FOR CONTRACT NO.: 01-463304

INFORMATION HANDOUT

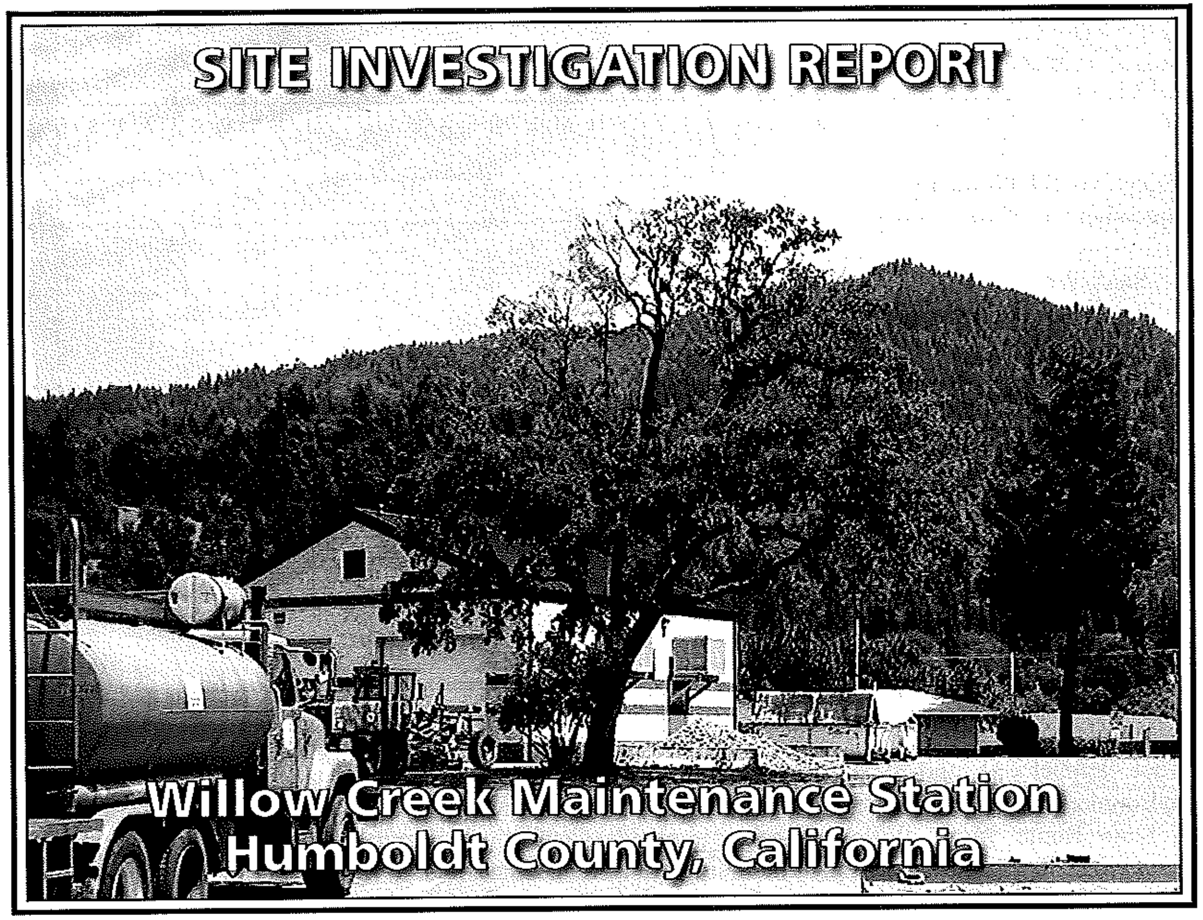
MATERIALS INFORMATION

SITE INVESTIGATION REPORT

EXISTING HOIST PICTURES

POTHOLE INFORMATION/EXISTING AC DEPTH FOR
PULVERIZE ROADBED

01-HUM-96-PM 0.6



PREPARED FOR:

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GEOCON PROJECT NO. S9380-06-131

GEOCON
CONSULTANTS, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. S9300-06-131
November 17, 2010

Mr. Steve Werner
California Department of Transportation – District 1
Environmental Engineering Office
1656 Union Street
Eureka, California 95501

Subject: WILLOW CREEK MAINTENANCE STATION
HUMBOLDT COUNTY, CALIFORNIA
CONTRACT NO. 03A1368
TASK ORDER NO. 131, EA NO. 01-463300
SITE INVESTIGATION REPORT

Dear Mr. Werner:

In accordance with California Department of Transportation (Caltrans) Contract No. 03A1368, Task Order Number 131, and Expense Authorization 01-463300, Geocon Consultants, Inc. has performed environmental engineering services at the Willow Creek Maintenance Station located at Post Mile 0.6 of State Route 96 in Willow Creek, Humboldt County, California. The accompanying report summarizes the services performed including the advancement of 27 direct-push borings and 4 hand-auger borings for shallow soil sampling for aerially deposited lead and petroleum hydrocarbons analysis, the collection of three paint samples for lead analysis, and the preparation of this report.

The contents of this report reflect the views of the author, who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

Please contact us if there are any questions concerning the contents of this report or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.

John Pfeiffer, PG, CEG
Senior Geologist

PROFESSIONAL GEOLOGIST
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PRELIMINARY SITE INVESTIGATION REPORT

1.0 INTRODUCTION

This Site Investigation Report for the Willow Creek Maintenance Station (the Site), located at Post Mile (PM) 0.6 along State Route 96 (SR-96) in Humboldt County, California, was prepared by Geocon Consultants, Inc. under California Department of Transportation (Caltrans) Contract No. 03A1368, Task Order (TO) Number 131, and Expense Authorization (EA) 01-463300.

1.1 Project Description and Proposed Improvements

The project area consists of the Site and adjacent Caltrans right-of-way along the southbound shoulder of SR-96 for 420 feet to the southeast. Proposed improvements include the in-place grinding of existing pavement on the Site, grading these materials and re-paving the Site, construction of bioswale ditches, and ditch improvements along SR-96. Additional improvements include the removal of an out-of-service vehicle hoist and construction of a new vehicle pre-wash structure. The approximate project location is depicted on the Vicinity Map and Site Plan, Figures 1 and 2, respectively.

1.2 General Objectives

The purpose of the scope of services outlined in TO No. 131 was to evaluate the Site for the presence of petroleum hydrocarbons in soil, evaluate whether impacts due to aerially deposited lead (ADL) from motor vehicle exhaust exist in the surface and near surface soils within the project boundaries, and evaluate an out-of-service hoist for the presence and quantity of lead-containing paint (LCP). The investigative results will be used by Caltrans to inform the construction contractor(s) if petroleum hydrocarbon- or lead-impacted soil, or LCP is present within the project boundaries for health, safety, and waste management and disposal evaluation purposes.

> *It was not Geocon's intent during this inspection to conduct an evaluation of lead-based paint hazards in accordance with U.S. Department of Housing and Urban Development (HUD) guidelines.*

2.0 BACKGROUND

2.1 Potential Petroleum Hydrocarbon Impacts

The Site was previously used as a trucking yard prior to Caltrans purchase of the property. At the time of purchase by the State, it was partially paved. It is presumed that waste oil and/or diesel fuel may have been used for dust control prior to paving. It is Caltrans' intent to grind the existing 2-inch-thick pavement in place and incorporate it into the existing shallow soils to a depth of approximately 8 inches. This pavement and soil material mixture will be compacted and become the base material for new pavement. It will also be graded and shaped prior to the placement of the dense graded pavement cap to facilitate surface drainage to the proposed onsite bioswale for stormwater treatment.

