1213-107-7 was originally reported at 6,500 mg/kg. Although all QA/QC for this sample were in order the value (74 mg/kg) was consistent with other samples and expected background concentrations.

FIGURES



1 1/2 0 1

SCALE IN MILE

1000 0 1000 2000 3000 4000 5000 6000 7000

SCALE IN FEET

REFERENCE: CA Digital Raster Graphics(http://gis.ca.gov/casil/usgs.gov/)
7.5 Minute Series, Albers NAD83, Trimmed
Block o34117a5, Downloaded 5/14/10

Stantec
25864-F BUSINESS CENTER DRIVE
REDLANDS, CALIFORNIA 92374
PHONE: (909) 335-6116 FAX: (909) 556-6516

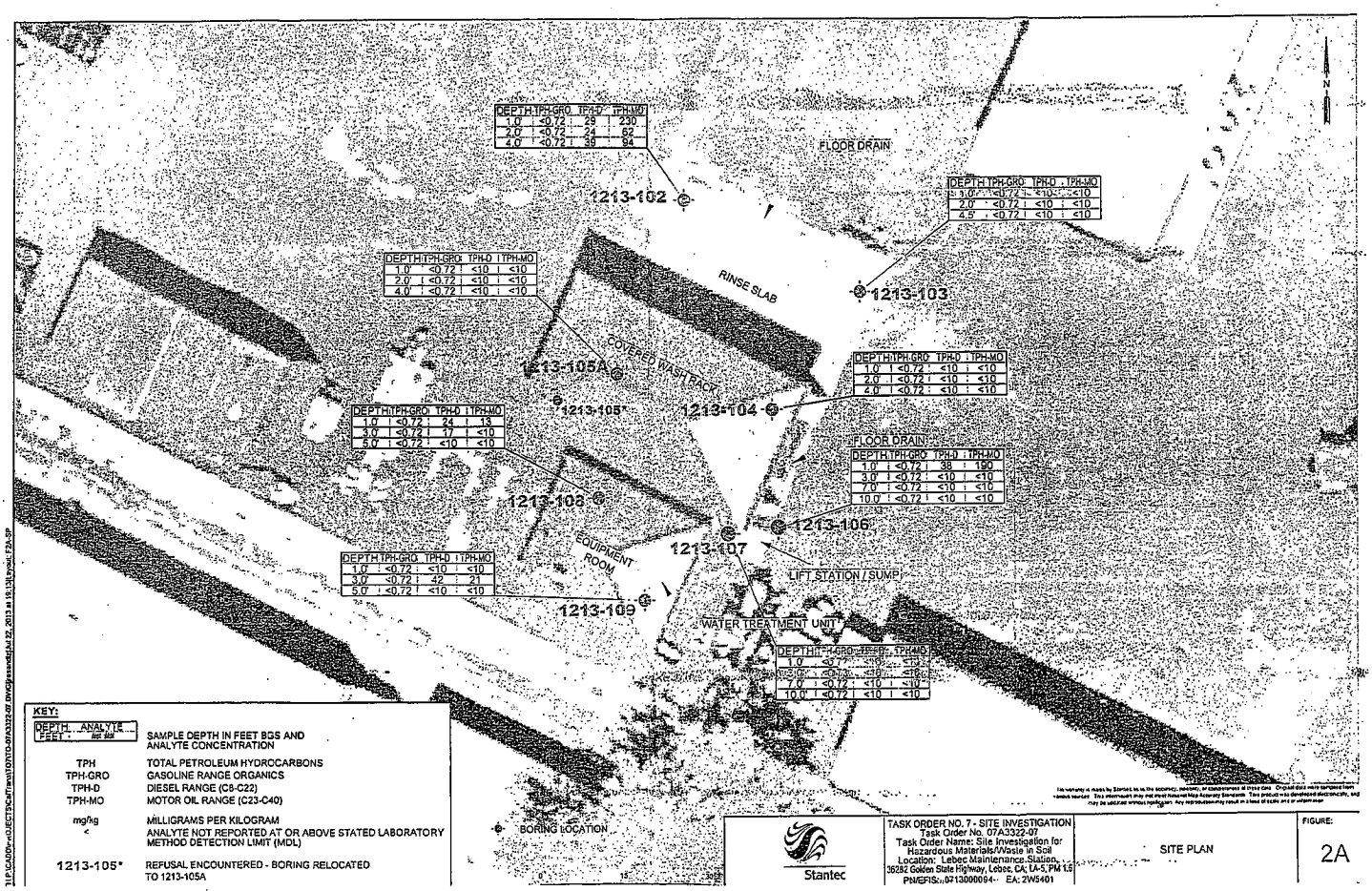
TASK ORDER NO. 7 - SITE INVESTIGATION
Task Order No. 07A3322-07
Task Order Name: Site Investigation for Hazardous Materials/Waste in Soil
Location: Lebec Maintenance Station, 36282 Golden State Highway, Lebec, CA; LA-5, PM 1.6
PN/EFIS: 0713000094 EA: 2W5401

