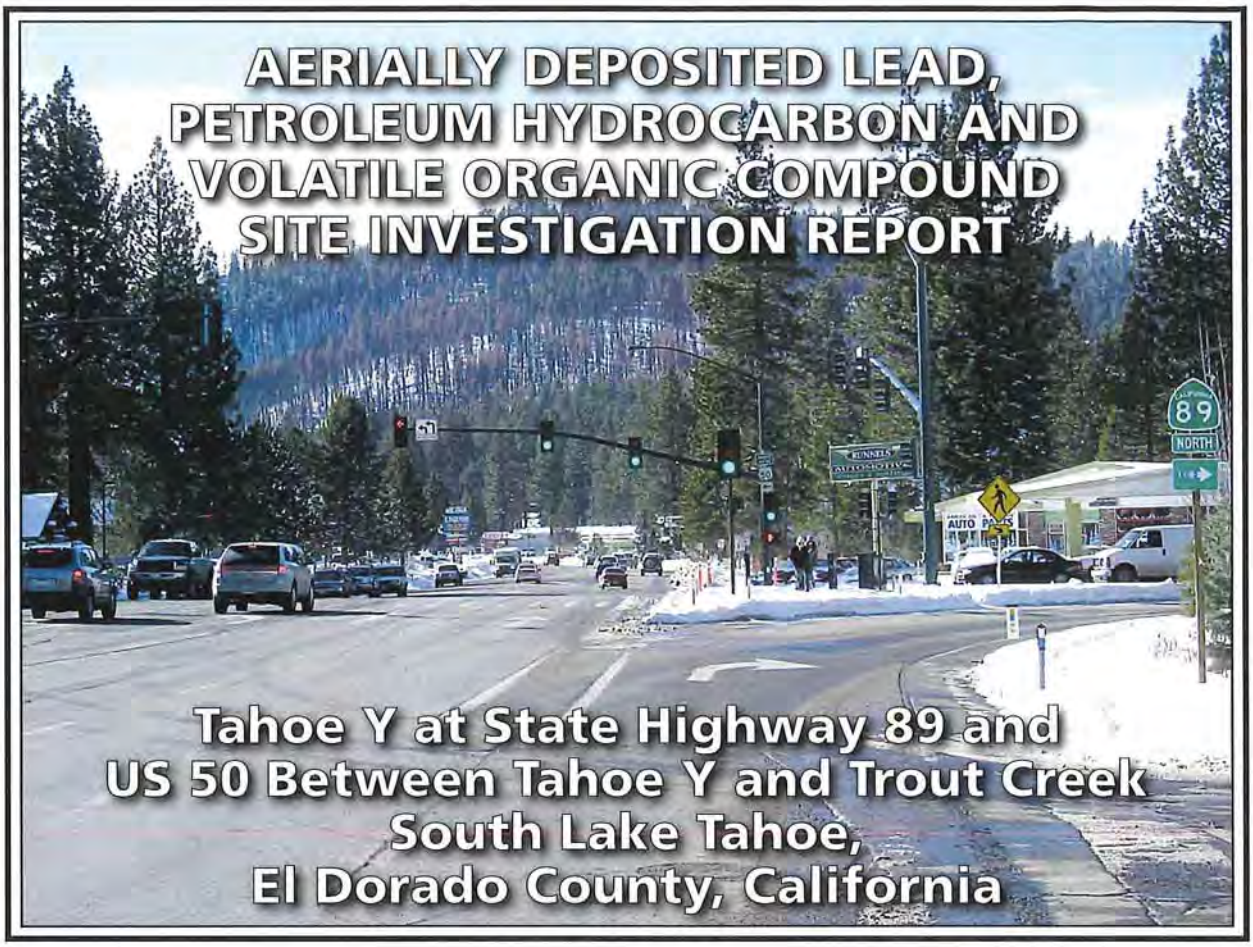
ED-50-03-3C380

AERIALLY DEPOSITED LEAD, PETROLEUM HYDROCARBON AND VOLATILE ORGANIC COMPOUND (SHORT VERSION)

NUMBER OF ATTACHMENTS-53

ROUTE: ED-50-75.4/77.3

AERIALLY DEPOSITED LEAD, PETROLEUM HYDROCARBON AND VOLATILE ORGANIC COMPOUND SITE INVESTIGATION REPORT



Tahoe Y at State Highway 89 and US 50 Between Tahoe Y and Trout Creek South Lake Tahoe, El Dorado County, California

PREPARED FOR:

CALIFORNIA DEPARTMENT OF TRANSPORTATION – DISTRICT 3
ENVIRONMENTAL ENGINEERING OFFICE
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GEOCON

GEOCON PROJECT NO. S9300-06-48
CONTRACT NO. 03A1368
TASK ORDER NO. 48, EAs 03-1A7320 AND 3C3800

JANUARY 2009

GEOCON
CONSULTANTS, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. S9300-06-48
January 27, 2009

Mr. Rajive Chadha
California Department of Transportation - District 3
Environmental Engineering Office
703 B Street, P.O. Box 911
Marysville, California 95901

Subject: AERIALLY DEPOSITED LEAD, PETROLEUM HYDROCARBON AND VOLATILE ORGANIC COMPOUND SITE INVESTIGATION REPORT
TAHOE Y AT STATE HIGHWAY 89 AND
US 50 BETWEEN TAHOE Y AND TROUT CREEK
SOUTH LAKE TAHOE, EL DORADO COUNTY, CALIFORNIA
CONTRACT NO. 03A1368, TASK ORDER NO. 48, EAs 03-1A7320 AND 3C3800

Dear Mr. Chadha:

In accordance with California Department of Transportation Contract No. 03A1368 and Task Order Number 48, EA Nos. 03-1A7320 and 3C3800, Geocon Consultants, Inc. has performed environmental engineering services for the Tahoe Y at State Highway 89, and US Highway 50 between Tahoe Y and Trout Creek Improvement Project, located in the City of South Lake Tahoe, El Dorado County, California. This report summarizes the services performed, including the advancement of 43 direct-push and 41 hand-auger borings for sampling of soil and groundwater and subsequent laboratory testing for constituents of concern including aerially deposited lead, petroleum hydrocarbon and volatile organic compound releases from adjacent facilities, and lead- and chromium-containing traffic stripe paint.

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 E. Juhrend, PE, CEG
Project Manager

Ian Stevenson, PG
Project Geologist

JEJ:IS:jaj

(4 + 3 CD) Addressee

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AERIALLY DEPOSITED LEAD, PETROLEUM HYDROCARBON AND VOLATILE ORGANIC COMPOUND SITE INVESTIGATION REPORT

1.0 INTRODUCTION

This Aerially Deposited Lead, Petroleum Hydrocarbon and Volatile Organic Compound Site Investigation Report for the U.S. Highway 50 (US-50) and State Highway 89 Improvement Project was prepared by Geocon Consultants, Inc. under California Department of Transportation (Caltrans) Contract No. 03A1368, Task Order (TO) No. 48 and EA Nos. 03-1A7320 and 3C3800.

1.1 Project Description and Proposed Improvements

The project consists of US-50 (Emerald Bay Road) between D Street and the US-50 State Highway 89 junction (Tahoe Y), and along State Highway 89 from the Tahoe Y to 5th Street. The project further includes US-50 (Lake Tahoe Boulevard) from the Tahoe Y to Trout Creek (Post Mile [PM] 75.4 to 77.3). We conducted the site investigation within existing Caltrans right-of-way (ROW) in the city limits of South Lake Tahoe, El Dorado County, California. Within the project limits, US-50 and State Highway 89 are four-lane conventional highways. Shoulder widths vary from 2 to 8 feet. Sidewalks varying in width between 5 and 8 feet are present in some locations along both sides of the highways. The approximate project location and limits are depicted on the attached Vicinity Map (Figure 1) and Site Plans (Figures 2-1 through 2-9).

Proposed highway drainage improvements include installation of sand traps and sand vaults up to 10 feet deep, drainage inlets and pipes, and removal of slotted drains. Other highway improvements include traffic signal poles, curb and gutter replacement, curb ramps, shoulder widening and sidewalks. Caltrans estimates that construction of the planned improvements will generate approximately 4,000 cubic yards of excess soil materials that will require offsite disposal.

1.2 General Objectives

The objective of this investigation was to determine the potential presence of aerially deposited lead (ADL) soil impacts resulting from leaded-gasoline vehicle emissions and to determine whether traffic stripe paint on the roadway contains lead and chromium. We further evaluated potential petroleum hydrocarbon and volatile organic compound (VOC) soil and groundwater impacts within the Caltrans ROW resulting from adjacent leaking underground storage tank (UST) facilities, surface spillage and a documented solvent plume in the general vicinity of the Tahoe Y. Caltrans will use the investigative results for preliminary project scoping and to inform the construction contractor(s) if lead-impacted soil, lead/chromium-impacted traffic stripe paint, and petroleum hydrocarbon and VOC-impacted soil and groundwater are present within the project boundaries for health, safety, management and disposal evaluation purposes. The fieldwork, sampling, laboratory analysis, and related tasks were performed in general accordance with Caltrans Contract 03A1368 requirements.

2.0 BACKGROUND

2.1 Potential ADL and Traffic Paint Impacts

Ongoing testing by Caltrans throughout California has indicated that ADL exists along major freeway routes due to emissions from vehicles powered by leaded gasoline. Traffic stripe paint used by Caltrans may contain lead-chromate. The presence of elevated levels of lead and chromium requires sampling and analytical testing of the paint stripe materials to determine appropriate health and safety procedures and proper management and disposal practices. Disposal of removed traffic stripe paint material is dependent on the method utilized to remove these materials (i.e. focused stripe removal vs. pavement grinding).

2.2 Hazardous Waste Determination Criteria - Lead

Regulatory criteria to classify a waste as "California hazardous" for handling and disposal purposes are contained in the *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). 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 concentration, 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 regulatory value for TTLC lead is 1,000 milligrams per kilogram (mg/kg). Both the STLC and TCLP regulatory values for lead are 5.0 milligrams per liter (mg/l). The TTLC value for chromium is 2,500 mg/kg. The STLC and TCLP values for chromium are both 5.0 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.

2.3 Potential Petroleum Hydrocarbon and VOC Impacts

The following facilities located along US-50 and State Highway 89 were identified by Caltrans and Geocon from regulatory records available from the El Dorado County Environmental Management Department (EDCEMD) and Lahontan Regional Water Quality Control Board (LRWQCB). These facilities have documented former or existing USTs that may have impacted adjacent Caltrans ROW from surface and subsurface releases.

1. Runnel's Automotive (former service station) – 986 Emerald Bay Road (Figure 2-1)
2. American Gasoline (active refueling) – 1140 Emerald Bay Road (Figure 2-2)
3. Former National Car Rental (former service station) – 1101 Emerald Bay Road (Figure 2-3)
4. Former South Y Shell (former service station) – 1020 Emerald Bay Road (Figure 2-3)
5. Former Chevron (Blockbuster) – 2037 Lake Tahoe Boulevard (Figure 2-4)
6. Former service station (Brothers Burrito House) – 2136 Lake Tahoe Boulevard (Figure 2-5)
7. Former service station (House of Carpets) – 2280 Lake Tahoe Boulevard (Figure 2-6)
8. Transam Food Mart (active refueling) – 2304 Lake Tahoe Boulevard (Figure 2-6)
9. US Gasoline (active refueling) – 2470 Lake Tahoe Boulevard (Figure 2-6)
10. Former service station (Tahoe Quick Lube) – 2513 Lake Tahoe Boulevard (Figure 2-7)
11. Former service station (Liquor Shack) – 2525 Lake Tahoe Boulevard (Figure 2-7)
12. Former service station (Sportsman) – 2556 Lake Tahoe Boulevard (Figure 2-7)
13. Ducks on the Lake Carwash – 2596 Lake Tahoe Boulevard (Figure 2-7)
14. 7-Eleven (active refueling) – 2620 Lake Tahoe Boulevard (Figure 2-7)
15. American Gas (active refueling) – 2762 Lake Tahoe Boulevard (Figure 2-8)
16. Former service station (Muffler Palace)– 2774 Lake Tahoe Boulevard (Figure 2-9)

We previously evaluated the former Rotten Robbie gasoline station located at 2601 Lake Tahoe Boulevard (adjacent to hand-auger boring HA15, see Figure 2-7) under Caltrans Contract 03A0937, TO No. 165. Three fuel USTs were removed from this currently vacant property in 1992. The results of our June 2007 site investigation including the performance of ten direct-push borings did not reveal petroleum hydrocarbon soil impacts to the maximum depth explored of 16 feet.

