

OIL WELL SUMP RECONNAISSANCE AND INVESTIGATION REPORT

•FINAL•

**Southern California Gas Company
Aliso Canyon Gas Storage Facility
12801 Tampa Avenue
Northridge, California 91326**

**Prepared for:
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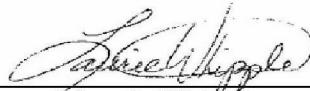
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EXECUTIVE SUMMARY

Eco & Associates, Inc. conducted an environmental investigation at abandoned oil field sumps within the western portion of the Aliso Canyon Gas Storage Facility (hereafter referred to as “the Site”). This investigation included a Site reconnaissance, soil investigation, and preparation of this report.

The Site, owned by the Southern California Gas Company is located at 12801 Tampa Avenue, north of the city of Northridge, California. It is located in an unincorporated territory of Los Angeles County within predominantly undeveloped hillside terrain. A network of paved and unpaved access roads transects the Site. Improvements at the Site include oil and gas wells, a natural gas compressor station, aboveground and underground piping, aboveground storage tanks, office buildings and other ancillary features.

The eastern portion of the Site has been previously investigated by Camp Dresser & McKee Inc. and ENV America. On January 20, 2006 Eco & Associates, Inc. conducted a Site reconnaissance to assess the oil well sumps within the western portion of the Site. sumps identified during this study are hereby referred to as Sumps 14 through 23. A subsurface investigation was recommended at seven of these sumps. Three of the sumps, Sumps 17, 18, and 19, were not included in the subsurface investigation as a result of inaccessibility.

The subsurface investigation included the logging and sampling of 33 trenches and 4 borings. Selected samples from each trench and boring were scheduled for chemical analyses. The following conclusions are based on the findings of the field investigation and the results of the chemical analyses.

- No remediation is considered warranted for Sumps 14, 20, 21, and 23. The TPH and VOC concentrations within soil samples collected from these sumps are below the anticipated RWQCB screening levels. The reported metal concentrations in these soil samples were below their respective CHHSLs (for industrial settings).
- The upper three feet of soil within Sump 15 is impacted with petroleum hydrocarbons, metals, and VOCs. The TPH (C13-C22 range) and benzene concentrations within these upper soils exceed regulatory cleanup levels. Based on the finding of this investigation, impacted soil within Sump 15 extends to a depth of approximately 3 feet below ground surface. The impacted area within this sump covers approximately 3,800 square feet. An estimated 422 cubic yards (633 tons) of impacted soil is present within this sump.
- A slightly elevated benzene concentration (29.2 µg/kg) was reported within the upper 1.5-foot thick soil layer in Sump 16. Due to the absence of other elevated VOCs, metals, and petroleum hydrocarbons, the soil in this sump is not

considered a potential threat to the environment. Remediation of impacted soil within this sump is currently not necessary.

- TPH and VOC concentrations reported in soil samples collected from Sump 22 were significantly greater than RWQCB's screening levels. Based on the finding of this investigation, impacted soil within Sump 22 extends from a depth of 1 foot to approximately 18 feet below ground surface. The impacted area within this sump covers approximately 8,400 square feet. An estimated 5,600 cubic yards (8,400 tons) of impacted soil is present within this sump.

It is recommended that impacted soil within Sumps 15 and 22 be remediated to appropriate cleanup levels provided by the RWQCB (for VOCs and TPH). Prior to remedial activities, it is also recommended that a remedial action workplan be developed.

OIL WELL SUMP RECONNAISSANCE & INVESTIGATION REPORT

Southern California Gas Company
Aliso Canyon Gas Storage Facility
12801 Tampa Avenue
Northridge, California 91326

1.0 INTRODUCTION

Eco & Associates, Inc. (Eco) was contracted by the Southern California Gas Company (hereafter referred to as SCG) to conduct an environmental investigation at abandoned oil field sumps within the western portion of the Aliso Canyon Gas Storage Facility (Figures 1 and 2) which is hereafter referred to as “the Site.” This investigation included a Site reconnaissance, soil investigation, and preparation of this report.

2.0 SITE DESCRIPTION AND BACKGROUND

The Site, owned by the SCG, is located at 12801 Tampa Avenue, north of the city of Northridge, California. It is located in an unincorporated territory of Los Angeles County within predominantly undeveloped hillside terrain. A network of paved and unpaved access roads transects the Site. Improvements at the Site include oil and gas wells, a natural gas compressor station, aboveground and underground piping, aboveground storage tanks, office buildings, and other ancillary features.

The Site was developed for oil production in the 1940’s, and has been used for oil production and gas storage since this time. The gas storage process includes the compression of imported natural gas and its subsequent injection into permeable reservoir rocks for temporary storage during periods of low demand. When demand increases, gas is withdrawn from wells, passed through a dehydration unit to remove moisture, and then piped offsite for distribution and consumption.

Oil well sumps within the eastern portion of Aliso Canyon have been the subject of environmental investigations and/or remediation activities. However, the oil well sumps within the western portion of Aliso Canyon (the Site) have not been investigated with respect to assessing the presence and nature of associated contaminants.

3.0 PREVIOUS ENVIRONMENTAL STUDIES

3.1 PHASE I ENVIRONMENTAL ASSESSMENT

In 1991, Camp Dresser & McKee Inc. (CDM) conducted a Phase I environmental assessment of the Site for the previous owner, Texaco Exploration and Production. The CDM study identified 13 known or suspected sump locations, based in large part on a review of historical aerial photos. These sumps, identified as Sump 1 through 13, were further studied by ENV America. The CDM Phase I assessment focused on the eastern portion of the Aliso Canyon Storage field, and did not include the western portion of the Aliso Canyon.

3.2 ENV AMERICA SITE ASSESSMENT

ENV America implemented a project in 1996 and 1997, which focused primarily on confirming the presence of the 13 sumps that were identified by CDM. In 1998, ENV America conducted an additional investigation within the eastern portion of the Site that consisted of a soil investigations and removal actions at some of the oil well sump locations.

In 2003, ENV America oversaw the remediation of two additional sumps, Sesnon Fee 2 (SF2) and Sesnon Fee 2A (SF2A), located within the western portion of the Site. In early 2005, ENV America conducted an investigation of two additional western sumps referred to as Frew-7 and "N". The remediation of Frew-7 was reported as having been completed. With the exception of these four sumps, none of the sumps in the Site's western portion have been investigated and/or remediated.

3.3 ECO & ASSOCIATES, INC. SITE ASSESSMENTS

In 2006, Eco & Associates, Inc. conducted a preliminary assessment of oil well sumps within the western portion of the Site refer to Figure 2. The investigation was conducted by reviewing historical aerial photos (Appendix A) and conducting a site reconnaissance. Prior to start of the site reconnaissance, the western portion of the site was divided into six areas referred to as 1 through 6. The Site reconnaissance was conducted on January 20, 2006 to review each of the ten sump locations. Fourteen oil field sumps were identified within these areas. As noted above, four of the sumps (Sumps SF21, SF2A, Frew-7, and N) were reported as having been investigated and/or remediated, and were not included in this assessment.

The 10 sumps assessed during this study are being referred to as Sumps 14 through 23 (see Table 1 and Figures 2 through 8) and were prioritized with regard to the most immediate need for further investigation and remediation. Factors including accessibility, utility interference, presence of vegetation, and presence of hazardous materials were used in evaluation of priorities. For example, the relatively larger sumps were considered higher priority due to their potential to contain greater quantities of impacted soil and potentially hazardous oilfield debris. Sumps that appeared readily accessible, as opposed to sumps within steep terrain, blocked by pipelines, or covered with relatively dense vegetation, were also considered higher priority. Sumps within the Site's southern portion were also given consideration for a higher priority due to their relative near proximity to the down-gradient residential development.

Based on this approach, Sumps 15, 16, 20, and 21 were considered as the highest priority (priority 1), Sumps 17, 22, and 23 were ranked medium priority (priority 2) and Sumps 14, 18, and 19 were ranked priority 3 (lowest priority) for further investigation. Table 1 provides a summary of our sump prioritization. Based on further review of the site and data, seven of the sumps were recommended for further investigation (Sumps 14, 15, 16, 20, 21, 22, and 23). Three of the sumps, Sumps 17, 18, and 19, were not included in the subsurface investigation as a result of inaccessibility. A review of the sumps selected for further investigation is provided below.

Sump 14 - Sump 14 is located within a relatively-level area on the upper portion of hill, south of an active oil well and associated pad (*Chevron USA, Inc. 'Orcutt-Sesnon L.W.' 1*) (Figures 2 and 4). This sump area is covered with a relatively light growth of grass. An old fence surrounds this sump's perimeter: it is suspected that this was erected to prevent cattle from entering the sump area. No other evidence of the former sump location was encountered at the time of the reconnaissance. Stained soil or possible oil seepage was not encountered within or adjacent to this sump location.

This sump location is readily accessible from a road to the north or from a gentle slope located to the southeast (via an equipment storage yard). A pipeline along this area's northern side will need to be protected if the northern route is used to access the sump area.

Sump 15 - Sump 15 is located within a relatively level area adjoined by ascending slopes on all sides that form a bowl-shaped area (Figures 2 and 4). Cut slopes are located north and west of this sump, and fill slopes are located east and south of this sump. A vehicle access road has been cut through the fill slope bordering the sump's southwest portion. This sump area is currently in use as a storage area for an oil lease operator. Miscellaneous equipment and supplies are located within the western portion of this sump area. A pile of stained soil (from a near-vicinity tank farm) is located within the eastern portion. Stained soil is also visible within the fill materials in the southern fill slope.

This sump location is readily accessible. Equipment within the western portion of this area will limit access during any planned subsurface investigation. Two to three partially buried pipelines along the western side of this sump may require additional protection.

Sump 16 - Sump 16 is located within a relatively level area southeast of a tank farm and northwest of Well "*Chevron USA, Inc. 'Orcutt-Del Aliso-Sesnon 1' 1*" (Figures 2 and 4). An operating compressor is located within the northern portion of this sump area. A soil-covered driveway/parking area is located immediately south of the compressor, within the central portion of this sump area. A depression is located in the southern portion of this sump area. This depression contains a light to moderate growth of grass and brush. A tree is located on the western side of this depression. An ascending cut slope marks the southern boundary of the sump area. Stained soil or possible oil seepage was not encountered within or adjacent to this sump location.

Access to this sump's northern portion is currently not possible as a result of the existing compressor. Subsurface work within the central portion of this sump area would prevent the use of the existing driveway/parking area. Pipelines to an inactive boiler traverse through the depression in this sump's southern portion, as well as along this sump's western side.

Sump 20 - Sump 20 is located within a relatively level area just below a cut slope (Figures 2 and 6). A light growth of grass and brush covers this sump area. There are no visual indications of the former sump location other than the flat-lying pad and a northern cut slope. Stained soil or possible oil seepage was not encountered within or adjacent to this sump location.

A paved access road is located northwest and south of this sump area. This sump location is readily accessible from an existing dozer road that traverses from the northern paved roadway to the sump area. One pipeline traverses across the surface of this access road. Additional aboveground pipelines are located north and east of this sump area. Electric lines traverse over a portion of this sump area.

Sump 21 - Two adjoining sumps were formerly located at the Sump 21 location (Figures 2 and 7). A well (*Southern Ca Gas Co 'Sesnon Fee' 6*) is located northeast of this sump location. The Sump 21 area is relatively flat and covered with a light to heavy growth of grasses and brush. Depressions marking the location of these former sump locations are not visible. Stained soil or possible oil seepage was not encountered within or adjacent to this sump location.

An ascending slope is located along the eastern side of this sump area. A paved roadway is located at the top of this slope, immediately east of the sump area. Historic access roads from the sump to this roadway were not encountered during the site reconnaissance. Pipelines were not observed within this sump area.

Sump 22 - Sump 22 is located within a relatively flat area immediately south of the access road to Well "*Southern Ca Gas Co 'Sesnon Fee' 8*" (Figures 2 and 8). This sump area is covered with a moderate growth of coastal shrub. Evidence of the former sump was not encountered at the time of the site reconnaissance. Stained soil or possible oil seepage was not encountered within or adjacent to this sump location.

This sump location is readily accessible from the adjoining roadway. Pipelines were not encountered within or immediately adjacent to this location.

Sump 23 - Sump 23 is located within a relatively level area at the south end of an overgrown road (Figures 2 and 8). This sump area is covered with a moderate growth of coastal shrub. Fences border a portion of the former sump area. No other evidence of this former sump location was encountered at the time of the site reconnaissance. Stained soil or possible oil seepage was not encountered within or adjacent to this sump location.

The access road that traverses from the adjoining paved roadway to this sump area requires maintenance prior to use. Pipelines were not encountered within or immediately adjacent to this location.

4.0 OBJECTIVES

The primary objectives of the field investigation were to:

- Evaluate the presence and nature of any impacted soil within the former sumps,
- Assess whether the detected chemical concentrations were likely to exceed the regulatory levels,
- Assess the spatial extent of impacted soil within each former sump area, and
- Assess the volume of impacted soil requiring remediation, if the soils were judged to be impacted.

5.0 FIELD ACTIVITIES

5.1 WORKPLAN AND HEALTH AND SAFETY PLAN

A workplan and site-specific health and safety plan were prepared by Eco prior to initiating the field work. These documents were presented to SCG for review and approval. Deviations from the approved workplan are discussed below.

- The use of a backhoe to investigate the onsite sumps (via trenches) was considered the best method to assess the sump boundaries and sump material types, and to collect in-place samples. The backhoe offered acceptable mobility over the uneven terrain encountered at some of the sump locations, as well as the ability to remove overgrown brush from older vehicle trails. Due to the inability of the backhoe to sample below a depth of approximately 17 feet, a drill rig was used to assess the vertical extent of impacted soil within Sump 22.
- The likely presence of sensitive vegetation species within the project area required the presence of a biologist during the entire investigation. SCG biologists were present during the investigation: they provided direction to Eco field staff in order to minimize environmental impacts.
- The trenches were backfilled with the previously excavated materials immediately after being completed. The borings, however, were backfilled with hydrated bentonite chips. The backfilling was undertaken to reduce Site hazards and minimize the potential for rainwater accumulation and subsequent contaminant migration.

5.2 SOIL SAMPLING

Prior to the start of this investigation, the proposed trenching and boring locations at each sump were marked with flagged wooden stakes. These locations were approved by SCG representatives prior to the start of the investigation.

The trenches were placed within the central portions of the sumps and around the sumps' boundaries. The purpose of the trenches was to assist in assessing the sumps' horizontal and vertical extent, as well as the nature of the materials contained within.

The field investigation and sampling was conducted in three phases. The first phase included the investigation of Sumps 14, 15, and 16. This portion of the investigation was conducted on June 21 and 22, 2006. A total of eleven trenches (five within Sump 14, three within Sump 15, and three within Sump 16) were logged and sampled during this phase of investigation. The locations of the trenches are shown on Figures 9, 10, and 11, respectively. The logs of these trench logs are provided in Appendix B.

SCG directed Eco to postpone the investigation of Sumps 20, 21, 22, and 23 pending a biological survey of these areas. The biological survey was conducted by SCG between June 2006 and September 2006. The latter information is provided in Appendix C. Based on the finding of the biological survey, SCG authorized Eco to proceed with the investigation of the remaining sumps.

The second phase included the investigation of Sumps 20, 21, 22, and 23. This portion of the investigation was conducted between November 6 and 8, 2006. A total of 22 trenches (five within Sump 20, nine within Sump 21, four within Sump 22, and four within Sump 23) were logged and sampled during this phase of investigation. The locations of the trenches are shown on Figures 12, 13, 14, and 15 respectively. The logs of these trench logs are provided in Appendix B.

Although data collected during this phase of investigation were sufficient to meet the objectives of the investigation, an additional investigation using a drill rig was deemed necessary to define the vertical extent of contamination with Sump 22.

Following receipt of authorization from SCG, Eco scheduled further investigation of Sump 22 for January 25, 2007. During this phase of the investigation, four borings (B-1 through B-4) were drilled to depths ranging between approximately 25 and 36 feet within the central portion of this sump. These boring locations are shown on Figure 16. The boring logs are provided in Appendix B.

Each trench was backfilled with native soil. The soil borings were backfilled with bentonite chips.

5.3 SOIL SAMPLING

Sampling was conducted from the surface using one of the following:

- A core sampler (in conjunction with a slide hammer); or

- A split-spoon sampler.

When using the slide hammer, extensions were added to the slide hammer assembly as needed. The onsite supervising geologist used his judgment to determine sampling locations within each trench and boring. These locations were based (in part) on field observations. Representative stained and/or odorous soils within each trench and boring were collected. Areas judged to be clean were also sampled to document the accuracy of the field observations and for comparison.

A California-registered geologist was onsite to continuously review and describe soil exposed or collected during the trenching and drilling process. All soil descriptions were recorded onto Eco's standard trench and/or boring log forms. These logs included, but not limited to, the following data:

- Sump location;
- Trench/boring identification;
- Sampling date (start and finish);
- Excavation width, depth, and length (including sketch);
- Depth to groundwater if encountered;
- Excavation equipment/method;
- The Unified Soil Classification System (USCS) group name and symbol;
- Soil color (compared to a Munsell Soil Color Chart for soil color and hue);
- Soil moisture; and
- Observations regarding the potential presence of contaminants.

5.4 SAMPLE COLLECTION

Soil samples were collected from each trench and boring. At each sampling location, soil was driven into stainless steel tubes (two 2-inch wide by 3-inch-long tubes for trench samples and three 2-inch wide by 6-inch long tubes for the boring samples) that lined the interior of drive samplers. Immediately after removing the tubes from the core sampler, the lower tubes were capped on each end with Teflon tape and plastic caps, labeled, and placed in a sealable plastic bag. Following the collection of samples via EPA Method 5035, the sealed soil samples were placed into an ice-cooled chest.

Each soil sample for VOC analysis was collected in accordance with EPA Method 8260B/5035. During this procedure, a sampling device was used to sub-core the soil-filled acetate sleeve. The soil exposed at the deeper end of the sleeve was sub-cored. After retrieving the soil

aliquot in the sampler, it was placed into a pre-weighed 40-milliliter VOA containing preservatives previously placed by the laboratory (two VOAs containing methanol, and one VOA containing bi-sodium sulfate).

5.5 DECONTAMINATION PROCEDURES

Soil sampling equipment (including the drive sampler) was decontaminated prior to use at each sampling location. The backhoe bucket, however, was not decontaminated during this investigation. Equipment decontamination was performed in accordance with the following procedures:

- Non-phosphate detergent and tap-water wash using a brush,
- Tap-water rinse, and
- De-ionized/distilled water rinse (twice).

The drive sampler and other sampling equipment were decontaminated in a pre-designated area on plastic sheeting. Cleaned equipment was stored on plastic sheeting in uncontaminated areas. Cleaned small equipment was stored in plastic bags. Materials to be stored more than a few hours were also covered. Disposable equipment intended for one-time use was not decontaminated, but was packaged for appropriate disposal.

5.6 LABORATORY ANALYSES

The collected soil samples were delivered to American Environmental Testing Laboratory, Inc. (AETL) for chemical analyses. The laboratory reports are in Appendix D. Each collected soil sample was analyzed by the following EPA Methods:

- Total petroleum hydrocarbons using EPA Test Method 8015 (carbon chain);
- Title 22 metals using EPA Test Method 6010; and/or
- Volatile Organic Compounds (VOC) using EPA method 8260B collected via 5035 technique.

Selection of soil for VOC analysis was primarily based on field observation during sampling activities (such as soil staining, elevated PID measurements, etc.). The SCG representative was notified prior to any additional analyses.

A quality assurance/quality control (QA/QC) program was implemented during this investigation to ensure the reliability and compatibility of all data generated during the investigation. During the soil investigation, a variety of data were collected to determine which of the chemicals identified are likely to impact (or have impacted) the Site and to assess whether the reported concentrations for these chemicals were of acceptable quality for use in their evaluation.

Duplicate samples (at least 10 percent) were collected simultaneously with the primary samples from the same sources under identical conditions. The duplicate samples were submitted to the analytical laboratory for chemical analyses.

The analytical laboratory was instructed to report estimated concentrations, such as concentrations above the method detection limit and below the reporting limit. The final report included a signed statement by the laboratory and project QA manager certifying that all internal QA/QC goals had been met.

6.0 SUMMARY OF ANALYTICAL DATA

6.1 SUMP 14 - TRENCHES

Five trenches were excavated within Sump 14 on June 21, 2006 (Figure 9). A total of fourteen soil samples were collected from these trenches and analyzed for TPH, VOCs, and/or metals. Tables 2, 3, and 4 provide a summary of these analytical results.

Relatively low petroleum hydrocarbon concentrations were present locally within soil in Sump 14. The maximum reported TPH concentration as diesel (C13-C22) and maximum reported TPH concentration as heavy hydrocarbons (C23-C40) were 668 and 2,660 milligrams per kilogram (mg/kg), respectively. TPH as gasoline and light hydrocarbons were not detected in any of the collected soil samples. The TPH concentrations reported in the collected soil samples do not exceed cleanup levels provided by the Regional Water Quality Control Board (RWQCB, 1996). The cleanup levels for petroleum hydrocarbons in the C13-C22 range and C23-C-40 range are 1,000 and 10,000 mg/kg, respectively (assuming groundwater is greater than 20 feet below the maximum depth of impacted soil).

Five soil samples collected from Sump 14 were analyzed for VOCs. Three VOCs were detected in four of the five samples analyzed. These VOCs and their maximum reported concentrations are provided in the following table. The reported VOC concentrations do not exceed regulatory screening levels. The screening levels shown below are relatively conservative, and are based on the possible presence of shallow (less than 20 feet) groundwater. Actual screen levels are anticipated to be greater than that shown.

VOLATILE ORGANIC COMPOUND	MAXIMUM CONCENTRATION ($\mu\text{G}/\text{KG}$)	SCREENING LEVEL ($\mu\text{G}/\text{KG}$)
Benzene	4.0j	11
Ethylbenzene	3.1j	200
Toluene	3.7j	450

With the exception of barium, lead, and zinc, the reported metal concentrations were near or below background levels (Connor and Shacklette, 1975). Barium's western U.S. mean (560

mg/kg) was exceeded in ten of the fourteen samples analyzed. Its reported concentrations in these ten samples ranged between 670 and 1,020 mg/kg. These concentrations do not, however, exceed the California Human Health Screening Level (CHHSL) of 63,000 mg/kg (for industrial settings; DTSC, 2005).

Lead's western U.S. mean (18 mg/kg) was exceeded in six of the fourteen samples analyzed. Its reported concentrations in these six samples ranged between 20.1 and 72.5 mg/kg. However, these concentrations do not exceed lead's CHHSL of 3,500 mg/kg (for industrial settings).

Zinc's western U.S. mean (51 mg/kg) was exceeded in each of the samples analyzed. Its reported concentrations in these samples ranged between 87.0 and 315 mg/kg. However, these concentrations do not exceed zinc's CHHSL of 10,000 mg/kg (for industrial settings).

6.2 SUMP 15 - TRENCHES

Three trenches were excavated within Sump 15 on June 21, 2006 (Figure 10). A total of ten soil samples were collected from these trenches and analyzed for TPH, VOCs, and/or metals. Tables 2, 3, and 4 provide a summary of these analytical results.

Relatively low to moderate petroleum hydrocarbon concentrations were detected within Sump 15. The maximum reported TPH concentration as diesel (C13-C22) and maximum reported TPH concentration as heavy hydrocarbons (C23-C40) were 1,570 mg/kg and 4,560 mg/kg, respectively. TPH as gasoline and light hydrocarbons were not detected in any of the collected soil samples. With two exceptions, the reported concentrations do not exceed the cleanup levels provided by the RWQCB. The cleanup levels for petroleum hydrocarbons in the C13-C22 range was exceeded in two samples collected from a clay layer within the sump. This clay layer, 0.2 to 1.8 feet in thickness, contained some dark petroleum-stained nodules. The two samples collected from this layer were reported with TPH (C13-C22) concentrations of 1,040 and 1,570 mg/kg. These concentrations exceed the cleanup level of 1,000 mg/kg.

Three samples collected from Sump 15 were analyzed for VOCs. Six VOCs were detected in two of the three samples analyzed. These VOCs and their maximum reported concentrations are provided in the following table.

VOLATILE ORGANIC COMPOUND	MAXIMUM CONCENTRATION (µG/KG)	SCREENING LEVEL (µG/KG)
Benzene	155	11
Ethylbenzene	21.7	200
Toluene	152	450
1,2,4-trimethylbenzene	9.3j	Not provided
o-Xylene	15.1	5,300

VOLATILE ORGANIC COMPOUND	MAXIMUM CONCENTRATION ($\mu\text{G/KG}$)	SCREENING LEVEL ($\mu\text{G/KG}$)
m,p-Xylenes	41.9	5,300

As noted above, the reported VOC concentrations (with the exception of benzene) do not exceed regulatory screening levels. Each reported benzene concentration (64.1 and 155 $\mu\text{g/kg}$) was greater than the anticipated screen level of 11 $\mu\text{g/kg}$. These two samples were collected from the upper 1 foot of soil within Sump 15.

With the exception of barium, lead, and zinc, the reported metal concentrations in soil samples collected from Sump 15 were near or below background levels. Barium's western U.S. mean (560 mg/kg) was exceeded in four of the ten samples analyzed. Each of these samples was collected from the upper 3 feet of the sump. The elevated barium concentrations ranged between 820 and 2,200 mg/kg. However, these concentrations do not exceed barium's CHHSL of 63,000 mg/kg.

Lead's western U.S. mean (18 mg/kg) was exceeded in six of the ten samples analyzed. Its reported concentrations in these samples ranged between 64.5 and 277 mg/kg. However, these concentrations do not exceed lead's CHHSL of 3,500 mg/kg.

Zinc's western U.S. mean (51 mg/kg) was exceeded in each of the samples analyzed. Its reported concentrations in these samples ranged between 108 and 1,370 mg/kg. However, these concentrations do not exceed zinc's CHHSL of 10,000 mg/kg.

6.3 SUMP 16 - TRENCHES

Three trenches were excavated within Sump 16 on June 22, 2006 (Figure 11). A total of eight soil samples were collected from these trenches and analyzed for TPH, VOCs, and/or metals. Tables 2, 3, and 4 provide a summary of these analytical results.

A review of the analytical data indicates that relatively low to moderate petroleum hydrocarbon concentrations were present within Sump 16. The maximum reported TPH concentration as gasoline (C4-C12), maximum TPH concentration as diesel (C13-C22), and maximum reported TPH concentration as heavy hydrocarbons (C23-C40) were 7.93 mg/kg, 132 mg/kg, and 879 mg/kg, respectively. The TPH concentrations in the collected soil samples do not exceed the cleanup levels provided by the RWQCB. The cleanup levels for petroleum hydrocarbons in the C4-C12 range, C13-C22 range, and C23-C40 range are 100 mg/kg, 1,000 mg/kg, and 10,000 mg/kg, respectively.

Three samples collected from Sump 16 were analyzed for VOCs. Twelve VOCs were detected in one of the three samples analyzed. These VOCs and their maximum reported concentrations are provided in the following table.

VOLATILE ORGANIC COMPOUND	REPORTED CONCENTRATION ($\mu\text{G/KG}$)	SCREENING LEVEL ($\mu\text{G/KG}$)
Benzene	29.2	11
sec-Butylbenzene	13.6	Not provided
Ethylbenzene	110	200
Isopropylbenzene	30.0	Not provided
p-Isopropylbenzene	12.9	Not provided
Naphthalene	10.6	Not provided
n-Propylbenzene	57.3	Not provided
Toluene	13.2	450
1,2,4-trimethylbenzene	3,860	Not provided
1,3,5-trimethylbenzene	1,850	Not provided
o-Xylene	603	5,300
m,p-Xylenes	3,200	5,300

As noted above, the reported VOC concentrations (with the exception of benzene) do not exceed regulatory screening levels. The reported benzene concentration (29.2 $\mu\text{g/kg}$) is greater than the screening level of 11 $\mu\text{g/kg}$. This sample was collected from the upper 1.5 foot of soil.

With the exception of lead, the reported metal concentrations were near or below background levels. Lead's western U.S. mean (18 mg/kg) was exceeded in seven of the eight samples analyzed. Its reported concentrations in these samples ranged between 19.0 and 374 mg/kg. However, these concentrations do not exceed lead's CHSL of 3,500 mg/kg.

6.4 SUMP 20 - TRENCHES

Five trenches were excavated within Sump 20 on November 6, 2006 (Figure 12). A total of eleven soil samples were collected from these trenches and analyzed for TPH, VOCs, and/or metals. Tables 2, 3, and 4 provide a summary of these analytical results.

Relatively low petroleum hydrocarbon concentrations were present locally within soil in Sump 14. The maximum reported TPH concentration as diesel (C13-C22) and maximum reported TPH concentration as heavy hydrocarbons (C23-C40) were 45.5 mg/kg and 613 mg/kg, respectively. TPH as gasoline and light hydrocarbons were not detected in any of the collected soil samples. The TPH concentrations reported in the collected soil samples do not exceed the cleanup levels provided by the RWQCB. The cleanup levels for petroleum

hydrocarbons in the C13-C22 range and C23-C40 range are 1,000 and 10,000 mg/kg, respectively.

Each soil sample collected from Sump 20 was analyzed for VOCs. Two VOCs were detected in six of the twelve samples analyzed. These VOCs and their maximum reported concentrations are provided below. The reported VOC concentrations do not exceed regulatory screening levels.