SITE LOCATION MAP

FIGURE: 1

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185832007	J. RESENDIZ	A. PEREZ		JULY 2013

FILEPATH:P:\CADD\PROJECTS\CalTrans\TO7\TO-07A3322-07.DWG|jresendiz|Jul 16, 2013 at 18:52|Layout: F1-SLM



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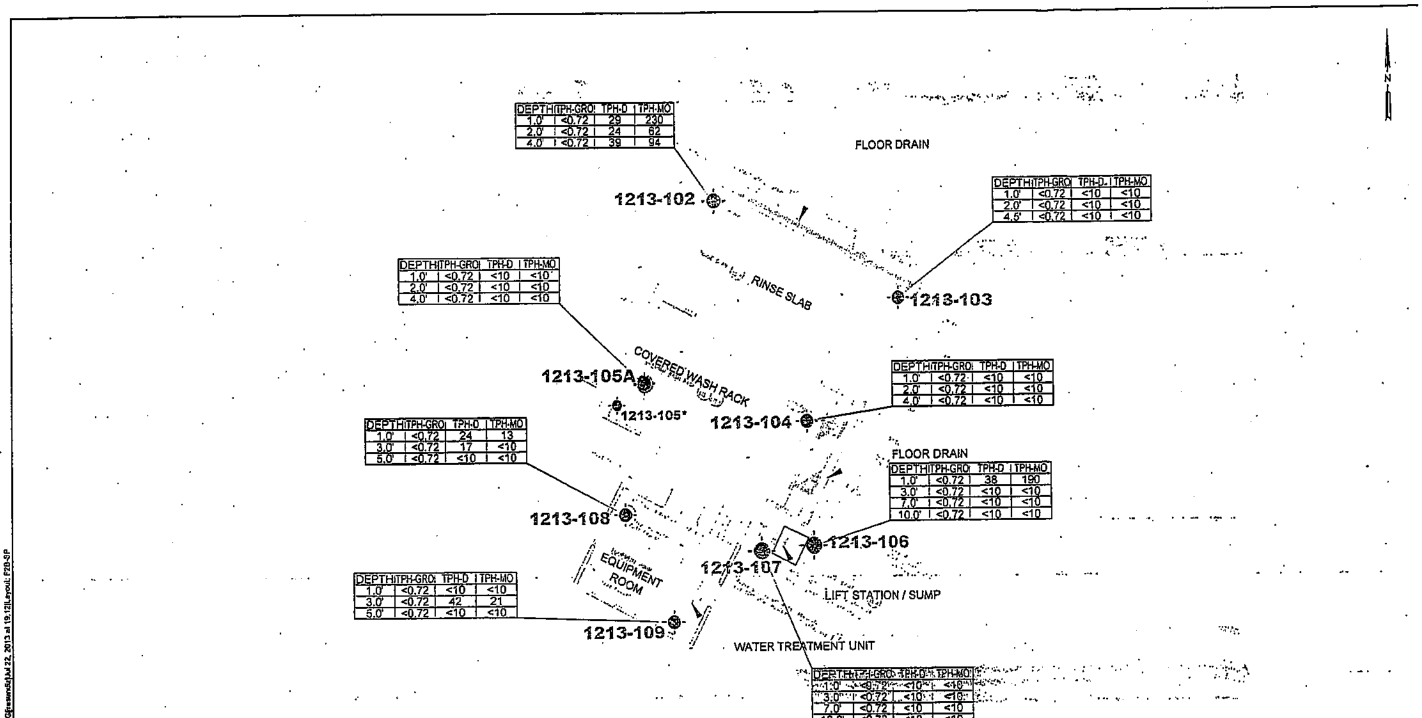
36282 Golden State Highway, Lebec, CA; TA-5, PM 1.5
PMERIS: 0713000094 EA: 2W5401