Information obtained from the LRWQCB indicates the potential presence of VOC (tetrachloroethylene [PCE]) groundwater impacts in the vicinity of the Tahoe Y. These contaminants may be the result of leaks or spills at former industrial facilities and/or dry cleaning facilities and is a concern due to potential migration of impacted groundwater along utility trench backfill. Four potential sources have been identified by the LRWQCB along Lake Tahoe Boulevard west of the Tahoe Y and northerly of the Tahoe Y along State Highway 89. Reported PCE levels in groundwater range up to 1,000 micrograms per liter (µg/l) in the near vicinity of the Tahoe Y. Groundwater is anticipated to be present in this area at depths between 10 and 20 feet below grade with flow varying toward the northwest to northeast.

Dewatering may be required during construction of the planned highway improvements. Petroleum hydrocarbon or VOC impacts to groundwater may significantly affect the design and construction of the proposed project. Dewatering water must be either off-hauled, treated onsite prior to disposal, or meet local water quality requirements prior to disposal to the municipal sewer treatment system.

2.4 Waste Determination Criteria – Petroleum Hydrocarbons and VOCs

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 and VOCs, have not yet been promulgated. Disposal of TPH and VOC-impacted soil and groundwater is generally regulated by disposal facility permit and acceptance criteria.

3.0 SCOPE OF SERVICES

The following scope of services was performed in general accordance with TO No. 48 and as requested by the Caltrans Quality Assurance (QA) Manager:

3.1 Pre-field Activities

- We conducted a Task Order meeting on October 31, 2008, to discuss the TO scope of services. Present at the meeting were Caltrans QA Manager Rajive Chadha and Geocon Task Order Manager John Juhrend. The purpose of the TO meeting was to identify and discuss the project boundaries and existing site conditions and to review the scope of work.
- Utilized the *Health and Safety Plan* prepared for TO No. 38 (US-50 Trout Creek to Ski Run Boulevard) dated April 2008, to provide guidelines on the use of personal protective equipment and the health and safety procedures implemented during the field activities.

- Prepared a *Workplan* dated November 11, 2008, which describes the requested scope of services, and quality assurance/quality control (QA/QC), sampling and laboratory procedures.
- Marked the approximate project limits and individual boring locations in white paint for subsequent utility clearance notification through Underground Service Alert (USA).
- Provided 48-hour notice to USA (Ticket Nos. 0573839, 0573853, 0573860, 0582720 and 0583901) prior to the field sampling activities at each location.
- Coordinated with USA subscribers South Tahoe Public Utilities District (STPUD), AT&T, Sierra Pacific and Southwest Gas to confirm and clear proposed exploration locations.
- Retained the services of Advanced Technology Laboratories (ATL), a Caltrans-approved and California-certified analytical laboratory, to perform the chemical analyses of samples.
- Retained the services of Flash Safety, a Caltrans-approved subcontractor, to provide traffic management services.
- Obtained an EDCEMD boring permit. A copy of the permit is presented in Appendix A.

3.2 Field Activities

We conducted our field investigation activities from November 12 to 20, 2008. These activities included shallow soil sampling for ADL along US-50 throughout the project limits, soil and groundwater sampling for petroleum hydrocarbons and VOCs adjacent to identified areas of concern (see Section 2.3), and sampling of traffic paint striping. USA subscribers cleared the proposed boring locations prior to the start of fieldwork and during our field investigation. Where the clearance was uncertain, we contacted STPUD and other utility owners to verify potential utility conflicts and adjusted borehole locations accordingly.

4.0 INVESTIGATIVE METHODS

We conducted the field investigation in general accordance with the Caltrans-approved *Workplan,* prepared by Geocon dated November 11, 2008. The boring locations were selected by the Caltrans QA Manager and Geocon personnel based on existing site conditions, identified underground utility locations, and preliminary improvement plans, to determine potential soil and groundwater impacts. The completed sampling locations are shown on the attached Site Plans, Figures 2-1 through 2-9.

4.1 Boring Sample Location Rationale

The Caltrans QA Manager and the Geocon TO Manager reviewed proposed exploration locations in the field, and designated the boring locations based on the proposed improvements, areas of specific hazardous materials impact concerns, ease of access, safety, and potential utility conflicts. The coordinates of the boring locations were determined using a hand-held, differential global positioning system (GPS). The GPS was used during the field activities to locate the horizontal position of each location with an error of no more than 3.3 feet. Some GPS data may have less than 3.3-foot accuracy

due to limited satellite access caused by line-of-sight obstructions. The latitude and longitude of the boring locations are summarized on Table 1.

4.1.1 Aerially Deposited Lead

The ADL field investigation activities consisted of obtaining shallow soil samples from 19 direct-push and 37 hand-auger borings located along the sidewalk areas of US-50 at locations specified in the field by the Caltrans QA Manager. At the direction of the Caltrans QA Manager, the ADL borings were generally spaced at approximate 500-foot intervals alternating on either side of US-50. A sampling interval of approximately 100 feet was utilized in the vicinity of the intersection of US-50 and Tahoe Keys Boulevard (see Figure 2.5) based on planned intersection and roadway improvements. The shallow soil samples for ADL analysis were obtained from depth intervals of 0 to 1.0 foot, 1.0 to 2.0 feet and 2.0 to 3.0 feet. Soil sample DP5-9 was further analyzed for total lead to aid in determining naturally occurring background levels. Refusal conditions were encountered in several hand-auger borings due to gravel and boulder size rock.

4.1.2 Petroleum Hydrocarbons and VOCs

The petroleum hydrocarbon and VOC field investigation activities consisted of performing 43 direct-push and 4 hand-auger borings for the collection of soil and groundwater samples. The borings were advanced to a maximum depth of 11 feet using a truck-mounted direct-push rig or hand-auger. Soil samples for petroleum hydrocarbon analysis were generally collected at depths of 4 and 9 feet and where field indicators of potential contamination were encountered in borings adjacent to the identified facilities of concern. Soil samples for VOC analysis were collected from a depth of 9 feet in borings performed in the general vicinity of the Tahoe Y. Groundwater samples were collected where encountered in borings DP14, DP35 and DP36 using temporary well casing.

The following summary presents boring locations adjacent and near identified facilities of concern within the project limits:

- Tahoe Y VOC groundwater plume (Figures 2-1, 2-3 and 2-4) – borings DP1, DP2, DP4, DP9 through DP16, DP18 through DP22, DP38, DP39, HA1, HA2 and HA31
- Runnel's Automotive (former service station, Map ID 1, Figure 2-1) - borings DP16, DP17and DP18
- American Gasoline (active refueling, Map ID 2, Figure 2-2) – borings DP5 and DP6
- Former National Car Rental (former service station, Map ID 3, Figure 2-3) – borings DP7 and DP8
- Former South Y Shell (former service station, Map ID 4, Figure 2-3) – borings DP1, DP2 and DP3
- Former Chevron (Blockbuster, Map ID 5, Figure 2-4) – boring HA31

- Former service station (Brothers Burrito House, Map ID 6, Figure 2-5) – boring DP23
- Former service station (House of Carpets, Map 7, Figure 2-6) – boring DP24
- Transam Food Mart (active refueling, Map ID 8, Figure 2-6) – borings DP25 and 26
- US Gasoline (active refueling, Map ID 9, Figure 2-6) – borings DP31 and DP32
- Former service station (Tahoe Quick Lube, Map ID 10, Figure 2-7) – boring HA32
- Former service station (Liquor Shack, Map ID 11, Figure 2-7) – boring DP40
- Former service station (Sportsman, Map ID 12, Figure 2-7) – boring DP27
- Ducks on the Lake Carwash (former refueling, Map ID 13, Figure 2-7) – boring DP28
- 7-Eleven (active refueling, Map ID 14, Figure 2-7) – borings DP29 and DP30
- American Gas (active refueling, Map ID 15, Figure 2-8) – borings DP33, DP34 and DP42
- Former service station (Muffler Palace, Map ID 16, Figure 2-9) – borings DP35, DP36, DP37, DP41 and DP43

4.2 Aerially Deposited Lead Soil Sampling Procedures

One hundred fifty-four soil samples were collected from 56 borings for total lead analysis. The soil samples were collected directly from the direct-push cores or bottom of the hand-auger auger and transferred to Ziploc® re-sealable plastic bags. The soil samples were field homogenized within the sample bags and subsequently labeled, placed in an ice chest, and delivered to ATL under chain-of-custody (COC) documentation. The shallow hand-auger borings were backfilled with the soil cuttings.

4.3 Petroleum Hydrocarbon and VOC Soil and Groundwater Sampling Procedures

For evaluation of potential petroleum hydrocarbon and VOC impacts, we collected 50 soil and 3 groundwater samples from 47 borings. Soil samples obtained from the borings were collected in acetate liners driven by the direct-push rig or in stainless steel sample tubes from the hand-auger. After collection, the acetate liner was split into sample intervals at the indicated depths. Each sample tube was fitted with Teflon™ sheets, capped, labeled and placed in an ice chest, pending delivery to ATL under COC procedures. Samples to be analyzed for VOCs were obtained from the cut ends of the acetate liners or the hand-auger using three EnCore® samplers. Each sample was placed in an individual EnCore® sample bag and labeled. The set of three samples were placed in a Ziploc® plastic bag, labeled, placed in an ice chest, and subsequently delivered to ATL under COC documentation within 24 hours of the sampling event.

The remaining soil in the acetate liners was transferred to re-sealable Ziploc® plastic bags and evaluated in the field for odor and soil discoloration. The soil in the bag was then field-screened using a photo-ionization detector (PID). Soil types and PID readings for each boring are presented on the boring logs (Appendix B).

Grab groundwater samples were collected from borings DP14, DP35 and DP36. After advancing the borings to 9 feet, we constructed a temporary well using ¾-inch-diameter, Schedule 40, PVC casing, with a 5-foot-long 0.010-inch or 0.020-inch slotted screen (bottom) and a 5-foot section of solid casing (top) in the borehole. The casing and screen were left in the borings for up to 5 minutes to allow for infiltration of groundwater. The groundwater sample from boring DP35 was collected using an exposed stainless steel screen within the direct-push rods. Groundwater samples were collected using disposable or stainless steel bailers. The water samples were placed into a one-liter amber jar and four 40-milliliter volatile organic analysis (VOA) vials. The samples were sealed, labeled, placed in an ice chest containing ice and subsequently delivered to ATL under COC documentation.

4.4 Traffic Stripe Paint Sampling Procedures

The traffic stripe paint samples were collected using a hammer to break a chip off the traffic stripe paint. The paint samples were placed in Ziploc® re-sealable plastic bags and subsequently labeled, and delivered to ATL under standard COC documentation.

4.5 Waste Disposal

Excess soil generated during the field sampling activities were contained in two Department of Transportation-approved, 17-H, 55-gallon drums, labeled, and temporarily stored at the Geocon warehouse in Rancho Cordova. KR Environmental Services subsequently removed the drums for proper disposal following regulatory protocol. The direct-push and deeper hand-auger borings were backfilled with tremied grout slurry per EDCEMD permit requirements and capped with cold patch asphalt in pavement areas. The decontamination water was discharged to the ground surface away from surface water bodies or storm drain inlets.

QA/QC procedures were performed during the field sampling 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 TO manager.

4.6 Traffic Control

Flash Safety provided traffic control during the field investigation activities performed in general accordance with Caltrans' Traffic Control Plan T-11. Lane closure traffic control consisted of a truck-mounted flashing arrow board, advanced warning signs and traffic cones. Rooftop warning lights were also activated on the direct-push rig, the support truck, the Caltrans vehicle, and on the Flash Safety vehicles.

4.7 Laboratory Analyses

4.7.1 Soil Sample Analysis

Soil samples were submitted to ATL for the following analyses:

- Ninety-three discrete soil samples and 17 three- and four-part composite soil samples were analyzed for total lead following United States Environmental Protection Agency (EPA) Test Method 6010B.
- Seven discrete soil samples with total lead concentrations greater than 50 mg/kg were further analyzed for soluble lead (WET) following EPA Test Method 7420.
- Nine randomly selected soil samples analyzed for soil pH using EPA Test Method 9045C.
- Thirty-one soil samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and diesel (TPHd) following EPA Test Method 8015B(M) and methyl tert-butyl ether (MTBE) and benzene, toluene, ethylbenzene and total xylenes (BTEX) following EPA 8260B.
- One soil sample was analyzed for total petroleum hydrocarbons as motor oil (TPHmo) following EPA Test Method 8015B(M).
- One soil sample was reanalyzed for TPHd and TPHmo using silica gel cleanup.
- Twenty-one soil EnCore® soil samples were analyzed for VOCs following EPA Test Method 8260B.