In a letter dated January 5, 2010, the North Coast Regional Water Quality Control Board (NCRWQCB) provided waste disposal and reuse guidance for Caltrans projects within the jurisdiction of the NCRWQCB. The letter states that the NCRWQCB will allow the onsite re-use of low level contaminated soils provided the following conditions are met:

- Potentially contaminated material shall be properly characterized for potential onsite and/or offsite disposal;
- Material determined to be non-hazardous solid waste or inert will be placed at an elevation at least 5 feet above seasonally high groundwater elevations and be underlain by the least permeable material available at the Site. An impermeable membrane will be used if low permeable material is not available;
- Material will be placed under a cap (i.e. asphalt, concrete, soil with vegetation) that will act as a low permeability surface;
- Material will not be placed in drainage ways or wetlands;
- Local grading ordinances are followed;
- Material is not transported or exposed during wet weather conditions;
- Materials shall be protected utilizing best management practices (BMPs); and
- The location of the placed materials is documented.

We intend to show that if the hydrocarbon-impacted soil materials, defined in this investigation, are reused onsite as proposed, that water quality will not be threatened.

2.2 Waste Determination Criteria – Petroleum Hydrocarbons

Currently, regulatory criteria for the classification of wastes based solely on the concentrations of total petroleum hydrocarbons (TPH) such as gasoline, diesel, and motor oil, have not yet been promulgated. Disposal of TPH-impacted soil is generally regulated by disposal facility permit and acceptance criteria. Caltrans has stated that excess TPH-impacted material that cannot be reused onsite will be taken to an appropriately permitted waste disposal facility.

2.3 Potential Lead Soil Impacts

Ongoing testing by Caltrans throughout California has indicated that ADL exists along highway and freeway routes due to historic emissions from vehicles powered by leaded gasoline.

2.4 Hazardous Waste Determination Criteria – Lead

Regulatory criteria to classify a waste as "California hazardous" for handling and disposal purposes are contained in the California Code of Regulations (CCR), Title 22, Division 4.5, Chapter 11, Article 3, § 66261.24. Criteria to classify a waste as "Resource, Conservation, and Recovery Act (RCRA) hazardous" are contained in Chapter 40 of the Code of Federal Regulations (40 CFR), Section 261.

For waste containing metals, the waste is classified as California hazardous when: 1) the total metal content exceeds the respective Total Threshold Limit Concentration (TTLC); or 2) the soluble metal content exceeds the respective Soluble Threshold Limit Concentration (STLC) based on the standard Waste Extraction Test (WET) procedure. A waste may have the potential of exceeding the STLC when the waste's total metal content is greater than or equal to ten times the respective STLC value, since the WET uses a 1:10 dilution ratio. Hence, when a total metal is detected at a concentration greater than or equal to ten times the respective STLC, and assuming that 100 percent of the total metals are soluble, soluble metal analysis is required. A material is classified as RCRA hazardous, or Federal hazardous, when the soluble metal content exceeds the Federal regulatory level based on the Toxicity Characteristic Leaching Procedure (TCLP). The TTLC value for lead is 1,000 milligrams per kilogram (mg/kg). The STLC and TCLP values for lead are both 5.0 milligrams per liter (mg/l).

The above regulatory criteria are based on chemical concentrations. Wastes may also be classified as hazardous based on other criteria such as ignitability and corrosivity; however, for the purposes of this investigation, toxicity (i.e., lead concentrations) is the primary factor considered for waste classification since waste generated during the construction activities would not likely warrant testing for ignitability or corrosivity. Waste that is classified as either California-hazardous or RCRA-hazardous requires management as a hazardous waste.

The Department of Toxic Substances Control (DTSC) regulates and interprets hazardous waste laws in California. DTSC generally considers excavated or transported materials that exhibit "hazardous waste" characteristics to be a "waste" requiring proper management, treatment and disposal. Soil that contains lead above hazardous waste thresholds and is left in-place would not be necessarily classified by DTSC as a "waste." The DTSC has provided site-specific determinations that "movement of wastes within an area of contamination does not constitute "land disposal" and, thus, does not trigger hazardous waste disposal requirements." Therefore, lead-impacted soil that is scarified in-place, moisture-conditioned, and recompacted during roadway improvement activities might not be considered a "waste." DTSC should be consulted to confirm waste classification. It is noted that in addition to DTSC regulations, health and safety requirements and other local agency requirements may also apply to the handling and disposal of lead-impacted soil.

2.5 Lead Paint

Construction activities (including demolition) that disturb materials or paints containing *any* amount of lead are subject to certain requirements of the Cal/OSHA lead standard contained in Title 8, CCR, Section 1532.1. Deteriorated paint is defined by Title 17, CCR, Division 1, Chapter 8, §35022 as a surface coating that is cracking, chalking, flaking, chipping, peeling, non-intact, failed, or otherwise separating from a substrate. Demolition of a deteriorated LCP component would require waste characterization and appropriate disposal. Intact LCP on a component is currently accepted by most landfill facilities; however, contractors are responsible for segregating and characterizing waste streams prior to disposal.

Potential hazards exist to workers who remove or cut through LCP coatings during demolition. Dust containing hazardous concentrations of lead may be generated during scraping or cutting materials coated with lead-containing paint. Torching of these materials may produce lead oxide fumes. Therefore, air monitoring and/or respiratory protection may be required during the demolition of materials coated with LCP. Guidelines regarding regulatory provisions for construction work where workers may be exposed to lead are presented in Title 8, CCR, Section 1532.1.

3.0 SCOPE OF SERVICES

The following scope of services was performed as requested by Caltrans in TO No. 131:

3.1 Pre-field Activities

- Conducted a pre-work telephone conference to discuss the TO scope of services. Caltrans representative Steve Werner and Geocon representative Ian Stevenson were on the call. The purpose of the pre-work telephone conference was to discuss the project details.
- Prepared a *Health and Safety Plan* dated June 11, 2010, to provide guidelines on the use of personal protective equipment and the health and safety procedures implemented during the field activities.
- Provided 48-hour notification to Underground Service Alert (Ticket Numbers 165272 and 165274) prior to job site mobilization.
- Retained the services of Cruz Brothers Locators to attempt to locate underground utilities at the Site.
- Retained the services of Advanced Technology Laboratories (ATL) to perform the chemical analyses of soil and paint samples.

3.2 Field Activities

The field activities consisted of the collection of 123 soil samples from 27 direct-push borings and four hand-auger borings for total petroleum hydrocarbons and lead analysis, and the collection of three paint chip samples for lead analysis.

4.0 INVESTIGATIVE METHODS

4.1 Boring Location Rationale

Boring locations were chosen in consultation with Caltrans in the vicinity of the proposed improvements. Borings DP1 through DP8 were located along the westbound shoulder of SR-96. Borings HA9 through DP13 were located in the unlined ditch along the southeastern boundary of the

Site where a bioswale will be constructed. Borings DP14 and DP15 were located at the existing mud rinse station where a new prewash structure will be located. Borings DP16 through DP31 were distributed in existing pavement areas that will be ground up and regraded. The approximate soil boring locations are depicted on Figure 2.