SITE PLAN

FIGURE: 2A



1213-102

DEPTH	TPH-GRO	TPH-D	TPH-MO
1.0'	<0.72	29	230
2.0'	<0.72	24	62
4.0'	<0.72	39	94

1213-103

DEPTH	TPH-GRO	TPH-D	TPH-MO
1.0'	<0.72	<10	<10
2.0'	<0.72	<10	<10
4.5'	<0.72	<10	<10

1213-105A

DEPTH	TPH-GRO	TPH-D	TPH-MO
1.0'	<0.72	<10	<10
2.0'	<0.72	<10	<10
4.0'	<0.72	<10	<10

1213-104

DEPTH	TPH-GRO	TPH-D	TPH-MO
1.0'	<0.72	<10	<10
2.0'	<0.72	<10	<10
4.0'	<0.72	<10	<10

1213-108

DEPTH	TPH-GRO	TPH-D	TPH-MO
1.0'	<0.72	24	13
3.0'	<0.72	17	<10
5.0'	<0.72	<10	<10

1213-106

DEPTH	TPH-GRO	TPH-D	TPH-MO
1.0'	<0.72	38	190
3.0'	<0.72	<10	<10
7.0'	<0.72	<10	<10
10.0'	<0.72	<10	<10

1213-109

DEPTH	TPH-GRO	TPH-D	TPH-MO
1.0'	<0.72	<10	<10
3.0'	<0.72	42	21
5.0'	<0.72	<10	<10

1213-107

DEPTH	TPH-GRO	TPH-D	TPH-MO
1.0'	<0.72	<10	<10
3.0'	<0.72	<10	<10
7.0'	<0.72	<10	<10
10.0'	<0.72	<10	<10

KEY:

DEPTH FEET	ANALYTE ###	SAMPLE DEPTH IN FEET BGS AND ANALYTE CONCENTRATION

TPH	TOTAL PETROLEUM HYDROCARBONS
TPH-GRO	GASOLINE RANGE ORGANICS
TPH-D	DIESEL RANGE (C8-C22)
TPH-MO	MOTOR OIL RANGE (C23-C40)
mg/kg	MILLIGRAMS PER KILOGRAM
<	ANALYTE NOT REPORTED AT OR ABOVE STATED LABORATORY METHOD DETECTION LIMIT (MDL)
1213-105*	REFUSAL ENCOUNTERED - BORING RELOCATED TO 1213-105A

BORING LOCATION

0 15 30

Stantec

TASK ORDER NO. 7 - SITE INVESTIGATION
Task Order No. 07A3322-07
Task Order Name: Site Investigation for Hazardous Materials/Waste in Soil
Location: Lebec Maintenance Station
36282 Golden State Highway, Lebec, CA; LA-5, PM 1.6

SITE PLAN

FIGURE: 2B