VOLATILE ORGANIC COMPOUND	MAXIMUM CONCENTRATION ($\mu\text{G}/\text{KG}$)	SCREENING LEVEL ($\mu\text{G}/\text{KG}$)
Ethylbenzene	6.6j	200
Toluene	6.2j	450

Metal concentrations detected in soil collected from Sump 20 were generally near or below anticipated background levels.

6.5 SUMP 21 - TRENCHES

Nine trenches were excavated within Sump 21 on November 8, 2006 (Figure 13). A total of twenty two soil samples were collected from these trenches and analyzed for TPH, VOCs, and/or metals. Tables 2, 3, and 4 provide a summary of these analytical results.

Relatively low to moderate petroleum hydrocarbon concentrations were present within Sump 16. The maximum reported TPH concentration as gasoline (C4-C12), maximum TPH concentration as diesel (C13-C22), and maximum TPH concentration as heavy hydrocarbons (C23-C40) were 102 mg/kg, 25,800 mg/kg, and 38,500 mg/kg, respectively. The TPH concentrations in one of the collected soil samples exceeded the cleanup level provided by the RWQCB. The cleanup levels for petroleum hydrocarbons in the C4-C12 range, C13-C22 range, and C23-C40 range are 100 mg/kg, 1,000 mg/kg, and 10,000 mg/kg, respectively. The impacted soil identified in this trench was obtained from a stained soil layer located between approximately 2.3 and 3 feet below ground surface.

Each sample collected from Sump 21 was analyzed for VOCs. Twelve VOCs were detected in the samples analyzed. These VOCs and their reported highest concentrations are provided below. As noted, the reported VOC concentrations do not exceed regulatory screening levels.

VOLATILE ORGANIC COMPOUND	REPORTED CONCENTRATION ($\mu\text{G}/\text{KG}$)	SCREENING LEVEL ($\mu\text{G}/\text{KG}$)
Benzene	8.31j	11
sec-Butylbenzene	5.86j	Not provided

VOLATILE ORGANIC COMPOUND	REPORTED CONCENTRATION ($\mu\text{G/KG}$)	SCREENING LEVEL ($\mu\text{G/KG}$)
Ethylbenzene	29.0	200
Isopropylbenzene	9.91j	Not provided
p-Isopropylbenzene	7.97j	Not provided
Naphthalene	54.9	Not provided
n-Propylbenzene	17.3	Not provided
Toluene	4.71j	450
1,2,4-trimethylbenzene	64.0	Not provided
1,3,5-trimethylbenzene	23.3	Not provided
o-Xylene	4.03j	5,300
m,p-Xylenes	55.6	5,300

With the exception of barium, the reported metal concentrations were near or below anticipated background levels. Barium's western U.S. mean (560 mg/kg) was exceeded in three of the twenty two samples analyzed. These samples were collected between 2.3 and 6 feet below the surface of the sump. The elevated barium concentrations ranged between 2,330 and 3,710 mg/kg. However, these concentrations do not exceed barium's CHHSL of 63,000 mg/kg.

6.6 SUMP 22 – TRENCHES & BORINGS

Four trenches were excavated within Sump 22 on November 8, 2006 (Figure 14). A total of fifteen soil samples were collected from these trenches and analyzed for TPH, VOCs, and/or metals. Tables 2, 3, and 4 provide a summary of these analytical results.

Since the vertical extent of contamination could not be determined using only the backhoe, an additional investigation of this area was conducted on January 25, 2007 using a hollow-stem auger drill rig. Four borings were drilled within the central portion of Sump 22 to depths of up to 36 feet (Figure 16). Soil samples collected at 5-foot intervals from these borings were analyzed for TPH, VOCs, and/or metals. Tables 2, 3, and 4 provide a summary of these analytical results.

Relatively high petroleum hydrocarbon concentrations were present within Sump 22. The maximum reported TPH concentration as gasoline (C4-C12), maximum TPH concentration as diesel (C13-C22), and maximum TPH concentration as heavy hydrocarbons (C23-C40) were 1,230 mg/kg, 18,100 mg/kg, and 21,900 mg/kg, respectively. The TPH concentrations reported in eighteen of the collected soil samples exceeded the cleanup levels provided by the RWQCB. The cleanup levels for petroleum hydrocarbons in the C4-C12 range, C13-C22 range,

and C23-C40 range are 100 mg/kg, 1,000 mg/kg, and 10,000 mg/kg, respectively. The TPH-impacted soil identified in this trench was obtained from stained soil located between 0.5 and 17 feet below ground surface.

Each sample collected from Sump 22 was analyzed for VOCs. Fifteen VOCs were detected in twenty-three of the thirty-nine samples analyzed. These VOCs and the maximum reported concentrations are provided below.

VOLATILE ORGANIC COMPOUND	REPORTED CONCENTRATION ($\mu\text{G/KG}$)	SCREENING LEVEL ($\mu\text{G/KG}$)
Benzene	2,480	11
2-Butanone	601j	1,900
n-Butylbenzene	3,100	Not provided
sec-Butylbenzene	2810	Not provided
tert-Butylbenzene	295	Not provided
Ethylbenzene	17,600	200
Isopropylbenzene	5,920	Not provided
p-Isopropylbenzene	2,680	Not provided
Naphthalene	126,000	Not provided
n-Propylbenzene	10,200	Not provided
Toluene	55,000	>450
1,2,4-trimethylbenzene	47,300	Not provided
1,3,5-trimethylbenzene	13,400	Not provided
o-Xylene	30,800	5,300
m,p-Xylenes	104,000	5,300

As noted above, the highest reported benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations exceed regulatory screening levels. Soil with BTEX concentrations exceeding their respective screening level were collected between 10 and 17 feet below the surface of this sump.

With the exception of barium, the reported metal concentrations were near or below anticipated background levels (Connor and Shacklette, 1975). Barium's western U.S. mean (560 mg/kg) was exceeded in seven of the thirty-nine soil samples analyzed. These samples were collected between 11 and 17 feet below the surface of the sump. The elevated barium

concentrations ranged between 630 and 2,800 mg/kg. These concentrations do not exceed barium's CHHSL of 63,000 mg/kg.

6.7 SUMP 23 - TRENCHES

Four trenches were excavated within Sump 23 on November 2006 (Figure 15). A total of four soil samples were collected from these trenches and analyzed for TPH, VOCs, and/or metals. Tables 2, 3, and 4 provide a summary of these analytical results.

Relatively low petroleum hydrocarbon concentrations were present locally within soil in Sump 23. The maximum reported TPH concentration as diesel (C13-C22) and maximum reported TPH concentration as heavy hydrocarbons (C23-C40) were 176 mg/kg and 805 mg/kg, respectively. TPH as gasoline and light hydrocarbons were not detected in any of the collected soil samples. The TPH concentrations reported in the collected soil samples do not exceed the cleanup levels provided by the RWQCB. The cleanup levels for petroleum hydrocarbons in the C13-C22 range and C23-C-40 range are 1,000 and 10,000 mg/kg, respectively.

VOCs were not detected in any of the soil samples collected from this sump.

Metal concentrations detected in this area were generally near or below typical background levels.

7.0 CONCLUSIONS

The following conclusions are based on the findings of the field investigation and the results of the chemical analyses.

- No remediation is considered warranted for Sumps 14, 20, 21, and 23. The TPH and VOC concentrations within soil samples collected from these sumps are below the anticipated RWQCB screening levels. The reported metal concentrations in these soil samples were below their respective CHHSLs (for industrial settings).
- The upper three feet of soil within Sump 15 is impacted with petroleum hydrocarbons, metals, and VOCs. The TPH (C13-C22 range) and benzene concentrations within these upper soils exceed regulatory cleanup levels. Based on the finding of this investigation, impacted soil within Sump 15 extends to a depth of approximately 3 feet below ground surface. The impacted area within this sump covers approximately 3,800 square feet. An estimated 422 cubic yards (633 tons) of impacted soil is present within this sump.
- A slightly elevated benzene concentration (29.2 µg/kg) was reported within the upper 1.5-foot thick soil layer in Sump 16. Due to the absence of other elevated VOCs, metals, and petroleum hydrocarbons, the soil in this sump is not considered a potential threat to the environment. Remediation of impacted soil within this sump is currently not recommended.

- TPH and VOC concentrations reported in soil samples collected from Sump 22 were significantly greater than RWQCB's screening levels. Based on the finding of this investigation, impacted soil within Sump 22 extends from a depth of 1 foot to approximately 18 feet below ground surface. The impacted area within this sump covers approximately 8400 square feet. An estimated 5,600 cubic yards (8,400 tons) of impacted soil is present within this sump.

8.0 RECOMMENDATIONS

It is recommended that impacted soil within Sumps 15 and 22 be remediated to appropriate cleanup levels provided by the RWQCB (for VOCs and TPH). Prior to remedial activities, it is also recommended that a comprehensive remedial action plan be developed and approved by the SCG.

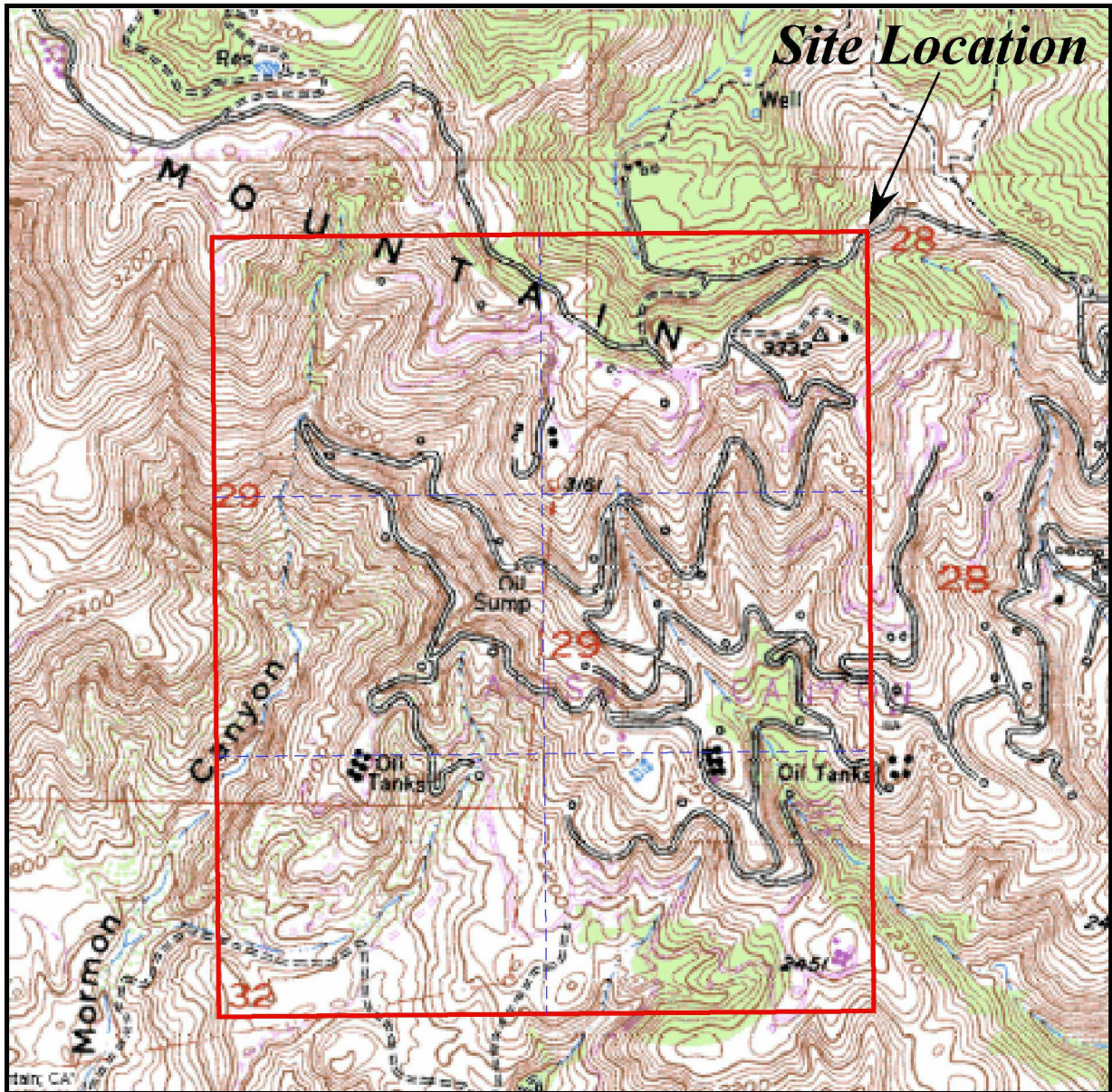
9.0 REFERENCES

California Department of Toxic Substances Control (DTSC), 2005, *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties*; dated January 2005.

Connor, J.J., and H.T. Shacklette, 1975, *Background Geochemistry of Some Rocks, Soils, Plants, and Vegetables in the Conterminous United States*; United States Government Printing Office, Washington DC.

Regional Water Quality Control Board (Los Angeles), 1995, *Interim Guidance for Remediation of VOC Impacted Sites*, dated January 1995.

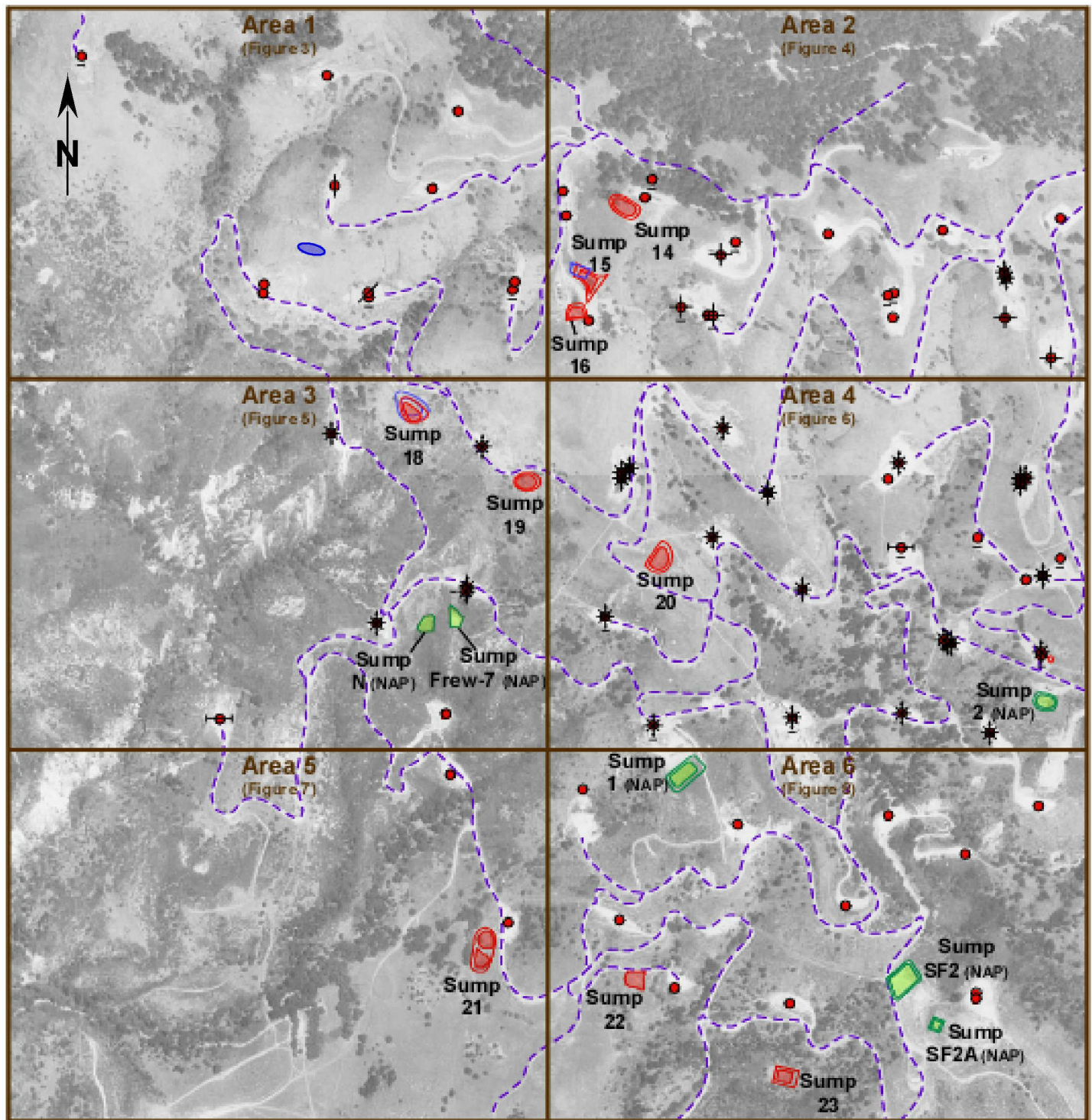
FIGURES



Approximate Scale:
 0 750 1,500 feet



<p>Eco & Associates, Inc.</p>	<p>SITE LOCATION MAP Southern California Gas Company Aliso Canyon Field Northridge, California</p>	<p>Figure No. 1</p>
<p>Project No.: <u>Eco-05-205</u> Date: <u>March 2007</u></p>		



Approximate Scale:
 0 428 856 feet



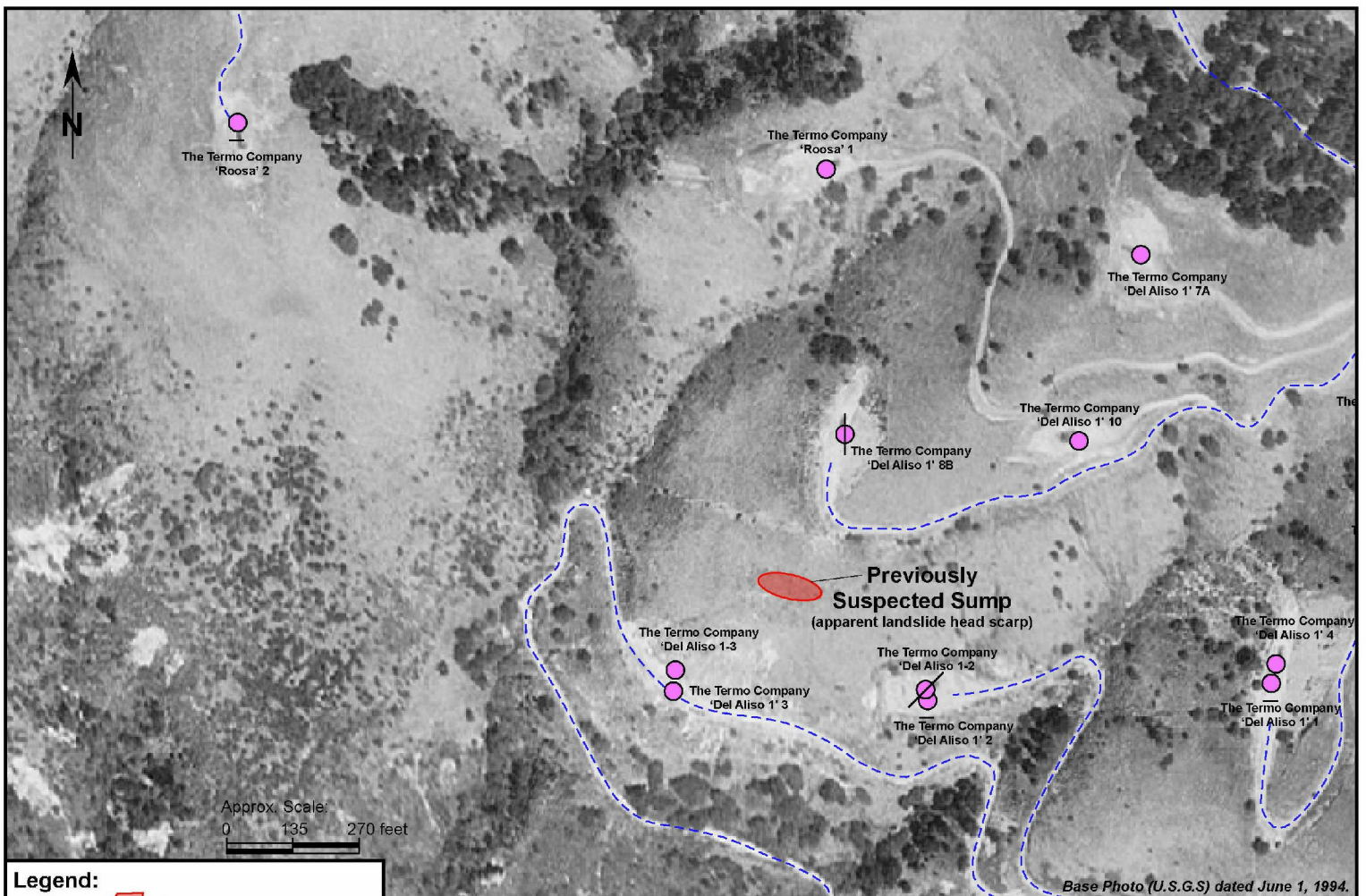
Eco & Associates, Inc.

INDEX MAP
 Southern California Gas Company
 Aliso Canyon Field
 Northridge, California

Figure No.

2

Project No.: Eco-05-205 Date: March 2007



Base Photo (U.S.G.S) dated June 1, 1994.

Legend:

-  Sump
-  Completed oil well
-  Water disposal well
-  Idle well

Eco & Associates, Inc.

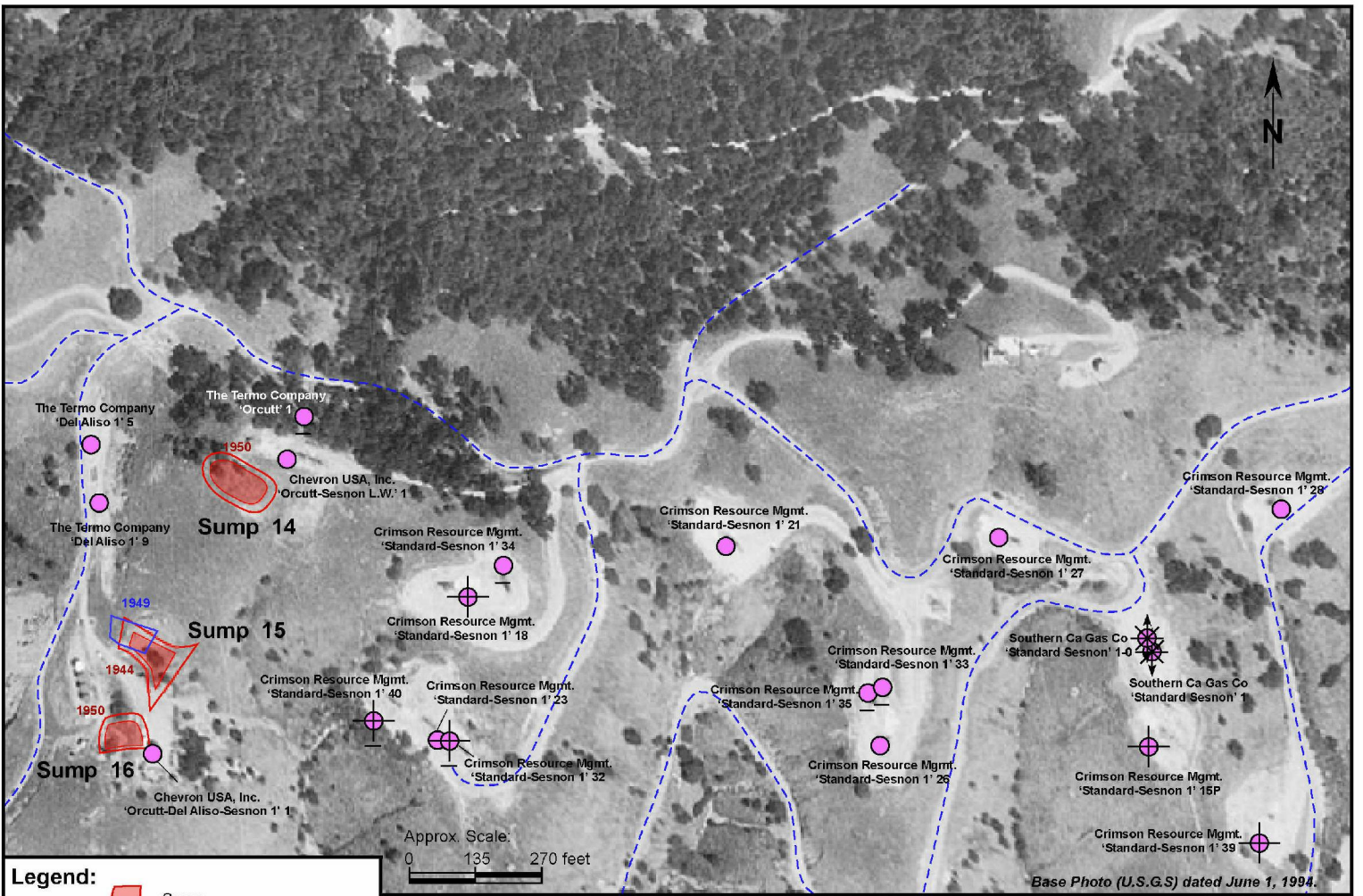
Project No.: ECO-05-205 Date: March 2007

**SUMP LOCATION MAP
(Area 1)**





Aliso Canyon Field
Northridge, California

Figure No.

3



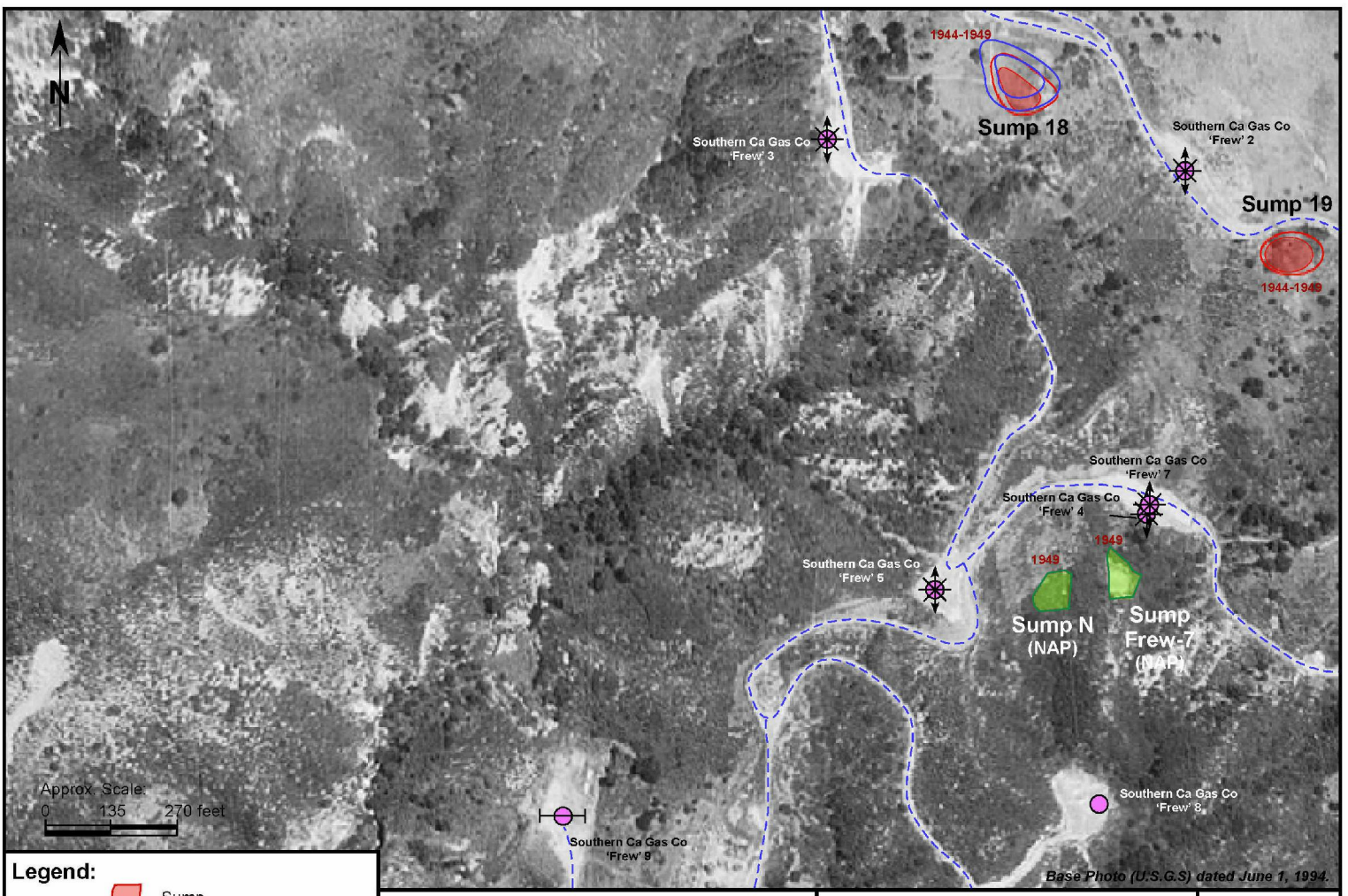
Legend:

-  Sump
-  Completed oil well
-  Gas storage well
-  Plugged & abandoned well

Eco & Associates, Inc.
 Project No.: ECO-05-205 Date: March 2007

**SUMP LOCATION MAP
 (Area 2)**
 Aliso Canyon Field
 Northridge, California

Figure No.
4



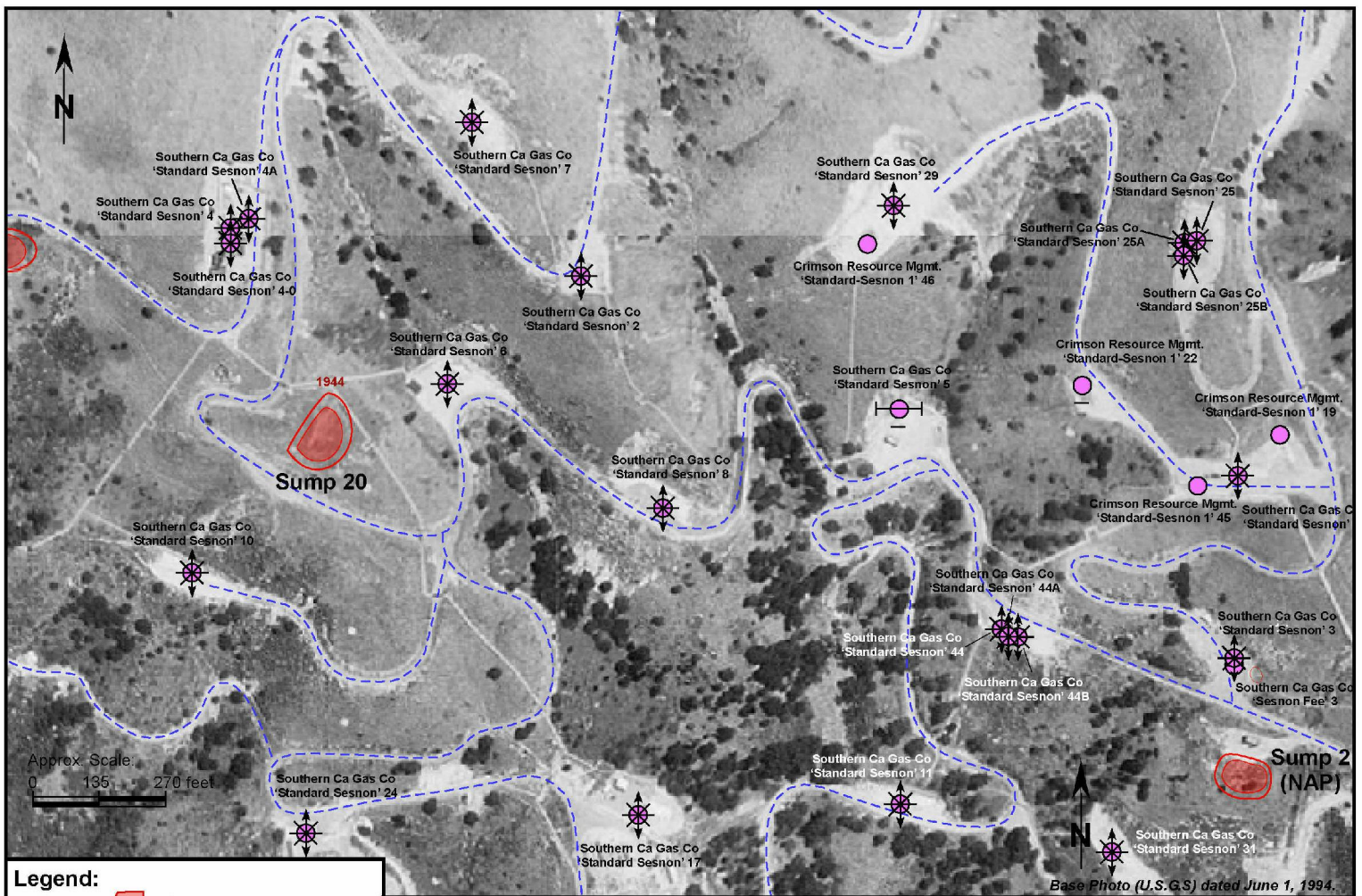
Legend:

	Sump
	Completed oil well
	Gas storage well
	Observation well





Eco & Associates, Inc.
 Project No.: ECO-05-205 Date: March 2007

**SUMP LOCATION MAP
 (Area 3)**
 Aliso Canyon Field
 Northridge, California

Figure No.
5



Legend:

-  Sump
-  Completed oil well
-  Gas storage well
-  Observation well

Eco & Associates, Inc.