4.7.2 Groundwater Samples

Groundwater samples collected from three temporary wells were submitted for the following analyses:

- Two groundwater samples were analyzed for TPHg and TPHd following EPA Test Method 8015B(M) and MTBE and BTEX following EPA 8260B.
- One groundwater sample was analyzed for VOCs following EPA Test Method 8260B.

4.7.3 Paint Stripe Samples

Four paint stripe samples were analyzed for total lead and chromium following EPA Test Method 6010B under standard ten-day turn-around-time (TAT).

4.7.4 Field and Laboratory QA/QC Methods

The soil, groundwater and traffic paint stripe samples were submitted to ATL for analyses under standard ten-day TAT. The EnCore® soil samples were overnighted to ATL within 24 hours of the sampling event, and as required, ATL conducted sample preservation (EPA Method 5035) within two days of the sampling event.

QA/QC procedures were conducted 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 is more frequent.
- One sample analyzed in duplicate for every ten samples, batch of samples or type of matrix, whichever is more frequent.
- One spiked sample for every ten samples, batch of samples or type of matrix, whichever is more frequent, with spike made at ten times the detection limit or at the analyte level.

The COC documentation was reviewed for accuracy and completeness prior to submitting the soil, groundwater and traffic paint stripe samples to the laboratory. The laboratory was instructed to handle, analyze, and conduct QA/QC procedures in accordance with Caltrans Contract 03A1368. Copies of the laboratory analytical reports including QC summary and COC documentation are presented in Appendix C.

5.0 FIELD OBSERVATIONS AND INVESTIGATIVE RESULTS

5.1 Soil and Hydrogeologic Conditions

Site soils generally consisted of shallow roadway fill to a maximum depth of approximately 4.5 feet over alluvium composed of silty sand and gravelly sand with minor silt/clay interbeds to the maximum depth explored of approximately 11 feet. We may have encountered utility backfill in some of our borings; however, native materials were typically used as backfill, and in the absence of other indicators (utility tape, asphalt, debris, etc.), we were unable to distinguish between native alluvium and trench backfill.

Petroleum hydrocarbons odors and staining were noted in soil samples obtained from borings DP13, DP14, DP23, DP33, DP34, DP35, DP36 and DP41. PID readings of extracted soil were generally 0.0 (zero) parts per million with the exception of elevated readings obtained in soil samples from borings DP34, DP35, DP36, DP37 and DP41.

Groundwater was encountered in borings DP14, DP35, DP36, DP41 and DP43. Depth to groundwater varied from 7.2 to 8.3 feet. We did not encounter groundwater in the remaining direct-push borings or in the deeper hand-augered borings. It should be noted that groundwater levels might fluctuate due to variations in rainfall, temperature, snowmelt, and other factors. Depth to groundwater can vary significantly due to localized pumping, irrigation practices, and seasonal fluctuations. Therefore, it is possible that during construction groundwater will be higher or lower than the levels encountered during this investigation.

Boring logs depicting soil conditions, groundwater levels, soil sample locations, and PID readings are presented in Appendix B.

5.2 Review of UST Release Information from Existing or Former Facilities

Sixteen former or current UST facilities were identified along US-50 (Emerald Bay Road and Lake Tahoe Boulevard) and State Highway 89 within the project limits. Releases from these adjacent facilities (even where regulatory case closure status has been granted) have the potential to impact soil and groundwater beneath the Caltrans ROW. The following information was obtained from the EDCEMD and GeoTracker database (www.geotracker.swrcb.ca.gov). The approximate locations of these facilities are depicted on the Site Plans, Figures 2-1 through 2-9, as Map IDs 1 through 16. Photographs of these facilities are attached.

Map ID 1, Runnels Automotive - 986 Emerald Bay Road (Figure 2-1). This facility is a former service station. Gasoline impacts were identified at this facility in 1995. Based on completed remedial soil excavation, the regulatory case file was closed in 1999.

Map ID 2, American Gasoline – 1140 Emerald Bay Road (Figure 2-2). This facility is an active refueling facility. Gasoline-impacted soil and groundwater were identified at this facility in 1983. The groundwater plume currently extends a significant distance offsite to the northwest requiring offsite wellhead treatment, and active soil and groundwater remediation systems.

Map ID 3, Former National Car Rental - 1101 Emerald Bay Road (Figure 2-3). This facility is a former service station. Gasoline impacts were identified at this facility in 1996. Based on completed remedial soil excavation and groundwater monitoring, the regulatory case file was closed in 2005.

Map ID 4, Former South Y Shell - 1020 Emerald Bay Road (Figure 2-3). This facility is a former service station. Gasoline impacts were identified at this facility in 1994 and 1998. Based on completed remedial soil excavation, operation of a groundwater treatment system and groundwater monitoring, the regulatory case file was closed in 2006.

Map ID 5, Former Chevron – 2037 Lake Tahoe Boulevard (Figure 2-4). This facility is a former service station. No records of this facility are available on the GeoTracker database.

Map ID 6, Brothers Burrito House – 2136 Lake Tahoe Boulevard (Figure 2-5). This facility is a former service station. No records of this facility are available on the GeoTracker database.

Map ID 7, House of Carpets – 2280 Lake Tahoe Boulevard (Figure 2-6). Leaking USTs were identified at this facility in 2001. Based on completed remedial soil excavation, the regulatory case file was closed in 2005.

Map ID 8, Transam Food Mart – 2304 Lake Tahoe Boulevard (Figure 2-6). This facility is an active refueling facility and a former Beacon service station. Gasoline impacts were identified at this facility in 1988. County personnel stated that several dispenser leaks to the ground surface have occurred at this facility. Based on completed operation of a groundwater treatment system and groundwater monitoring, the regulatory case file was closed in 2004.

Map ID 9, US Gasoline – 2470 Lake Tahoe Boulevard (Figure 2-6). This facility is an active refueling facility and a former Stop N Save service station. Gasoline impacts were identified at this facility in 1995. Based on completed remediation, the regulatory case file was closed in 1998.

Map ID 10, Tahoe Quick Lube – 2513 Lake Tahoe Boulevard (Figure 2-7). This facility is a former service station. No records of this facility are available on the GeoTracker database.

Map ID 11, Liquor Shack – 2525 Lake Tahoe Boulevard (Figure 2-7). This facility is a former service station. Diesel impacts were identified at this facility in 2006. Based on completed remedial soil excavation, the regulatory case file was closed in 2006.

Map ID 12, Sportsman – 2556 Lake Tahoe Boulevard (Figure 2-7). This facility is a former service station. No records of this facility are available on the GeoTracker database.

Map ID 13, Ducks on the Lake Carwash – 2596 Lake Tahoe Boulevard (Figure 2-7). Gasoline impacts were identified at this facility in 1993. Based on completed remediation and verification monitoring, the regulatory case file was closed in 2002.

Map ID 14, 7-Eleven – 2620 Lake Tahoe Boulevard (Figure 2-7). This facility has active refueling. Gasoline impacts were identified in 1998. Based on completed assessment and monitoring, the regulatory case file was closed in 2004.

Map ID 15, American Gas – 2762 Lake Tahoe Boulevard (Figure 2-8). This facility is an active refueling facility and a former Terrible Herbst service station. Gasoline soil and groundwater impacts were initially identified at this facility in 1975. The groundwater plume currently extends a significant distance offsite to the northwest across US-50 and is commingled with the groundwater plume from the adjacent former Exxon service station facility. Active soil and groundwater remediation systems are operated at this facility.

Map ID 16, Muffler Palace – 2774 Lake Tahoe Boulevard (Figure 2-9). This facility is a former Exxon service station. Gasoline soil and groundwater impacts were initially identified at this facility in 1993. The groundwater plume currently extends a significant distance offsite to the northwest across US-50 and is commingled with the groundwater plume from the adjacent American Gas facility. Active soil and groundwater remediation systems are operated at this facility.

5.3 ADL Soil Analytical Results

Total lead was detected above the MRL of 5.0 mg/kg in 61 of 110 soil samples analyzed, with concentrations ranging from 5.1 to 110 mg/kg. Seven of the 110 soil samples had reported total lead concentrations greater than 50 mg/kg (i.e., ten times the STLC value for lead of 5.0 mg/l). These samples were obtained from hand-auger borings HA33, HA35, HA36 and HA39 located at or near the intersection of US-50 and Tahoe Keys Boulevard (see Figure 2-5). These samples were analyzed for soluble lead using the WET method, with reported concentrations ranging from 1.9 to 7.2 mg/l. Three of seven reported soluble lead concentrations were above the STLC value for lead of 5.0 mg/l. Reported soil pH values ranged from 6.7 to 7.8.

A summary of the total and soluble lead and soil pH analytical data is presented on Table 2. The laboratory reports and COC documentation are presented in Appendix C.

5.4 Petroleum Hydrocarbons and VOCs in Soil Analytical Results

Thirty-one soil samples were analyzed for petroleum hydrocarbons as part of this investigation. TPHg was only detected in soil sample DP34-6 at a concentration of 3,000 mg/kg.

TPHd was detected in 30 of 31 soil samples analyzed at concentrations ranging from 1.2 to 3,600 mg/kg. Only seven soil samples contained elevated TPHd above 10 mg/kg. TPHd was reported in sample DP23-4 at 86 mg/kg, and when reanalyzed using silica gel cleanup, TPHd was reported at 50 mg/kg. This soil sample was the only one further analyzed for TPHmo. Sample DP23-4 contained a reported TPHmo concentration of 270 mg/kg, and when reanalyzed using silica gel cleanup, TPHmo was reported at 160 mg/kg.

Full list VOCs and MTBE were not detected in each soil sample analyzed. BTEX compounds were only detected in four soil samples obtained from borings DP34 and DP41 at concentrations ranging from 7.0 to 424,000 micrograms per kilogram (µg/kg).

Petroleum hydrocarbon and VOC soil analytical results are presented on Table 3. The laboratory reports and COC documentation are presented in Appendix C.

5.5 Petroleum Hydrocarbons and VOCs in Groundwater Analytical Results

Full list VOCs, MTBE and benzene were not detected in each of the groundwater samples analyzed. TPHg was only reported in sample DP35 at a concentration of 0.70 mg/l. TPHd was detected in samples DP35 and DP36 at concentrations of 1.3 and 0.22 mg/l, respectively. BTEX compounds (except benzene) were only detected in sample DP35 at concentrations ranging from 1.7 to 6.6 µg/l.

A summary of groundwater analytical results are presented on Table 4. The laboratory reports and COC documentation are presented in Appendix C.

5.6 Traffic Stripe Paint Sample Analytical Results

Total lead was reported in each traffic stripe sample at concentrations ranging from 2.5 to 6.1 mg/kg. Total chromium was reported for each traffic stripe sample at concentrations ranging from 3.6 to 7.1 mg/kg.

The analytical results of the traffic stripe paint samples are summarized on Table 5. Laboratory reports and COC documentation are presented in Appendix C.

5.7 Laboratory Data Validation

Our review of the laboratory-provided QA/QC indicates acceptable surrogate recoveries and non-detect results for the method blanks. Dilutions were necessary for some samples due to sample matrix interference. Duplicates, Matrix Spikes and/or Matrix Spike Duplicates for some samples were outside recovery criteria; however, the Laboratory Control Samples validated the sample batch.

Based on this limited data review, no additional qualifications of the soil, groundwater and traffic stripe paint data are necessary, and the data are of sufficient quality for the purposes of this report.

5.8 Statistical Evaluation for Lead Detected in Soil Samples

Statistical methods were applied to the total lead data obtained for borings advanced along US-50 at the Tahoe Keys Boulevard intersection to evaluate: 1) the upper confidence limits (UCLs) of the arithmetic means of the total lead concentrations for each sampling depth; and 2) if an acceptable correlation between total and soluble lead concentrations exists that would allow the prediction of soluble lead concentrations based on calculated UCLs. 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.