4.2 Soil Sampling Procedures

A total of 123 soil samples were collected from 31 borings at the Site. Borings DP1 through DP8 and DP13 through DP31 were advanced using direct-push equipment to a maximum depth of approximately 3 feet. During the advancement of each boring, a continuous soil core was collected inside a clear acetate sleeve fitted inside the push rods. Soil samples were collected at 0.5-foot intervals by cutting a section out of the core at the desired interval and sealing the ends of the sample with Teflon™ sheets and plastic end caps. The samples were then labeled and placed in a chilled cooler. Soil borings HA9 through HA12 were advanced using a hand-auger to a maximum depth of approximately 3 feet. Soil samples were transferred directly from the hand-auger to a 4-ounce glass jar, labeled, and placed in a chilled cooler. Selected soil samples from direct-push and hand-auger borings were submitted to ATL under standard chain-of-custody (COC) documentation.

Following sample collection, borings performed along SR-96 and within the unlined ditch in the southeast corner of the Site were backfilled with cuttings. Borings performed within paved areas of the Site were backfilled with cuttings and capped with asphalt cold patch.

4.3 Lead Paint Sampling Procedures

Bulk samples of suspected LCP were collected by Ian Stevenson from the hoist using techniques presented in HUD guidelines. In addition, the painted areas were evaluated for evidence of deterioration such as flaking or cracking. LCP sampling locations are depicted on Figure 2. Photographs of each paint sample location are attached.

4.4 Field Quality Assurance/Quality Control Procedures

Quality assurance/quality control (QA/QC) procedures were performed during the field exploration activities. These procedures included decontamination of sampling equipment before each boring was advanced and providing COC documentation for each sample submitted to the laboratory. The soil sampling equipment was cleansed between each boring by washing the equipment with an Alconox™ solution followed by a double rinse with deionized water. The field sampling activities were performed under the supervision of Geocon's project manager.

4.5 Traffic Control

Shoulder closure along SR-96 was established during the field sampling activities using cones and warning signs.

4.6 Laboratory Analyses

Selected soil samples were submitted to ATL for total petroleum hydrocarbons as diesel (TPHd), total petroleum hydrocarbons as motor oil (TPHmo), lead, propane, methane, and CAM-17 metals analysis.

4.6.1 Petroleum Hydrocarbon Samples

Seventy soil samples were submitted to ATL for the following analyses under standard ten day turn-time-time (TAT) basis.

- Sixty discrete soil samples were analyzed for TPHd and TPHmo following EPA Test Method 8015B Modified.
- Four 2-part composite soil samples were analyzed for TPHd and TPHmo following EPA Test Method 8015B Modified.
- Two soil samples were analyzed for tentatively identified compounds propane and methane following EPA Test Method 8260B.
- Ten soil samples were further analyzed for TCLP soluble TPHd and TPHmo following EPA Test Methods 1311 and 8015B Modified.

Subsequent to completion of analyses for TPHd, TPHmo, and lead, distributed samples representative of the upper one foot of soil across the Site were laboratory composited by ATL and then analyzed for CAM-17 metals on a three-day TAT basis.

- Five 2-part composite soil samples and one 4-part composite soil sample were analyzed for CAM-17 metals (excepting mercury) following EPA Test Method 6010B.
- Three of the composite soil samples were analyzed for soluble chromium using the WET procedure with deionized water extractant (DI-WET).

4.6.2 ADL Soil Samples

Seventy-one soil samples were submitted to ATL under standard ten day TAT for total lead analysis following EPA Test Method 6010B. The laboratory was instructed to homogenize the soil samples prior to analysis in accordance with Contract 03A1368 requirements.

4.6.3 Paint Chip Samples

Three paint chip samples were submitted to ATL for the following analyses under a standard 10-day TAT.

- Three paint chip samples were analyzed for total lead following EPA Test Method 6010B.
- One paint chip sample was further analyzed for WET soluble lead following EPA Test Method 7420.

- Two paint chip samples were further analyzed for TCLP soluble lead following EPA Test Method 1311.

4.6.4 Laboratory QA/QC

QA/QC procedures were performed for each method of analysis with specificity for each analyte listed in the test method's QA/QC. The laboratory QA/QC procedures included the following:

- One method blank for every ten samples, batch of samples or type of matrix, whichever was more frequent.
- One sample analyzed in duplicate for every ten samples, batch of samples or type of matrix, whichever was more frequent.
- One spiked sample for every ten samples, batch of samples or type of matrix, whichever was more frequent, with the spike made at ten times the detection limit or at the analyte level.

Prior to submitting the soil and paint samples to the laboratory, the COC documentation was reviewed for accuracy and completeness. Reproductions of the laboratory reports and COC documentation are presented in Appendix A.

5.0 FIELD OBSERVATIONS AND INVESTIGATIVE RESULTS

5.1 Site Conditions

Soil encountered during the excavation of borings was generally comprised of brown to grayish brown silty sand with gravel and clayey sand with gravel. Staining or petroleum hydrocarbon odors were not observed during drilling activities, but fragments of asphaltic concrete (AC) were observed mixed with other gravels at many of the locations. A propane-like odor was observed in soil samples collected from borings DP23 and DP30 near a propane line in the western portion of the Site. It was later discovered by others that an underground propane gas line was leaking. The line has subsequently been abandoned. Groundwater was not encountered in any of the borings performed during this investigation. Groundwater was encountered at depths ranging from approximately 6 to 23 feet between 1993 and 1997 in former groundwater monitoring wells at the Site. Domestic water onsite and on adjacent parcels is provided by the Willow Creek Community Services District. The source of the domestic water supply is Willow Creek, an upgradient tributary to the Trinity River.

5.2 Petroleum Hydrocarbon Analytical Results

Although a substantial number of borings to a depth of as much as 3 feet were advanced at the Site, we did not detect any petroleum hydrocarbon odors or staining. In addition, photoionization detector (PID) headspace readings obtained from soil samples did not show elevated volatile compounds except in the vicinity of a leaking propane line, as discussed in Section 5.1. TPHd and TPHmo were detected; however, in 59 of the 60 discrete soil samples and in each of the four composite samples analyzed.

TPHd was reported at concentrations ranging from 1.0 to 2,000 mg/kg with 13 samples containing greater than 100 mg/kg. TPHmo was reported at concentrations ranging from 1.1 to 13,000 mg/kg with 28 samples containing concentrations equal to or greater than 100 mg/kg.

Ten of the soil samples containing TPHd and/or TPHmo at concentrations greater than 100 mg/kg were further analyzed for TCLP TPHd and TPHmo per Caltrans' direction. TCLP soluble TPHd was reported for five of the ten soil samples at concentrations ranging from 0.32 to 1.4 mg/l. TCLP soluble TPHmo was also reported for five of the ten soil samples, at concentrations ranging from 0.34 to 5.5 mg/l.

Methane and propane were not reported above the laboratory reporting limit (RL) for the two samples analyzed.

In follow-up communications, the analytical laboratory noted that 37 of the samples analyzed for TPHmo contained hydrocarbons that are heavier than motor oil (greater than C40). Just three of the samples analyzed for TPHmo and TPHd contained hydrocarbons that are on the lighter end of TPHd and also on the heavier end of motor oil. Although a direct correlation cannot be made since standards of asphalt were not provided to the laboratory, the fact that much of the hydrocarbons found at the Site in the shallow subsurface are heavier than motor oil, is at the least, consistent with the presence of asphalt.