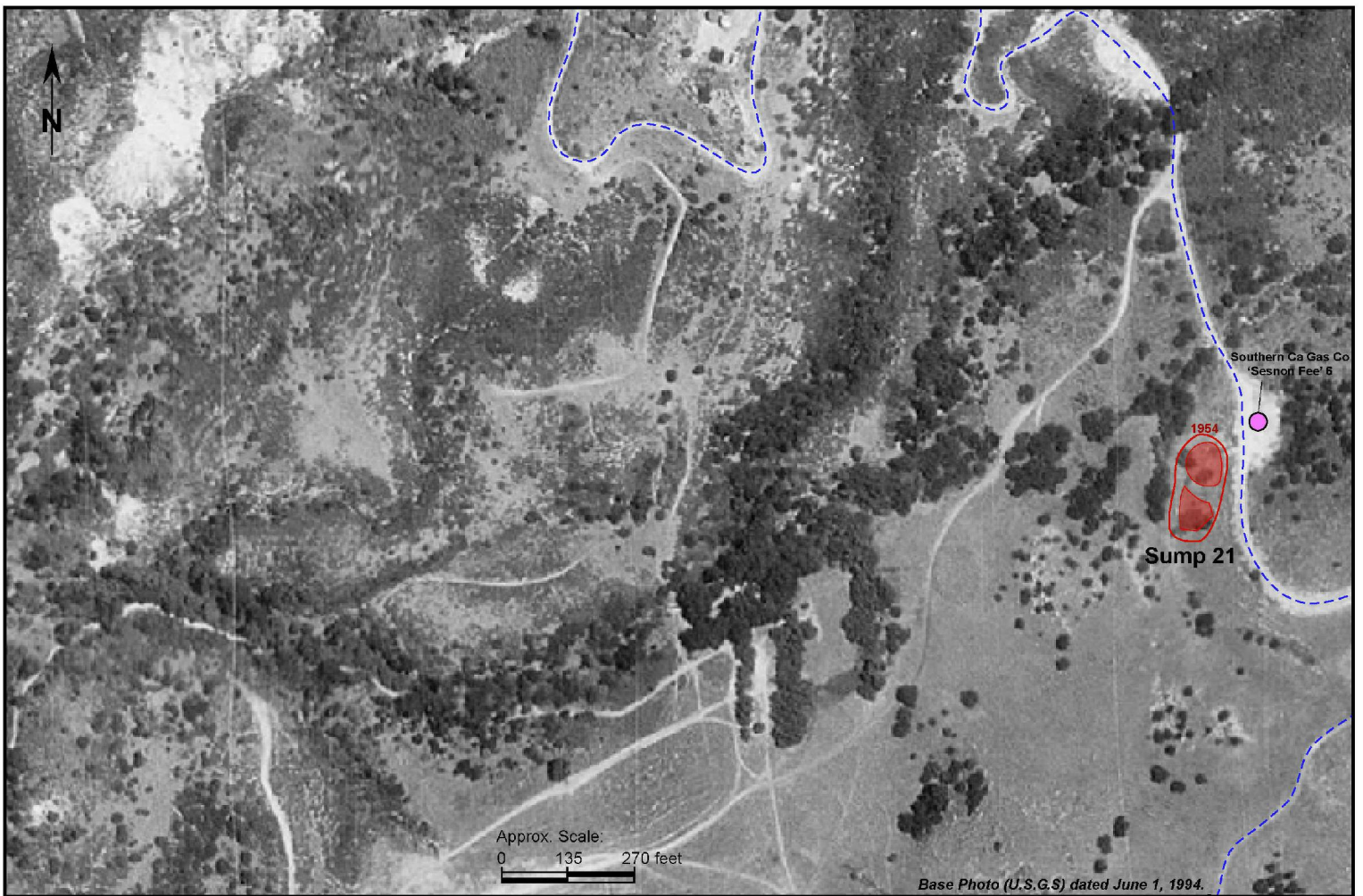
Project No.: ECO-05-205 Date: March 2007

SUMP LOCATION MAP
(Area 4)
 Aliso Canyon Field
 Northridge, California

Figure No.



6

Base Photo (U.S.G.S) dated June 1, 1994.



Base Photo (U.S.G.S) dated June 1, 1994.

Legend:

-  Sump
-  Completed oil well.

Eco & Associates, Inc.

Project No.: ECO-05-205 Date: March 2007

**SUMP LOCATION MAP
(Area 5)**



Aliso Canyon Field
Northridge, California

Figure No.

7



Legend:

-  Sump
-  Completed oil well.

Eco & Associates, Inc.

Project No.: ECO-05-205 Date: March 2007

**SUMP LOCATION MAP
(Area 6)**

Aliso Canyon Field
Northridge, California

Figure No.

8



Approx. Scale:
 0 15 30 feet

Base Photograph dated January 1, 2006

<p>Eco & Associates, Inc.</p>	<p>SUMP 14</p>	<p>Figure No.</p>
<p>Project No.: <u>ECO-05-205</u> Date: <u>March, 2007</u></p>	<p>Aliso Canyon Field, Northridge, California</p>	<p>9</p>



Approx. Scale:
0 15 30 feet

Base Photograph dated January 1, 2006

Eco & Associates, Inc.

SUMP 15

Figure No.

Aliso Canyon Field,
Northridge, California

10

Project No.: ECO-05-205 Date: March, 2007



Approx. Scale:
0 15 30 feet

Base Photograph dated January 1, 2006

Eco & Associates, Inc.

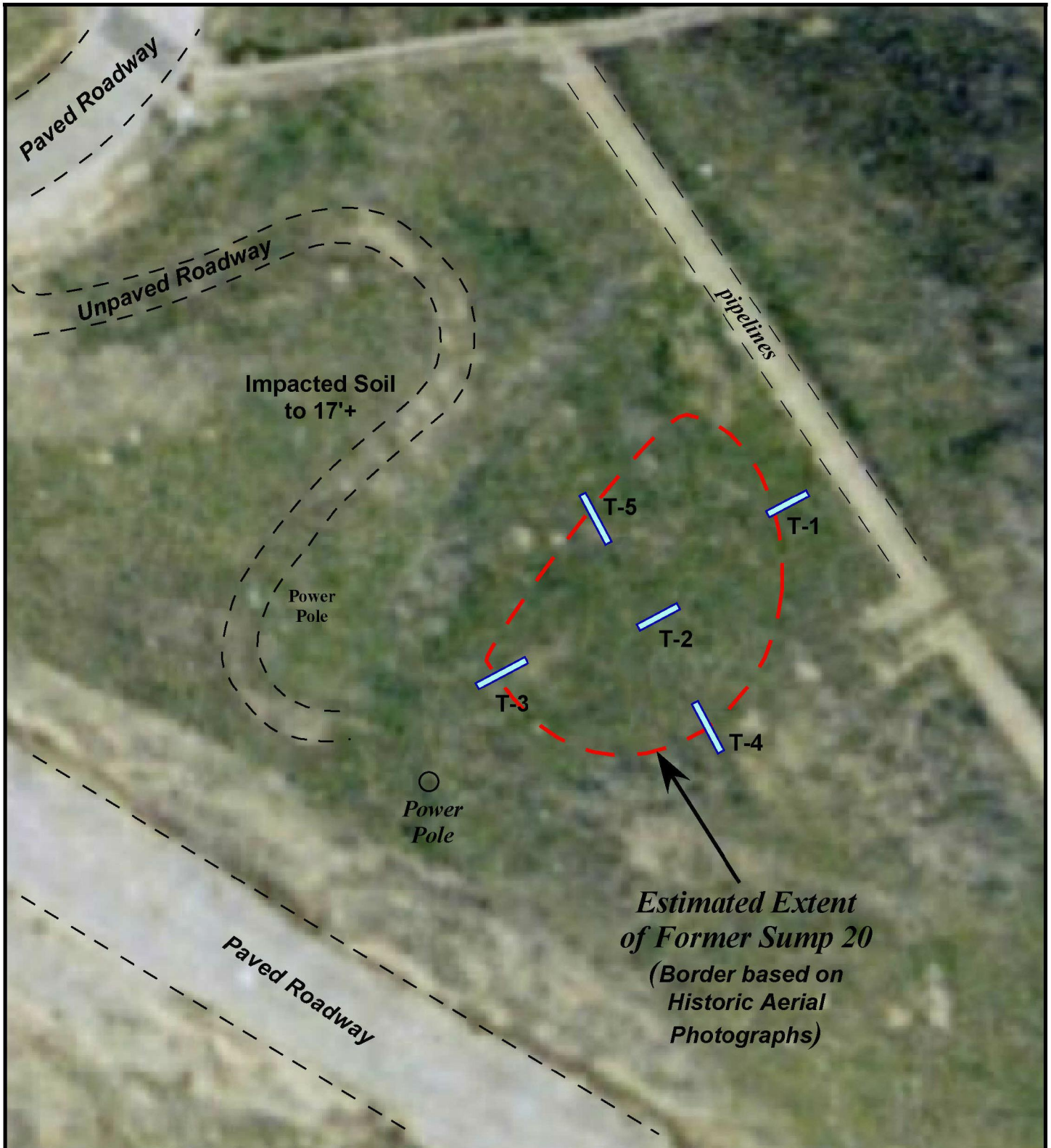
SUMP 16

Figure No.

Aliso Canyon Field,
Northridge, California

11

Project No.: ECO-05-205 Date: March, 2007



Approx. Scale:
 0 20 40 feet

Base Photograph dated January 1, 2006

Eco & Associates, Inc.

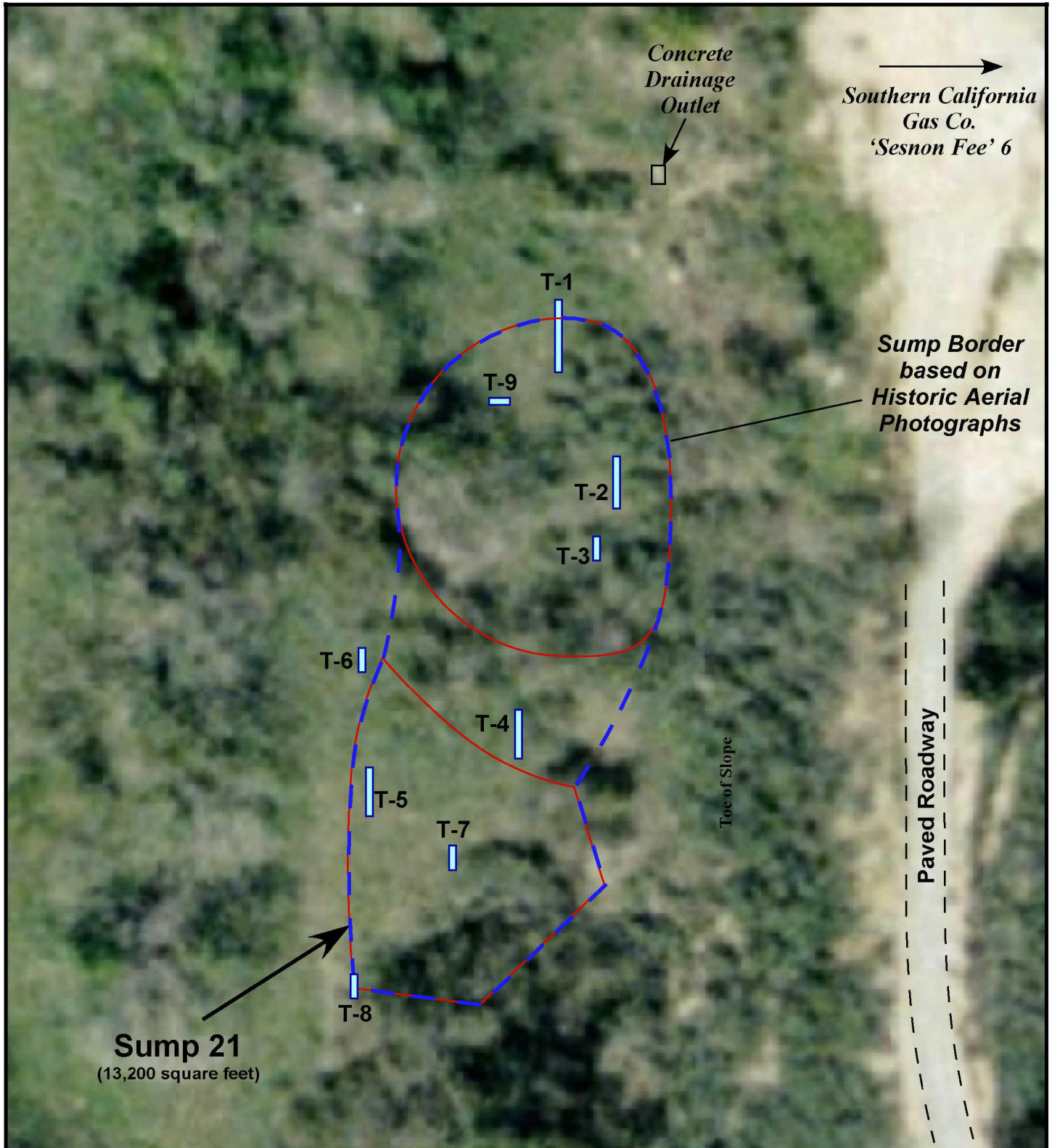
SUMP 20

Figure No.

Project No.: ECO-05-205 Date: March, 2007

Aliso Canyon Field,
 Northridge, California

12



Approx. Scale:
 0 20 40 feet

Base Photograph dated January 1, 2006

Eco & Associates, Inc.

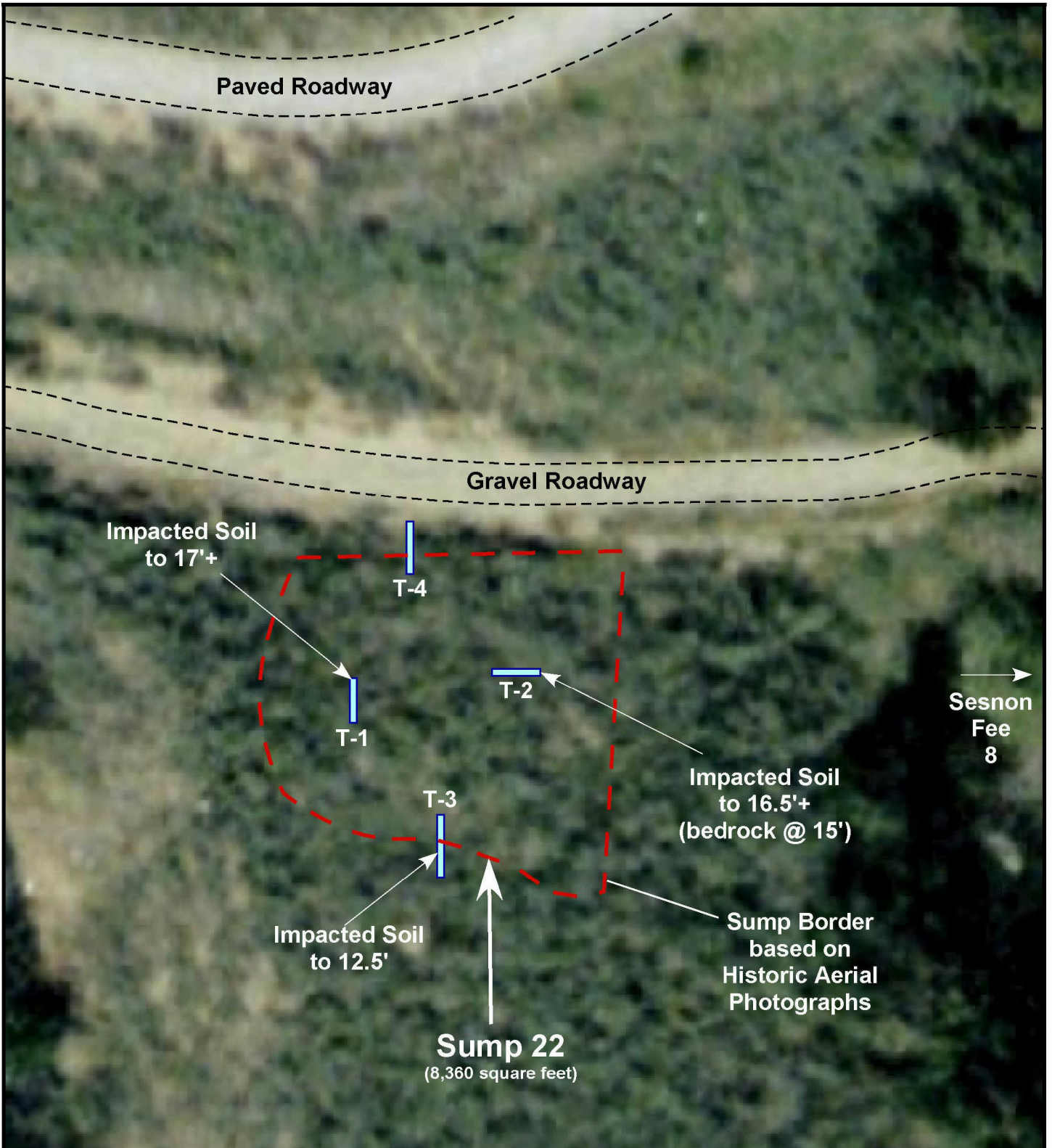
SUMP 21

Figure No.

Aliso Canyon Field,
 Northridge, California

13

Project No.: ECO-05-205 Date: March, 2007



Approx. Scale:
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Base Photograph dated January 1, 2006

Eco & Associates, Inc.

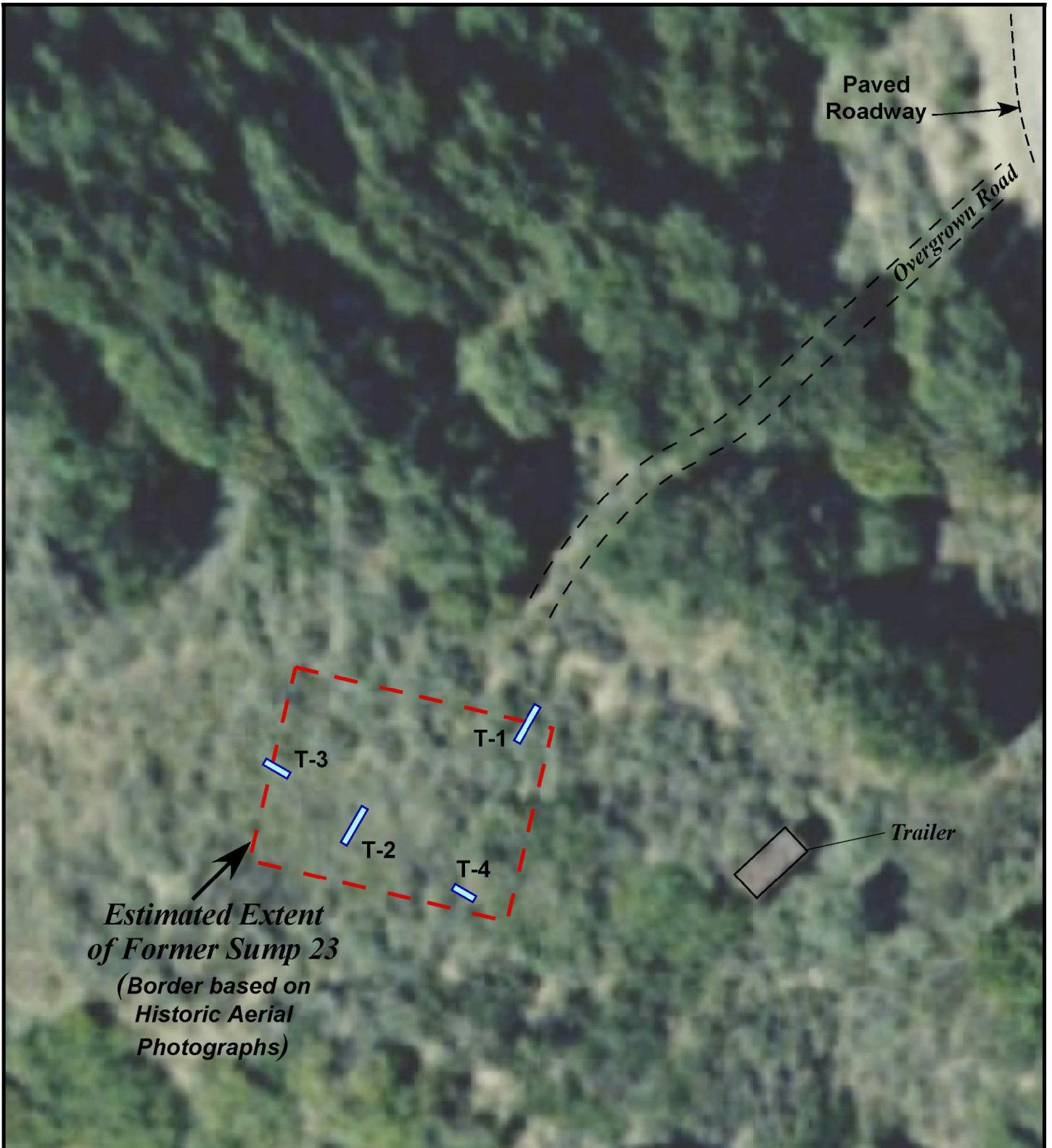
SUMP 22

Figure No.