5.8.1 Calculating the UCLs for the Arithmetic 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.* For those samples in which total lead was not detected at concentrations exceeding the laboratory MRL, a value equal to one-half of the detection limit was used in the UCL calculation. The bootstrap results are included in Appendix D. The calculated UCLs and statistical results are summarized in the table below:

90% and 95% UCLs for Total Lead

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 1.0	59.8	63.2	47.8	9.2	110
1.0 to 2.0	31.8	34.3	23.1	2.5 [1]	76
2.0 to 3.0	23.4	25.9	13.9	2.5 [1]	65

1 = Minimum value is one-half of the laboratory method reporting limit

5.8.2 Correlation of Total and Soluble Lead

Total and corresponding soluble (WET) lead concentrations are bivariate data with a linear structure. This linear structure should allow for the prediction of soluble lead (WET) concentrations based on the UCLs calculated above in Section 5.8.1.

To estimate the degree of interrelation between total and corresponding soluble (WET) lead values (x and y, respectively), the *correlation coefficient [r]* is used. The correlation coefficient is a ratio that ranges from +1 to –1. A *correlation coefficient* of +1 indicates a perfect direct relationship between two variables; a *correlation coefficient* of –1 indicates that one variable changes inversely with relation to the other. Between the two extremes is a spectrum of less-than-perfect relationships, including zero, which indicates the lack of any sort of linear relationship at all. The *correlation coefficient* was calculated for the seven (x, y) data points (i.e., soil samples analyzed for both total lead [x] and soluble [WET] lead [y]) and equaled 0.685. A *correlation coefficient* greater than or equal to 0.8 is an acceptable indicator that a correlation exists. Consequently, an acceptable correlation between total and soluble lead concentrations could not be established for the data points since the *correlation coefficient* is less than 0.8. To achieve an acceptable correlation, the total and soluble (WET) lead data (data points with the lowest ratio of soluble (WET) lead to total lead) from three of the seven data points (HA33-1, HA35-1 and HA36-1) were excluded from the regression analysis and the *correlation coefficient* equaled 0.806.

For the *correlation coefficient* that indicates a linear relationship between total and soluble lead (WET) concentrations, it is possible to compute the line of dependence or a best-fit line between the two variables. A least squares method was used to find the equation of a best-fit line (regression line) by forcing the y-intercept equal to zero since that is a known point. The equation of the regression line was determined to be $y = 0.0736(x)$, where x represents total lead concentrations and y represents predicted soluble lead (WET) concentrations.

This equation was used to estimate the expected WET soluble lead concentrations for the UCLs shown in Section 5.8.1. Regression analysis results and a scatter plot depicting the (x, y) data points along with the regression line are included in Appendix D. The 90% and 95% UCL-predicted WET soluble lead concentrations are summarized in Section 6.1.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 ADL-Impacted Soil Waste Classification/Disposal

Waste classifications based on the 90% UCL of the lead content for the relevant excavation depths has historically been considered sufficient to satisfy a good faith effort by the EPA, as discussed in SW-846. Risk assessment characterization is typically 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. Per Caltrans guidelines, the 90% UCLs are to be used to evaluate onsite reuse and the 95% UCLs are to be used to evaluate offsite disposal.

The following table presents the predicted soluble (WET) lead concentrations and waste classifications for soil in the vicinity of US-50 at the Tahoe Keys Boulevard intersection based on the calculated total lead UCLs and the relationship between total and soluble (WET) lead. We summarize the 90% and 95% UCL-predicted soluble (WET) lead calculations based on excavation scenarios to 1.0, 2.0 and 3.0 feet.

90% and 95% Total Lead UCLs and Predicted Soluble (WET) Lead

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	95% UCL Predicted WET Lead (mg/l)	Waste Classification
0 to 1.0 foot	59.8	4.4	63.2	4.7	Non-hazardous
Underlying soil (1.0 to 3.0 feet)	*27.6*	*2.0*	*30.1*	*2.2*	*Non-hazardous*
0 to 2.0 feet	45.8	3.4	48.7	3.6	Non-hazardous
Underlying soil (2.0 to 3.0 feet)	*23.4*	*1.7*	*25.9*	*1.9*	*Non-hazardous*
0 to 3.0 feet	38.3	2.8	41.1	3.0	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the above table, soil materials excavated to a maximum depth of 3.0 feet would not be classified as a California hazardous waste since the 90% and 95% UCL-predicted soluble (WET) lead concentrations are less than the lead STLC of 5.0 mg/l. Consequently, the top 3.0 feet of excavated soil could be reused or disposed of as non-hazardous soil with respect to lead content.

If soil within the project limits is scarified in-place, moisture-conditioned, and recompacted during roadway improvement activities, it may not be considered a "waste."

6.2 Petroleum Hydrocarbon and VOC Soil Reuse and Disposal

Elevated petroleum hydrocarbons in soil were identified at the following four locations:

1. TPHd reported at a concentration of 71 mg/kg in soil sample DP13-4 obtained at the east corner of 5th Street and State Highway 89 (see Figure 2-1). Slight odor, staining and positive

PID readings were noted for boring DP13. No known contamination source was identified at this location other than the adjacent active refueling facility (Swiss Mart) located at the north corner of the intersection.

2. TPHd and TPHmo at concentrations of 86 and 270 mg/kg (50 and 160 mg/kg using silica gel cleanup), respectively, in soil sample DP23-4 obtained adjacent to the Brothers Burrito House located at 2136 Lake Tahoe Boulevard, a former service station (Map ID 6, Figure 2-5). Slight odor and staining were noted for boring DP23.
3. TPHg and TPHd at concentrations of 3,000 and 330 mg/kg, respectively, in soil sample DP34-6 obtained adjacent to the active American Gas service station located at 2762 Lake Tahoe Boulevard (Map ID 15, Figure 2-8). Slight to strong odor, staining and positive PID readings were noted for boring DP34.
4. TPHd at concentrations ranging from 32 to 3,600 in soil samples obtained from borings DP36, DP37, DP41 and DP43 in the vicinity of a former Muffler Palace service station located at 2774 Lake Tahoe Boulevard (Map ID 16, Figure 2-9). Odor, staining and/or positive PID readings were noted for each of these borings.

The elevated petroleum hydrocarbon soil concentrations for each of the identified four locations are depicted on the Site Plans, Figures, 2-1, 2-5, 2-8 and 2-9. Soil excavated from these areas may require disposal at a licensed recycling/disposal facility. For preliminary planning purposes, estimated costs to transport and dispose (excluding excavation, stockpile and loading costs) of petroleum hydrocarbon-impacted soil from the project site to a Class II non-hazardous waste landfill facility (Hay Road Landfill in Vacaville, California) are estimated at $67 per ton.

Relatively low TPHd concentrations of less than 10 mg/kg were reported for the remaining soil samples. Based on our experience, these detections likely represent naturally occurring organic content and are not indicative of "contamination." In the absence of observed petroleum hydrocarbon staining, odors or other indicators of contamination, these soil materials should be suitable for onsite reuse as trench backfill.

We recommend that a soil management plan (SMP) be prepared for use during construction activities. The SMP would present contingencies for handling, transportation, and disposal of petroleum hydrocarbon-impacted soil, if encountered during roadway excavation activities. It may be necessary for the contractor(s) to stockpile excavated soils and obtain representative soil samples for analytical testing to determine appropriate and economical disposal options. Asphalt debris and grindings should not be incorporated into soil stockpiles that require disposal evaluation.

6.3 Petroleum Hydrocarbon and VOC Groundwater Management/Disposal

Groundwater was only sampled from borings DP14, DP35, and DP36 to the maximum depth explored of 11 feet. Therefore, the findings presented hereinafter are only relevant to those three locations sampled.

Groundwater sample DP14 obtained on the west side of State Highway 89 and south of 5th Street (see Figure 2-1) did not contain detectable VOCs. Based on information obtained from the LRWQCB, VOC-impacted groundwater exists in the vicinity of the Tahoe Y.

Gasoline- and diesel-range impacts were reported in groundwater samples obtained from borings DP35 and DP36 within the commingled groundwater plume area associated with the former and existing service stations (Map IDs 15 and 16, Figures 2-8 and 2-9) located southerly of Trout Creek.

Dewatering water generated during construction will require storage, permitting, possible pre-treatment, and analytical testing prior to discharge to the sewage system or offsite recycling/disposal. STPUD staff indicated that construction-generated dewatering water can be discharged to their wastewater treatment facility (sewer system), provided the water meets the standard for contaminants set forth in its "Construction Discharge Permit," Section E.1. In general, these standards are equivalent to the maximum contaminant levels (MCLs) established for drinking water (except MTBE, which has a 0.5 µg/l limit). A copy of the STPUD discharge permit requirements is presented in Appendix E.

6.4 Traffic Stripe Paint Waste Classification/Disposal

The traffic stripe paint was sampled per Caltrans' request since it may be removed from the underlying asphalt concrete by grinding or sand blasting, which would create a paint waste stream. The analytical results of the traffic stripe paint will be used by Caltrans to provide contractors with preliminary analytical data of the traffic stripe paint.

Total lead and chromium were reported for the traffic stripe paint samples at relatively low concentrations of less than 10 mg/kg, below respective TTLC values of 1,000 and 2,500 mg/kg. Thus, the traffic stripe paint will not require disposal as a California hazardous waste based on lead and chromium content.

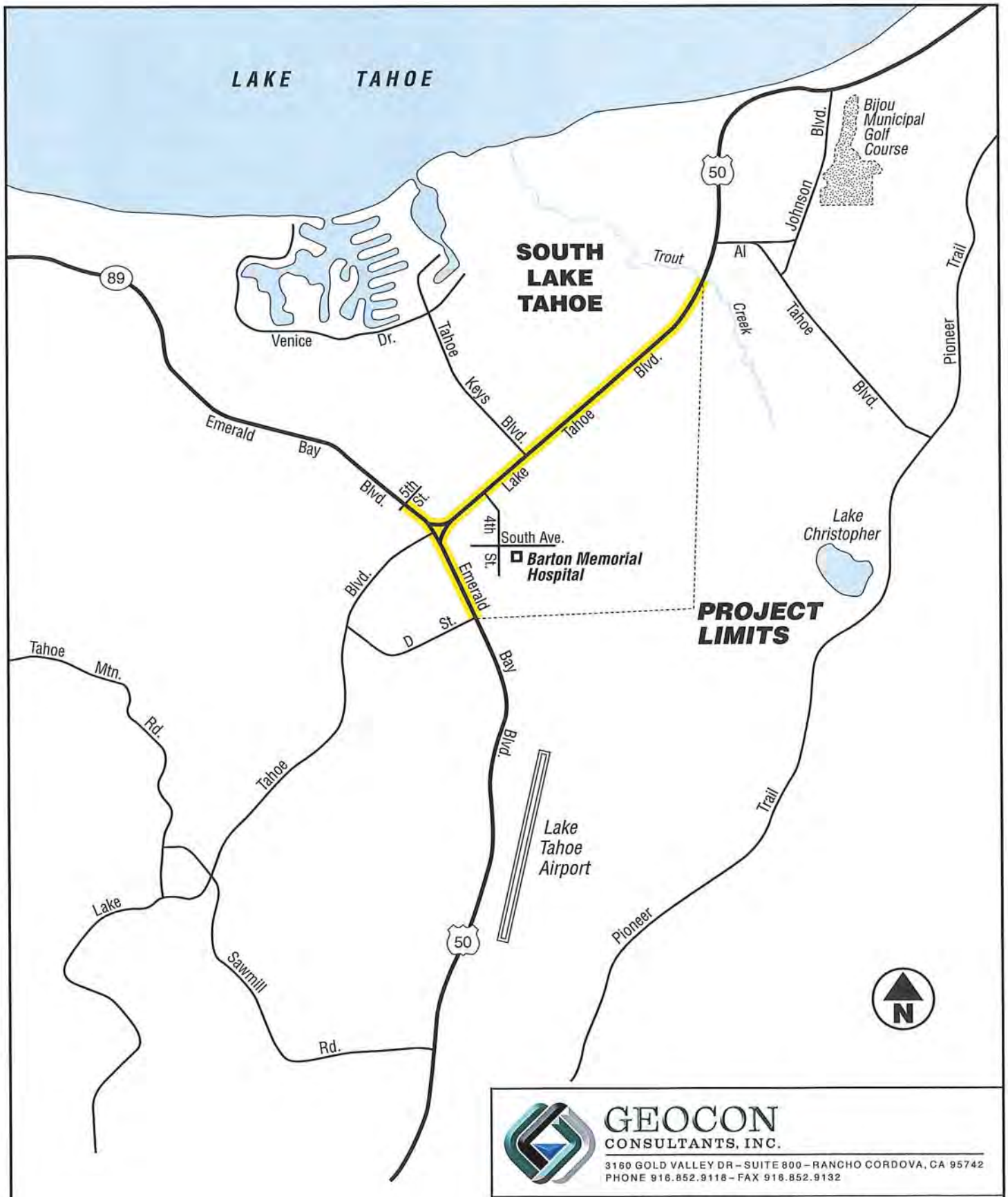
6.5 Worker Protection

We recommend that the contractor(s) prepare a health and safety plan to minimize worker exposure. The health and safety plan (CCR Title 8) should include a discussion of the constituents of concern (lead, petroleum hydrocarbons, etc.), routes of exposure, permissible exposure limits, and personal protective measures. The health and safety plan should be reviewed and signed by onsite construction workers prior to any field activities.