Petroleum hydrocarbon analytical results are summarized in Table 1. The laboratory reports and COC documentation are presented in Appendix A.

5.3 ADL Analytical Results

Total lead was detected in 50 of the 71 soil samples analyzed at concentrations ranging from 5.1 to 180 mg/kg. Just 2 of the 71 soil samples had reported total lead concentrations greater than 50 mg/kg (i.e., greater than ten times the STLC value for lead of 5.0 mg/l). The lead levels within the shallow subsurface of highway shoulder appear to be slightly elevated compared to the maintenance station.

A summary of the lead analytical results is presented on Table 2. The laboratory reports and COC documentation are presented in Appendix A.

5.4 CAM-17 Metals Analytical Results

Antimony, beryllium, cadmium, molybdenum, selenium, silver, and thallium were not detected at or above laboratory RLs in the six composite soil samples. Arsenic, barium, chromium, cobalt, copper, lead, nickel, vanadium, and zinc were detected within the ranges listed below, which are all within typical ranges for naturally occurring background levels. Analysis for mercury was omitted because the CAM-17 analyses were performed after expiration of the hold time for that analysis.

- Arsenic <1.0 to 3.5 mg/kg
- Barium 19 to 59 mg/kg
- Chromium (Total) 31 to 98 mg/kg
- Cobalt 7.3 to 22 mg/kg
- Copper 20 to 46 mg/kg
- Lead 2.8 to 34 mg/kg
- Nickel 56 to 190 mg/kg
- Vanadium 17 to 50 mg/kg
- Zinc 23 to 57 mg/kg

Three of the six composite soil samples had total chromium concentrations greater than 50 mg/kg (ten times the chromium STLC of 5.0 mg/l). The DI-WET analyses for these three samples did not detect soluble chromium at or above laboratory RLs. No other CAM-17 metals results were at concentrations greater than ten times their respective STLC values. CAM-17 analytical results are summarized on Table 3. The laboratory reports and COC documentation are presented in Appendix A.

5.5 Lead Paint Analytical Results

Total lead at concentrations ranging from 460 to 31,000 mg/kg was detected in the paint chip samples analyzed. Sample PS1 was reported to have a WET soluble lead concentration of 32 mg/l. Samples PS2 and PS3 were reported to have TCLP soluble lead concentrations of 1.2 and <1.0 mg/l, respectively.

A summary of the paint sample analytical results is presented on Table 4. The laboratory reports and COC documentation are presented in Appendix B.

5.6 Laboratory Quality Assurance/Quality Control

We reviewed the laboratory QA/QC provided with the laboratory reports. The data show acceptable non-detect results for the method blanks. However dilution was necessary for EPA Methods 7420 and 8015. Relative percent differences (RPDs) for EPA Method 6010 were also outside the RPD limit. Surrogate recoveries, RPD for duplicates (DUP) and/or matrix spikes (MS)/matrix spike duplicates (MSD) were outside recovery data for EPA Method 8015. The data showed acceptable recoveries and RPDs for the remainder of the matrix spikes and duplicates. Based on this limited data review, no additional qualifications of the ATL soil and paint sample data are necessary, and the data are of sufficient quality for the purposes of this report.

5.7 Statistical Evaluation of Soil Analytical Results

Statistical methods were applied to soil analytical results for TPHd, TPHmo, lead, and detected CAM-17 metals to evaluate the upper confidence limits (UCLs) of the arithmetic means for each sampling depth. The statistical methods used are discussed in a book entitled Statistical *Methods for Environmental Pollution Monitoring,* by Richard Gilbert; in an EPA *Technology Support Center Issue* document entitled, *The Lognormal Distribution in Environmental Applications,* by Ashok Singh et. al., dated December 1997; and in a book entitled *An Introduction to the Bootstrap,* by Bradley Efron and Robert J. Tibshirani.

5.7.1 Calculating the UCLs for the True Mean

The upper one-sided 90% and 95% UCLs of the arithmetic mean are defined as the values that, when calculated repeatedly for randomly drawn subsets of site data, equal or exceed the true mean 90% and 95% of the time, respectively. Statistical confidence limits are the classical tool for addressing uncertainties of a distribution mean. The UCLs of the arithmetic mean concentration are used as the mean concentrations because it is not possible to know the true mean due to the essentially infinite number of soil samples that could be collected from a site. The UCLs therefore account for uncertainties due to limited sampling data. As data become less limited at a site, uncertainties decrease, and the UCLs move closer to the true mean. Non-parametric bootstrap techniques used to calculate the UCLs are discussed in the previously referenced EPA document and in *An Introduction to the Bootstrap.*

5.7.2 Statistical Evaluation for Petroleum Hydrocarbons in Soil

TPHd and TPHmo UCLs were calculated for the depth intervals 0.0 to 0.5 foot, 0.5 to 1.0 foot, and 1.0 to 2.0 feet. For those samples in which TPHd or TPHmo was not detected at concentrations exceeding the laboratory RL, a value equal to one-half of the detection limit was used in the UCL calculation. The bootstrap results are included in Appendix B. The calculated UCLs and statistical results are summarized in the tables below:

SAMPLE INTERVAL (feet)	TPHd 90% UCL (mg/kg)	TPHd 95% UCL (mg/kg)	TPHd MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	403.3	439.3	275	2.1	2,000
0.5 to 1.0	64.3	69.6	45.5	1.1	360
1.0 to 2.0	5.4	5.8	3.7	<1.0	11
All samples: 0.0 to 2.0	201.0	217.0	140.7	<1.0	2,000

SAMPLE INTERVAL (feet)	TPHmo 90% UCL (mg/kg)	TPHmo 95% UCL (mg/kg)	TPHmo MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	2,216	2,426	1,446	2.0	13,000
0.5 to 1.0	307	338	209.1	<1.0	1,800
1.0 to 2.0	11.5	12.5	7.5	1.1	28
All samples: 0.0 to 2.0	1,086	1,178	725.2	<1.0	13,000

5.7.3 Statistical Evaluation for Petroleum Hydrocarbon TCLP Results

UCLs were calculated for the ten TCLP soluble TPHd and TPHmo results. For those samples in which TCLP soluble TPHd or TPHmo was not detected at concentrations exceeding the laboratory RL, a value equal to one-half of the detection limit was used in the UCL calculation. For comparison, we also calculated the UCLs for TPHd and TPHmo concentrations in the ten associated soil samples. The bootstrap results are included in Appendix B. The calculated UCLs and statistical results are summarized in the tables below:

	90% UCL	95% UCL	MEAN	MINIMUM VALUE	MAXIMUM VALUE
TPHd TCLP (mg/l)	0.604	0.681	0.360	<0.22	1.4
Associated samples TPHd (mg/kg)	996	1,082	717	92	2,000

	90% UCL	95% UCL	MEAN	MINIMUM VALUE	MAXIMUM VALUE
TPHmo TCLP (mg/l)	1.302	1.476	0.680	<0.22	3.3
Associated samples TPHmo (mg/kg)	5,707	6,273	3,997	360	13,000

5.7.4 Statistical Evaluation for Lead in Soil

Lead UCLs were calculated for soil samples collected along SR-96 (DP-1 through DP-8). For those samples in which total lead was not detected at concentrations exceeding the laboratory RL, a value equal to one-half of the detection limit was used in the UCL calculation. The bootstrap results are included in Appendix B. The calculated UCLs and statistical results are summarized in the table below:

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	35.1	37.2	26.8	2.5	63
0.5 to 1.0	63.9	71.6	40.4	7.7	180
1.0 to 1.5	20.2	22.2	12.8	2.5	49
1.5 to 2.0	6.0	6.3	4.8	2.5	8.0

5.7.5 Statistical Evaluation for CAM-17 Metals in Soil

UCLs were calculated for CAM-17 metals that were detected at concentrations exceeding the laboratory RL. The bootstrap results are included in Appendix B. The calculated UCLs and statistical results are summarized in Table 3.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Petroleum Hydrocarbons

The majority of the analyzed soil samples contained TPHd and TPHmo, including those collected from under shoulder pavement sections along SR-96. The UCLs show that concentrations of TPHd and TPHmo are highest in the top 6 inches of soil/subgrade (directly below the AC) and attenuate rapidly with depth, decreasing by approximately one order-of-magnitude in the next 6 inches (0.5 to 1.0 foot) and by another order-of-magnitude in the next 6 to 12 inches (1.0- to 2.0-foot-depth interval). The specific source(s) of these hydrocarbons is/are not known.