Project No.: ECO-05-205 Date: March, 2007

Aliso Canyon Field,
 Northridge, California

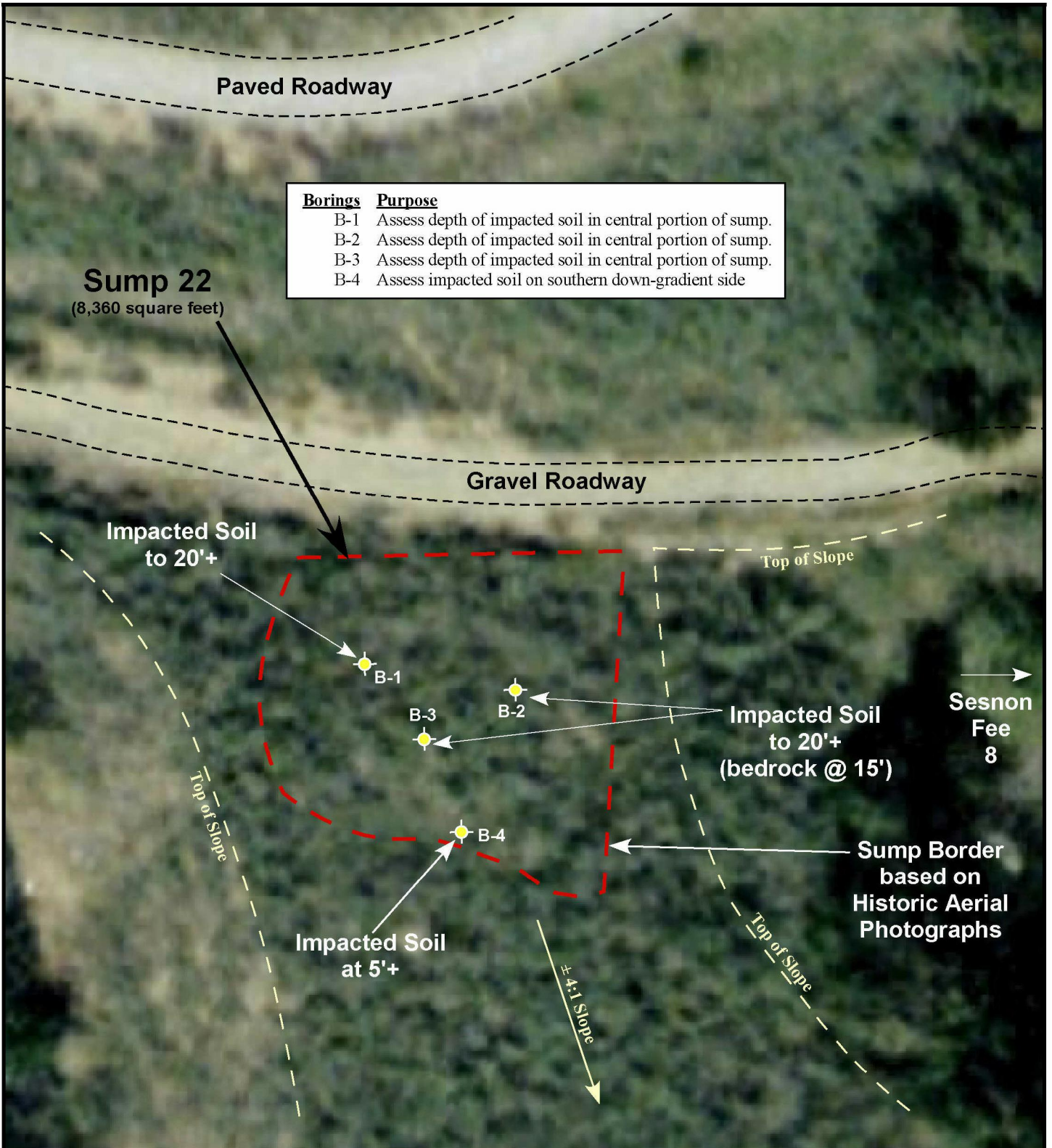
14



Approx. Scale:
 0 20 40 feet

Base Photograph dated January 1, 2006

<p>Eco & Associates, Inc.</p>	<p>SUMP 23</p>	<p>Figure No.</p>
<p>Project No.: <u>ECO-05-205</u> Date: <u>March, 2007</u></p>	<p>Aliso Canyon Field, Northridge, California</p>	<p>15</p>



Approx. Scale:
0 20 40 feet

Base Photograph dated January 1, 2006

<p>Eco & Associates, Inc.</p>	<p>SUMP 22 Boring Locations</p>	<p>Figure No.</p>
<p>Project No.: <u>ECO-05-205</u> Date: <u>March 2007</u></p>	<p>Aliso Canyon Field Northridge, California</p>	<p>16</p>

TABLES

TABLE 1

SUMMARY OF SUMPS WITHIN THE WESTERN PORTION
OF THE ALISO CANYON GAS STORAGE FIELD
NORTHRIDGE, CALIFORNIA

FEATURE	APPROX. AREA (SQ FT)	LOCATION / DESCRIPTION	ACCESS	UTILITY INTERFERENCE	VEGETATION	HAZARDOUS MATERIAL INDICATIONS ¹	RANKING/PRIORITY ²
SUMP 14 (M)	11,717	Sump located within a relatively level area on upper portion of hill, south of oil well and pad. An old fence traverses around the sump's perimeter. No other evidence provides indications of former sump location.	Readily accessible from northern road or southeastern gentle slope	One pipeline on ground along north side of sump.	Short grasses	None	1 - readily accessible - relatively large sump
SUMP 15 (L1)	11,127	Sump located within a relatively level area adjoined by ascending slopes on all sides (bowl-shaped area). Cut slopes are located north and west of sump. Fill slopes are located east and south of sump. The sump area is currently in use as a storage area for lease operators. A pile of stained soil from a near-vicinity tank farm is located within the sump's eastern portion.	Readily accessible via existing roadway	Two to three buried pipelines along west side of sump.	Soil, sparse vegetation, and perimeter trees.	Oil-stained soil. No seepage.	1 - readily accessible - relatively large sump - stained soil

TABLE 1 (Continued)

SUMMARY OF SUMPS WITHIN THE WESTERN PORTION
OF THE ALISO CANYON GAS STORAGE FIELD
NORTHRIDGE, CALIFORNIA

FEATURE	APPROX. AREA (SQ FT)	LOCATION / DESCRIPTION	ACCESS	UTILITY INTERFERENCE	VEGETATION	HAZARDOUS MATERIAL INDICATIONS ¹	RANKING/PRIORITY ²
SUMP 16 (L2)	6,652	Sump located within relatively level area. Northern portion of sump area contains equipment pad with operating compressor. Driveway/parking area is located in central portion of sump area. A depression is located in southern portion of sump area. An ascending cut slope marks the southern boundary of sump area.	Readily accessible via existing roadway	Pipelines from adjoining boiler traverse through sump's southern and western portions.	One large tree, grasses, and brush on southern side of sump.	None	2 - readily accessible - area in use - no stained soils or seepage
SUMP 18 (O)	16,480	Sump located within a relatively flat-lying pad at the base of a relatively steep and long slope that descends from a road to the north. Aboveground pipelines on southern side of roadway block access to sump. Relatively steep ascending and descending slopes are located immediately east and south of this flat-lying pad, respectively.	Very difficult (steep slope & pipelines)	One pipeline traverses N-S through sump (partly buried). Many pipelines immediately north of sump.	Trees and heavy brush on sump's east side. Light grasses on west side.	None	3 - not readily accessible - no stained soils or seepage - pipeline interference

TABLE 1 (Continued)

SUMMARY OF SUMPS WITHIN THE WESTERN PORTION
OF THE ALISO CANYON GAS STORAGE FIELD
NORTHRIDGE, CALIFORNIA

FEATURE	APPROX. AREA (SQ FT)	LOCATION / DESCRIPTION	ACCESS	UTILITY INTERFERENCE	VEGETATION	HAZARDOUS MATERIAL INDICATIONS ¹	RANKING/PRIORITY ²
SUMP 19 (P)	8,937	Sump located within a relatively flat-lying pad at the base of a relatively steep slope that descends from a road to the north. Aboveground pipelines on southern side of roadway block access to sump. A relatively steep descending slope is located immediately south of this flat-lying pad.	Very difficult (steep slope & pipelines)	Pipelines located on ground along western and southern sides of sump.	Trees and brush on sump's north and west sides. Grasses and brush on east side.	None	3 - not readily accessible - no stained soils or seepage - pipeline interference
SUMP 20 (I)	13,226	Sump located within a relatively level pad just below a cut slope. Aboveground pipelines are located north and east of this sump area. There are no visual indications of the former sump location other than the flat-lying pad and northern cut slope.	Readily accessible via dozer road from upper roadway.	One pipeline on ground at west entrance to sump area. Overhead electric lines.	Relatively light growth of grasses and brush.	None	1 - readily accessible - no stained soils or seepage
SUMP 21 (C1 & C2)	19,364	Two adjoining sumps were formerly located at this location. The sump area is relatively flat and immediately west of a sloped that descends from an upper roadway.	Moderately accessible	None	Relatively light to thick growth of grasses and brush.	None	1 - Moderately accessible - relatively large sump area - no stained soils or seepage

TABLE 1 (Continued)

SUMMARY OF SUMPS WITHIN THE WESTERN PORTION
OF THE ALISO CANYON GAS STORAGE FIELD
NORTHRIDGE, CALIFORNIA

FEATURE	APPROX. AREA (SQ FT)	LOCATION / DESCRIPTION	ACCESS	UTILITY INTERFERENCE	VEGETATION	HAZARDOUS MATERIAL INDICATIONS ¹	RANKING/ PRIORITY ²
SUMP 22 (B)	6,888	Sump located on relatively flat area immediately south of a road. Pad is covered with vegetation (shrubs). Sump location is not readily discernible.	Readily accessible	None	Relatively moderate growth of coastal shrubs.	None	2 - readily accessible - relatively small sump area - no stained soils or seepage
SUMP 23 (A)	9,353	Sump located within a relatively level area at the south end of an overgrown dozer road that requires maintenance. Fencing borders portion of former sump. Sump location is not readily discernible.	Moderately accessible	None	Relatively moderate growth of coastal shrubs.	None	2 - Moderately accessible - no stained soils or seepage

Notes:

1. No visible seepage, oil-stained soil, or odor.
2. Ranking based on field observations that include sump accessibility, sump size, presence of stained soil, vegetation growth, and utility interference. Sump locations with a ranking of 1 (one) are recommended for earlier investigation. A sump location with a ranking of 3 (three) is recommended for later investigation as a result of poor accessibility, pipeline interference, smaller size, and/or lack of surface staining.

TABLE 2

SUMMARY OF SOIL ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS by GC/MS (SW846)
 Aliso Canyon Phase II - 2801 Tampa Avenue, Northridge, CA 91326

Sample ID	Benzene	2-Butanone (MEK)	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Ethylbenzene	Isopropylbenzene	p-Isopropyltoluene	Naphthalene	n-Propylbenzene	Toluene (Methyl benzene)	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	o-Xylene	m,p-Xylenes	
	ug/Kg															
June 2006																
62106-S14-T-1-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	2.2J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
62106-S14-T-2-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	3.1J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
62106-S14-T-3-1	4.0J	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
62106-S14-T-4-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
62106-S14-T-5-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	2.2J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	3.7J	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
62106-S15-T-1-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
62106-S15-T-2-1	155	ND<25	ND<5.0	ND<5.0	ND<5.0	21.7	ND<5.0	ND<5.0	ND<5.0	ND<5.0	152	9.3J	ND<5.0	15.1	41.9	
62106-S15-T-3-1	64.1	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	35.8	ND<5.0	ND<5.0	2.7J	8.2J	
62106-S16-T-1-2	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
62206-S16-T-2-2	29.2	ND<25	ND<5.0	13.6	ND<5.0	110	30.0	12.9	10.6	57.3	13.2	3.860	1.850	603	3.260	
62206-S16-T-3-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
November 2006																
110606-S20-T-1-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	4.5J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	4.2J	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110606-S20-T-1-2	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110606-S20-T-1-3	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110606-S20-T-2-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110606-S20-T-2-2	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	4.6J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	4.2J	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110606-S20-T-2-3	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	4.7J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	4.3J	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110606-S20-T-3-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	4.7J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	4.0J	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110606-S20-T-4-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110606-S20-T-4-2	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	4.7J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	4.7J	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110606-S20-T-5-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110606-S20-T-5-2	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	6.6J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	6.2J	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110806-S21-T-1-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110806-S21-T-1-2	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110806-S21-T-1-3	4.32J	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110806-S21-T-2-1	4.76J	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	2.54J	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110806-S21-T-2-2	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110806-S21-T-2-3	3.74J	ND<25	ND<5.0	ND<5.0	ND<5.0	3.48J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	2.96J	ND<5.0	ND<5.0	3.02J	ND<2.0	
110806-S21-T-3-1	8.31J	ND<25	ND<5.0	5.86J	ND<5.0	29.0	9.91J	7.97J	54.9	17.3	ND<2.0	64.0	23.3	4.03J	55.6	
110806-S21-T-3-2	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	
110806-S21-T-4-4	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0	

TABLE 2

SUMMARY OF SOIL ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS by GC/MS (SW846)
Aliso Canyon Phase II - 2801 Tampa Avenue, Northridge, CA 91326

Sample ID	Benzene	2-Butanone (MEK)	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Ethylbenzene	Isopropylbenzene	p-Isopropyltoluene	Naphthalene	n-Propylbenzene	Toluene (Methyl benzene)	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	o-Xylene	m,p-Xylenes		
	ug/Kg																
110806-S21-T-5-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110806-S21-T-5-2	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110806-S21-T-5-3	3.09J	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	2.90J	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110806-S21-T-6-1	5.44J	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	4.71J	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110806-S21-T-7-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	10.9	ND<5.0	ND<5.0	34.0	5.76J	ND<2.0	36.3	17.7	2.70J	12.6J		
110806-S21-T-7-2	4.38J	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	3.16J	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110806-S21-T-9-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110706-S22-T-1-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110706-S22-T-1-2	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	3.83J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	3.69J	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110706-S22-T-1-3	ND<2.0	ND<25	15.4	12.4	ND<5.0	2.06J	28.7	ND<5.0	140	49.3	ND<2.0	ND<5.0	ND<5.0	ND<2.0	7.80J		
110706-S22-T-1-4	ND<2.0	ND<25	8.68J	10.6	ND<5.0	ND<2.0	6.94J	ND<5.0	24.6	8.31J	ND<2.0	ND<5.0	ND<5.0	10.5	ND<2.0		
110706-S22-T-1-5	ND<2.0	ND<75	155	183	27.7J	1,770	489	ND<15	5,930	740	ND<6	48.3	ND<15	35.5	40.9J		
110706-S22-T-1-6	ND<2.0	601J	2,630	1,710	ND<70	15,800	4,130	2,340	79,600	6,850	ND<28	47,300	7,940	ND<28	34,100		
110706-S22-T-2-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110706-S22-T-2-2	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110706-S22-T-2-3	ND<2.0	ND<25	544	453	44.0J	191	913	340	9,810	1,520	ND<10	2,400	174	ND<10	687		
110706-S22-T-2-4	782	ND<25	1,380	627	71.3	10,200	1,670	949	28,000	2,820	6,470	13,600	6,810	14,500	57,100		
110706-S22-T-2-5	2,480	ND<25	3,100	1,420	158	17,600	3,170	2,170	39,800	5,600	55,000	27,200	13,400	30,800	104,000		
110706-S22-T-3-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110706-S22-T-3-2	ND<2.0	ND<25	5.44J	8.78J	ND<5.0	2.72J	21.7	ND<5.0	151	31.2	2.16J	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110706-S22-T-3-3	ND<2.0	ND<25	443	930	93.3	186	1,800	ND<30	20,200	3,030	ND<12	1,210	ND<30	ND<12	ND<12		
110706-S22-T-3-4	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110806-S22-T-4-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110806-S22-T-4-2	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	3.76J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	4.16J	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110906-S23-T-1-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110906-S23-T-2-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110906-S23-T-3-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
110906-S23-T-4-1	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0		
						January 2007											
012507-B1-5	ND<2.0	ND<25	9.62J	8.01J	ND<5.0	ND<2.0	12.9	ND<5.0	38.7	19.3	ND<2.0	ND<5.0	ND<5.0	12.8	ND<2.0		
012507-B1-10	ND<2.0	ND<25	750	1,860	196	196	3,030	ND<35	54,400	4,600	ND<14	ND<35	ND<35	ND<14	ND<14		
012507-B1-15	ND<2.0	ND<25	2,660	2,810	295	7,080	5,920	2,680	126,000	10,200	ND<12	23,600	144	ND<12	1,880		
012507-B1-20	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	5.13J	ND<5.0	ND<5.0	41.8	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	7.39J		

TABLE 2

SUMMARY OF SOIL ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS by GC/MS (SW846)
 Aliso Canyon Phase II - 2801 Tampa Avenue, Northridge, CA 91326

Sample ID	Benzene	2-Butanone (MEK)	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Ethylbenzene	Isopropylbenzene	p-Isopropyltoluene	Naphthalene	n-Propylbenzene	Toluene (Methyl benzene)	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	o-Xylene	m,p-Xylenes
	ug/Kg														
012507-B1-25	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	9.00J	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B1-30	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B1-35	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B2-5	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B2-10	ND<2.0	ND<25	333	198	ND<25	1,820	366	210	8,260	616	ND<10	748	ND<25	97.3	342
012507-B2-15	920	ND<25	1,440	636	ND<35	10,100	1,520	938	38,100	2,610	917	13,700	6,090	22,500	76,200
012507-B2-20	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	2.76J
012507-B2-25	2.54J	ND<25	ND<5.0	ND<5.0	ND<5.0	4.53J	ND<5.0	ND<5.0	12.7	ND<5.0	4.39J	8.80J	ND<5.0	6.62J	26.4
012507-B2-30	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B3-5	ND<2.0	ND<25	7.82J	5.62J	ND<5.0	ND<2.0	8.36J	ND<5.0	12.2	12.8	ND<2.0	ND<5.0	ND<5.0	2.21J	ND<2.0
012507-B3-10	ND<2.0	ND<25	297	205	ND<25	2,430	613	98.4	6,820	1,030	121	467	ND<25	ND<10	93.8J
012507-B3-15	ND<2.0	ND<25	487	390	ND<30	2,320	691	319	10,900	1,240	159	2,180	133	ND<12	1,090
012507-B3-20	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	29.8	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B3-25	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B3-30	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B3-35	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B4-5	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B4-10	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B4-15	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B4-20	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0
012507-B4-25	ND<2.0	ND<25	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<2.0	ND<5.0	ND<5.0	ND<2.0	ND<2.0

ug/Kg - micrograms per kilogram

ND<X - Indicates constituent(s) not detected at or above Method Detection Limit (MDL)

J - Indicates analyte was detected. However, analyte concentration is an estimated value which is between the MDL and the Practical Quantitation Limit (PQL).

TABLE 3

SUMMARY OF SOIL ANALYTICAL RESULTS FOR
 TPH AS DIESEL AND HEAVY HYDROCARBONS - USING GC/FID
 Aliso Canyon Phase II
 12801 Tampa Avenue, Northridge, CA 91326

Sample ID	TPH as Gasoline and Light HC.	TPH as Diesel	TPH as Heavy Hydrocarbons
	(C4-C12)	(C13-C22)	(C23-C40)
	mg/Kg		
	June 2006		
06-21-06-S-14-T-1-1	ND<0.500	552	2,340
06-21-06-S-14-T-1-2	ND<0.500	580	2,370
06-21-06-S-14-T-1-3	ND<0.500	ND<5.0	15.7
06-21-06-S-14-T-1-4	ND<0.500	357	1,560
06-21-06-S-14-T-2-1	ND<0.500	93.6	487
06-21-06-S-14-T-2-2	ND<0.500	124	621
06-21-06-S-14-T-2-3	ND<0.500	43.6	288
06-21-06-S-14-T-3-1	ND<0.500	ND<5.0	ND<5.0
06-21-06-S-14-T-3-2	ND<0.500	167	778
06-21-06-S-14-T-3-3	ND<0.500	668	2,660
06-21-06-S-14-T-4-1	ND<0.500	8.67J	226
06-21-06-S-14-T-4-2	ND<0.500	49.7	429
06-21-06-S-14-T-5-1	ND<0.500	153	372
06-21-06-S-14-T-5-2	ND<0.500	47.4	166
06-21-06-S-15-T-1-1	ND<0.500	ND<5.0	ND<5.0
06-21-06-S-15-T-1-2	ND<0.500	ND<5.0	8.06J
06-21-06-S-15-T-1-3	ND<0.500	ND<5.0	ND<5.0
06-21-06-S-15-T-2-1	ND<0.500	72.4	297
06-21-06-S-15-T-2-2	ND<0.500	1,040	2,540
06-21-06-S-15-T-2-3	ND<0.500	101	473
06-21-06-S-15-T-2-4	ND<0.500	39.1	267
06-21-06-S-15-T-3-1	ND<0.500	733	3,540
06-21-06-S-15-T-3-2	ND<0.500	159	537
06-21-06-S-15-T-3-3	ND<0.500	1,570	4,560
06-21-06-S-16-T-1-1	ND<0.500	88.5	251
06-21-06-S-16-T-1-2	ND<0.500	ND<5.0	ND<5.0
06-21-06-S-16-T-1-3	ND<0.500	13.7	68.4
06-22-06-S16-T2-1	ND<0.500	ND<5.0	ND<5.0
06-22-06-S16-T2-2	7.93	132	879
06-22-06-S16-T2-3	6.93	29.2	307
06-22-06-S16-T3-1	ND<0.500	ND<5.0	ND<5.0
06-22-06-S16-T3-2	ND<0.500	ND<5.0	82.2
	November 2006		
110606-S20-T-1-1	ND<0.500	ND<5.0	ND<5.0
110606-S20-T-1-2	ND<0.500	ND<5.0	ND<5.0
110606-S20-T-1-3	ND<0.500	ND<5.0	ND<5.0
110606-S20-T-2-1	ND<0.500	5.83J	40.9

TABLE 3

SUMMARY OF SOIL ANALYTICAL RESULTS FOR
 TPH AS DIESEL AND HEAVY HYDROCARBONS - USING GC/FID
 Aliso Canyon Phase II
 12801 Tampa Avenue, Northridge, CA 91326

Sample ID	TPH as Gasoline and Light HC.	TPH as Diesel	TPH as Heavy Hydrocarbons
	(C4-C12)	(C13-C22)	(C23-C40)
	mg/Kg		
110606-S20-T-2-2	ND<0.500	ND<5.0	ND<5.0
110606-S20-T-2-3	ND<0.500	ND<5.0	ND<5.0
110606-S20-T-3-1	ND<0.500	ND<5.0	ND<5.0
110606-S20-T-4-1	ND<0.500	45.5	613
110606-S20-T-4-2	ND<0.500	29.7	248
110606-S20-T-5-1	ND<0.500	ND<5.0	35.1
110606-S20-T-5-2	ND<0.500	ND<5.0	20.7
110706-S22-T-1-1	ND<0.500	1,050	2,870
110706-S22-T-1-2	ND<0.500	74.2	392
110706-S22-T-1-3	6.49	18,100	21,900
110706-S22-T-1-4	5.28	3,260	3,430
110706-S22-T-1-5	219	353	506
110706-S22-T-1-6	1,120	828	569
110706-S22-T-2-1	ND<0.500	1,670	5,650
110706-S22-T-2-2	ND<0.500	4,580	6,330
110706-S22-T-2-3	363	420	542
110706-S22-T-2-4	634	1,330	779
110706-S22-T-2-5	960	1,180	496
110706-S22-T-3-1	ND<0.500	1,610	4,410
110706-S22-T-3-2	173	1,840	1,810
110706-S22-T-3-3	300	1,670	1,330
110706-S22-T-3-4	ND<0.500	ND<5.0	ND<5.0
110806-S21-T-1-1	ND<0.500	ND<5.0	ND<5.0
110806-S21-T-1-2	ND<0.500	12.5	194
110806-S21-T-1-3	ND<0.500	ND<5.0	ND<5.0
110806-S21-T-2-1	ND<0.500	ND<5.0	ND<5.0
110806-S21-T-2-2	ND<0.500	637	2,010
110806-S21-T-2-3	ND<0.500	199	832
110806-S21-T-3-1	82.0	437	658
110806-S21-T-3-2	ND<0.500	ND<5.0	ND<5.0
110806-S21-T-4-4	ND<0.500	ND<5.0	ND<5.0
110806-S21-T-5-1	ND<0.500	ND<5.0	ND<5.0
110806-S21-T-5-2	ND<0.500	ND<5.0	ND<5.0
110806-S21-T-5-3	ND<0.500	ND<5.0	ND<5.0
110806-S21-T-6-1	ND<0.500	ND<5.0	ND<5.0
110806-S21-T-7-1	102	25,800	38,500
110806-S21-T-7-2	ND<0.500	ND<5.0	ND<5.0
110806-S21-T-9-1	ND<0.500	962	3,870

TABLE 3

SUMMARY OF SOIL ANALYTICAL RESULTS FOR
TPH AS DIESEL AND HEAVY HYDROCARBONS - USING GC/FID
Aliso Canyon Phase II
12801 Tampa Avenue, Northridge, CA 91326

Sample ID	TPH as Gasoline and Light HC.	TPH as Diesel	TPH as Heavy Hydrocarbons
	(C4-C12)	(C13-C22)	(C23-C40)
mg/Kg			
110806-S22-T-4-1	ND<0.500	1,430	4,660
110806-S22-T-4-2	ND<0.500	9.37J	54.4
110906-S23-T-1-1	ND<0.500	ND<5.0	ND<5.0
110906-S23-T-2-1	ND<0.500	176	805
110906-S23-T-3-1	ND<0.500	ND<5.0	ND<5.0
110906-S23-T-4-1	ND<0.500	ND<5.0	ND<5.0
January 2007			
012507-B1-5	1.75	11,600	13,800
012507-B1-10	522	14,400	13,900
012507-B1-15	1,230	4,080	2,440
012507-B1-20	0.722J	ND<5.0	ND<5.0
012507-B1-25	ND<0.500	31.8	ND<5.0
012507-B1-30	ND<0.500	ND<5.0	ND<5.0
012507-B1-35	ND<0.500	ND<5.0	ND<5.0
012507-B2-5	ND<0.500	1,130	2,570
012507-B2-10	142	5,110	5,580
012507-B2-15	429	3,130	2,920
012507-B2-20	ND<0.500	ND<5.0	ND<5.0
012507-B2-25	ND<0.500	17.9	ND<5.0
012507-B2-30	ND<0.500	ND<5.0	ND<5.0
012507-B3-5	87.9	13,900	15,000
012507-B3-10	79.6	7,200	8,370
012507-B3-15	140	102	171
012507-B3-20	ND<0.500	ND<5.0	ND<5.0
012507-B3-25	ND<0.500	ND<5.0	ND<5.0
012507-B3-30	ND<0.500	ND<5.0	ND<5.0
012507-B3-35	ND<0.500	ND<5.0	ND<5.0
012507-B4-5	ND<0.500	1,580	4,690
012507-B4-10	ND<0.500	ND<5.0	ND<5.0
012507-B4-15	ND<0.500	ND<5.0	ND<5.0
012507-B4-20	ND<0.500	ND<5.0	ND<5.0
012507-B4-25	ND<0.500	ND<5.0	ND<5.0

Notes:

mg/Kg - milligrams per kilogram

ND<X - Indicates constituent(s) not detected at or above Method Detection Limit (MDL)

J - Indicates analyte was detected. However, analyte concentration is an estimated value which is between the MDL and the Practical Quantitation Limit (PQL).

TABLE 4

SUMMARY OF SOIL ANALYTICAL RESULTS FOR
 CAM TITLE 22 METALS (SW-846)
 Aliso Canyon Gas Storage Facility
 12801 Tampa Avenue, Northridge, CA 91326

Sample ID	Antimony	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury (By EPA 7471)	Molybdenum	Nickel	Vanadium	Zinc
	mg/Kg												
June 2006													
06-21-06-S-14-T-1-1	ND<1.0	6.30	361	2.20J	16.4	4.95J	21.8	54.5	ND<0.1	9.00	40.0	72.5	84.0
06-21-06-S-14-T-1-2	ND<1.0	3.65J	730	ND<1.3	10.9	2.95J	11.6	72.5	ND<0.1	ND<2.5	12.8	20.7	121
06-21-06-S-14-T-1-3	ND<1.0	3.55J	127	ND<1.3	24.2	4.85J	34.8	2.75J	ND<0.1	16.0	73.5	111	94.5
06-21-06-S-14-T-1-4	ND<1.0	3.15J	948	2.05J	18.4	5.80	21.4	45.0	ND<0.1	6.65	39.2	62.5	101
06-21-06-S-14-T-2-1	ND<1.0	3.65J	915	2.40J	23.7	5.80	27.4	41.5	ND<0.1	10.1	51.0	93.5	102
06-21-06-S-14-T-2-2	ND<1.0	4.95J	985	1.95J	20.1	6.10	28.2	20.1	ND<0.1	10.8	44.4	79.5	315
06-21-06-S-14-T-2-3	ND<1.0	3.65J	928	ND<1.3	19.1	6.75	27.0	18.9	ND<0.1	13.4	47.6	88.0	238
06-21-06-S-14-T-3-1	ND<1.0	2.20J	212	2.35J	23.5	5.90	25.9	5.80	ND<0.1	9.10	45.8	81.0	87.0
06-21-06-S-14-T-3-2	ND<1.0	2.90J	670	2.20J	26.7	6.50	33.7	15.9	ND<0.1	11.2	61.5	119	122
06-21-06-S-14-T-3-3	ND<1.0	5.70	1,020	1.90J	24.7	7.30	31.9	49.2	ND<0.1	10.0	53.0	89.0	125
06-21-06-S-14-T-4-1	ND<1.0	2.80J	725	ND<1.3	21.5	5.65	24.2	13.8	ND<0.1	7.95	43.2	82.5	160
06-21-06-S-14-T-4-2	ND<1.0	2.35J	229	2.20J	24.0	8.00	29.1	7.40	ND<0.1	9.65	48.5	92.5	108
06-21-06-S-14-T-5-1	ND<1.0	4.65J	720	2.40J	23.7	5.90	29.8	14.4	ND<0.1	11.7	58.0	99.5	203
06-21-06-S-14-T-5-2	ND<1.0	4.40J	943	2.20J	22.9	5.95	27.1	17.1	ND<0.1	10.9	53.0	91.5	199
06-21-06-S-15-T-1-1	ND<1.0	5.65	234	9.05	40.0	9.10	44.5	5.10	ND<0.1	15.1	109	192	129
06-21-06-S-15-T-1-2	ND<1.0	6.15	175	10.3	35.7	8.50	55.5	6.45	ND<0.1	12.5	124	174	124
06-21-06-S-15-T-1-3	ND<1.0	3.25J	149	10.4	31.4	7.55	37.8	4.30J	ND<0.1	12.3	90.0	139	108
06-21-06-S-15-T-2-1	ND<1.0	4.35J	2,200	ND<1.3	74.5	3.90J	19.9	149	ND<0.1	ND<2.5	34.2	25.5	361
06-21-06-S-15-T-2-2	ND<1.0	4.75J	830	ND<1.3	20.6	6.00	35.0	64.5	ND<0.1	4.70J	39.0	26.4	426
06-21-06-S-15-T-2-3	ND<1.0	2.85J	138	ND<1.3	15.7	3.70J	37.1	251	ND<0.1	ND<2.5	61.0	18.6	188
06-21-06-S-15-T-2-4	ND<1.0	11.0	183	18.3	26.8	7.20	46.9	7.05	ND<0.1	21.7	317	204	157
06-21-06-S-15-T-3-1	2.00J	54.5	2,000	ND<1.3	23.3	3.45J	25.6	99.0	ND<0.1	ND<2.5	39.3	26.3	1,370
06-21-06-S-15-T-3-2	ND<1.0	2.35J	275	1.75J	15.3	7.35	18.0	109	ND<0.1	7.45	34.4	30.2	379
06-21-06-S-15-T-3-3	ND<1.0	3.25J	820	1.80J	17.7	4.40J	25.2	277	ND<0.1	6.80	39.7	26.8	880
06-21-06-S-16-T-1-1	ND<1.0	3.55J	293	5.6	20.9	5.95	30.6	55.5	ND<0.1	7.90	54.5	99.5	87.5
06-21-06-S-16-T-1-2	ND<1.0	2.10J	107	ND<1.3	16.7	7.85	12.6	19.0	ND<0.1	3.95J	20.1	24.0	50.5
06-21-06-S-16-T-1-3	ND<1.0	3.65J	505	4.00	15.4	5.70	19.1	33.7	ND<0.1	7.50	37.9	62.5	73.0
06-22-06-S16-T2-1	ND<1.0	2.60J	216	4.20	25.6	7.75	32.7	4.70J	ND<0.1	8.40	64.0	102	95.5
06-22-06-S16-T2-2	ND<1.0	5.35	157	ND<1.3	14.1	4.25J	13.4	66.5	ND<0.1	5.15	26.2	29.5	72.5
06-22-06-S16-T2-3	ND<1.0	2.95J	169	ND<1.3	13.0	3.25J	8.20	374	ND<0.1	5.65	15.2	14.9	52.5
06-22-06-S16-T3-1	ND<1.0	2.85J	111	ND<1.3	10.2	3.10J	6.70	35.6	ND<0.1	2.65J	10.2	14.3	36.2
06-22-06-S16-T3-2	ND<1.0	4.25J	358	2.40J	17.5	5.55	20.0	39.7	ND<0.1	6.60	34.3	59.0	65.5
November 2006													
110606-S20-T-1-1	ND<1.0	4.70J	124	8.6	21.9	5.55	32.6	2.65J	0.100J	18.30	58.3	90.3	102.0
110606-S20-T-1-2	ND<1.0	5.65	169	11	33.3	7.4	39.6	4.55J	ND<0.1	19.5	74.1	121	126
110606-S20-T-1-3	ND<1.0	6.35	167	10.9	30.4	6.7	36.6	4.60J	ND<0.1	22.4	74.7	126	125
110606-S20-T-2-1	ND<1.0	6.2	161	12.1	29.9	7.55	43	4.65J	ND<0.1	24.4	77.2	121	139
110606-S20-T-2-2	ND<1.0	5.7	128	8.6	23.3	6.05	33.5	ND<2.5	0.100J	19.6	64.2	95.8	107
110606-S20-T-2-3	ND<1.0	6.25	133	9.6	26.5	6.90	35.1	3.65J	ND<0.1	21.8	68.9	104	117
110606-S20-T-3-1	ND<1.0	6.95	112	13.4	22.7	6.05	37.9	3.75J	ND<0.1	28.4	70.2	103.0	122
110606-S20-T-4-1	ND<1.0	7.25	255	11.5	31.4	7.55	38	4.90J	ND<0.1	22.00	66.8	112.0	141.0
110606-S20-T-4-2	ND<1.0	6.5	138	9.85	26.4	5.40	35.5	3.20J	ND<0.1	20.1	62.7	105	121