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.

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 contaminant sources other than those specified herein. Therefore, this 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.



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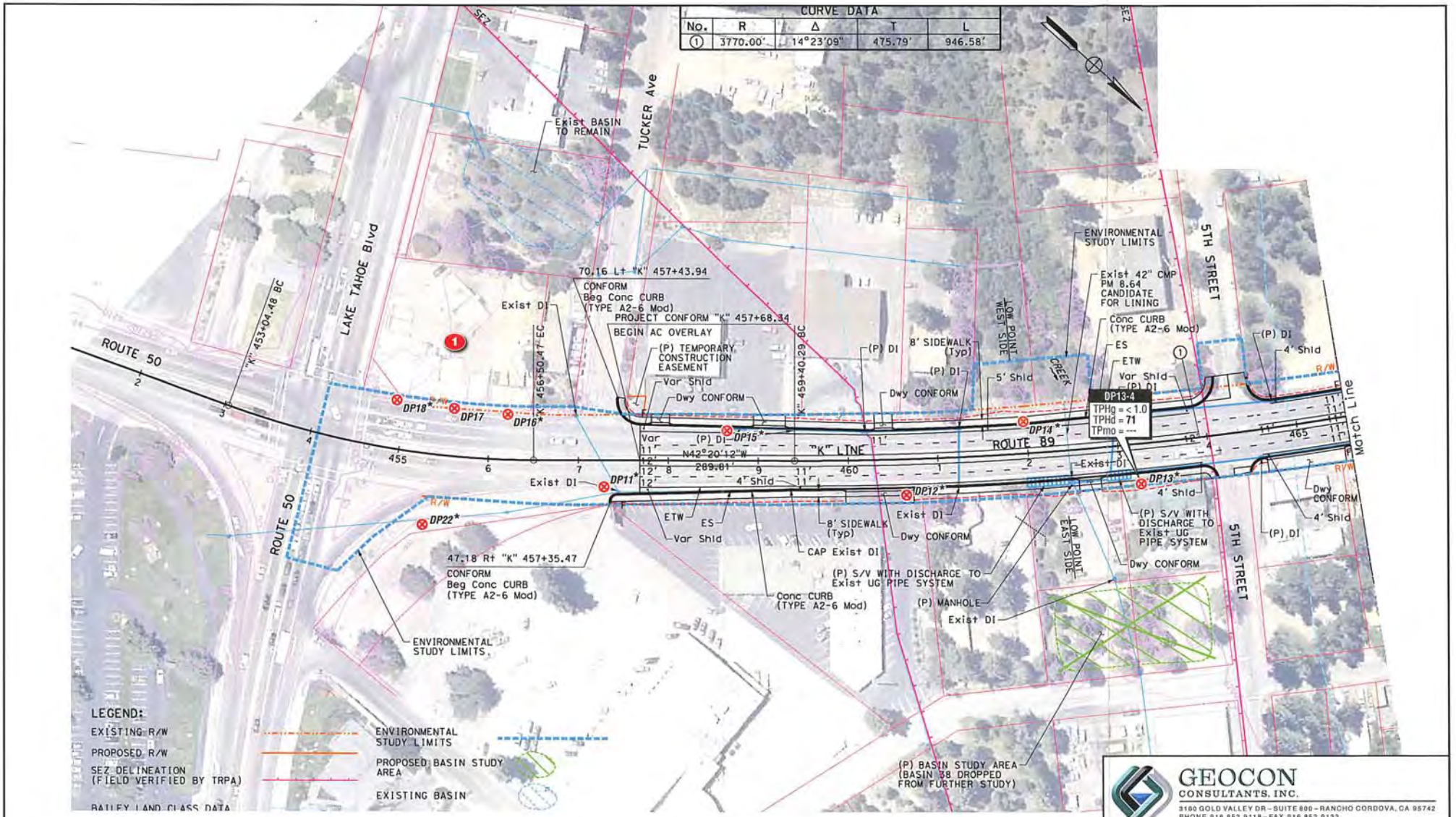
South Lake Tahoe, California	**VICINITY MAP**	
GEOCON Proj. No. S9300-06-48		
Task Order No. 48	January 2009	Figure 1



LEGEND:

DP1 ⊗ Approximate Direct-Push Boring Location

* VOC Soil Analysis (EnCore™ Sample Collected)

VOC Volatile Organic Compound

POTENTIAL HAZARDOUS FACILITY LOCATIONS:

1 Runnel's Automotive (former service station) – 986 Emerald Bay Road

0 100

Scale in Feet

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

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Tahoe Y at State Highway 89 and US 50 Between Tahoe Y and Trout Creek

South Lake Tahoe, California

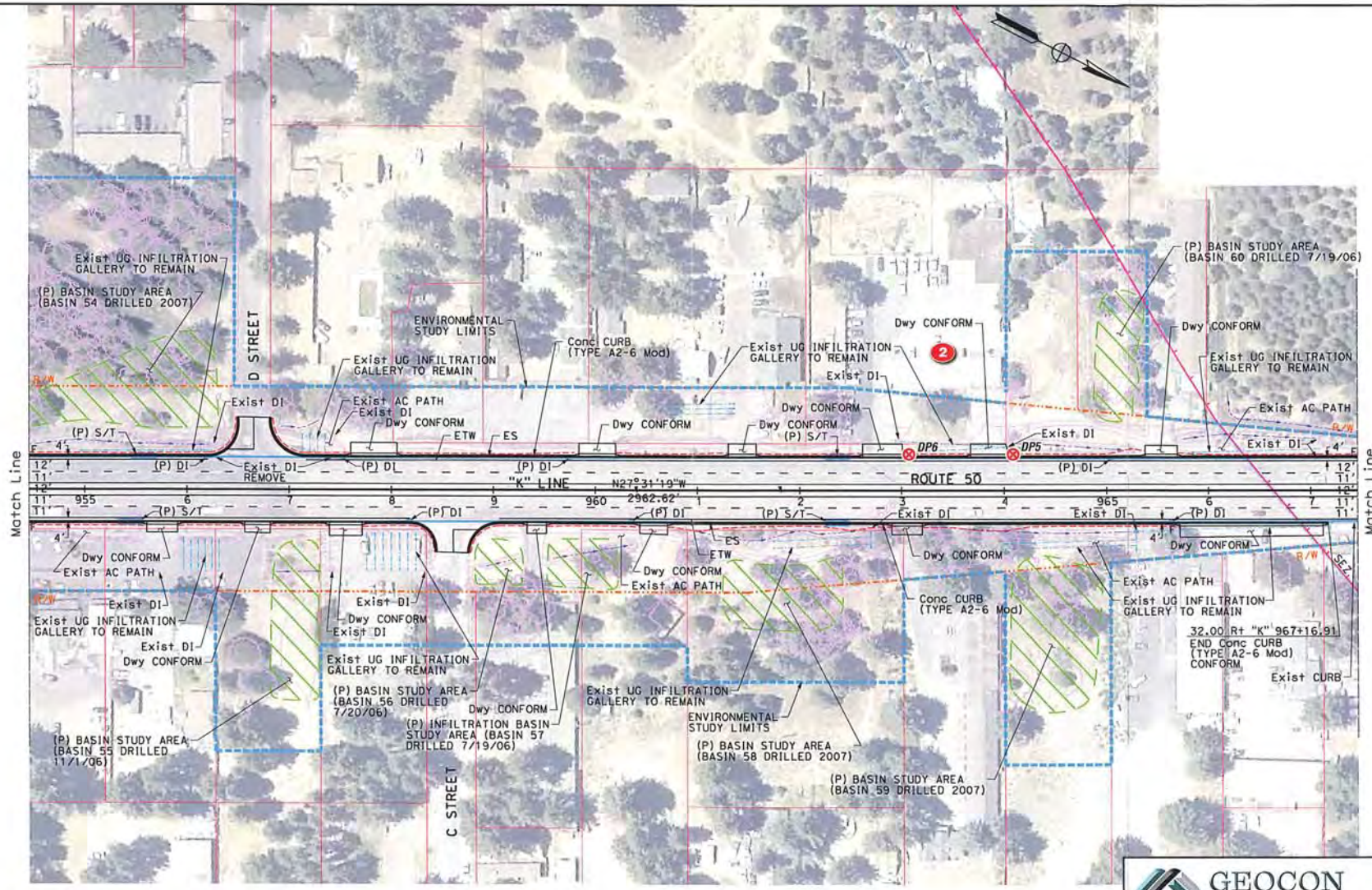
GEOCON Proj. No. S9300-06-48

Task Order No. 48

SITE PLAN

January 2009

Figure 2-1



LEGEND:

DP1 ⊗ Approximate Direct-Push Boring Location

POTENTIAL HAZARDOUS FACILITY LOCATIONS:

(2) American Gasoline (active refueling) – 1140 Emerald Bay Road

0 100
Scale in Feet

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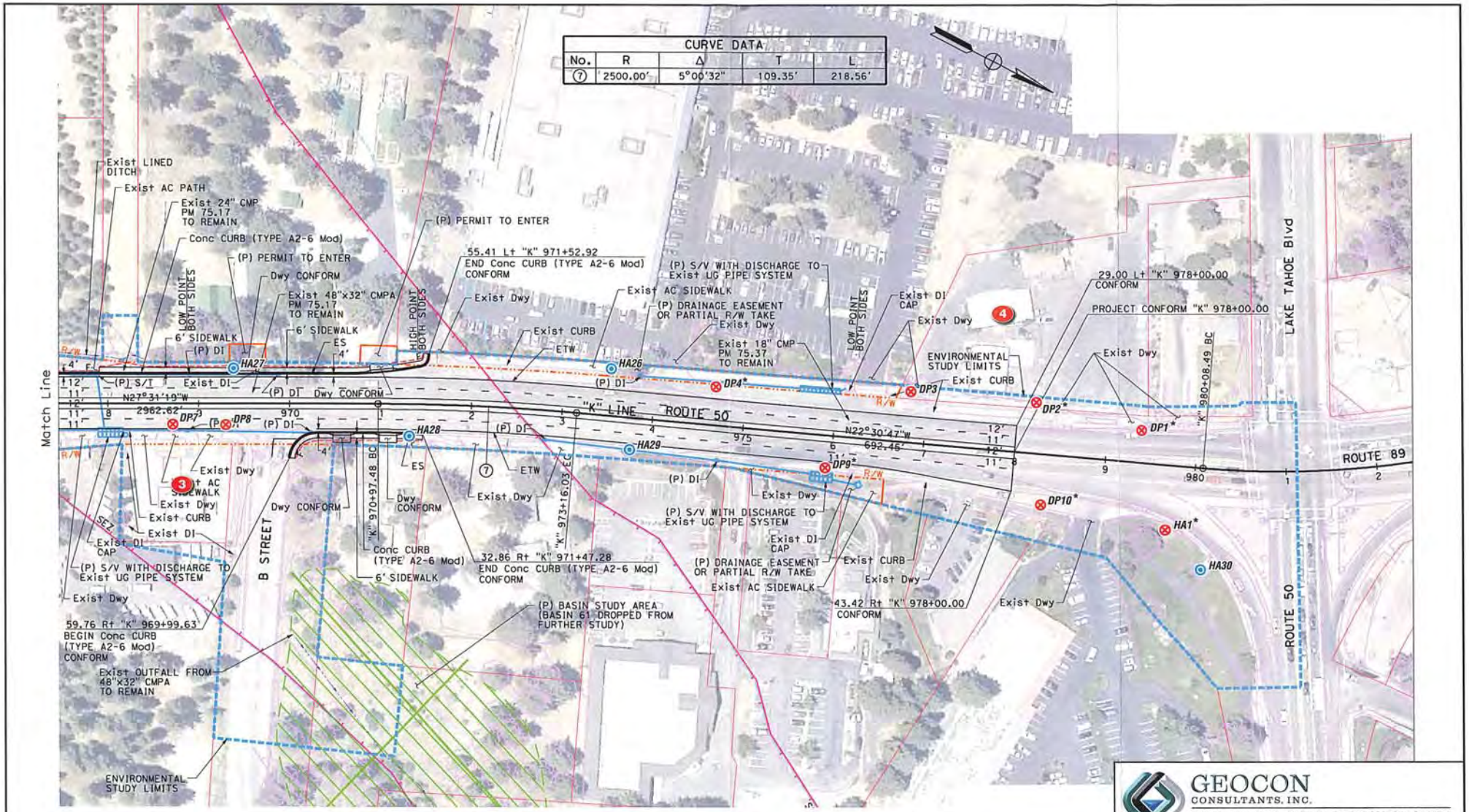
South Lake Tahoe, California	**SITE PLAN**	
GEOCON Proj. No. S9300-06-48		
Task Order No. 48	January 2009	Figure 2-2