Likely sources of the detected petroleum hydrocarbons include asphalt fragments observed in sampled soils, leaching of petroleum hydrocarbons from the overlying asphaltic concrete pavement, stormwater entrainment and transport of surface petroleum hydrocarbons through cracks or voids within the pavement surface, and/or the historic practice of applying petroleum hydrocarbons to the ground surface for dust control (before the Site was paved). Review of the analytical data indicates a poor correlation among the various analytical results for TPHd, TPHmo, TCLP soluble TPHd, and TCLP soluble TPHmo, suggesting that the detected petroleum hydrocarbons result from more than one source type. The field observation of asphalt fragments in soils during sampling, coupled with the laboratory's characterization of 37 samples as containing hydrocarbons that are heavier than motor oil (greater than C40), strongly suggests asphalt as a significant source for the detected petroleum hydrocarbon impacts.

TCLP analyses for ten of the soil samples with relatively elevated TPH concentrations showed soluble TPHd and TPHmo concentrations up to 1.4 mg/l and 3.3 mg/l, respectively. The 90% UCLs for the TCLP TPHd and TCLP TPHmo results were 0.60 mg/l and 1.3 mg/l, respectively. These values are elevated relative to environmental screening levels, but it must be noted that the TCLP analyses are worst-case characterizations intended to mimic relatively acidic landfill leaching conditions rather than a rainwater infiltration scenario as would be anticipated at the Site. Further, the TCLP analyses were performed on ten of the most impacted samples. The 90% UCLs on soil concentrations of TPHd and TPHmo in the ten samples submitted for TCLP analysis were 996 mg/kg and 5,701 mg/kg, respectively. For comparison, the 90% UCLs for soil concentrations of TPHd and TPHmo in all samples from the top 6 inches were less than half of those values, at 403 mg/kg and 2,216 mg/kg, respectively. Due to this fact, it appears reasonable that a TCLP representative of the site conditions would be less than of half of what is noted above. This would suggest that the overall TCLP of TPH at the site would be below water quality objectives. And as noted previously, concentrations attenuate rapidly – by at least two orders-of-magnitude – within the top 18 inches of soil. This relatively rapid attenuation is consistent with the low-mobility nature of longer-chain petroleum hydrocarbons such as those encountered at the Site.

To further characterize potential threat to water quality, we analyzed selected composite samples for CAM-17 metals due to the potential association of TPHmo with waste oil. The detected concentrations of CAM-17 metals did not exceed regulatory screening levels and were generally consistent with typical background (naturally occurring) conditions encountered in California.

Previous groundwater monitoring at the Site documented depths to groundwater in the range of approximately 6 to 23 feet, with inferred flow to the northeast. The Trinity River is located approximately 750 feet northeast of the Site. Based on the analytical data obtained, the petroleum hydrocarbon impacts detected in shallow soil are of a low-mobility nature and exhibit rapid attenuation in the first 2 feet. As such, reuse of shallow soils mixed with the existing pavement surface at the facility as proposed by Caltrans appears to present a very low threat to groundwater or surface water in the area if the subject materials are capped by asphalt, concrete, or other low permeability surface and are placed at an elevation at least 5 feet above seasonally high groundwater as NCRQWCB guidance recommends.

6.2 ADL Soil Waste Disposal/Reuse Classification

Waste classifications are evaluated based on the 90% UCL of the lead content for the relevant excavation depths; this has historically been considered sufficient to satisfy a good faith effort by the EPA as discussed in SW-846. Risk assessment characterization is based on the 95% UCL of the lead content in the waste for the relevant depths; this is in accordance with the Risk Assessment Guidance for Superfund (RAGS) Volume 1 documentation for Exposure Assessment.

The table below summarizes the waste classification for excavated soil within this area based on the calculated total lead UCLs.

Excavation Depth	90% UCL Total Lead (mg/kg)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 2.0 foot	31.3	34.3	Non-Hazardous

90% UCL applicable for waste classification; 95% UCL applicable for risk assessment

As shown on the above table, soil materials excavated from the top 2.0 feet would not be classified as a California-hazardous waste since the 90% and 95% UCL-total lead concentrations are less than 50 mg/kg. In consideration of the fact that ADL concentrations typically decrease with depth, it is unlikely that waste material generated from deeper excavations would have concentrations of lead greater than those found in shallow soils. Statistical analysis of total lead data is presented in Appendix B.

6.3 Lead Paint

Deteriorated green, orange, and yellow paint observed on the out of service equipment hoist would be classified as California hazardous based on lead content. As such, the deteriorated portion of these paints must be removed and disposed of prior to renovation, demolition, or other activities that would disturb them. For budgetary planning purposes, our opinion of probable costs for the removal, containerization, transportation, and disposal of these paints is $2,500.

Contractors removing deteriorated LCP should be required to use personnel who have lead-related construction certification as supervisors or workers, as appropriate, from the California Department of Public Health Services for LCP removal work. Loose and peeling/flaking LCP require removal prior to demolition for waste segregation purposes: to separate potentially hazardous waste (Category III concentrated lead such as loose paint, paint sludge, vacuum debris, and vacuum filters) from non-hazardous demolition debris (Category II intact lead-painted architectural components such as doors, windows, framework, cladding, and trim). Category I waste is low lead waste (typically non-hazardous) such as construction materials, filtered wash water, and plastic sheeting. Contractors are responsible for informing the landfill of the contractor's intent to dispose of California hazardous waste, and/or architectural components containing intact LCP. Some landfills may require additional waste characterization. Contractors are responsible for segregating and characterizing waste streams prior to disposal.

We recommend that all paints at the project location be treated as lead-containing for purposes of determining the applicability of the Cal/OSHA lead standard during any future maintenance, renovation, and demolition activities. This recommendation is based on LCP sample results and the fact that lead was a common ingredient of paints manufactured before 1978 and is still an ingredient of some paints. In accordance with Title 8, CCR, Section 1532.1(p), written notification to the nearest Cal/OSHA district office is required at least 24 hours prior to certain lead-related work. Compliance and training requirements regarding construction activities where workers may be exposed to lead are presented in Title 8, CCR, Section 1532.1, subsections (e) and (l), respectively. Contractors are responsible for segregating and characterizing waste streams prior to disposal.