TABLE 4

**SUMMARY OF SOIL ANALYTICAL RESULTS FOR
CAM TITLE 22 METALS (SW-846)
Aliso Canyon Gas Storage Facility
12801 Tampa Avenue, Northridge, CA 91326**

Sample ID	Antimony	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury (By EPA 7471)	Molybdenum	Nickel	Vanadium	Zinc
	mg/Kg												
110606-S20-T-5-1	ND<1.0	4.80J	138	10.5	24.9	6.45	34.6	4.15J	ND<0.1	20.1	63.9	99.2	113
110606-S20-T-5-2	ND<1.0	6.8	111	7.65	19.7	5.20	29.2	3.50J	ND<0.1	20.8	56.8	86.6	98.3
110706-S22-T-1-1	1.30J	9.2	116	8.35	26.4	4.75J	39.9	4.95J	ND<0.1	23.6	76.7	142	116
110706-S22-T-1-2	1.20J	9.1	162	9.95	35.4	6.90	43.6	4.25J	ND<0.1	16.6	82.2	177	116
110706-S22-T-1-3	ND<1.0	8.85	91.4	7.7	15.7	5.8	25.5	4.70J	ND<0.1	14.4	66.3	85.6	75.6
110706-S22-T-1-4	ND<1.0	7.65	142	12.4	27.2	5.20	40.2	4.45J	ND<0.1	22.4	80.9	154	115
110706-S22-T-1-5	ND<1.0	9.7	2360	3.45	21.9	2.55J	18	16.20	ND<0.1	9	35.1	51.6	69.4
110706-S22-T-1-6	ND<1.0	1.90J	2800	1.35J	16.6	ND<2.5	8.6	11.4	ND<0.1	ND<2.5	18.2	24.9	53.8
110706-S22-T-2-1	ND<1.0	7.4	119	10.6	29.4	6.6	37.7	4.15J	ND<0.1	21.2	76.9	138	103
110706-S22-T-2-2	ND<1.0	6.1	130	9.9	33.2	5.20	42.7	4.40J	ND<0.1	27.1	79.9	147	112
110706-S22-T-2-3	ND<1.0	3.45J	294	ND<1.3	16.7	2.75J	5.4	9.15	ND<0.1	4.85J	15.2	17	25.3
110706-S22-T-2-4	ND<1.0	3.25J	680	1.35J	21.5	3.90J	9.35	10.8	ND<0.1	ND<2.5	16.5	22.4	51.4
110706-S22-T-2-5	ND<1.0	8.4	113	9.5	30.6	6	38.6	4.40J	ND<0.1	23.7	83.8	139	112
110706-S22-T-3-1	ND<1.0	8	110	9.45	38.3	5.9	38.9	4.90J	ND<0.1	23.4	88.3	129	109
110706-S22-T-3-2	ND<1.0	3.85J	630	6.25	42.5	2.60J	25.1	3.85J	ND<0.1	15.2	50.9	96.4	68.3
110706-S22-T-3-3	ND<1.0	2.15J	2510	1.40J	19.8	ND<2.5	10.3	14.8	ND<0.1	ND<2.5	20.8	27.7	58.8
110706-S22-T-3-4	ND<1.0	3.30J	149	5.25	25.2	6.4	25.7	3.15J	ND<0.1	9.7	48.3	90.9	68.1
110806-S21-T-1-1	ND<1.0	1.20J	99.5	6.30	19.2	5.40	20.6	2.65J	ND<0.1	6.05	40.8	51.8	66.8
110806-S21-T-1-2	ND<1.0	ND<1.0	73.1	6.60	15	ND<2.5	11.6	ND<2.5	ND<0.1	ND<2.5	27.9	36.8	47.2
110806-S21-T-1-3	ND<1.0	3.35J	171	6.2	21.5	7.15	24.2	4.30J	ND<0.1	12.2	42.1	79.6	79.5
110806-S21-T-2-1	ND<1.0	1.90J	113	7.6	21.7	5.05	24.00	2.60J	ND<0.1	4.05J	48.2	52.5	75.6
110806-S21-T-2-2	ND<1.0	13.8	3710	1.45J	22.6	ND<2.5	30.10	23.5	ND<0.1	ND<2.5	13.8	30.6	66.1
110806-S21-T-2-3	ND<1.0	9.25	93	1.65J	20.4	7.4	17.8	8.85	ND<0.1	ND<2.5	16	28.0	66.7
110806-S21-T-3-1	ND<1.0	5.00	296	1.60J	33.8	7.3	16.3	10.5	ND<0.1	ND<2.5	16.1	31.9	57.4
110806-S21-T-3-2	ND<1.0	ND<1.0	82.2	6.8	22.5	6.1	19.3	ND<2.5	ND<0.1	ND<2.5	34.8	53.7	85.2
110806-S21-T-4-4	ND<1.0	1.20J	145	6.35	23.7	7.4	28.6	3.05J	ND<0.1	8.3	45.4	81.3	85.4
110806-S21-T-5-1	ND<1.0	5.2	118	8.3	34.9	5.60	39.6	2.55J	ND<0.1	6.95	70.3	135	108
110806-S21-T-5-2	ND<1.0	ND<1.0	153	9.25	41.6	8.35	39.7	3.50J	ND<0.1	ND<2.5	86.9	147	106
110806-S21-T-5-3	ND<1.0	2.00J	93.3	5.8	20.3	4.30J	22.4	ND<2.5	ND<0.1	2.70J	86.6	53.8	67
110806-S21-T-6-1	ND<1.0	2.00J	98.2	6.1	16.9	4.35J	20.6	ND<2.5	ND<0.1	ND<2.5	43.1	37.1	59.3
110806-S21-T-7-1	ND<1.0	7.55	2330	ND<1.3	15.1	ND<2.5	17.8	16.30	ND<0.1	2.90J	14.5	23.2	58.7
110806-S21-T-7-2	ND<1.0	ND<1.0	115	5.25	32.5	4.40J	46.7	ND<2.5	ND<0.1	ND<2.5	67.1	80.5	89.5
110806-S21-T-9-1	ND<1.0	15.60	2,710	1.90J	29.6	4.90J	37.1	24.2	ND<0.1	ND<2.5	19.0	40.2	90.3
110806-S22-T-4-1	ND<1.0	9.7	115	12.8	25.7	6.55	40.5	4.30J	ND<0.1	25.6	86.4	156	123
110806-S22-T-4-2	ND<1.0	10.6	111	10.7	26.2	6.85	45.4	3.65J	ND<0.1	28	91.4	149	129
110906-S23-T-1-1	ND<1.0	4.35J	96.1	3.6	25.5	4.35J	26.2	3.15J	ND<0.1	9.7	47.6	110	74.2
110906-S23-T-2-1	ND<1.0	6.7	459	8.3	37.4	13.7	50.1	6.85	0.100J	11.6	94.9	151	129
110906-S23-T-3-1	ND<1.0	5.3	157	4	31.8	5.10	38	3.35J	0.100J	8.1	64.5	125	88.3
110906-S23-T-4-1	ND<1.0	6.15	121	8.5	29.4	5.00	39.6	3.35J	0.150J	10.9	82.2	133	105
January 2007													
012507-B1-5	ND<1.0	6.70	136	12.1	20.2	5.25	45.7	5.25	ND<0.1	24.8	71.5	126	118
012507-B1-10	ND<1.0	24.8	243	4	16.8	3.35J	24	13.7	ND<0.1	10.1	40.4	57.5	78.5
012507-B1-15	ND<1.0	2.55J	1980	1.80J	18.8	ND<2.5	10.5	21.5	ND<0.1	3.20J	21.1	25.2	65.0

TABLE 4

SUMMARY OF SOIL ANALYTICAL RESULTS FOR
 CAM TITLE 22 METALS (SW-846)
 Aliso Canyon Gas Storage Facility
 12801 Tampa Avenue, Northridge, CA 91326

Sample ID	Antimony	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury (By EPA 7471)	Molybdenum	Nickel	Vanadium	Zinc
	mg/Kg												
012507-B1-20	ND<1.0	16.3	149	9	34.4	4.75J	57.5	ND<2.5	ND<0.1	25.2	57.5	167	96.5
012507-B1-25	ND<1.0	8.40	151	5.7	59.5	5.65	68.5	3.25J	0.100J	24.1	81.5	189	147
012507-B1-30	ND<1.0	6.15	102	18.9	31.8	6.25	47.8	3.00J	ND<0.1	17.7	212	177	141
012507-B1-35	ND<1.0	5.25	55.5	11.1	18.5	3.50J	31.7	ND<2.5	0.100J	17.0	48.0	106	69.5
012507-B2-5	ND<1.0	5.30	90.5	7.50	16.5	3.70J	34.5	4.05J	ND<0.1	13.4	50.5	91.0	80.0
012507-B2-10	ND<1.0	4.90J	134	9.05	24.7	4.70J	44.6	3.35J	ND<0.1	17.0	65.5	138	102
012507-B2-15	ND<1.0	4.90J	1,520	2.15J	21.3	3.65J	13.4	11.6	ND<0.1	3.20J	20.1	25.8	62.0
012507-B2-20	ND<1.0	1.70J	167	4.20	21.3	12.9	24.6	4.35J	ND<0.1	7.60	45.2	91.0	70.5
012507-B2-25	ND<1.0	7.10	163	22.4	32.7	7.70	52.5	3.55J	0.100J	13.7	182	140	142
012507-B2-30	ND<1.0	5.40	89.5	7.00	16.7	3.75J	30.5	3.10J	ND<0.1	16.9	53.0	93.5	84.0
012507-B3-5	ND<1.0	5.60	89.5	7.30	15.6	4.30J	33.1	3.65J	ND<0.1	13.7	51.0	80.5	78.0
012507-B3-10	ND<1.0	5.50	92.5	8.75	16.7	4.40J	32	4.20J	ND<0.1	12.8	54.5	85.5	81.5
012507-B3-15	ND<1.0	1.75J	467	ND<1.3	9.25	ND<2.5	5.95	6.00	ND<0.1	2.75J	8.30	12.7	21.8
012507-B3-20	ND<1.0	2.95J	118	2.90	18.3	6.80	23.4	3.60J	ND<0.1	8.65	36.8	76.5	62.5
012507-B3-25	ND<1.0	7.60	120	3.35	20.1	4.20J	41.7	3.85J	ND<0.1	9.70	59.5	106	111
012507-B3-30	ND<1.0	7.45	173	13.6	43.4	3.90J	48.3	3.15J	0.150J	14.6	59.5	183	124
012507-B3-35	ND<1.0	7.00	140	11.7	29.5	6.00	45.3	3.00J	ND<0.1	16.7	106	121	137
012507-B4-5	ND<1.0	8.85	147	6.70	17.7	5.15	35.8	6.05	ND<0.1	13.3	51.0	88.5	83.0
012507-B4-10	ND<1.0	2.65J	149	4.80	19.1	7.10	28.3	4.90J	ND<0.1	8.65	35.3	93.0	70.5
012507-B4-15	ND<1.0	3.45J	168	8.05	26.3	7.40	34.2	3.65J	ND<0.1	12.8	57.0	109	84.0
012507-B4-20	ND<1.0	6.00	79.5	5.90	26	4.45J	44.8	2.85J	ND<0.1	14.4	62.0	126	97.5
012507-B4-25	ND<1.0	5.45	82	4.65	20.2	13.6	42.1	3.50J	ND<0.1	11.9	52.0	119	86.0

Notes:

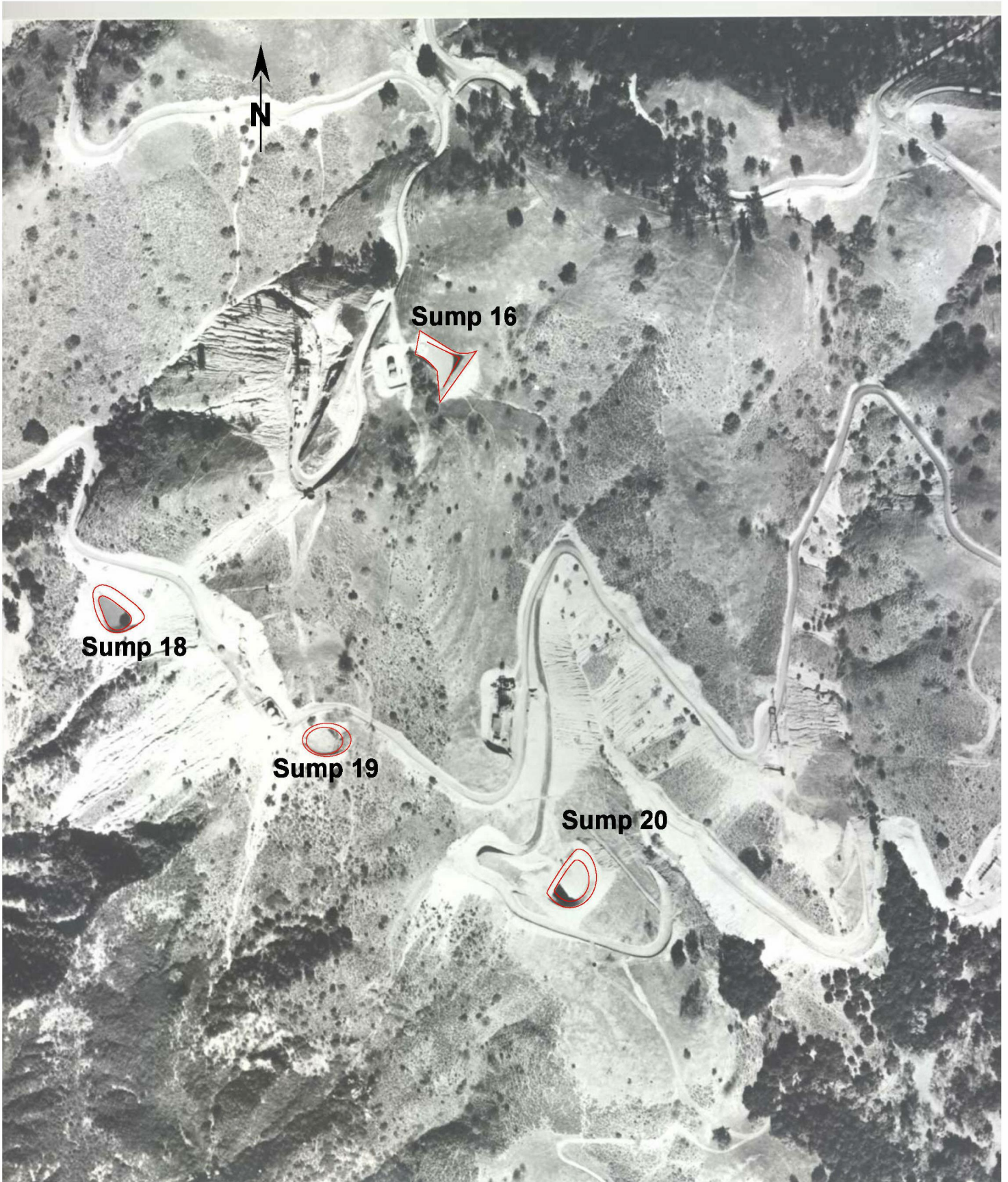
mg/Kg - milligrams per kilogram

ND<X - Indicates constituent(s) not detected at or above Method Detection Limit (MDL).

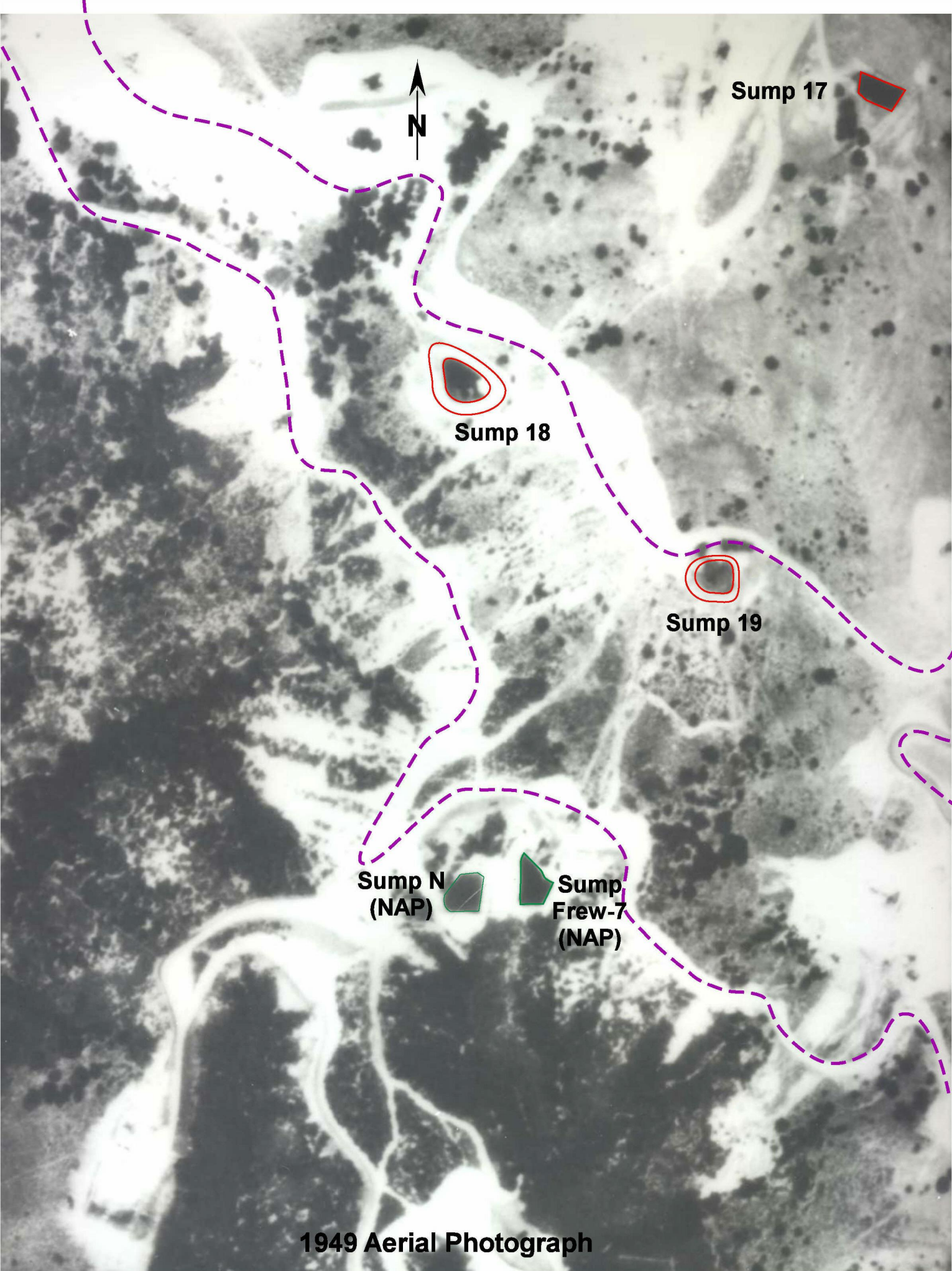
J - Indicates analyte was detected. However, analyte concentration is an estimated value which is between the MDL and the Practical Quantitation Limit (PQL).

APPENDIX A

HISTORIC AERIAL PHOTOGRAPHS



1944 Aerial Photograph



Sump 17



Sump 18

Sump 19

Sump N
(NAP)

Sump
Frew-7
(NAP)

1949 Aerial Photograph



Sump 19

Sump 15

Sump 16

Sump 17

1950 Aerial Photograph



1954 Aerial Photograph

APPENDIX B

TRENCH AND BORING LOGS



TRENCH LOG

Site: Sump 14

Date: 06-21-06

Trench ID: Trench 1

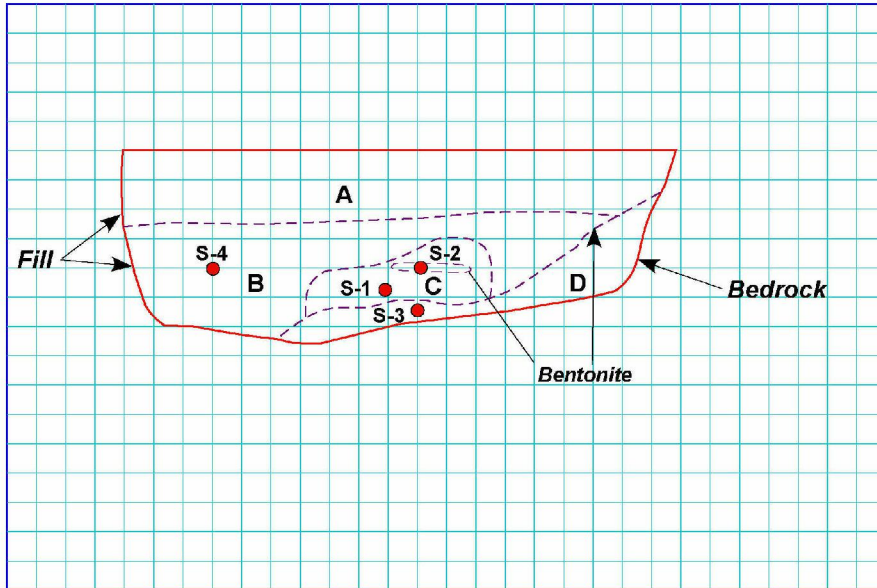
Time: 0800

Sample: S-1 through S-4

Weather: Clear & warm

Trench Map: 

Map Scale: One square = 1 foot



Field Notes:

- A. Brown fine to coarse sandy silt with trace gravel, cobbles, and boulder-size rock clasts (angular siltstone fragments), damp, abundant rootlets in upper 1', no odor or visible staining.
- B. Brown fine sandy silt with gravel- to cobble-size rock fragments, moist, few darker gray oil stained areas, no other visible staining, no odor.
- C. Very dark gray and light gray silty clay, damp to moist, trace fine to coarse sand and gravel- to cobble-size rock fragments, oil stained, apparent bentonite-rich layer (light gray), no odor.
- D. Yellowish brown siltstone (weathered), moist, FeO staining, no petroleum staining or odor.



TRENCH LOG

Site: Sump 14

Date: 06-21-06

Trench ID: Trench 2

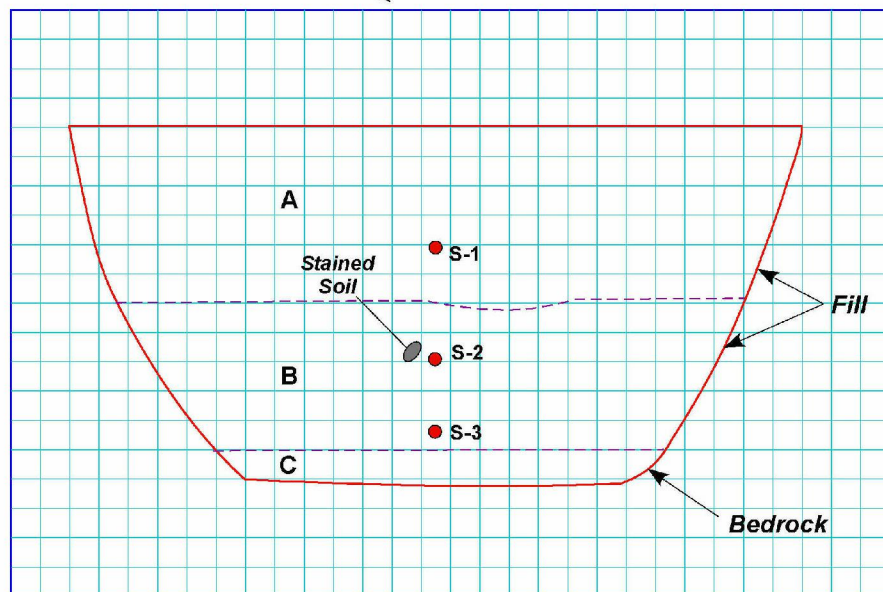
Time: 0900

Sample: S-1 through S-3

Weather: Clear & warm

Trench Map: 

Map Scale: One square = 1 foot



Field Notes:

A. Dark brown to dark gray clayey silt with trace fine to coarse sand and gravel- to cobble-size angular rock fragments, damp, no odor or visible staining.

B. Yellowish red and dark gray silty clay, moist, common gravel- to cobble-size rock fragments, common reddish staining, one very dark gray stained area (less than 3"x5"x5"), no odor.

C. Yellowish brown siltstone (weathered), moist, FeO staining, no oil staining or odor.



TRENCH LOG

Site: Sump 14

Date: 06-21-06

Trench ID: Trench 3

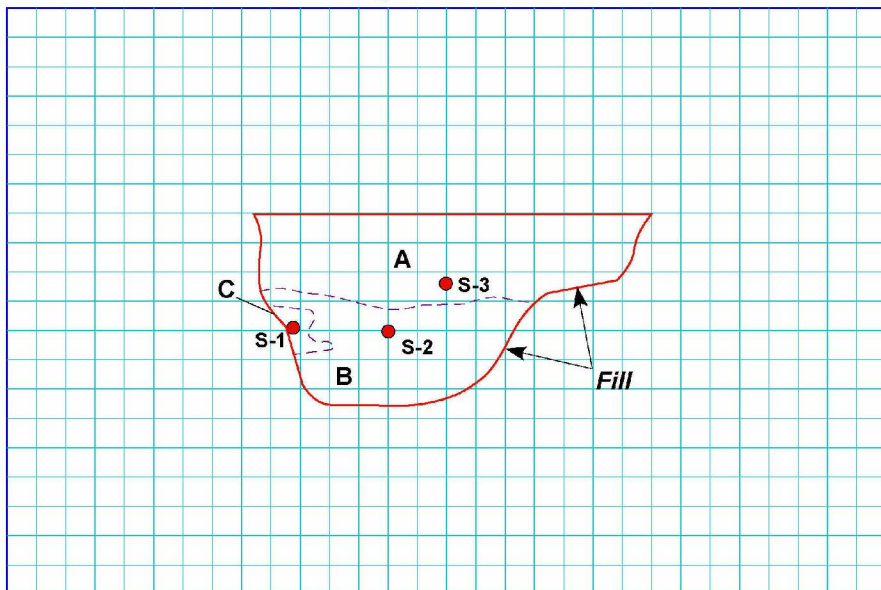
Time: 0845

Sample: S-1 through S-3

Weather: Clear & warm

Trench Map: 

Map Scale: One square = 1 foot



Field Notes:

A. Dark gray, brown, and strong brown clayey silt with trace fine to coarse sand and gravel- to cobble-size angular rock fragments, damp, abundant rootlets to 1', no odor or visible staining.

B. Yellowish red, dark red, and brown silt, moist, trace fine to coarse sand and gravel- to cobble-size angular rock fragments, no odor or visible staining.

C. Very dark gray silty clay, moist, trace fine to coarse sand, no odor, possible hydrocarbon staining.



TRENCH LOG

Site: Sump 14

Date: 06-21-06

Trench ID: Trench 4

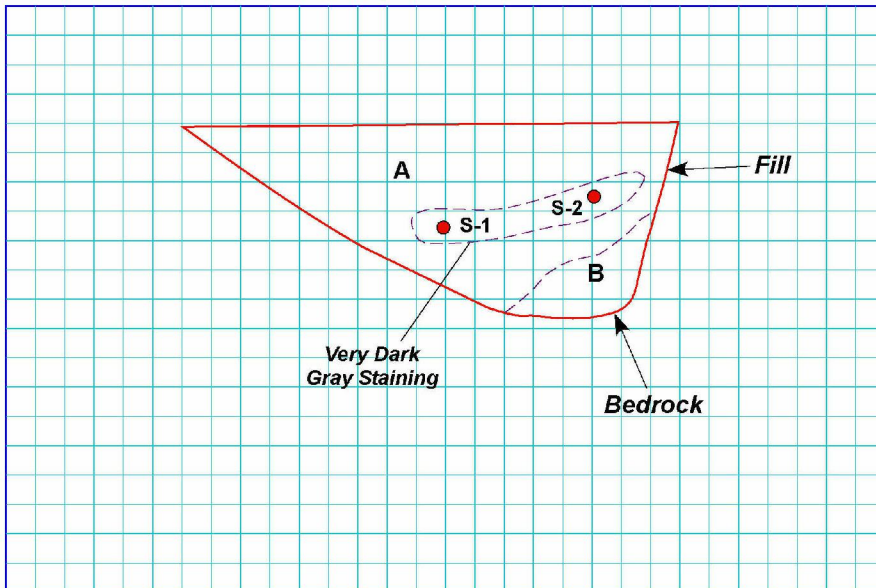
Time: 1040

Sample: S-1 through S-2

Weather: Clear & warm

Trench Map: 

Map Scale: One square = 1 foot



Field Notes:

A. Very dark gray, brown, dark yellow brown, and gray clayey silt to silty clay, damp to moist, common fine to coarse sand and gravel- to cobble-size angular rock fragments, dark gray material appears organic rich, common animal burrows (krotovina), no odor or visible staining.