LEGEND:

- DP1 ⊗ Approximate Direct-Push Boring Location
- HA1 ⊙ Approximate Hand-Auger Boring Location
- * VOC Soil Analysis (EnCore™ Sample Collected)
- VOC Volatile Organic Compound

POTENTIAL HAZARDOUS FACILITY LOCATIONS:

3. Former National Car Rental (former service station) – 1101 Emerald Bay Road
4. Former South Y Shell (former service station) – 1020 Emerald Bay Road

0 100
Scale in Feet

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Tahoe Y at State Highway 89 and US 50 Between Tahoe Y and Trout Creek

South Lake Tahoe, California

SITE PLAN

GEOCON Proj. No. S9300-06-48

Task Order No. 48 | January 2009 | Figure 2-3

LEGEND:

- DP1 ⊗ Approximate Direct-Push Boring Location
- HA1 ⊙ Approximate Hand-Auger Boring Location
- PC1 ▲ Approximate Paint Chip Sample Location
- * VOC Soil Analysis (EnCore™ Sample Collected)
- VOC Volatile Organic Compound

POTENTIAL HAZARDOUS FACILITY LOCATIONS:

5 Former Chevron (Blockbuster) – 2037 Lake Tahoe Blvd.

0 200
Scale in Feet

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South Lake Tahoe, California	**SITE PLAN**	
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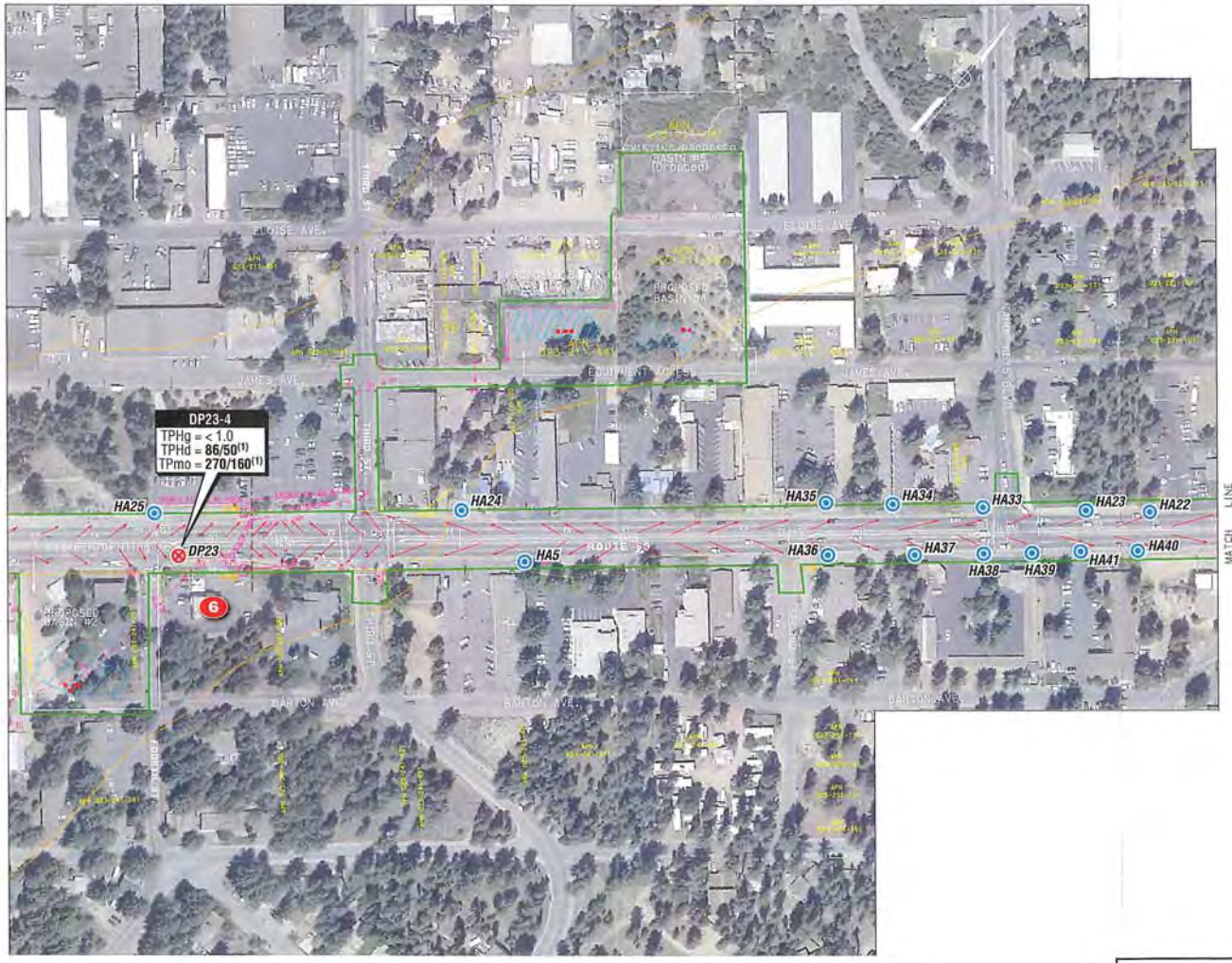
Task Order No. 48	January 2009	Figure 2-4



LEGEND:

DP1 ⊗ Approximate Direct-Push Boring Location

HA1 ⊙ Approximate Hand-Auger Boring Location

POTENTIAL HAZARDOUS FACILITY LOCATIONS:

6 Former Service Station (Brothers Burrito House) – 2136 Lake Tahoe Blvd.

0 100

Scale in Feet

TPHg = Total Petroleum Hydrocarbons as Gasoline (mg/kg)
TPHd = Total Petroleum Hydrocarbons as Diesel (mg/kg)
TPHmo = Total Petroleum Hydrocarbons as Gasoline (mg/kg)
(1) = Using Silica Gel Cleanup

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South Lake Tahoe, California	**SITE PLAN**	
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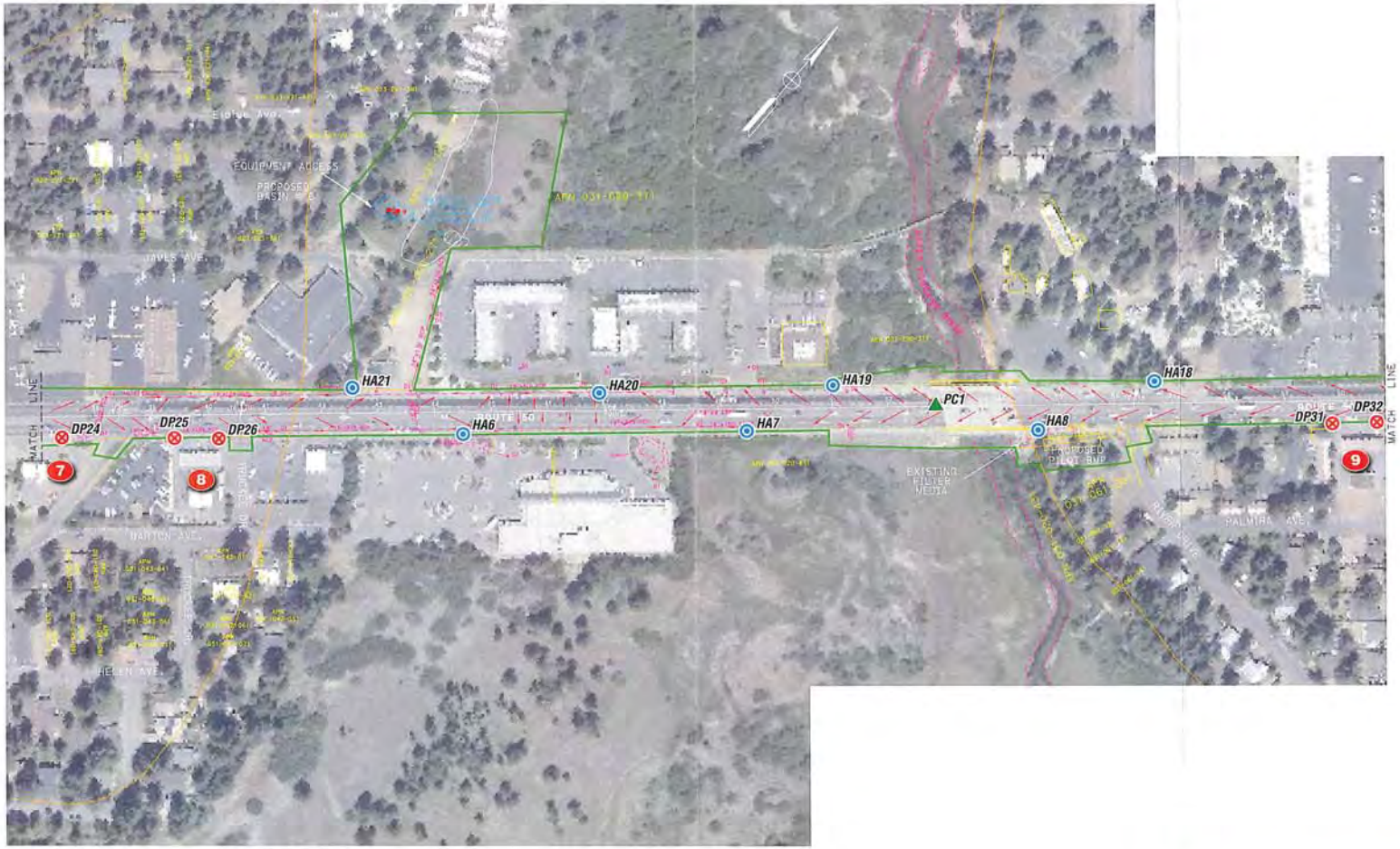
Task Order No. 48	January 2009	Figure 2-5



LEGEND:

- DP1 ⊗ Approximate Direct-Push Boring Location
- HA1 ⊙ Approximate Hand-Auger Boring Location
- PC1 ▲ Approximate Paint Chip Sample Location

POTENTIAL HAZARDOUS FACILITY LOCATIONS:

7. Former Service Station (House of Carpets) – 2280 Lake Tahoe Blvd.
8. Transam Food Mart (active refueling) – 2304 Lake Tahoe Blvd.
9. US Gasoline (active refueling) – 2470 Lake Tahoe Blvd.

0 200
Scale in Feet

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South Lake Tahoe, California	**SITE PLAN**	
GEOCON Proj. No. S9300-06-48		
Task Order No. 48	January 2009	Figure 2-6

LEGEND:

- DP1 ⊗ Approximate Direct-Push Boring Location
- HA1 ◎ Approximate Hand-Auger Boring Location
- PC1 ▲ Approximate Paint Chip Sample Location

POTENTIAL HAZARDOUS FACILITY LOCATIONS:

10. Former Service Station (Tahoe Quick Lube) – 2513 Lake Tahoe Blvd.
11. Former Service Station (Liquor Shack) – 2525 Lake Tahoe Blvd.
12. Former Service Station (Sportsman) – 2556 Lake Tahoe Blvd.
13. Ducks on the Lake Carwash – 2596 Lake Tahoe Blvd.
14. 7-Eleven (active refueling) – 2620 Lake Tahoe Blvd.