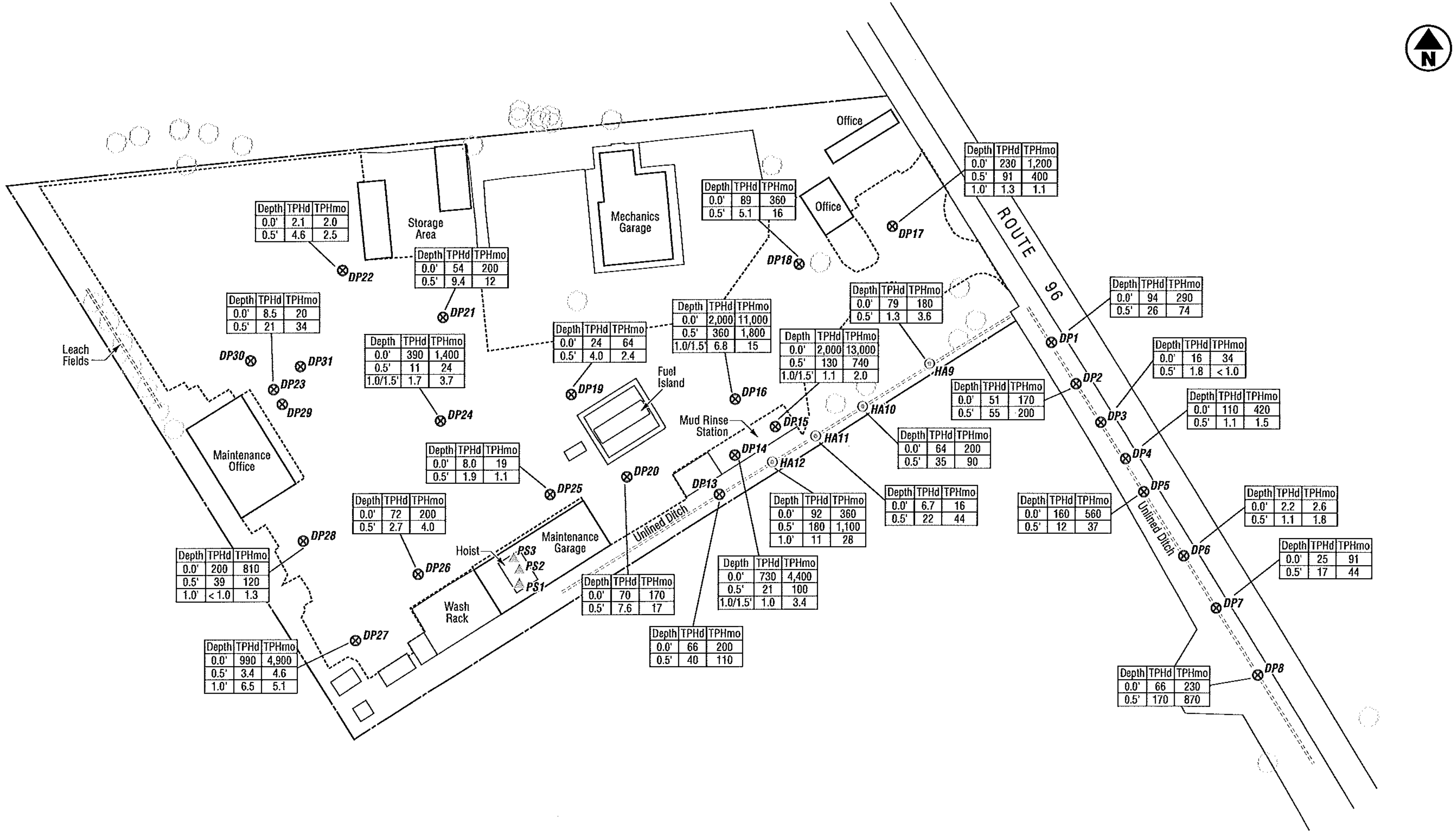
6.4 Worker Protection

Per Caltrans' requirements, the contractor(s) should prepare a project-specific Lead Compliance Plan (CCR Title 8, Section 1532.1, the "Lead in Construction" standard) to minimize worker exposure to lead-impacted soil. The plan should include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other health and safety protocols and procedures for the handling of lead-impacted soil.

7.0 REPORT LIMITATIONS

This report has been prepared exclusively for Caltrans. The information contained herein is only valid as of the date of the report and will require an update to reflect additional information obtained.

This report is not a comprehensive site characterization and should not be construed as such. The findings as presented in this report are predicated on the results of the limited sampling and laboratory testing performed. In addition, the information obtained is not intended to address potential impacts related to sources other than those specified herein. Therefore, the report should be deemed conclusive with respect to only the information obtained. We make no warranty, express or implied, with respect to the content of this report or any subsequent reports, correspondence or consultation. We strived to perform the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.



DP22

Depth	TPHd	TPHmo
0.0'	2.1	2.0
0.5'	4.6	2.5

DP21

Depth	TPHd	TPHmo
0.0'	54	200
0.5'	9.4	12

DP23

Depth	TPHd	TPHmo
0.0'	8.5	20
0.5'	21	34

DP24

Depth	TPHd	TPHmo
0.0'	390	1,400
0.5'	11	24
1.0/1.5'	1.7	3.7

DP19

Depth	TPHd	TPHmo
0.0'	24	64
0.5'	4.0	2.4

DP16

Depth	TPHd	TPHmo
0.0'	2,000	11,000
0.5'	360	1,800
1.0/1.5'	6.8	15

DP18

Depth	TPHd	TPHmo
0.0'	89	360
0.5'	5.1	16

DP17

Depth	TPHd	TPHmo
0.0'	230	1,200
0.5'	91	400
1.0'	1.3	1.1

HA9

Depth	TPHd	TPHmo
0.0'	79	180
0.5'	1.3	3.6

DP15

Depth	TPHd	TPHmo
0.0'	2,000	13,000
0.5'	130	740
1.0/1.5'	1.1	2.0

DP1

Depth	TPHd	TPHmo
0.0'	94	290
0.5'	26	74

DP2

Depth	TPHd	TPHmo
0.0'	51	170
0.5'	55	200

DP3

Depth	TPHd	TPHmo
0.0'	16	34
0.5'	1.8	< 1.0

DP4

Depth	TPHd	TPHmo
0.0'	110	420
0.5'	1.1	1.5

HA10

Depth	TPHd	TPHmo
0.0'	64	200
0.5'	35	90

HA11

Depth	TPHd	TPHmo
0.0'	6.7	16
0.5'	22	44

DP5

Depth	TPHd	TPHmo
0.0'	160	560
0.5'	12	37

DP6

Depth	TPHd	TPHmo
0.0'	2.2	2.6
0.5'	1.1	1.8

DP7

Depth	TPHd	TPHmo
0.0'	25	91
0.5'	17	44

DP8

Depth	TPHd	TPHmo
0.0'	66	230
0.5'	170	870

HA12

Depth	TPHd	TPHmo
0.0'	92	360
0.5'	180	1,100
1.0'	11	28

DP14

Depth	TPHd	TPHmo
0.0'	730	4,400
0.5'	21	100
1.0/1.5'	1.0	3.4

DP13

Depth	TPHd	TPHmo
0.0'	66	200
0.5'	40	110

DP20

Depth	TPHd	TPHmo
0.0'	70	170
0.5'	7.6	17

DP25

Depth	TPHd	TPHmo
0.0'	8.0	19
0.5'	1.9	1.1

DP26

Depth	TPHd	TPHmo
0.0'	72	200
0.5'	2.7	4.0

DP28

Depth	TPHd	TPHmo
0.0'	200	810
0.5'	39	120
1.0'	< 1.0	1.3

DP27

Depth	TPHd	TPHmo
0.0'	990	4,900
0.5'	3.4	4.6
1.0'	6.5	5.1

LEGEND:

DP1 ⊗ Approximate Direct-Push Boring Location

HA9 ⊙ Approximate Hand-Auger Boring Location

PS1 △ Approximate Paint Sample Location

TPHd = Total Petroleum Hydrocarbons as Diesel (mg/kg)

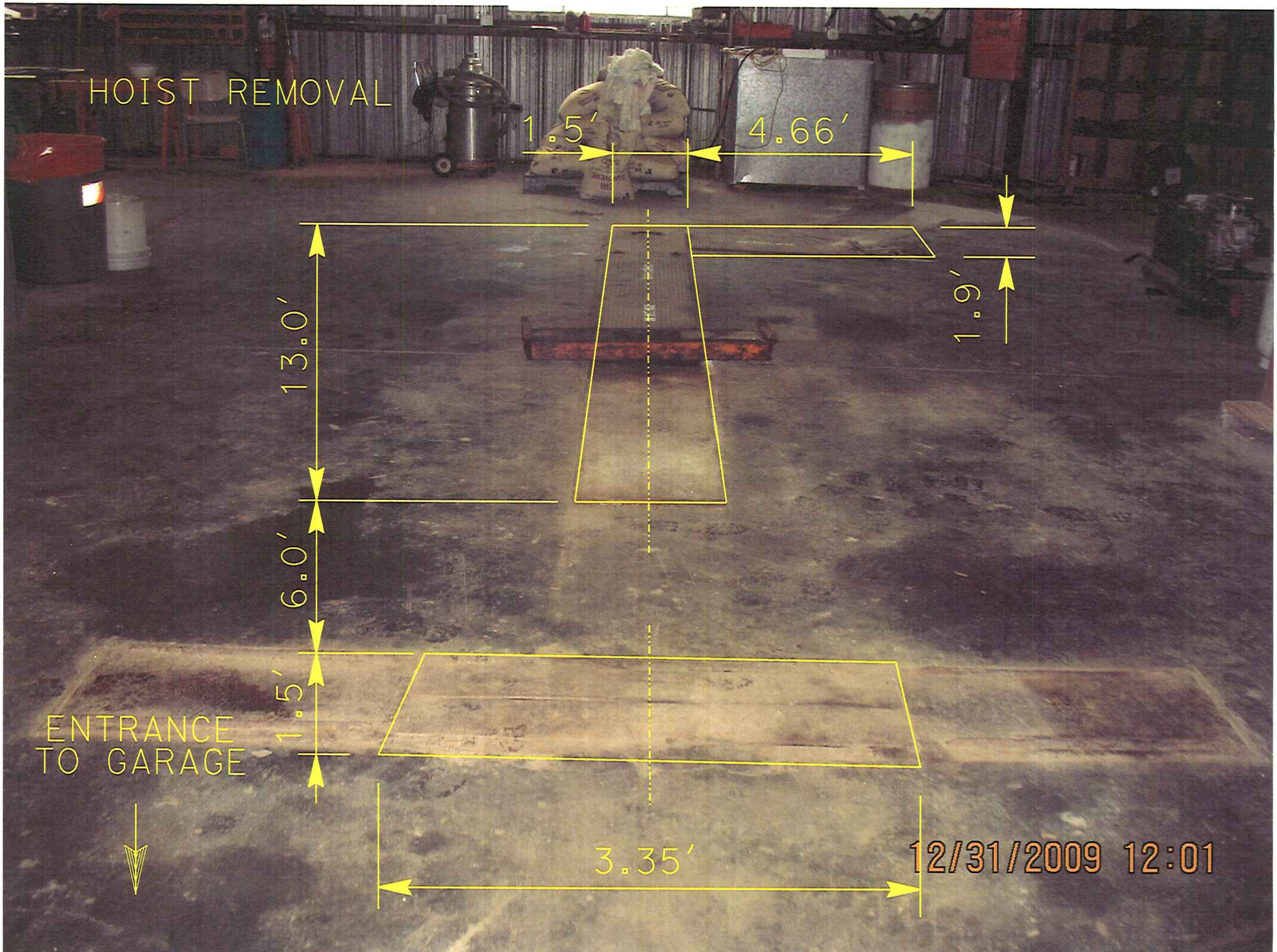
TPHmo = Total Petroleum Hydrocarbons as Motor Oil (mg/kg)