B. Yellowish brown siltstone (weathered), moist, FeO staining, no petroleum staining or odor.



TRENCH LOG

Site: Sump 14

Date: 06-21-06

Trench ID: Trench 5

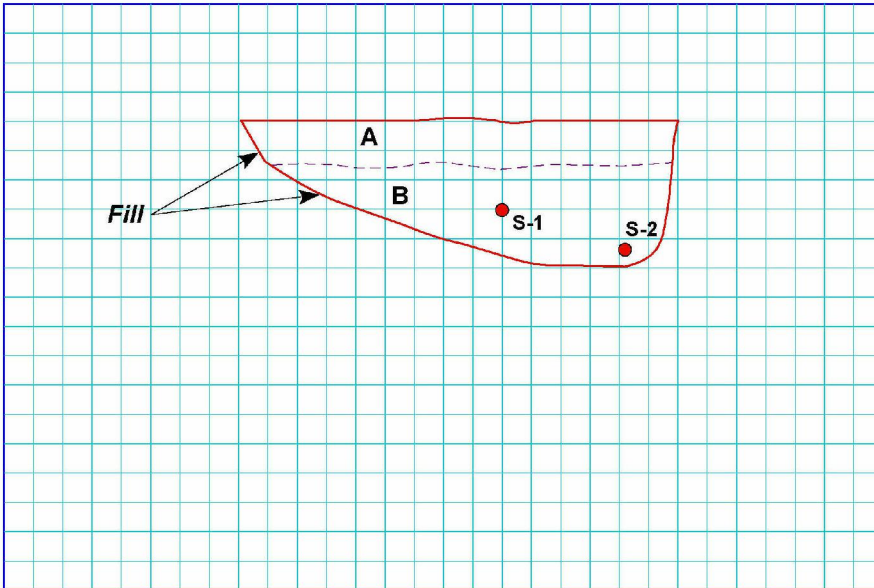
Time: 1105

Sample: S-1 and S-2

Weather: Clear & hot

Trench Map: 

Map Scale: One square = 1 foot



Field Notes:

A. Dark yellowish brown and dark gray silt with common fine to coarse sand and gravel- to cobble-size angular rock fragments, dry, abundant rootlets, no odor or visible staining.

B. Yellowish red, dark gray, and gray silty clay with fine to coarse sand and gravel- to cobble-size angular rock fragments, moist, few black oil-stained nodules, no other visible staining, no odor.



TRENCH LOG

Site: Sump 15

Date: 06-21-06

Trench ID: Trench 1

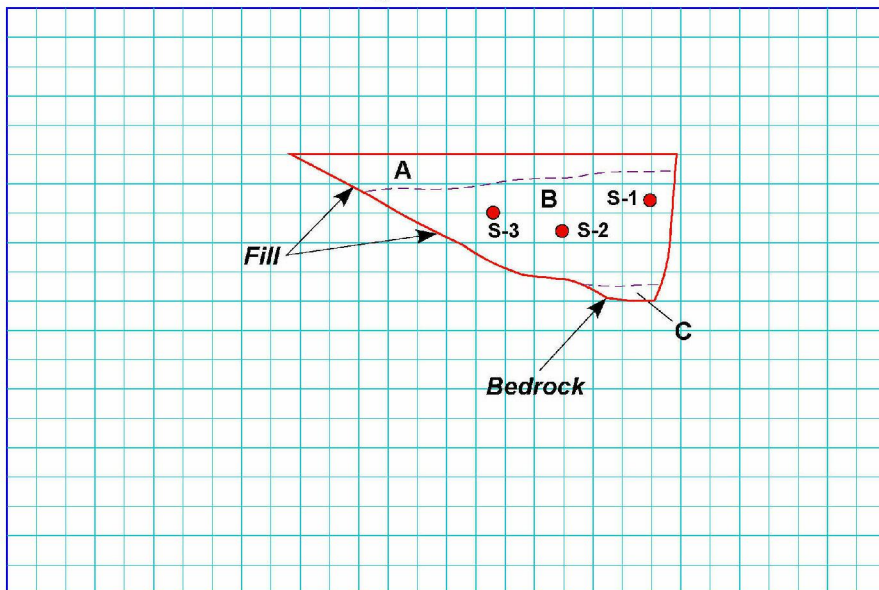
Time: 1237

Sample: S-1 through S-4

Weather: Clear & hot

Trench Map:

Map Scale: One square = 1 foot



Field Notes:

A. Light gray, yellowish brown, and gray fine sand to silty fine sand, damp, no odor or visible staining.

B. Dark grayish brown, dark yellowish brown, yellowish brown, and olive brown silty clay, with abundant gravel- and cobble-size angular rock fragments, moist, no odor or visible staining.

C. Yellowish brown siltstone, moist, weathered, no odor or visible staining.



TRENCH LOG

Site: Sump 15

Date: 06-21-06

Trench ID: Trench 2

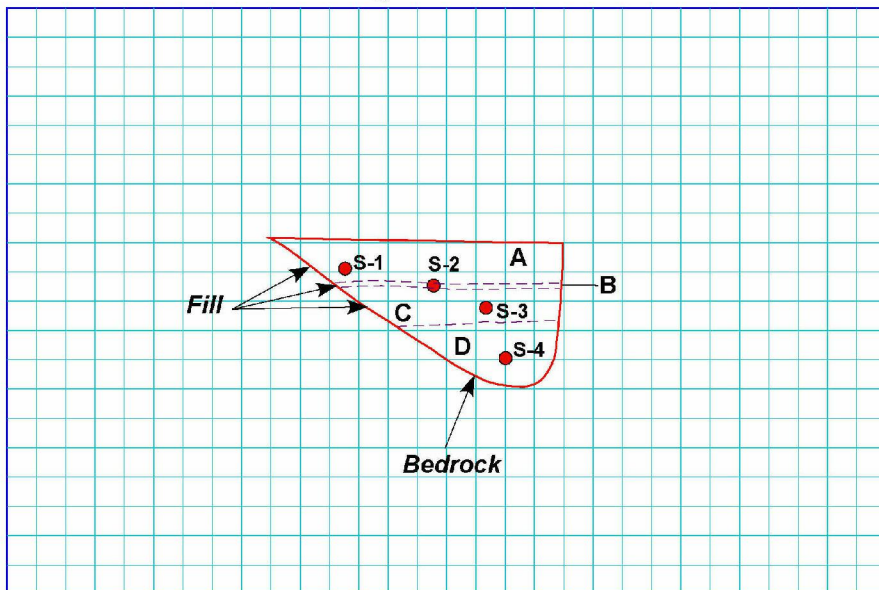
Time: 1315

Sample: S-1 through S-4

Weather: Clear & hot

Trench Map: 

Map Scale: One square = 1 foot



Field Notes:

- A. Very dark gray silty clay with trace fine to coarse sand, damp, oil staining, slight odor.
- B. Gray clay (bentonite) with some black oil stained nodules, no odor.
- C. Gray to pale brown silty fine sand, damp, few oil stained nodules, no other staining, no odor.
- D. Dark yellowish brown, yellowish brown, and gray weathered siltstone, MnO staining, fractured, no oil staining, no odor.



TRENCH LOG

Site: Sump 15

Date: 06-21-06

Trench ID: Trench 3

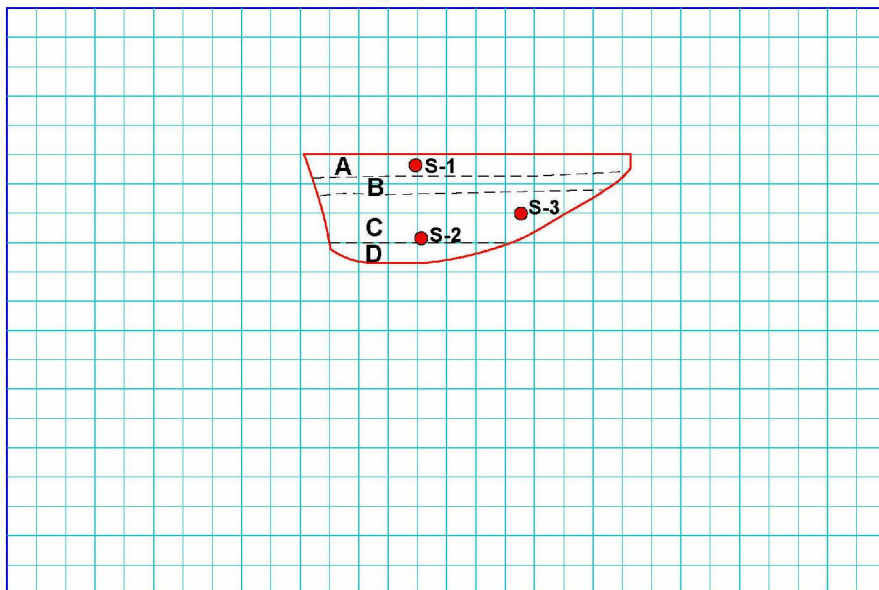
Time: 1430

Sample: S-1 through S-3

Weather: Clear & hot

Trench Map: 

Map Scale: One square = 1 foot



Field Notes:

- A. Black to very dark gray fine sandy silt, oil stained, no odor.
- B. Yellowish brown and gray silty fine sand, damp, no visible staining or odor.
- C. Gray, dark gray, and yellowish red silty clay, moist, trace black oil-stained nodules, no odor.
- D. Yellowish brown siltstone (weathered), damp, no visible staining or odor.



TRENCH LOG

Site: Sump 16

Date: 06-21-06

Trench ID: Trench 1

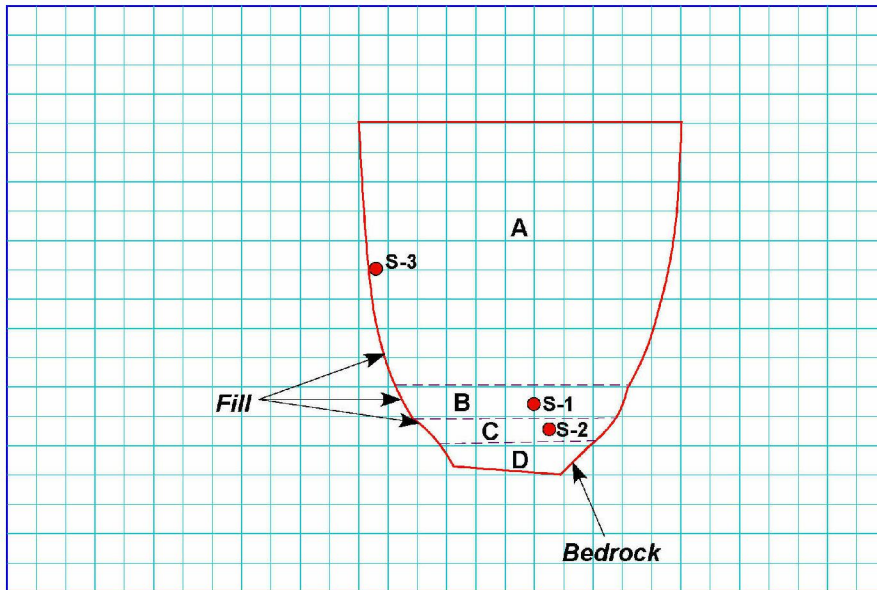
Time: 1500

Sample: S-1 through S-3

Weather: Clear & hot

Trench Map: 

Map Scale: One square = 1 foot



Field Notes:

A. Brown to olive brown silty clay with abundant gravel- to cobble-size angular rock fragments, moist, locally stained with oil, no odor.

B. Black to very dark gray silty clay, moist, abundant gravel- and cobble-size angular rock fragments, heavy oil staining, no discernible odor.

C. Gray to blue gray clay with some black oil staining, wet, plastic, no odor.

D. Very dark gray siltstone (unweathered), very hard, fractured, wet surfaces, no odor, possible oil staining.



TRENCH LOG

Site: Sump 16

Date: 06-22-06

Trench ID: Trench 2

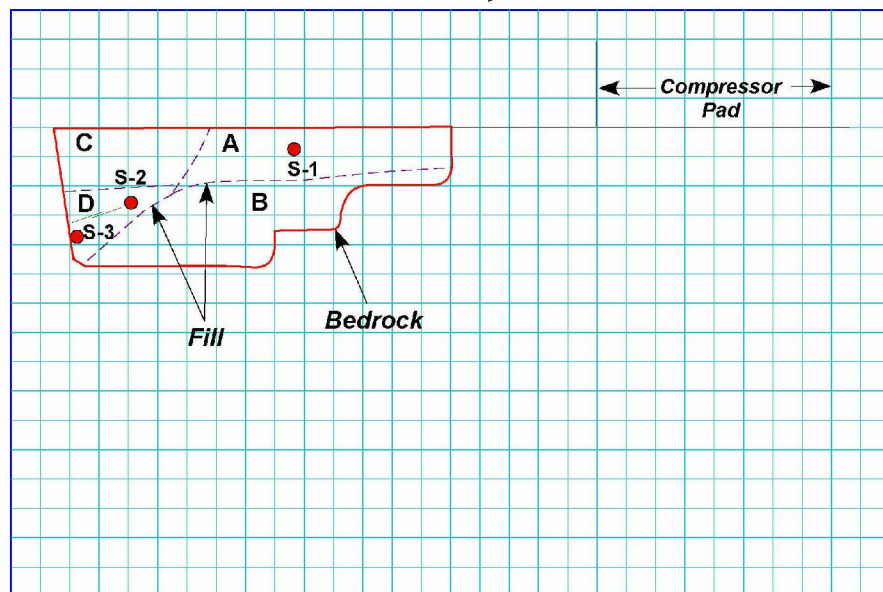
Time: 0720

Sample: S-1 through S-3

Weather: Clear & cool

Trench Map:

Map Scale: One square = 1 foot



Field Notes:

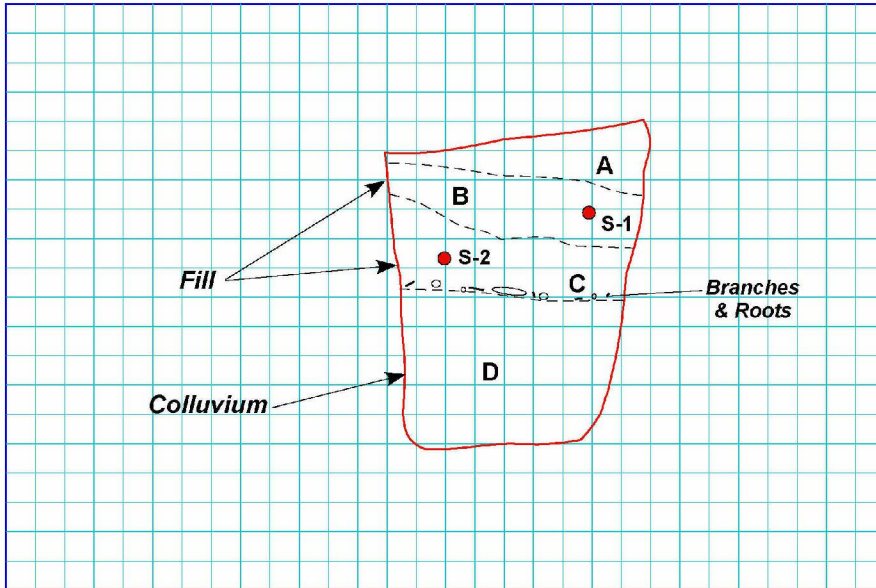
- A. Dark yellowish brown to dark brown fine sandy silt with trace gravel- and cobble-size angular rock fragments, damp, few oil stained areas, no odor.
- B. Dark brown gray to yellowish brown siltstone, fractured, oil stained fracture faces, no odor.
- C. Yellowish brown fine sandy to clayey silt, damp, no odor or visible staining.
- D. Gray and dark gray brown clay to silty clay, some very dark gray oil staining, moist, petroleum hydrocarbon odor, bentonite rich, few sandy silt laminae.



TRENCH LOG

Site: Sump 16
Trench ID: Trench 3
Sample: S-1 and S-2
Trench Map:

Date: 06-22-06
Time: 0815
Weather: Clear & warm
Map Scale: One square = 1 foot



Field Notes:

- A. Dark yellowish brown fine sandy silt with abundant fine to coarse sand and gravel- and cobble-size angular rock fragments, damp, abundant rootlets, no odor or visible staining.
- B. Dark brown and yellowish red clayey silt, damp to moist, no odor or visible staining.
- C. Gray, dark brown, and yellowish brown clay, moist, plastic (bentonite rich), old tree branches at base of this unit, no odor or visible staining.
- D. Yellowish brown clayey silt, moist, gravel- and cobble-size angular rock fragments, moist, no odor or visible staining.



TRENCH LOG

Site: Sump 20

Date: November 6, 2006

Trench ID: Trench 1

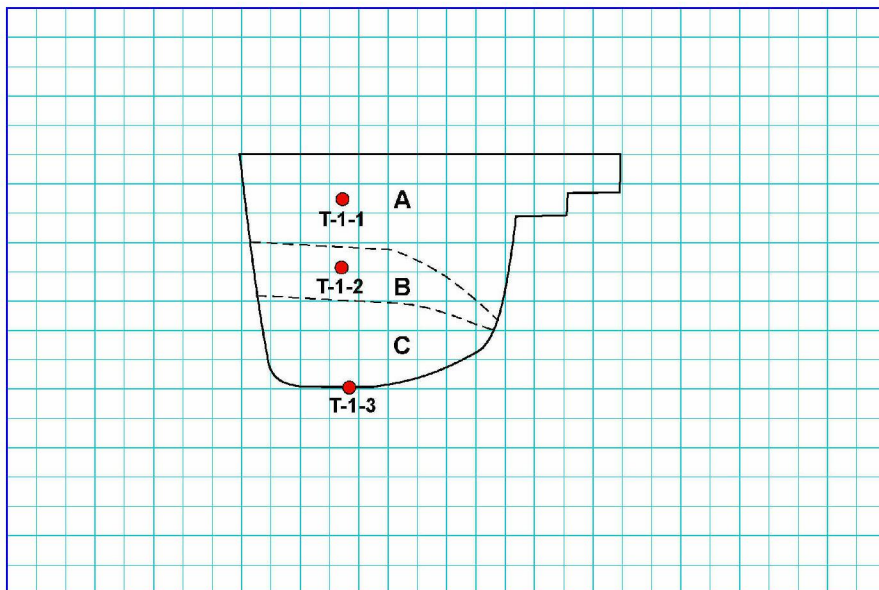
Time: 0915 to 0951

Sample: T-1-1, T-1-2, and T-1-3

Weather: Warm and windy

Trench Map:

Map Scale: One square = 1 square foot



Field Notes:

A. Light yellowish brown fine to coarse sandy silt with abundant angular gravel, dry, no odor or visible staining.

B. Dark brown fine to coarse sandy silt with abundant angular gravel, damp, no visible staining or odor.

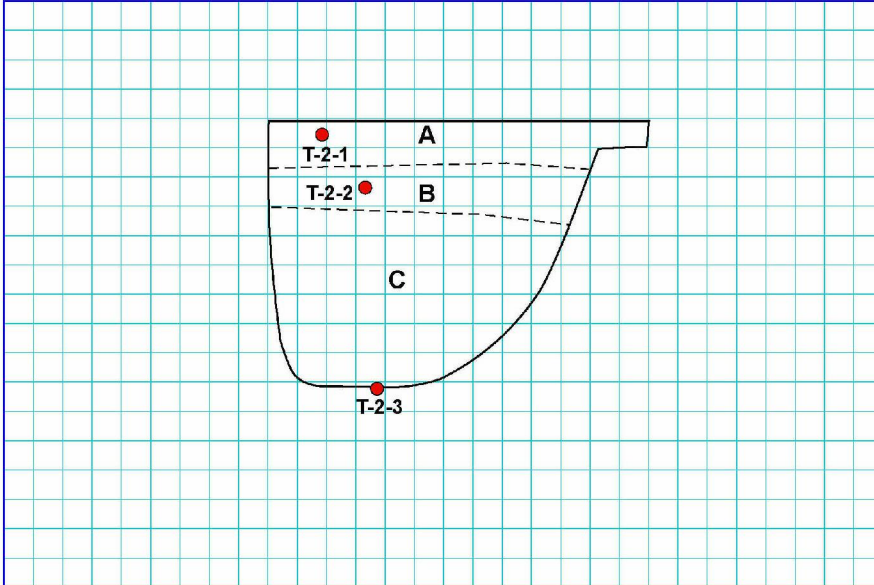
C. Dark yellowish brown fine to coarse sandy silt with abundant angular gravel, moist, no visible staining or odor.



TRENCH LOG

Site: Sump 20
Trench ID: Trench 2
Sample: T-2-1, T-2-2, and T-2-3
Trench Map:

Date: November 6, 2006
Time: 1004 to 1050
Weather: Warm and windy
Map Scale: One square = 1 square foot



Field Notes:

A. Light yellowish brown silt with abundant fine to coarse sand and angular gravel and cobbles, dry, no odor or visible staining.

B. Brown to dark brown silt with abundant fine to coarse sand and angular gravel, damp, no visible staining or odor.

C. Yellowish brown gravel, cobbles, and boulders within a silty and fine to coarse sand matrix, damp, no visible staining or odor.



TRENCH LOG

Site: Sump 20

Date: November 6, 2006

Trench ID: Trench 3

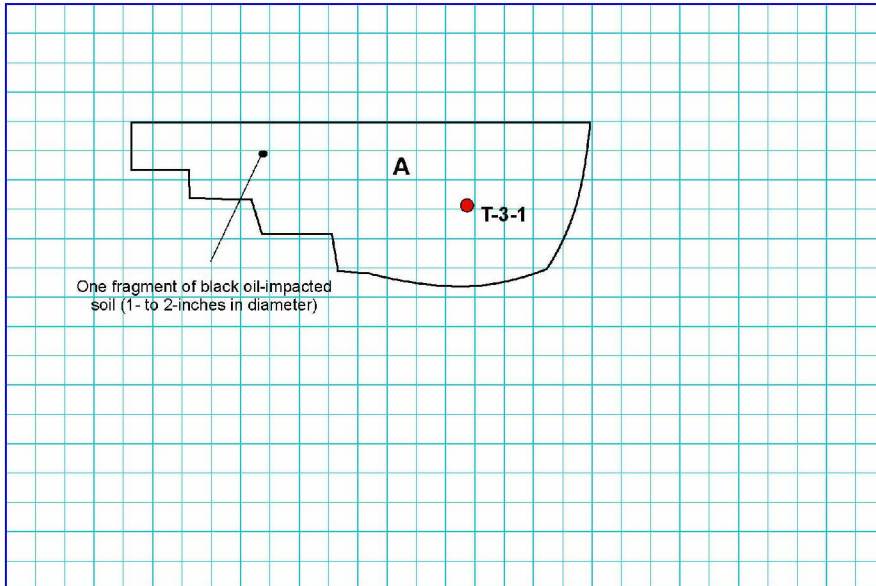
Time: 1100 to 1140

Sample: T-3-1

Weather: Warm and windy

Trench Map:

Map Scale: One square = 1 square foot



Field Notes: _____

A. Light yellowish brown silt with abundant fine to coarse sand and angular gravel and cobbles, dry to damp, no odor or visible staining. _____



TRENCH LOG

Site: Sump 20

Date: November 6, 2006

Trench ID: Trench 4

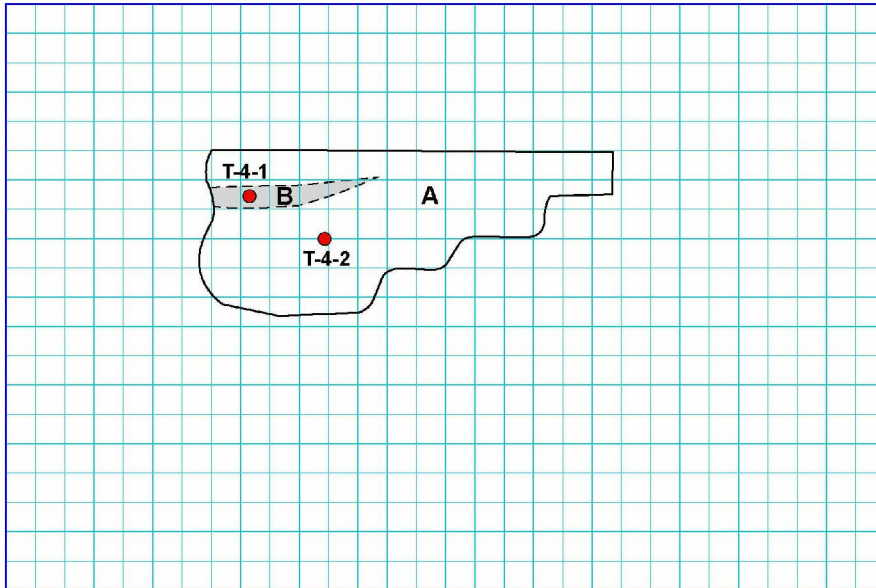
Time: 1142 to 1222

Sample: T-4-1 and T-4-2

Weather: Warm and windy

Trench Map:

Map Scale: One square = 1 square foot



Field Notes: _____

A. Light yellowish brown silt with abundant fine to coarse sand and angular gravel and cobbles, dry, no odor or visible staining.

B. Gray silt with common fine to coarse sand and angular gravel, dry, possible staining, no odor.



TRENCH LOG

Site: Sump 20

Date: November 6, 2006

Trench ID: Trench 5

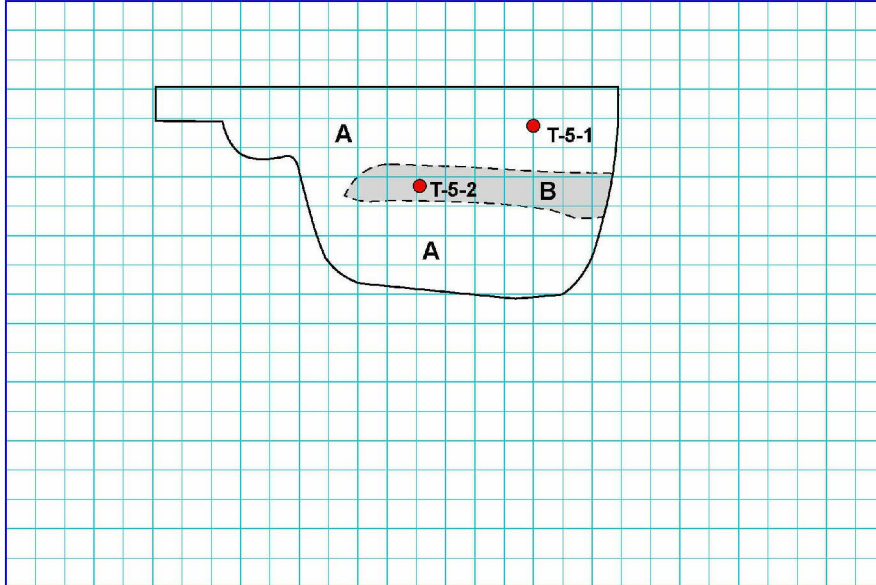
Time: 1231 to 1315

Sample: T-5-1 and T-5-2

Weather: Warm and windy

Trench Map:

Map Scale: One square = 1 square foot



Field Notes: _____

A. Light yellowish brown silt with abundant fine to coarse sand and angular gravel and cobbles, dry, no odor or visible staining.

B. Gray silt with common fine to coarse sand and angular gravel, dry, possible staining, no odor.



TRENCH LOG

Site: Sump 21

Date: November 8, 2006

Trench ID: Trench 1

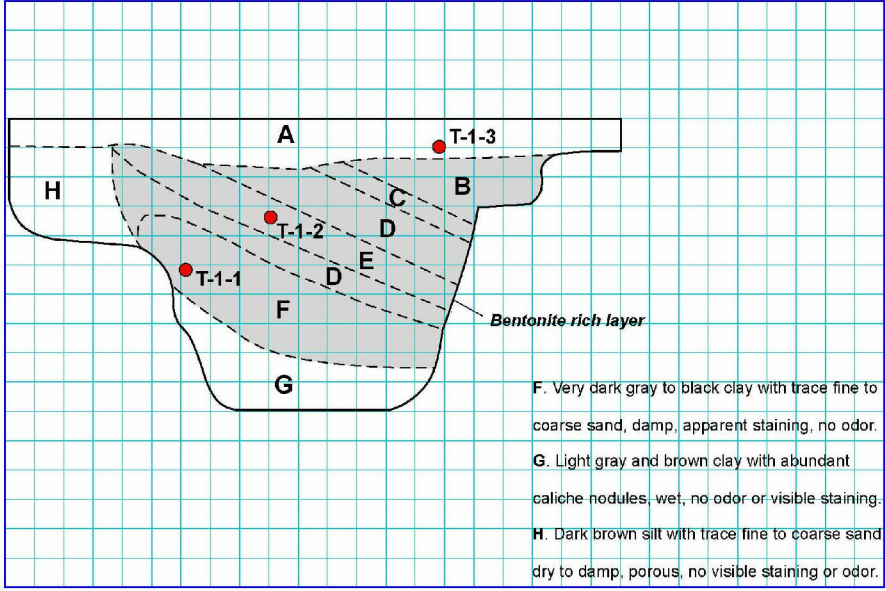
Time: 0919 to 1025

Sample: T-1-1, T-1-2, and T-1-3

Weather: Hot and calm

Trench Map:

Map Scale: One square = 1 square foot



F. Very dark gray to black clay with trace fine to coarse sand, damp, apparent staining, no odor.
 G. Light gray and brown clay with abundant caliche nodules, wet, no odor or visible staining.
 H. Dark brown silt with trace fine to coarse sand dry to damp, porous, no visible staining or odor.