0 200
Scale in Feet

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South Lake Tahoe, California	**SITE PLAN**	
GEOCON Proj. No. S9300-06-48		
Task Order No. 48	January 2009	Figure 2-7

LEGEND:

DP1 ⊗ Approximate Direct-Push Boring Location

HA1 ⊙ Approximate Hand-Auger Boring Location

POTENTIAL HAZARDOUS FACILITY LOCATIONS:

15 American Gas (active refueling) – 2762 Lake Tahoe Blvd.

0 100
Scale in Feet

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

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and US 50 Between Tahoe Y and Trout Creek

South Lake Tahoe, California

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SITE PLAN

January 2009

Figure 2-8

LEGEND:

DP1 ⊗ Approximate Direct-Push Boring Location

PC1 ▲ Approximate Paint Chip Sample Location

POTENTIAL HAZARDOUS FACILITY LOCATIONS:

16 Former Service Station (Muffler Palace) – 2774 Lake Tahoe Blvd.

0 100
Scale in Feet

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

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South Lake Tahoe, California	**SITE PLAN**	
GEOCON Proj. No. S9300-06-48		
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Photo No. 1 Runnel's Automotive (former service station) – 986 Emerald Bay Road

Photo No. 2 American Gasoline (active refueling) – 1140 Emerald Bay Road

PHOTOS NO. 1 & 2

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Tahoe Y at State Highway 89 and US 50 Between Tahoe Y and Trout Creek	
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Photo No. 3 Former National Car Rental (former service station) – 1101 Emerald Bay Road

Photo No. 4 Former South Y Shell (former service station) – 1020 Emerald Bay Road

PHOTOS NO. 3 & 4

GEOCON
CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

Tahoe Y at State Highway 89 and US 50 Between Tahoe Y and Trout Creek	
GEOCON Proj. No. S9300-06-48	South Lake Tahoe, California
Task Order No. 48	January 2009

Photo No. 5 Former Chevron (Blockbuster) – 2037 Lake Tahoe Boulevard

Photo No. 6 Former service station (Brothers Burrito House) – 2136 Lake Tahoe Boulevard

PHOTOS NO. 5 & 6

GEOCON
CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

Tahoe Y at State Highway 89 and US 50 Between Tahoe Y and Trout Creek	
GEOCON Proj. No. S9300-06-48	South Lake Tahoe, California
Task Order No. 48	January 2009

Photo No. 7 Former service station (House of Carpets) – 2280 Lake Tahoe Boulevard

Photo No. 8 Transam Food Mart (active refueling) – 2304 Lake Tahoe Boulevard

PHOTOS NO. 7 & 8

GEOCON
CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

Tahoe Y at State Highway 89 and US 50 Between Tahoe Y and Trout Creek	
GEOCON Proj. No. S9300-06-48	South Lake Tahoe, California
Task Order No. 48	January 2009

Photo No. 9 US Gasoline (active refueling) – 2470 Lake Tahoe Boulevard

Photo No. 10 Former service station (Tahoe Quick Lube) – 2513 Lake Tahoe Boulevard

PHOTOS NO. 9 & 10

GEOCON
CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

Tahoe Y at State Highway 89 and US 50 Between Tahoe Y and Trout Creek	
GEOCON Proj. No. S9300-06-48	South Lake Tahoe, California
Task Order No. 48	January 2009

Photo No. 11 Former service station (Liquor Shack) – 2525 Lake Tahoe Boulevard

Photo No. 12 Former service station (Sportsman) – 2556 Lake Tahoe Boulevard

PHOTOS NO. 11 & 12

GEOCON
CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

Tahoe Y at State Highway 89 and US 50 Between Tahoe Y and Trout Creek	
GEOCON Proj. No. S9300-06-48	South Lake Tahoe, California
Task Order No. 48	January 2009

Photo No. 13 Ducks on the Lake Carwash – 2596 Lake Tahoe Boulevard

Photo No. 14 7-Eleven (active refueling) – 2620 Lake Tahoe Boulevard

PHOTOS NO. 13 & 14

GEOCON
CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

Tahoe Y at State Highway 89 and US 50 Between Tahoe Y and Trout Creek	
GEOCON Proj. No. S9300-06-48	South Lake Tahoe, California
Task Order No. 48	January 2009

Photo No. 15 American Gas (active refueling) – 2762 Lake Tahoe Boulevard

Photo No. 16 Former service station (Muffler Palace)– 2774 Lake Tahoe Boulevard

PHOTOS NO. 15 & 16

GEOCON
CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

Tahoe Y at State Highway 89 and US 50 Between Tahoe Y and Trout Creek	
GEOCON Proj. No. S9300-06-48	South Lake Tahoe, California
Task Order No. 48	January 2009

TABLE 1
SUMMARY OF SOIL BORING COORDINATES
SOUTH LAKE TAHOE Y/US-50 AND SR-89 PROJECT
EL DORADO COUNTY, CALIFORNIA

SAMPLE ID	DATE	LATITUDE	LONGITUDE
DP1	11/12/2008	38.912997761	-120.004475246
DP2	11/12/2008	38.912715026	-120.004330687
DP3	11/12/2008	38.912467849	-120.004222075
DP4	11/12/2008	38.911797875	-120.003901996
DP5	11/12/2008	38.909172935	-120.002284919
DP6	11/12/2008	38.908902006	-120.002105481
DP7	11/12/2008	38.910371364	-120.002820828
DP8	11/12/2008	38.910437489	-120.002859954
DP9	11/13/2008	38.912213211	-120.003835080
DP10	11/13/2008	38.912782071	-120.004073036
DP11	11/13/2008	38.914233944	-120.005191498
DP12	11/13/2008	38.914973696	-120.006048927
DP13	11/13/2008	38.915426425	-120.006617366
DP14	11/13/2008	38.915144386	-120.006517232
DP15	11/13/2008	38.914435110	-120.005674445
DP16	11/13/2008	---	---
DP17	11/13/2008	38.913778460	-120.005067688
DP18	11/13/2008	38.913665735	-120.004963777
DP19	11/14/2008	38.915162945	-120.001723353
DP20	11/14/2008	---	---
DP21	11/14/2008	38.913929791	-120.004139786
DP22	11/14/2008	38.913903807	-120.004591712
DP23	11/17/2008	38.916264983	-119.999765004
DP24	11/14/2008	---	---
DP25	11/17/2008	38.919815723	-119.994385623
DP26	11/14/2008	38.919893193	-119.994293503
DP27	11/17/2008	38.925453014	-119.985914249
DP28	11/17/2008	38.926323412	-119.984581204
DP29	11/17/2008	38.926775295	-119.983928889
DP30	11/17/2008	38.926808183	-119.983836482
DP31	11/18/2008	38.923424628	-119.988949037
DP32	11/18/2008	38.923527890	-119.988775491
DP33	11/18/2008	38.930218570	-119.979921243
DP34	11/18/2008	38.930369378	-119.979810393
DP35	11/18/2008	38.930717035	-119.979566952
DP36	11/18/2008	38.931083780	-119.979297460
DP37	11/18/2008	38.931528510	-119.978980511
DP38	11/19/2008	38.913819899	-120.003444395
DP39	11/19/2008	38.914143698	-120.002901661
DP40	11/19/2008	38.924995639	-119.986917988
DP41	11/19/2008	---	---
DP42	11/19/2008	38.930368643	-119.980022520
DP43	11/19/2008	38.931400661	-119.979307214
HA1	11/14/2008	38.913141521	-120.004105960
HA2	11/14/2008	38.913502694	-120.004067366

TABLE 1
SUMMARY OF SOIL BORING COORDINATES
SOUTH LAKE TAHOE Y/US-50 AND SR-89 PROJECT
EL DORADO COUNTY, CALIFORNIA

SAMPLE ID	DATE	LATITUDE	LONGITUDE
HA3	11/17/2008	38.914625464	-120.002221950
HA4	11/17/2008	38.915491169	-120.000894138
HA5	11/17/2008	---	---
HA6	11/17/2008	---	---
HA7	11/17/2008	---	---
HA8	11/17/2008	---	---
HA9	11/17/2008	---	---
HA10	11/17/2008	---	---
HA11	11/17/2008	---	---
HA12	11/17/2008	38.929266537	-119.981039458
HA13	11/17/2008	38.928424261	-119.981988149
HA14	11/17/2008	38.927585893	-119.983040180
HA15	11/17/2008	38.926719599	-119.984353669
HA16	11/17/2008	38.925970236	-119.985459041
HA17	11/17/2008	38.923624785	-119.988990194
HA18	11/17/2008	38.922990181	-119.989970746
HA19	11/17/2008	38.921951858	-119.991527215
HA20	11/17/2008	38.921203198	-119.992659633
HA21	11/17/2008	38.920486559	-119.993745618
HA22	11/17/2008	38.919336587	-119.995503940
HA23	11/17/2008	38.919070375	-119.995842986
HA24	11/17/2008	38.917253770	-119.998617261
HA25	11/17/2008	38.916297343	-120.000061764
HA26	11/17/2008	38.911489945	-120.003740553
HA27	11/17/2008	38.910389942	-120.003042096
HA28	11/17/2008	---	---
HA29	11/17/2008	38.911630065	-120.003539916
HA30	11/19/2008	38.913418536	-120.004173293
HA31	11/20/2008	38.914032875	-120.003742792
HA32	11/20/2008	---	---
HA33	11/20/2008	38.918828940	-119.996290822
HA34	11/20/2008	38.918503755	-119.996756484
HA35	11/20/2008	38.918428214	-119.996904686
HA36	11/20/2008	38.918265102	-119.996699139
HA37	11/20/2008	38.918448556	-119.996457516
HA38	11/20/2008	38.918655732	-119.996127742
HA39	11/20/2008	---	---
HA40	11/20/2008	---	---
HA41	11/20/2008	---	---

Notes:
DP = Direct-push Boring
HA = Hand-auger Boring
--- = GPS data not available

TABLE 2

SUMMARY OF LEAD AND SOIL pH ANALYTICAL RESULTS

SOUTH LAKE TAHOE Y/US-50 AND SR-89 PROJECT

EL DORADO COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE DATE	TOTAL LEAD (mg/kg)	WET LEAD (mg/l)	SOIL pH
DP1-1	11/12/2008	5.2	---	---
DP1-2	11/12/2008	<5.0	---	---
DP1-3	11/12/2008	<5.0	---	---
DP3-3	11/12/2008	<5.0	---	---
DP4-1	11/12/2008	---	---	8.2
DP4-3	11/12/2008	5.5	---	---
DP5-9	11/12/2008	<5.0	---	---
DP9-2	11/13/2008	---	---	8.3
DP10-1	11/12/2008	<5.0	---	---
DP10-2	11/12/2008	<5.0	---	---
DP10-3	11/12/2008	<5.0	---	---
DP25-3	11/17/2008	<5.0	---	---
DP27-1	11/17/2008	<5.0	---	---
DP27-2	11/17/2008	<5.0	---	---
DP27-3	11/17/2008	<5.0	---	---
DP30-1	11/17/2008	5.2	---	---
DP30-2	11/17/2008	8.4	---	---
DP30-3	11/17/2008	6.8	---	---
DP31-1	11/18/2008	7.4	---	8.3
DP31-2	11/18/2008	<5.0	---	---
DP31-3	11/18/2008	<5.0	---	---
DP33-1	11/18/2008	<5.0	---	---
DP33-2	11/18/2008	<5.0	---	---
DP33-3	11/18/2008	<5.0	---	---
DP36-1	11/18/2008	<5.0	---	8.4
DP36-2	11/18/2008	<5.0	---	---
DP36-3	11/18/2008	<5.0	---	---

TABLE 2

SUMMARY OF LEAD AND SOIL pH ANALYTICAL RESULTS

SOUTH LAKE TAHOE Y/US-50 AND SR-89 PROJECT

EL DORADO COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE DATE	TOTAL LEAD (mg/kg)	WET LEAD (mg/l)	SOIL pH
DP39-1	11/19/2008	5.6	---	---
DP39-2	11/19/2008	<5.0	---	---
DP39-3	11/19/2008	<5.0	---	---
DP40-1	11/19/2008	5.5	---	---
DP40-2	11/19/2008	5.2	---	---
DP40-3	11/19/2008	5.1	---	8.0
DP42-1	11/19/2008	<5.0	---	---
DP42-2	11/19/2008	<5.0	---	---
DP42-3	11/19/2008	<5.0	---	---
DP43-1	11/19/2008	10	---	---
DP43-2	11/19/2008	<5.0	---	8.2
DP43-3	11/19/2008	<5.0	---	---
HA3-3	11/17/2008	---	---	7.9
HA5-1	11/17/2008	26	---	---
HA5-2	11/17/2008	11	---	---
HA5-3	11/17/2008	<5.0	---	---
HA6-3	11/17/2008	5.8	---	---
HA9-1	11/17/2008	6.8	---	---
HA9-2	11/17/2008	<5.0	---	---
HA9-3	11/17/2008	<5.0	---	---
HA10-1	11/17/2008	37	---	---
HA10-2	11/17/2008	6.5	---	---
HA10-3	11/17/2008	<5.0	---	---
HA11-1	11/17/2008	14	---	---
HA11-2	11/17/2008	<5.0	---	---
HA11-3	11/17/2008	<5.0	---	---
HA14-3	11/17/2008	<5.0	---	---
HA15-3	11/17/2008	<5.0	---	---