0 — 80

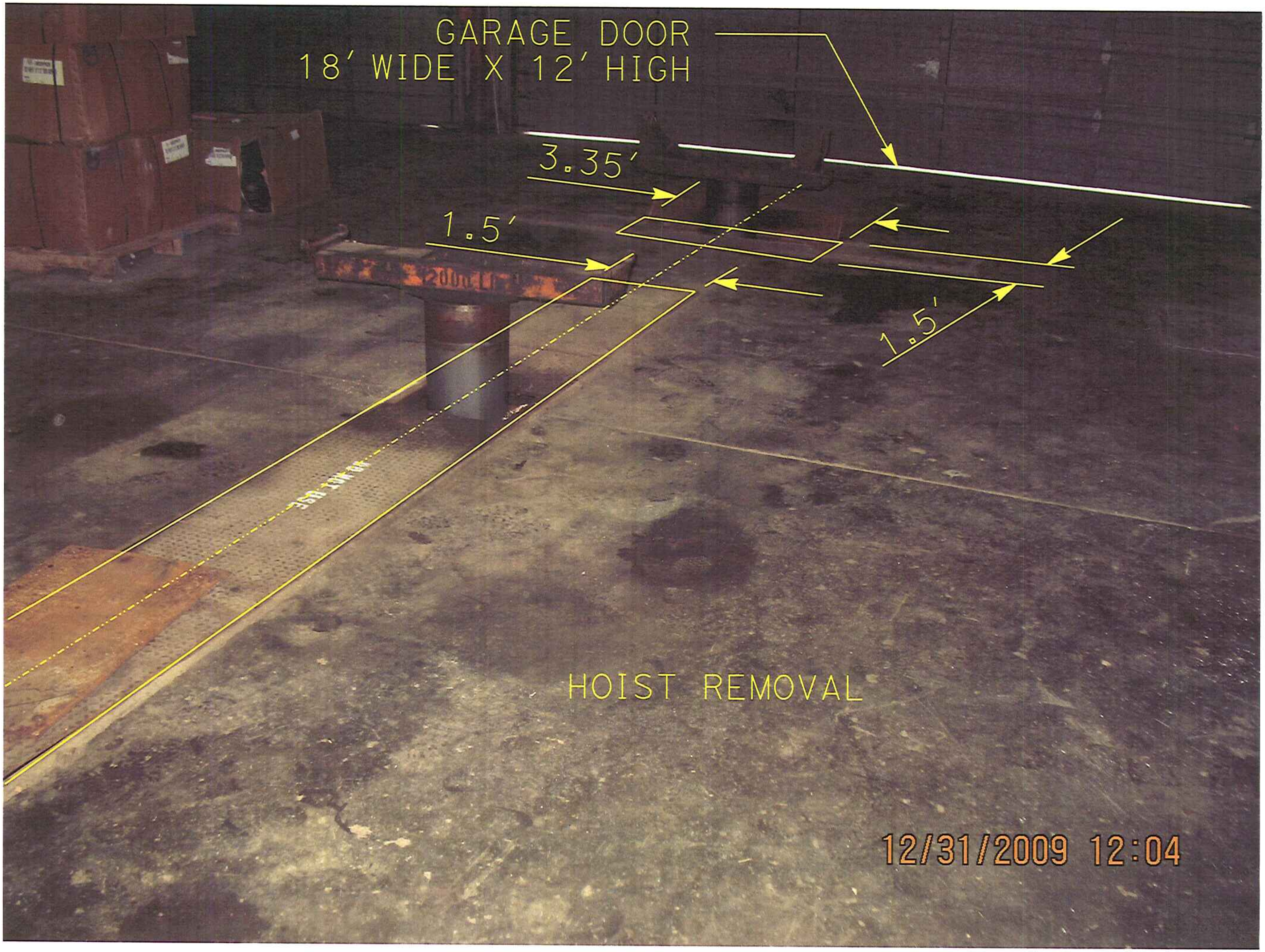
Scale in Feet

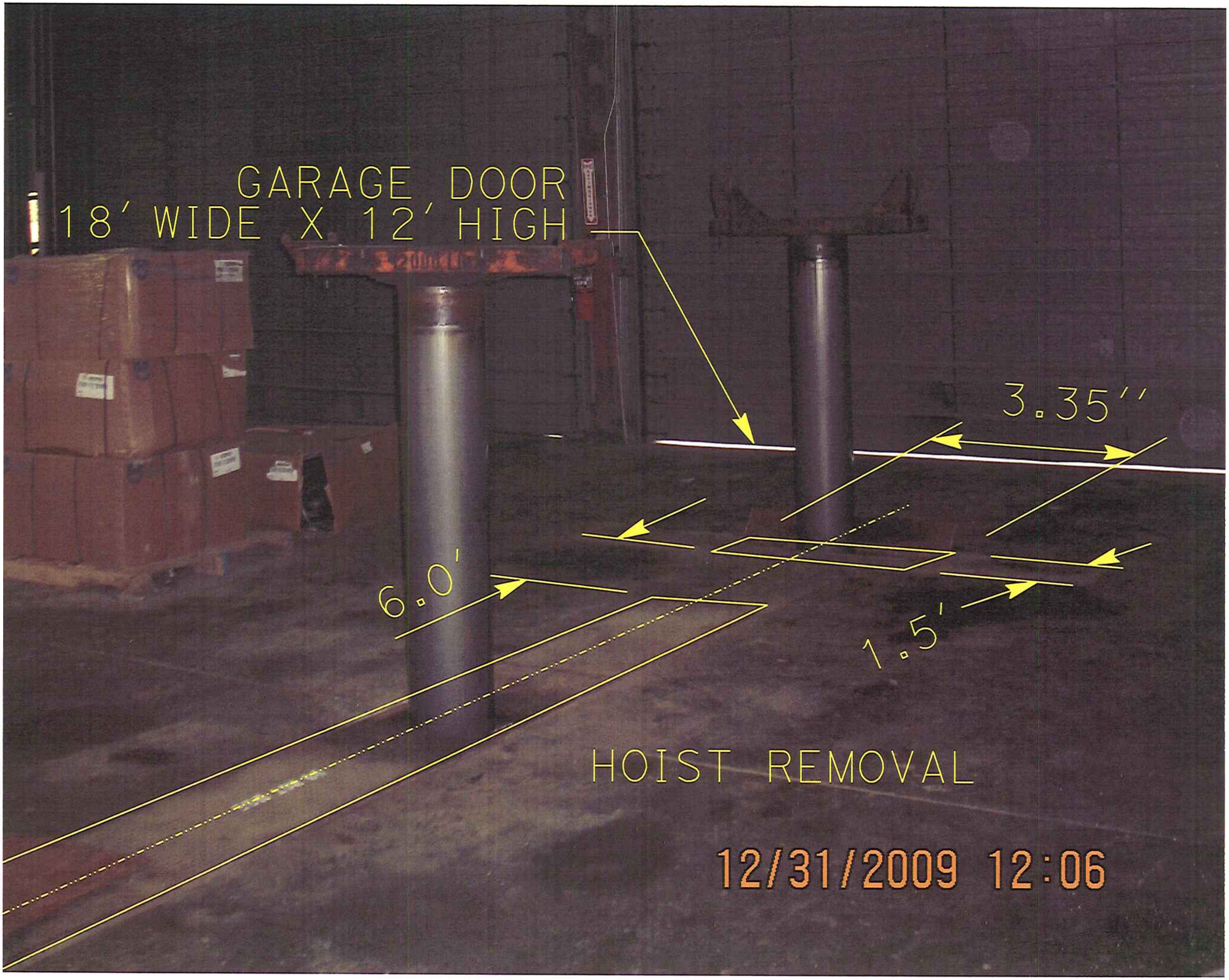
GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DR. - SUITE 800 - RANCHO CORDOVA, CA. 95742
PHONE 916 852-9118 - FAX 916 852-9132

Willow Creek Maintenance Station	
Humboldt County, California	**SITE PLAN**
GEOCON Proj. No. S9300-06-131	
Task Order No. 131	November 2010 — Figure 2



HOIST REMOVAL
1.5'
4.66'
1.9'
13.0'
6.0'
1.5'
ENTRANCE
TO GARAGE
3.35'
12/31/2009 12:01


GARAGE DOOR
18' WIDE X 12' HIGH
3.35'
1.5'
1.5'
HOIST REMOVAL
12/31/2009 12:04


GARAGE DOOR
18' WIDE X 12' HIGH
3.35"
6.0'
1.5'
HOIST REMOVAL
12/31/2009 12:06

POT HOLE LOCATION INFORMATION/EXISTING AC DEPTHS FOR PULVERIZE ROADBED						
POTHOLE	UTILITY	NORTHING	EASTING	Elev OF Exist GROUND SURFACE (Ft)	DEPTH OF UTILITY (Ft)	DEPTH OF Exist AC (Ft)
1	Tel	6109013.075	2232584.308	462.22	2.5	0.25
2	Elect	6109168.465	2232426.749	461.64	0.58	0.5
3	Elect	6109305.71	2232487.828	461.12	1.58	0.33
4	Elect	6109323.758	2232524.338	461.24	2.75	0.42
5	PROPANE/Elect	6109374.64	2232486.579	460.92	2.83/3.25	0.42
6	PROPANE/Elect/WATER	6109396.348	2232600.702	461.99	2.67/2.67/2.17	0.42
7	Elect/Elect	6109443.112	2232498.118	460.29	2.83/2.83	0.67
8	WATER	6109487.537	2232542.672	461.04	2.08	0.25
9	PROPANE	NOT DETERMINED				
10	PROPANE/WATER	6109483.001	2232700.784	461.34	1.25/1.92	0.25
11	Tel/Elect	6109491.297	2232691.894	461.24	1.25/1.50	0.25
12	Elect	6109548.026	2232559.623	460.12	2.75	N/A
13	Elect	6109553.741	2232637.205	460.06	1.42	N/A
14	Elect	6109569.154	2232571.305	459.07	1.83	N/A
15	WATER	NOT FOUND				0.13
16	Elect	6109325.397	2232481.604	461.03	2.75	0.42
17	Elect	6109351.799	2232459.626	461.11	2.83	0.42