Field Notes:

- A. Brown silt with trace fine to coarse sand and gravel, dry, no odor or visible staining.
- B. Brown silt with trace fine to coarse sand and gravel, dry, no odor, very dark gray petroleum stained areas.
- C. Light gray silt and fine sand, dry, no odor or visible staining.
- D. Very dark brown clayey silt with trace fine to coarse sand, damp, no odor or visible staining.
- E. White, gray, dark brown, and dark gray clay, silt, and trace fine to coarse sand and gravel, damp, no odor or visible staining.



TRENCH LOG

Site: Sump 21

Date: November 8, 2006

Trench ID: Trench 2

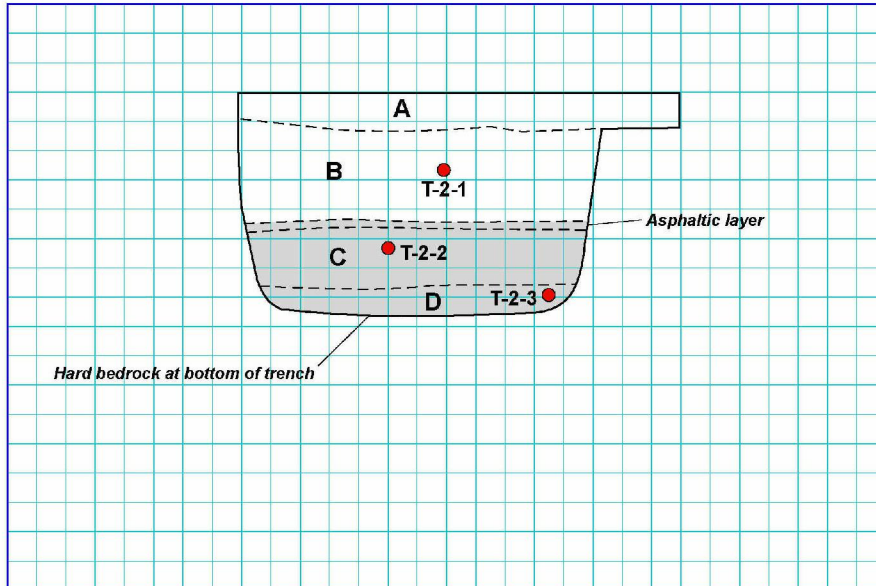
Time: 1028 to 1115

Sample: T-2-1, T-2-2, and T-2-3

Weather: Hot and calm

Trench Map:

Map Scale: One square = 1 square foot



Field Notes:

A. Light yellowish brown silt with abundant fine to coarse sand, trace gravel, dry, no odor or visible staining.

B. Brown to dark brown silt with fine to coarse sand, trace gravel, dry to damp, no odor or visible staining.

C. Black to very dark gray clay with common oil staining, moist, no odor.

D. Light gray to dark gray clay, moist to wet, slight VOC/petroleum hydrocarbon odor, bentonite rich.



TRENCH LOG

Site: Sump 21

Date: November 8, 2006

Trench ID: Trench 3

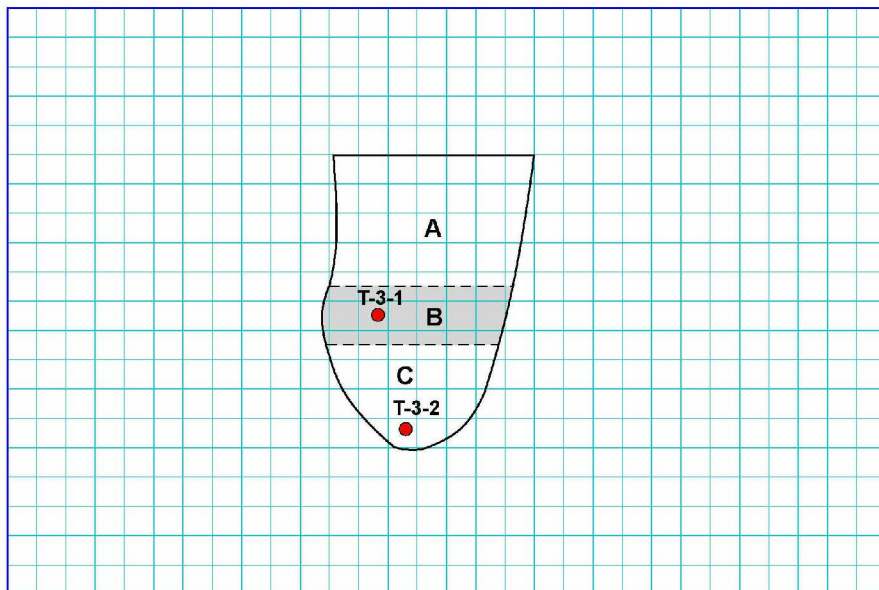
Time: 1120 to 1148

Sample: T-3-1 and T-3-2

Weather: Hot and slightly windy

Trench Map:

Map Scale: One square = 1 square foot



Field Notes:

A. Light yellowish brown and brown silt with trace fine to coarse sand, dry to damp, no odor or visible staining.

B. Gray to brown clay, wet, oil filled cracks, slight odor.

C. Olive brown to light brown clay, moist to wet, trace calcium carbonate inclusions, no odor or visible staining.



TRENCH LOG

Site: Sump 21

Date: November 8, 2006

Trench ID: Trench 4

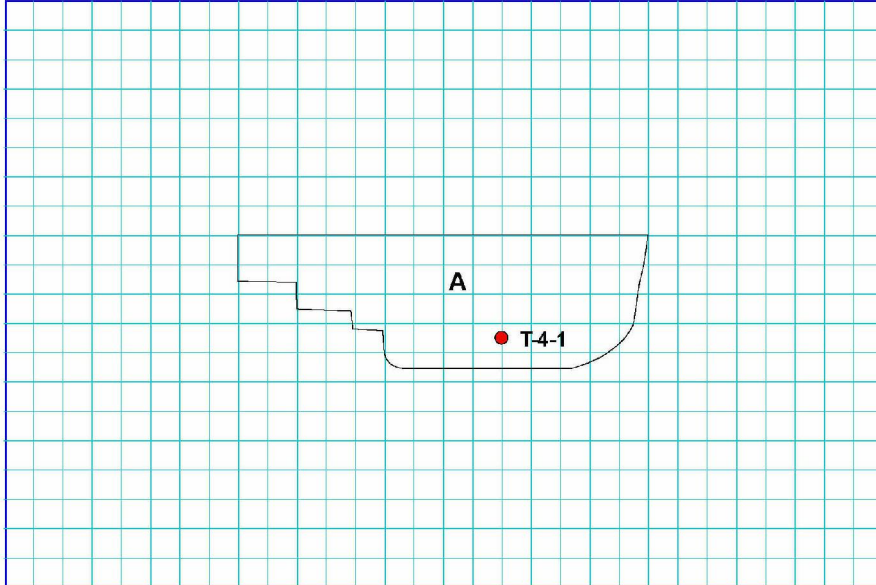
Time: 1150 to 1210

Sample: T-4-1

Weather: Hot and calm

Trench Map:

Map Scale: One square = 1 square foot



Field Notes: _____

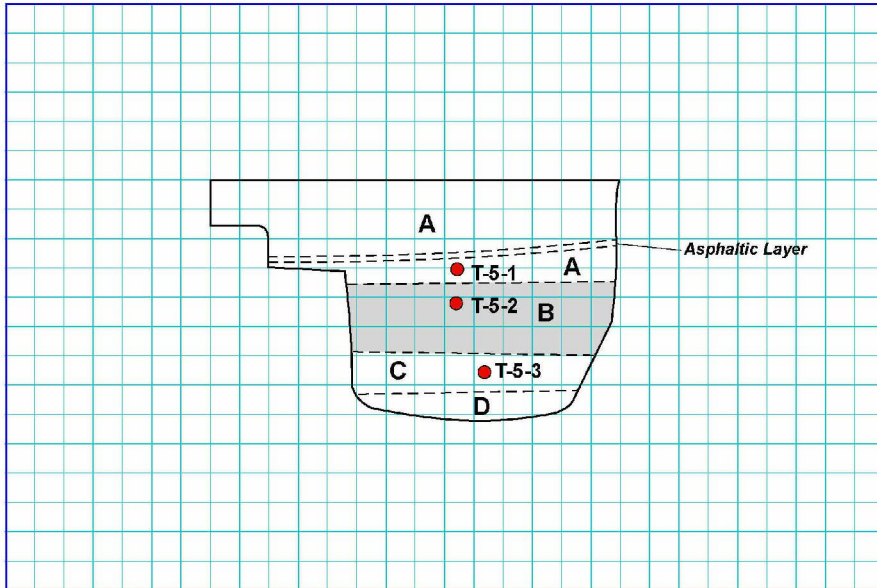
A. Brown clay to silty clay with trace fine to coarse sand, dry to damp, porous, no odor or visible staining.



TRENCH LOG

Site: Sump 21
Trench ID: Trench 5
Sample: T-5-1, T-5-2, and T-5-3
Trench Map:

Date: November 8, 2006
Time: 1328 to 1405
Weather: Hot and calm
Map Scale: One square = 1 square foot



Field Notes:

- A. Light yellowish brown fine to coarse sandy silt, trace gravel, dry, no odor or visible staining.
- B. Gray to grayish brown clay, moist, plastic (bentonite), no odor or visible staining.
- C. Very dark gray silty clay, moist, porous, no odor or visible staining (apparent buried soil A-horizon).
- D. Olive brown to light brown clay with trace calcium carbonate inclusions and fine to coarse sand, moist, no odor or visible staining.



TRENCH LOG

Site: Sump 21

Date: November 8, 2006

Trench ID: Trench 6

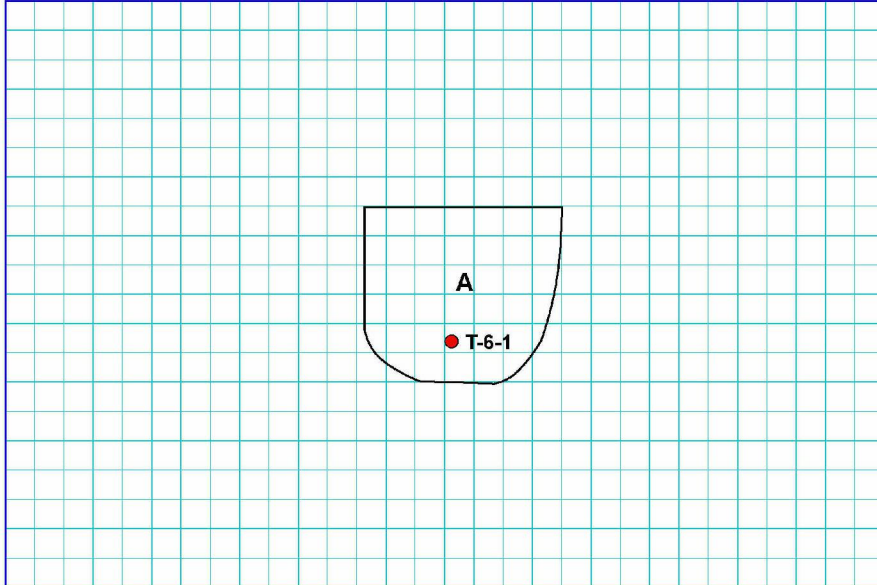
Time: 1409 to 1025

Sample: T-6-1

Weather: Hot and slightly windy

Trench Map:

Map Scale: One square = 1 square foot



Field Notes: _____

A. Very dark gray silty clay with trace fine to coarse sand, damp, no odor or visible staining.



TRENCH LOG

Site: Sump 21

Date: November 8, 2006

Trench ID: Trench 7

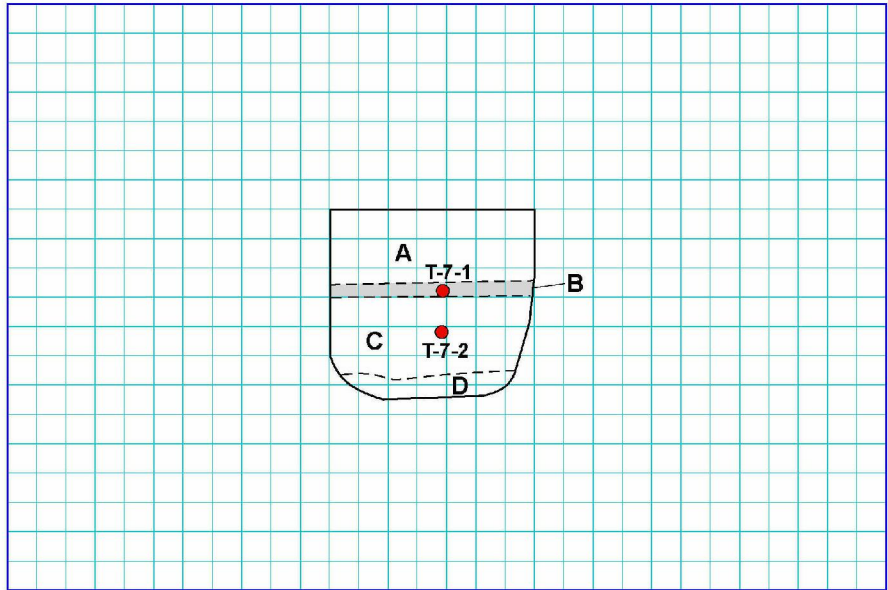
Time: 1426 to 14489

Sample: T-7-1 and T-7-2

Weather: Hot and calm

Trench Map:

Map Scale: One square = 1 square foot



Field Notes:

A. Grayish brown silt with trace fine to coarse sand, dry, no odor or visible staining.

B. Black oily clay, very plastic, stained.

C. Very dark gray silty clay with abundant calcium carbonate inclusions, damp, no odor or visible staining (buried top soil).

D. Light brown clay with trace fine to coarse sand, moist, no odor or visible staining.



TRENCH LOG

Site: Sump 21

Date: November 8, 2006

Trench ID: Trench 8

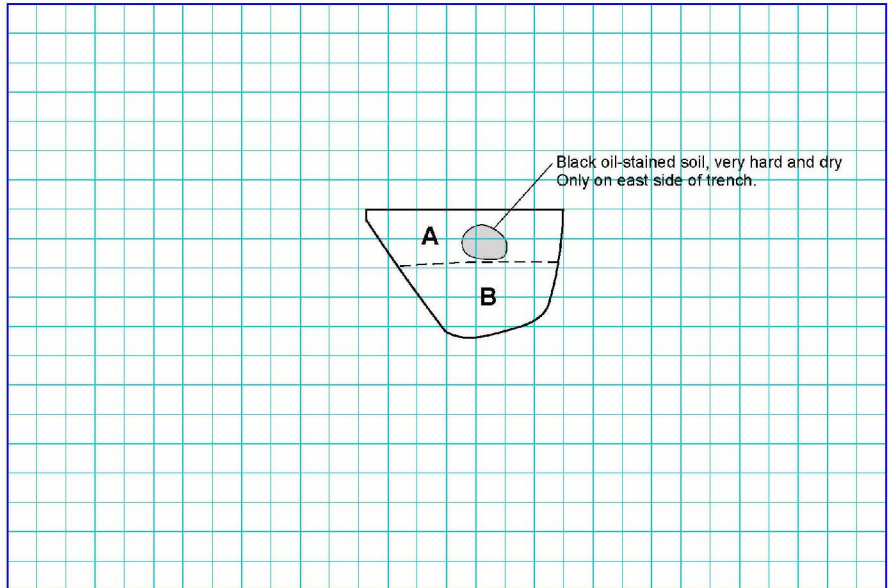
Time: 1450 to 1515

Sample: None

Weather: Hot and calm

Trench Map:

Map Scale: One square = 1 square foot



Field Notes: _____

A. Light brownish gray fine to coarse sandy silt, dry, no odor or visible staining. _____

B. Very dark gray to dark gray silty clay with trace fine to coarse sand, damp, no odor or visible staining (apparent buried top soil). _____



TRENCH LOG

Site: Sump 21

Date: November 8, 2006

Trench ID: Trench 9

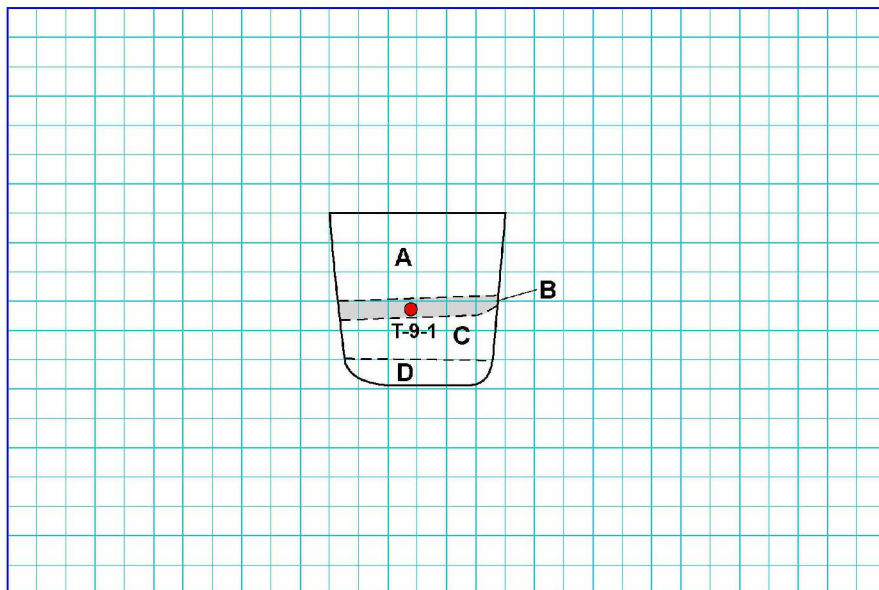
Time: 1515 to 1540

Sample: T-9-1

Weather: Hot and calm

Trench Map:

Map Scale: One square = 1 square foot



Field Notes:

A. Grayish brown silty clay with trace fine to coarse sand and gravel, dry, no odor or visible staining.

B. Black, very dark gray, and brown clay, dry, some petroleum hydrocarbon staining, no odor.

C. Grayish brown silt with trace fine to coarse sand, damp, no odor or visible staining.

D. Bedrock: Layers of wet siltstone, sandstone, and clay, no odor or visible staining.



TRENCH LOG

Site: Sump 22

Trench ID: Trench 1

Sample: T-1-1 through T-1-6

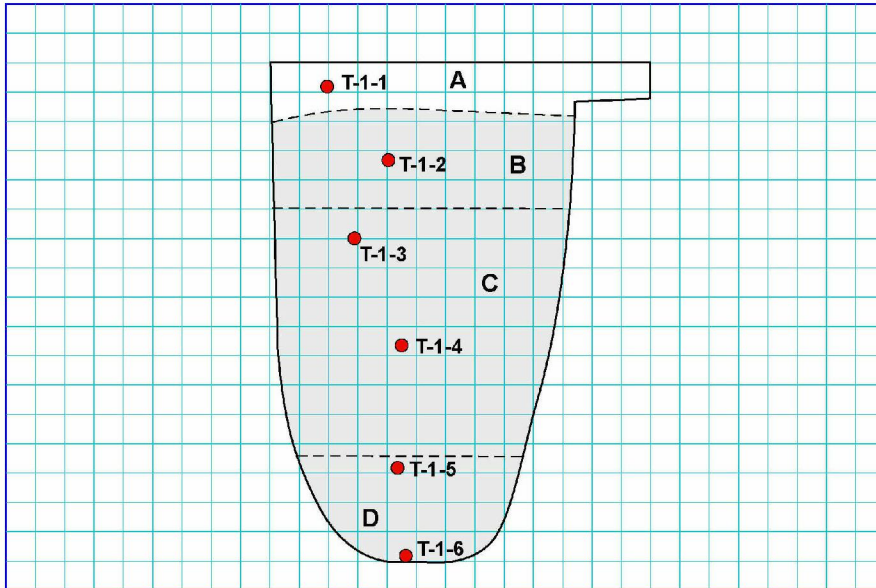
Trench Map:

Date: November 7, 2006

Time: 0813 to 0930

Weather: Warm and Windy

Map Scale: One square = 1 square foot



Field Notes:

A. Light yellowish brown gravel- and cobble-size rock clasts in a silty fine to coarse sandy matrix, dry, no odor or visible staining.

B. Light yellowish brown, gray, very dark gray, and black fine to coarse sandy silt, with abundant gravel-size rock clasts, dry to damp, 5 to 10 percent of soil stained with oil, no odor.

C. Very dark gray to black clay to silty clay with abundant fine to coarse sand and gravel-size rock clasts, stained, and odorous.

D. Black to very dark gray clay, wet, stained and odorous, oily, few layers containing sand and gravel, stained, and odorous.



TRENCH LOG

Site: Sump 22

Date: November 7, 2006

Trench ID: Trench 2

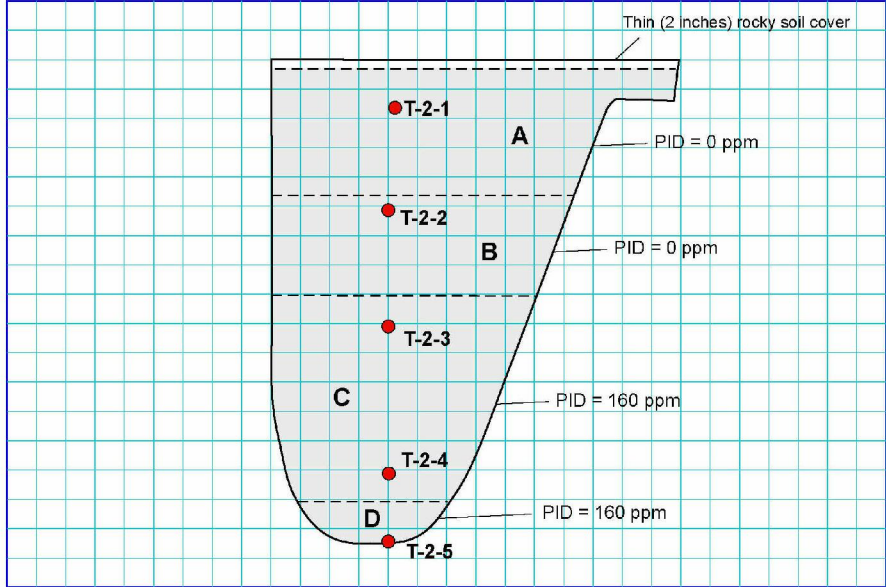
Time: 0935 to 1110

Sample: T-2-1 through T-2-5

Weather: Warm and Windy

Trench Map:

Map Scale: One square = 1 square foot



Field Notes:

A. Very dark gray fine to coarse sandy silt with gravel- to cobble-size rock clasts, dry to damp, stained, no odor.

B. Very dark gray clay with fine to coarse and gravel-size rock clasts, moist, small pockets of oil, stained and odorous.

C. Black to very dark gray clay with some fine to coarse sand and gravel-size rock clasts, wet, greasy, common oil-filled pockets, stained and odorous.

D. Gray to very dark gray layered siltstone and sandstone, wet, stained, strong odor.



TRENCH LOG

Site: Sump 22

Date: November 7, 2006

Trench ID: Trench 3

Time: 1255 to 1457

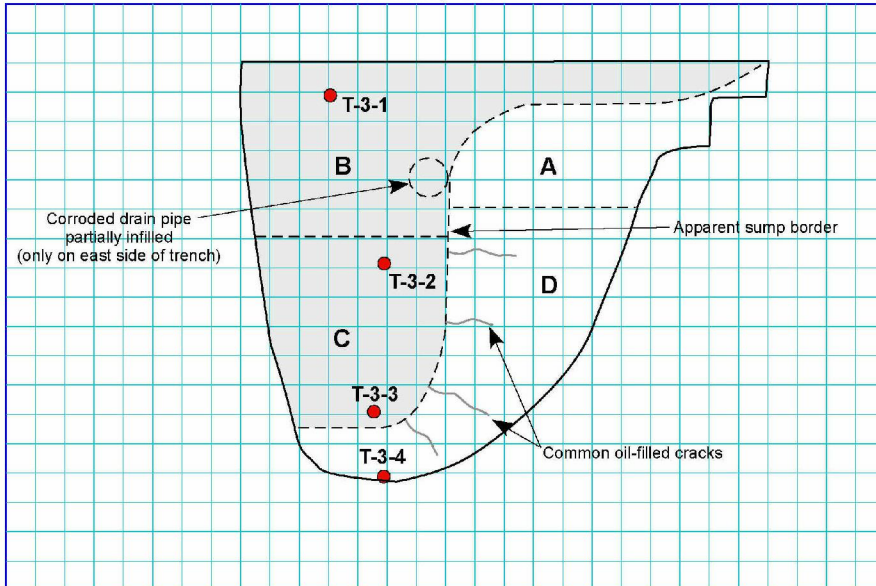
Sample: T-2-1 through T-2-4

Weather: Hot and Calm

Trench Map:

Map Scale: One square = 1 square foot

North-South Trench, East View



Field Notes:

A. Light yellowish brown fine to coarse sand with abundant gravel- to cobble-size rock clasts, dry, trace staining, no odor.

B. Black, very dark gray, brown, and yellowish brown silt and clay with abundant fine to coarse sand and gravel-size rock clasts, dry to damp, oil stained, no odor.

C. Black to very dark gray clay with some fine to coarse sand and gravel-size rock clasts, wet, common oil-filled pockets, stained and odorous.

D. Brown fine sandy clay, moist, no staining or odor, common oil filled cracks.



TRENCH LOG

Site: Sump 22

Date: November 8, 2006

Trench ID: Trench 4

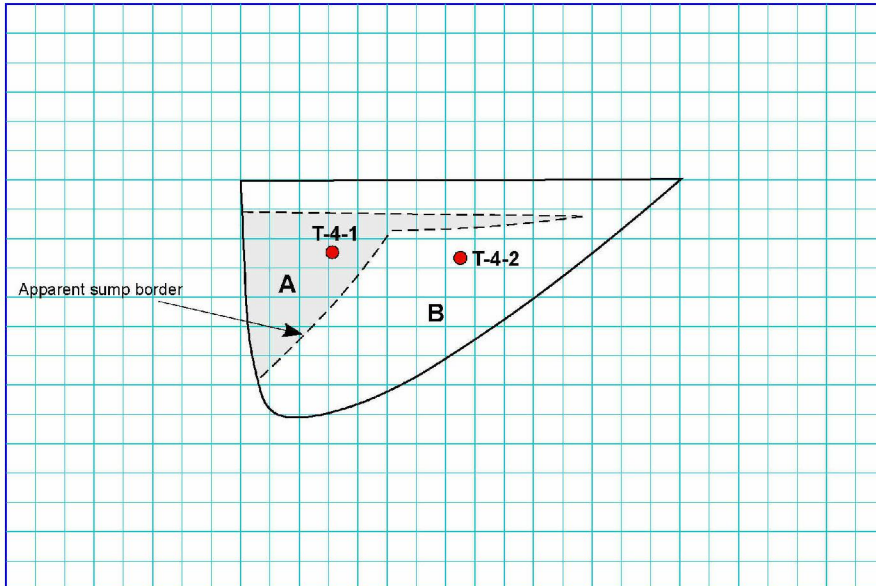
Time: 0735 to 0810

Sample: T-4-1 and T-4-2

Weather: Hot and Calm

Trench Map:

Map Scale: One square = 1 square foot



Field Notes:

A. Very dark gray to black fine to coarse sandy silt with some yellowish brown gravel-size rock clasts, dry, stained, no odor.

B. Yellowish brown fine to coarse sandy silt, with abundant gravel- to boulder-size rock clasts, dry to damp, no visible staining or odor.