TABLE 2

SUMMARY OF LEAD AND SOIL pH ANALYTICAL RESULTS

SOUTH LAKE TAHOE Y/US-50 AND SR-89 PROJECT

EL DORADO COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE DATE	TOTAL LEAD (mg/kg)	WET LEAD (mg/l)	SOIL pH
HA16-1	11/17/2008	15	---	---
HA16-2	11/17/2008	<5.0	---	---
HA16-3	11/17/2008	<5.0	---	---
HA17-2	11/17/2008	---	---	7.8
HA17-3	11/17/2008	6.4	---	---
HA18-3	11/17/2008	5.9	---	---
HA21-1	11/17/2008	8.5	---	---
HA21-2	11/17/2008	<5.0	---	---
HA21-3	11/17/2008	<5.0	---	---
HA22-1	11/17/2008	28	---	---
HA22-2	11/17/2008	30	---	---
HA23-1	11/17/2008	38	---	---
HA23-2	11/17/2008	<5.0	---	---
HA28-1	11/17/2008	---	---	7.8
HA30-1	11/19/2008	10	---	---
HA30-2	11/19/2008	10	---	---
HA30-3	11/19/2008	<5.0	---	---
HA33-1	11/20/2008	60	1.9	---
HA33-2	11/20/2008	52	2.8	---
HA33-3	11/20/2008	24	---	---
HA34-1	11/20/2008	17	---	---
HA34-2	11/20/2008	32	---	---
HA34-3	11/20/2008	<5.0	---	---
HA35-1	11/20/2008	73	2.9	---
HA35-2	11/20/2008	5.4	---	---
HA35-3	11/20/2008	<5.0	---	---
HA36-1	11/20/2008	91	4.9	---
HA36-2	11/20/2008	23	---	---
HA36-3	11/20/2008	<5.0	---	---

TABLE 2

SUMMARY OF LEAD AND SOIL pH ANALYTICAL RESULTS

SOUTH LAKE TAHOE Y/US-50 AND SR-89 PROJECT

EL DORADO COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE DATE	TOTAL LEAD (mg/kg)	WET LEAD (mg/l)	SOIL pH
HA37-1	11/20/2008	45	---	---
HA37-2	11/20/2008	18	---	---
HA37-3	11/20/2008	<5.0	---	---
HA38-1	11/20/2008	13	---	---
HA38-2	11/20/2008	<5.0	---	---
HA39-1	11/20/2008	110	7.2	---
HA39-2	11/20/2008	76	6.8	---
HA39-3	11/20/2008	65	5.7	---
HA40-1	11/20/2008	41	---	---
HA40-2	11/20/2008	7.2	---	---
HA40-3	11/20/2008	9.7	---	---
HA41-1	11/20/2008	9.2	---	---
HA41-2	11/20/2008	5.3	---	---
HA41-3	11/20/2008	<5.0	---	---
Composite DP3-1, DP4-1, HA26-1, HA27-1	11/12/2008	15	---	---
Composite DP3-2, DP4-2, HA26-2, HA27-2	11/12/2008	12	---	---
Composite DP7-1, DP9-1, HA28-1, HA29-1	11/12/2008	14	---	---
Composite DP7-2, DP9-2, HA28-2, HA29-2	11/12/2008	12	---	---
Composite DP7-3, DP9-3, HA28-3, HA29-3	11/12/2008	5.2	---	---
Composite DP23-1, HA3-1, HA4-1	11/17/2008	35	---	---
Composite DP23-2, HA3-2, HA4-2	11/17/2008	<5.0	---	---
Composite DP23-3, HA3-3, HA4-3	11/17/2008	<5.0	---	---
Composite DP25-1, HA6-1, HA7-1, HA8-1	11/17/2008	9.3	---	---
Composite DP25-2, HA6-2, HA7-2, HA8-2	11/17/2008	6.1	---	---
Composite HA12-1, HA13-1, HA14-1, HA15-1	11/17/2008	28	---	---
Composite HA12-2, HA14-2, HA15-2	11/17/2008	8.8	---	---
Composite HA17-1, HA18-1, HA19-1, HA20-1	11/17/2008	32	---	---
Composite HA17-2, HA18-2, HA19-2, HA20-2	11/17/2008	14	---	---

TABLE 2

SUMMARY OF LEAD AND SOIL pH ANALYTICAL RESULTS

SOUTH LAKE TAHOE Y/US-50 AND SR-89 PROJECT

EL DORADO COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE DATE	TOTAL LEAD (mg/kg)	WET LEAD (mg/l)	SOIL pH
Composite DP19-1, HA24-1, HA25-1	11/14/2008	15	---	---
Composite DP19-2, HA24-2, HA25-2	11/14/2008	6.3	---	---
Composite DP19-3, HA24-3, HA25-3	11/14/2008	<5.0	---	---

Notes: DP1-1

Sample depth in feet below ground surface

Boring identification

mg/kg = Milligrams per kilogram

mg/l = Milligrams per liter

< = Less than the laboratory test method reporting limits

--- = Not analyzed

TABLE 3
SUMMARY OF SOIL ANALYTICAL RESULTS - PETROLEUM HYDROCARBONS and VOCs
SOUTH LAKE TAHOE Y/US-50 AND SR-89 PROJECT
EL DORADO COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE DATE	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	VOCs (µg/kg)	MTBE (µg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)
DP1-9	11/12/2008	---	---	---	ND	---	---	---	---	---
DP2-9	11/12/2008	<1.0	1.8	---	ND	<5.0	<5.0	<5.0	<5.0	<10
DP4-9	11/12/2008	---	---	---	ND	---	---	---	---	---
DP5-9	11/12/2008	<1.0	2.5	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP8-9	11/12/2008	<1.0	1.8	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP9-9	11/13/2008	---	---	---	ND	---	---	---	---	---
DP10-9	11/13/2008	---	---	---	ND	---	---	---	---	---
DP11-9	11/13/2008	---	---	---	ND	---	---	---	---	---
DP12-9	11/13/2008	---	---	---	ND	---	---	---	---	---
DP13-4	11/13/2008	<1.0	71	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP13-9	11/13/2008	---	---	---	ND	---	---	---	---	---
DP14-9	11/13/2008	---	---	---	ND	---	---	---	---	---
DP15-9	11/13/2008	---	---	---	ND	---	---	---	---	---
DP16-9	11/13/2008	<1.0	1.7	---	ND	<5.0	<5.0	<5.0	<5.0	<10
DP18-9	11/13/2008	---	---	---	ND	---	---	---	---	---
DP19-9	11/14/2008	---	---	---	ND	---	---	---	---	---
DP20-9	11/14/2008	---	---	---	ND	---	---	---	---	---
DP21-9	11/14/2008	---	---	---	ND	---	---	---	---	---
DP22-9	11/14/2008	---	---	---	ND	---	---	---	---	---
DP23-4	11/17/2008	<1.0	86/50 [1]	270 / 160 [1]	---	<5.0	<5.0	<5.0	<5.0	<10
DP24-9	11/17/2008	<1.0	2.8	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP26-9	11/17/2008	<1.0	1.9	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP27-9	11/17/2008	<1.0	1.4	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP28-9	11/17/2008	<1.0	1.3	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP29-9	11/17/2008	<1.0	1.2	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP31-9	11/18/2008	<1.0	3.3	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP33-9	11/18/2008	<1.0	1.2	---	---	<5.0	<5.0	<5.0	<5.0	<10

TABLE 3
SUMMARY OF SOIL ANALYTICAL RESULTS - PETROLEUM HYDROCARBONS and VOCs
SOUTH LAKE TAHOE Y/US-50 AND SR-89 PROJECT
EL DORADO COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE DATE	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	VOCs (µg/kg)	MTBE (µg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)
DP34-4	11/18/2008	<1.0	4.8	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP34-6	11/18/2008	3,000	330	---	---	<2,500	<2,500	5,800	57,000	424,000
DP34-9	11/18/2008	<1.0	1.6	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP35-4	11/18/2008	<1.0	1.3	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP35-8	11/18/2008	<1.0	2.3	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP35-9	11/18/2008	<1.0	1.2	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP36-4	11/18/2008	<1.0	3,600	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP36-9	11/18/2008	<1.0	<1.0	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP37-4	11/18/2008	<1.0	220	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP37-9	11/18/2008	<1.0	7.9	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP38-9	11/19/2008	---	---	---	ND	---	---	---	---	---
DP39-9	11/19/2008	---	---	---	ND	---	---	---	---	---
DP40-9	11/19/2008	<1.0	2.4	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP41-3	11/19/2008	<1.0	32	---	---	<5.0	49	13	16	41.3
DP41-6	11/19/2008	<1.0	2.1	---	---	<5.0	21	<5.0	<5.0	18
DP41-9	11/19/2008	<1.0	4.1	---	---	<5.0	7.0	<5.0	18	33
DP42-4	11/19/2008	<1.0	4.1	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP42-9	11/19/2008	<1.0	1.4	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP43-4	11/19/2008	<1.0	140	---	---	<5.0	<5.0	<5.0	<5.0	<10
DP43-9	11/19/2008	<1.0	2.4	---	---	<5.0	<5.0	<5.0	<5.0	<10
HA1-9	11/14/2008	---	---	---	ND	---	---	---	---	---
HA2-9	11/14/2008	---	---	---	ND	---	---	---	---	---
HA31-9	11/20/2008	---	---	---	ND	---	---	---	---	---
HA32-9	11/20/2008	<1.0	3.6	---	---	<5.0	<5.0	<5.0	<5.0	<10

Notes:

DP1-9
- Top of sample (depth in feet)
- Boring identification Number

TPHg = Total petroleum hydrocarbons as gasoline
TPHd = Total petroleum hydrocarbons as diesel
TPHmo = Total petroleum hydrocarbons as motor oil
VOCs = Volatile organic compounds using EPA 5035 preservation
MTBE = Methyl tert-butyl ether
1 = Reanalyzed using silica gel cleanup

--- = not analyzed
mg/kg = Milligrams per kilogram
µg/kg = Micrograms per kilogram
ND, < = Less than the laboratory test method reporting limits

TABLE 4
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - PETROLEUM HYDROCARBONS and VOCs
SOUTH LAKE TAHOE Y/US-50 AND SR-89 PROJECT
EL DORADO COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE DATE	TPHg (mg/l)	TPHd (mg/l)	VOCs (µg/l)	MTBE (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)
DP14	11/13/2008	---	---	ND	---	---	---	---	---
DP35	11/18/2008	0.70	1.3	---	<0.50	<0.50	1.7	5.9	6.6
DP36	11/18/2008	<0.05	0.22	---	<0.50	<0.50	<0.50	<0.50	<1.0

Notes:

TPHg = Total petroleum hydrocarbons as gasoline
TPHd = Total petroleum hydrocarbons as diesel
VOCs = Volatile organic compounds
MTBE = Methyl tert-butyl ether
mg/l = Milligrams per liter
µg/l = Micrograms per liter
ND, < = Less than the laboratory method reporting limits
--- = not analyzed

TABLE 5
SUMMARY OF TRAFFIC PAINT SAMPLE ANALYTICAL RESULTS
SOUTH LAKE TAHOE Y/US-50 AND SR-89 PROJECT
EL DORADO COUNTY, CALIFORNIA

SAMPLE I.D.	SAMPLE DATE	TOTAL LEAD (mg/kg)	TOTAL CHROMIUM (mg/kg)
PC1	11/20/2008	4.4	7.1
PC2	11/20/2008	2.5	4.6
PC3	11/20/2008	3.7	6.0
PC4	11/20/2008	6.1	3.6

Notes: mg/kg = Milligrams per kilogram