TRENCH LOG

Site: Sump 23

Date: November 9, 2006

Trench ID: Trench 1

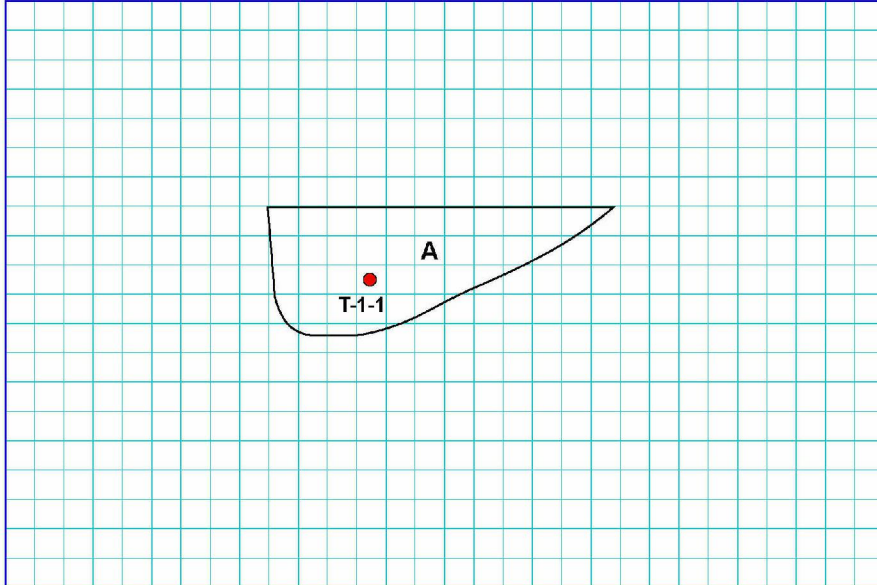
Time: 0800 to 0825

Sample: T-1-1

Weather: Cool and windy

Trench Map:

Map Scale: One square = 1 square foot



Field Notes:

A. Grayish brown to yellowish brown silty fine to coarse sand with abundant gravel, cobbles, and boulders, dry to damp, no odor or visible staining.



TRENCH LOG

Site: Sump 23

Date: November 9, 2006

Trench ID: Trench 2

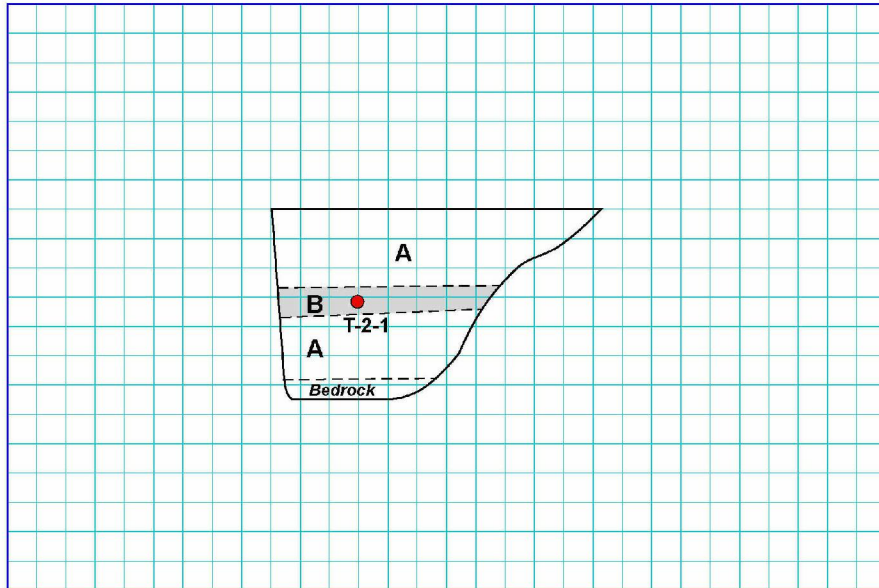
Time: 0828 to 0905

Sample: T-2-1

Weather: Cool and windy

Trench Map:

Map Scale: One square = 1 square foot



Field Notes:

A. Yellowish brown silty fine to coarse sand with abundant gravel and cobbles, dry, no odor or visible staining.

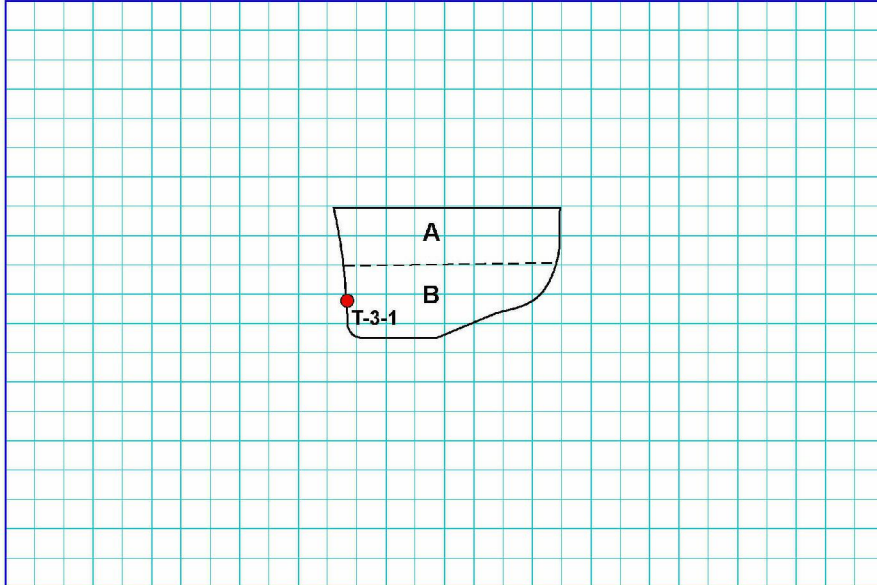
B. Dark gray fine to coarse sandy silt and clay, abundant gravel, damp, few pieces of oil-stained soil, no odor.



TRENCH LOG

Site: Sump 23
Trench ID: Trench 3
Sample: T-3-1
Trench Map:

Date: November 9, 2006
Time: 0908 to 0930
Weather: Cool and windy
Map Scale: One square = 1 square foot



Field Notes: _____

A. Dark yellowish brown fine to coarse sandy silt with abundant gravel and cobbles, dry, no odor or visible staining.

B. Brown to dark yellowish brown fine to coarse sandy silt and clay (buried top soil), trace gravel, damp, no odor or visible staining.



TRENCH LOG

Site: Sump 23

Date: November 9, 2006

Trench ID: Trench 4

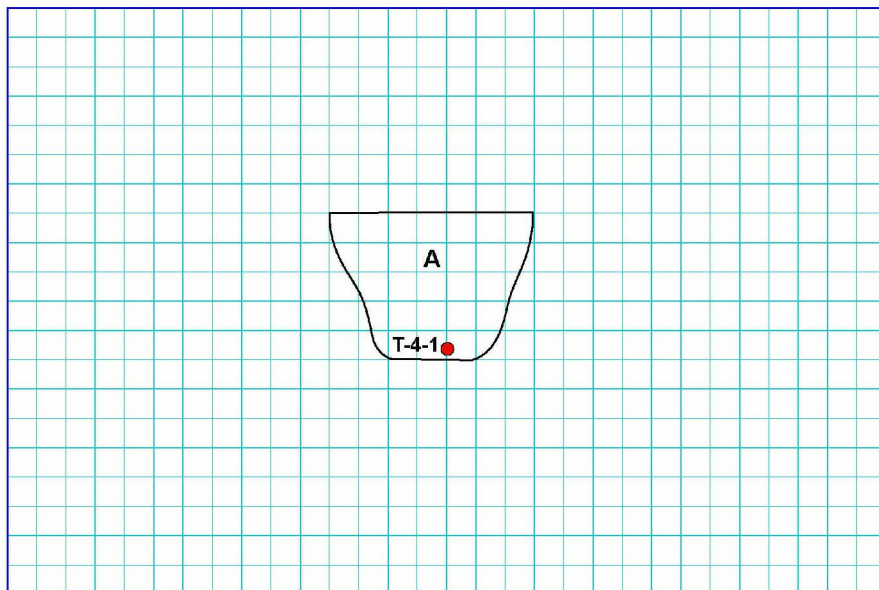
Time: 0935 to 1000

Sample: T-4-1

Weather: Cool and windy

Trench Map:

Map Scale: One square = 1 square foot



Field Notes: _____

A. Yellowish brown silty fine to coarse sand
with abundant gravel and cobbles, dry, no odor
or visible staining.



Elevation, feet	Depth, feet	SAMPLES			Blows per 6 inches	Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Headspace PID, ppm	Background PID, ppm	Drilling Progress 24-hour clock	REMARKS
		Type	Number									
1	2	3	4	5	6	7	8	9	10	11	12	

COLUMN DESCRIPTIONS

- 1 Elevation:** Elevation in feet relative to mean sea level (MSL).
- 2 Depth:** Depth in feet below the ground surface.
- 3 Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.
- 4 Sample Number:** Identification number of sample retained for possible chemical analyses.
- 5 Blows per 6 inches:** Number of blows to advance driven sampler each 6-inch interval, or distance noted, using a 140-lb hammer with a 30-inch drop. "--" indicates data not available.
- 6 Graphic Log:** Graphic depiction of subsurface material encountered; typical symbols are explained below.
- 7 Unified Soil Classification:** Unified Soil Classification System (USCS) code for associated soil stratum.
- 8 Material Description:** Description of material encountered; in addition to soil classification, may include color, moisture, grain size, density/consistency, staining, and odor.
- 9 Headspace PID:** Photoionization device field headspace reading in parts per million (ppm); NM=not measured.
- 10 Background PID:** Photoionization device background reading in parts per million (ppm); NM=not measured.
- 11 Drilling Progress:** Time (in 24-hour clock) at sampling and other events during downhole advance.
- 12 Remarks:** Comments and observations regarding drilling or sampling made by driller or field personnel.

TYPICAL MATERIAL GRAPHIC SYMBOLS

SAND (SP)	SAND (SW)	Clayey SAND (SC)	Silty SAND (SM)
CLAY (CL)	Sandy CLAY (CL)	Silty CLAY (CL)	SILT (ML)
GRAVEL (GP/GW)	Sandy GRAVEL (GP/GW)	SANDSTONE	SILTSTONE

TYPICAL SAMPLER GRAPHIC SYMBOLS

Split spoon with three stainless steel liners	Portion of sample retained for analysis	No sample recovery
---	---	--------------------

OTHER GRAPHIC SYMBOLS

- First water encountered at time of drilling
- Static water level measured after drilling
- Change in material properties within a stratum
- Inferred contact between strata or gradational change in lithology

GENERAL NOTES

- Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

ECO_2S_KEY; SUMP22AC.GPJ; 1/29/2007



Date(s) Drilled	January 25, 2007	Logged By	Q. Kinnebrew	Reviewed By	
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-inch-OD auger	Total Depth of Borehole	35.7 feet
Drill Rig Type	CME 85	Drilling Contractor	BC ² Environmental	Approximate Surface Elevation	2,180 feet MSL
Sampling Method	Split spoon lined with 3 stainless steel tubes (2 in. dia. x 6 in. long)	Depth to Groundwater	Not encountered at time of drilling		
Borehole Backfill	Bentonite chips, hydrated	Comments	Refer to site plan for location		

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number							
2180	0					[Material not sampled or observed in upper 5 feet]				
2175	5	01-25-07 / B-1-5	18 21 23		CL	Very dark gray, silty CLAY with abundant fine to coarse sand and angular gravel-size siltstone clasts, damp, very stiff, petroleum hydrocarbon staining, slight oil odor	250	0	0935	
2170	10	01-25-07 / B-1-10	7 9 10		CL	↓ Becomes black and very dark gray, stiff, heavy staining, naphthalene odor	21.3	0	0939	Only ~10% sample recovery at 10 ft.
2165	15	01-25-07 / B-1-15	7 7 9		CL	Black to very dark gray, silty CLAY, wet, stiff, heavy petroleum hydrocarbon staining, strong petroleum hydrocarbon odor	967	0	0943	
2160	20	01-25-07 / B-1-20	16 19 21		ML/CL	<u>Bedrock</u> Gray to dark gray, SILT and silty CLAY layers [weathered siltstone], wet, very stiff, oil seeps between fractures, petroleum hydrocarbon staining and odor	957	0	0948	
2155	25	01-25-07 / B-1-25	18 22 29		ML	Dark yellowish brown SILTSTONE, damp, hard, laminated, no visible staining, slight naphthalene odor	474	0	0951	
2150	30					↓ Becomes light olive brown, very stiff, very slight odor				

ECO_2S; SUMP22AC.GPJ; 1/29/2007



Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number	Blows per 6 inches							
2150	30	01-25-07 / B-1-30		14 19 21		ML	Light olive brown SILTSTONE, damp, very stiff, laminated, no visible staining, very slight naphthalene odor [Bedrock] (continued)	508	0	0954	Drilling becomes difficult at 30 ft.
2145	35	01-25-07 / B-1-35		18 50/2"			↓ Becomes yellowish brown to dark yellowish brown, hard, no odor Cemented SANDSTONE Bottom of boring at 35.7 feet bgs	444	0	1003	
2140	40										
2135	45										
2130	50										
2125	55										
2120	60										
2115	65										

ECO_2S; SUMP22AC.GPJ; 1/29/2007



Date(s) Drilled	January 25, 2007	Logged By	Q. Kinnebrew	Reviewed By	
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-inch-OD auger	Total Depth of Borehole	31.5 feet
Drill Rig Type	CME 85	Drilling Contractor	BC ² Environmental	Approximate Surface Elevation	2,180 feet MSL
Sampling Method	Split spoon lined with 3 stainless steel tubes (2 in. dia. x 6 in. long)	Depth to Groundwater	Not encountered at time of drilling		
Borehole Backfill	Bentonite chips, hydrated	Comments	Refer to site plan for location		

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number							
2180	0					[Material not sampled or observed in upper 5 feet]				
2175	5	01-25-07 / B-2-5	13 15 20		CL	Very dark gray, brown, and dark yellowish brown, silty CLAY with abundant fine to coarse sand and angular gravel-size siltstone clasts, damp, very stiff, petroleum hydrocarbon staining and odor	4.2	0	1041	
2170	10	01-25-07 / B-2-10	5 7 12		CL	Very dark gray CLAY with abundant fine to coarse sand and angular gravel-size siltstone clasts, moist, stiff, heavy petroleum hydrocarbon staining, strong petroleum hydrocarbon odor	29.6	0	1043	
2165	15	01-25-07 / B-2-15	10 13 15		ML	Dark gray SILT, wet, very stiff, petroleum hydrocarbon staining, strong petroleum hydrocarbon odor	385	0	1047	
2160	20	01-25-07 / B-2-20	19 50/5"		CL	Dark yellowish brown, silty CLAY, trace gravel-size siltstone clasts, moist, hard, no visible staining, no odor	0.5	0	1050	
2155	25	01-25-07 / B-2-25	15 18 21		ML	Bedrock Dark yellowish brown SILTSTONE, moist, very stiff, no visible staining, no odor	2.6	0	1053	
2150	30									

ECO_2S; SUMP22AC.GPJ; 1/29/2007



Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number	Blows per 6 inches							
2150	30		01-25-07 / B-2-30	:-		ML	Dark yellowish brown SILTSTONE, moist, very stiff, no visible staining, no odor [Bedrock] (continued)	0.2	0	1058	
							Bottom of boring at 31.5 feet bgs				
2145	35										
2140	40										
2135	45										
2130	50										
2125	55										
2120	60										
2115	65										

ECO_2S; SUMP22AC.GPJ; 1/29/2007



Date(s) Drilled	January 25, 2007	Logged By	Q. Kinnebrew	Reviewed By	
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-inch-OD auger	Total Depth of Borehole	35.9 feet
Drill Rig Type	CME 85	Drilling Contractor	BC ² Environmental	Approximate Surface Elevation	2,180 feet MSL
Sampling Method	Split spoon lined with 3 stainless steel tubes (2 in. dia. x 6 in. long)	Depth to Groundwater	Not encountered at time of drilling		
Borehole Backfill	Bentonite chips, hydrated	Comments	Refer to site plan for location		

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number							
2180	0					[Material not sampled or observed in upper 5 feet]				
2175	5	01-25-07 / B-3-5		7 8 10	CL	Dark gray, silty CLAY with abundant fine to coarse sand and angular gravel-size siltstone clasts, moist, stiff, petroleum hydrocarbon staining, strong petroleum hydrocarbon odor	NM	NM	1135	No headspace or background measurements due to moisture sensitivity of PID.
2170	10	01-25-07 / B-3-10		6 8 8	CL		NM	NM	1138	
2165	15	01-25-07 / B-3-15		9 10 10	CL	Very dark gray, gray, and black CLAY, locally abundant fine to coarse sand and angular gravel-size siltstone clasts, wet, stiff, some oil, petroleum hydrocarbon staining, strong petroleum hydrocarbon odor	NM	NM	1140	
2160	20	01-25-07 / B-3-20		11 14 17	CL	Very dark gray, silty CLAY, trace fine to coarse sand and angular gravel-size siltstone clasts, moist, very stiff, petroleum hydrocarbon staining and odor	NM	NM	1142	
2155	25	01-25-07 / B-3-25		12 17 24	ML	Bedrock Dark yellowish brown SILTSTONE, moist, very stiff, no visible staining, slight petroleum hydrocarbon odor	NM	NM	1145	
2150	30					▼ No odor				

ECO_2S; SUMP22AC.GPJ; 1/29/2007



Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number	Blows per 6 inches							
2150	30	01-25-07 / B-3-30		13 14 19		ML	Dark yellowish brown SILTSTONE, moist, very stiff, no visible staining, no odor [Bedrock] (continued)	NM	NM	1148	
2145	35	01-25-07 / B-3-35		22 50/5"			▼ Becomes hard	NM	NM	1151	
							Bottom of boring at 35.9 feet bgs				
2140	40										
2135	45										
2130	50										
2125	55										
2120	60										
2115	65										

ECO_2S; SUMP22AC.GPJ; 1/29/2007



Date(s) Drilled	January 25, 2007	Logged By	Q. Kinnebrew	Reviewed By	
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-inch-OD auger	Total Depth of Borehole	25.9 feet
Drill Rig Type	CME 85	Drilling Contractor	BC ² Environmental	Approximate Surface Elevation	2,180 feet MSL
Sampling Method	Split spoon lined with 3 stainless steel tubes (2 in. dia. x 6 in. long)	Depth to Groundwater	Not encountered at time of drilling		
Borehole Backfill	Bentonite chips, hydrated	Comments	Refer to site plan for location		

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number							
2180	0					[Material not sampled or observed in upper 5 feet]				
2175	5	01-25-07 / B-4-5		20 50/5"	ML	Brown, fine to coarse sandy SILT with angular gravel-size siltstone clasts, dry to damp, hard, no visible staining, no odor	NM	NM	1236	No headspace or background measurements due to moisture sensitivity of PID.
2170	10	01-25-07 / B-4-10		10 12 17	CL	Dark brown to dark yellowish brown, silty CLAY, trace fine to coarse sand, moist, very stiff, no visible staining, no odor	NM	NM	1239	
2165	15	01-25-07 / B-4-15		12 17 24		↓ Becomes dark brown, wet	NM	NM	1244	
2160	20	01-25-07 / B-4-20		15 18 25	ML	Dark yellowish brown, clayey SILT [weathered siltstone], moist, very stiff, no visible staining, no odor	NM	NM	1248	
2155	25	01-25-07 / B-4-25		10 50/5"		↓ Becomes hard	NM	NM	1251	
						Bottom of boring at 25.9 feet bgs				
2150	30									

ECO_2S; SUMP22AC.GPJ; 1/29/2007

APPENDIX C

SEMPRA ENERGY UTILITIES ENVIRONMENTAL EVALUATION FORM

Sempra Energy Utilities Environmental Evaluation Form



rev. 12/04

Project Title: Aliso Canyon Storage Facility Sump Investigation (Western Area)

ESPTS Number: 5765

ES Project Lead: Johnny Grady

Project Number: Pending

PROJECT INFORMATION		TO BE COMPLETED BY COMPANY PROJECT MANAGER OR PLANNER	
IO#: n/a	GWO.#: n/a	Project Location	
C.C.#: n/a	W.R.#: n/a	Property Ownership:	The Gas Company @ Aliso Canyon
Line#: n/a	Activity Class: NA	Base: GAP	Aliso Canyon
Project Description: SCG is planning to conduct soil tests for potential contamination (e.g., metals, petroleum hydrocarbons, solvents, and volatile organic compounds) resulting from petroleum releases associated with ponds labeled "sump" at the Aliso Canyon Storage Field. Historically, when the Aliso Canyon field was used for oil production sumps were used for the containment of spent drilling mud and/or other oilfield related wastes. Field evidence suggests that sumps were covered with soil derived from earthwork cuts in the Aliso Canyon Storage Field. The project action would include the use of a backhoe to dig five soil pits 2' by 10' to a depth of 10' to 12' at sumps sites scheduled for testing (Sump 20, Sump 21, Sump 22, and Sump 23 – it is noteworthy that Sump 20 is actually two separate sumps in close proximity to either other, these sumps are labels as Sump 20). Excavated soils would be backfilled after soil samples are taken.		<input checked="" type="checkbox"/> Private	<input type="checkbox"/> Public (State) Other:
The temporary disturbance area would include 5 test pits (2' by 10') at each site and the area of trampled vegetation to gain access to the four sump sites. Access to Sump 20 and 23 would be gained via unmaintained secondary roads that have become overgrown with herbaceous plants and shrubs; access to Sump 21 would require grading from an existing road to gain access to the site which is at a lower elevation than the adjacent road.		<input type="checkbox"/> Tribal	<input type="checkbox"/> Public (Fed)
Lat/Long of Sump Sites		GPS:	Lat: See Project Description
Sump 20 34.3137 -118.5711	Sump 21 34.3074 -118.5744		Long: See Project Description
Sump 22 34.3070 -118.5714	Sump 23 34.3057 -118.5685	Quad:	Oat Mountain
Equipment: backhoe and two pick-up trucks		County / City:	LA County/ Northridge
Date Submitted: 6/21/06	Start Date: 8/15/06	Township:	Range:
Duration of Activity: #Days 5 #Weeks 1		Section(s):	
Contractor: <input checked="" type="checkbox"/>	Company Crew: <input type="checkbox"/>	Programmatic Area:	GAP
	# People: 4	APN Number(s):	n/a
		Thomas Guide#:	480
		Atlas Sheet #:	n/a
		Mileposts:	n/a
		Photo <input checked="" type="checkbox"/> Map <input checked="" type="checkbox"/> Urban <input type="checkbox"/> Rural <input checked="" type="checkbox"/>	
		Site / Access Description:	

Sempra Energy Utilities Environmental Evaluation Form



rev. 12/04

Project Title: Aliso Canyon Storage Facility Sump Investigation (Western Area)

ESPTS Number: 5765

ES Project Lead: Johnny Grady

Project Number: Pending

PROJECT INFORMATION				TO BE COMPLETED BY COMPANY PROJECT MANAGER OR PLANNER			
Disturbance:	Length	See above	Width	See above	Acres	See above	Existing roads within storage field: access to Sump 20 and Sump 23 is via overgrown secondary roads; access to Sump 21 will require the construction of a road
Project Contact:	Masood Hosseini Quin Kinnebrew	Phone #:	(213) 244-3292 (714) 315-5354				

Sempra Energy Utilities Environmental Evaluation Form



rev. 12/04

Project Title: Aliso Canyon Storage Facility Sump Investigation (Western Area)

ESPTS Number: 5765

ES Project Lead: Johnny Grady

Project Number: Pending

BIOLOGICAL SURVEY AND MONITORING DATA:		<i>To Be Completed by Biologist</i>
Pre-construction Survey Required?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Documentation:
Biological Monitor Needed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Comments: A biological monitor should be on-site during all ground disturbing activities as outlined in the USFWS letter dated September 20, 2006.		
BIOLOGICAL DATA:		
Date of Site Visit: June 20, 2006	Habitat Type: Grassland and Coastal Sage Scrub	
Sensitive Habitats: Coastal Sage Scrub, California Oak		
Sensitive Species: CNDDDB indicates 2 sensitive species, slender horned spine flower (<i>Dodecahema leptoceras</i>) and California orcutt grass (<i>Orcuttia californica</i>) (SCG 2006 Online Mapping Tool). SCG Storage Field Habitat Types and Sensitive Species indicate potential presence of the following species: coastal California gnatcatcher (<i>Polioptila californica</i>), Braunton's milkvetch (<i>Astragalus brauntonii</i>), southern California black walnut (<i>Juglans californica</i>), Lyon's pentachaeta (<i>Pentachaeta lyonii</i>), Marcescent dudleya (<i>Dudleya cymosa</i> spp. <i>marcescens</i>), Santa Susana tarplant (<i>Deinandra minthorni</i>), and Verity's live-forever (<i>Dudleya verityi</i>) (SCG 2000). The USFWS has proposed critical habitat for coastal sage scrub within the project area (USFWS 2003). The biologist did not detect any of the above sensitive species during the site visit.		
Sensitive Resources: None.		
Access: Existing roads in storage facility.	Terrain: Moderately sloped and flat	
Comments: Protocol surveys for the coastal California gnatcatcher were completed in June 2006 for a nearby project. The species was not detected.		

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<p>BIOLOGICAL IMPACTS:</p>	<p>The project activities associated with the sump investigation will result in temporary impacts to coastal sage scrub and grassland habitat as a result of the crushing vegetation during vehicle travel and stockpiling of spoils as well as the removal of vegetation during the excavation of investigation trenches. After the project is complete the disturbed vegetation will be allowed to spontaneously recover.</p>					
<p>Recommended Mitigation Measures</p>	<p>Implement USFWS measures to avoid effects of the project on coastal California gnatcatchers as outlined below.</p> <ol style="list-style-type: none"> 1. Vegetation trimming will occur between August 1 and March 1 to avoid potential impacts to nesting coastal California gnatcatchers. 2. Activities will be conducted in a manner that minimizes vegetation impacts to the maximum extent feasible. Roadside locations and previously disturbed sites will be used for parking and staging of equipment and vehicles, where feasible. 3. A qualified biologist will monitor the project during all ground-disturbing activities. The biologist will have the authority to halt construction activities that might result in harm to a special-status species or habitats. The biologist will also be responsible for assisting in compliance with these avoidance measures. 					
<p>Anticipated Impacts & Habitat Compensation Costs <i>(to be confirmed post-construction)</i></p>	<p>Habitat Type(s)</p>	<p>Disturbance Area (Acres)</p>	<p>T / P</p>	<p>Mitigation Ratio</p>	<p>Total Compensation (Acres)</p>	<p>Anticipated Cost</p>
	<p>Grassland habitat</p>	<p>0.17</p>	<p>T</p>	<p>n/a</p>	<p>n/a</p>	<p>n/a</p>
	<p>Coastal sage scrub</p>	<p>0.43</p>	<p>T</p>	<p>n/a</p>	<p>n/a</p>	<p>n/a</p>

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Project Title: Aliso Canyon Sump Investigation
ES Project Lead: Johnny Grady

ESPTS Number: 5765

Project Number: GAP 06-5765

Reviewed By:	Johnny Grady	Date:	8-28-06
BIOLOGICAL Summary	The project activities associated with the sump investigation will result in the temporary disturbance of approximately 0.17 acres of grassland habitat and 0.43 acres of coastal sage scrub habitat. The project should be implemented with the above mitigation measures thereby avoiding impacts to sensitive species.		

Project figures and photographs are included in SCG submittal to USFWS dated July 28, 2006.

Sempra Energy Utilities Environmental Evaluation Form



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Project Title: Aliso Canyon Sump Investigation

ESPTS Number: 5765

ES Project Lead: Johnny Grady

Project Number: GAP 06-5765

WATER QUALITY DATA:		<i>To be completed by FES or Water Quality Specialist</i>	
A. Anticipated total disturbance area (sq. ft. or acres) <i>Include workstrip(s), access paths, trench width, equipment lay-down and storage areas, extra workspaces for spoil storage, and hydrotest discharge areas for installation projects. Also include disturbance area associated with pipeline or other facility removal. This should total the same area indicated as Page 1.</i>		Approximately ½ acre total disturbance total for all 4 locations.	
B. Watershed Name: Los Angeles River Watershed			
C. Number of Waterbodies Crossed (washes, streams, culverts):		None	
D. Are any of the above blue-line streams (i.e. federally jurisdictional)?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
E. Are any permits required (404, 401, 1602)?		<input type="checkbox"/> Yes (see below) <input checked="" type="checkbox"/> No	
ACOE District / Address	RWQCB District / Address	CDFG District / Address	
Permits: None	Permits: None	Permits: None	
F. Will this project require the surface discharge of hydrostatic test water or trench water?		<input type="checkbox"/> Yes (see below) <input checked="" type="checkbox"/> No	
If yes, please include type and volume of discharge(s):			
Reviewed By:	Brad Lane	Date:	9-19-06
WATER Summary	No permits required for investigation stage of this project. Use proper BMP's for Stock Pile management to prevent wind, and rain erosion or run off. Remove minimal vegetation to prevent sedimentation and canalization during future rain events.		

Sempra Energy Utilities Environmental Evaluation Form



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Project Title: Aliso Canyon Sump Investigation
ES Project Lead: Johnny Grady

ESPTS Number:	5765
Project Number:	GAP 06-5765

ADDITIONAL INFORMATION:	<i>To be completed by FES or Environmental Solutions subject matter expert</i>	
CEQA EXEMPTION / COVERAGE		
<input checked="" type="checkbox"/> Yes, Exemption(s): CEQA categorical exemption 15301 (b)	No, Lead Agency:	<input type="checkbox"/> Covered by Developer EIR, MND, ND – NOE/NOD? Name:
NEPA NEXUS/JURISDICTION		
NEPA Nexus: <input checked="" type="checkbox"/> No federal jurisdiction	<input type="checkbox"/> Yes, Lead Agency: BLM	<input type="checkbox"/> Covered by Developer EIS/EA - ROD/FONSI/CatEx?
Section 106/Cultural Resource Compliance Issues? Description: N/A	Record Search Required <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Consultation with NAHC? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Coastal Development Permit Required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Consult with CCC or LCP		
Additional Discretionary/Ministerial Permits Required: None		
Additional Summary/Comments:		

APPENDIX D

LABORATORY REPORTS

APPENDIX D – LABORATORY REPORTS

Laboratory reports are included on the attached CD-ROM in PDF format.