
START 3

Superfund Technical Assessment and Response Team 3 –
Region 8



**United States
Environmental Protection Agency
Contract No. EP-W-05-050**

SAMPLING ACTIVITIES REPORT

**LONE PINE GAS, INC. OIL SPILL
Walden, Jackson County, Colorado**

TDD No. 1204-09

March 8, 2013



URS

OPERATING SERVICES, INC.

In association with:

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SAMPLING ACTIVITIES REPORT

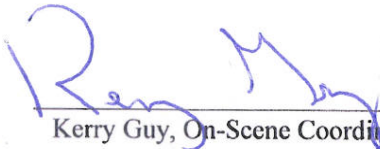
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**SAMPLING ACTIVITIES REPORT
Lone Pine Gas, Inc. Oil Spill
Near Walden, Jackson County, Colorado**

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1.0 INTRODUCTION

URS Operating Services, Inc. (UOS) was tasked by the Environmental Protection Agency (EPA), under Superfund Technical Assessment and Response Team 3 (START) contract # EP-W-05-050, Technical Direction Document (TDD) No. 1204-09 and its amendments, to provide technical support to the EPA Region 8 On-Scene Coordinator (OSC) in relation to an Emergency Response (ER) to a release of crude oil from the Lone Pine, Inc. (aka Lone Pine Gas, Inc.) (“Lone Pine”) tank battery and treatment facility (“the facility”). The facility is located approximately 11 miles west of Walden, Colorado (Figure 1). The release, which apparently occurred on or around December 15, 2011, was not reported to the National Response Center.

The purpose of this Emergency Response assessment was to assist the OSC in assessing the impacts from the spill in order to allow the OSC to evaluate and assess the need for any future removal actions at the site. Specifically, START was tasked to assist the OSC with a thorough assessment and documentation of oil impacts to Spring Gulch Creek, and then Hell Creek, from a point immediately below the facility’s waste water discharge point to the downstream extent of impacts (“the site”). Assessment activities were primarily conducted during two multi-day sampling events that occurred in April and June 2012. An additional 1-day sampling event occurred in August 2012. The assessment activities included:

- visual assessment of the extent and degree of contamination to Spring Gulch Creek, Hell Creek, and two irrigation ditches (the Hell Creek Ditch and the Sorenson Ditch);
- semi-quantitative analysis of hydrocarbon concentrations in stream sediments using immunoassay testing;
- collection of sediment samples from the creeks and ditches for laboratory analysis;
- collection of water samples for laboratory analysis from Spring Gulch Creek and Hell Creek; including background samples, samples collected to assess potential risks to livestock drinking water from the creek, and effluent samples from the facility discharge;
- collection of samples of crude oil and contaminated sediment for U.S. Coast Guard (USCG) laboratory “fingerprint” analysis;
- photo documentation and global positioning system (GPS) surveying of impacted areas and sampling locations; and
- GPS surveying of monitoring wells installed at the site.

In total, just over 8 stream miles (including both Spring Gulch Creek and Hell Creek) were assessed for contamination and 115 environmental samples (primarily sediment) were collected. A summary of analytical methods by matrix and assessment event is given in Section 4.2.

Three samples of sediment and one sample of crude oil were also collected and sent to the USCG Marine Safety Laboratory (MSL) for fingerprint analysis using gas chromatography (GC) and GC – mass spectrometry (GC-MS).

START field activities followed the site-specific Sampling and Analysis Plans (UOS 2012a, UOS 2012b), the site-specific Health and Safety Plan (UOS 2012c), the Generic Quality Assurance Project Plan (QAPP) (UOS 2005a), and the applicable UOS Technical Standard Operating Procedures (TSOPs) (UOS 2005b). Site activities from the April assessment were previously summarized in a trip report dated July 6, 2012 (UOS 2012d).

Site activities were documented in the site-specific logbook, included as Appendix A. Appendix B contains the site photolog and Appendix C contains the results of the USCG fingerprint analysis. Additional laboratory analytical results and chains of custody for sediment and water samples are supplied in Appendix D. Analytical results from polycyclic aromatic hydrocarbon (PAH) analysis were validated and the data validation package is also included in Appendix D. Appendix E contains the equilibrium partitioning calculations used to determine PAH toxicity in sediments and a discussion regarding PAH exposure to cattle. Appendix F contains groundwater and sediment analytical results and a sample location map from sampling conducted by Lone Pine under the oversight of the Colorado Oil and Gas Conservation Commission (COGCC).

In summary, the combined assessment activities identified oil contamination within the stream sediments of Spring Gulch Creek, and then Hell Creek, from the facility to a point approximately 4.4 stream miles downstream (Figures 2 and 4). This oil contamination was identified both visually (through the creation of a visible hydrocarbon sheen when sediments were disturbed) and through chemical analysis of sediments for petroleum hydrocarbons. Below approximately 4.4 miles, although visible sheen could not be created, analytical results showed the presence of hydrocarbons at concentrations greater than background within nearly all sediment samples collected from Hell Creek to its confluence with the North Fork of the North Platte River (Figure 4). The North Fork is approximately 6.7 stream miles downstream from the Lone Pine facility.

Remnant oil contamination was also identified in Upper Hell Creek at most locations downstream of the point where a release occurred during the winter of 2005-2006, a distance of approximately 1.2 stream miles. The Sorenson and Hell Creek irrigation ditches did not appear to have detectable petroleum contamination beyond a few hundred feet from their headwaters.

When compared to screening benchmarks within the National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRTs) (Buchman 2008), concentrations of seven PAHs and three metals exceeded the Threshold Effect Concentration (TEC)¹ in at least one sediment sample. Concentrations of four of these PAHs also exceeded the Probable Effect Concentration (PEC)² in at least one sample.

Toxicological assessment of sediment and surface water PAH concentrations by the EPA indicates that sediment toxicity at a few locations within Spring Gulch Creek and Hell Creek is likely high enough to cause an adverse effect to invertebrates. However, negligible risk appears to be presented to cattle ingesting water from Hell Creek, or to humans consuming beef from these cattle.

2.0 SITE DESCRIPTION AND BACKGROUND

The Lone Pine facility is located approximately 11 miles (14.5 road miles) west of Walden, Colorado in Jackson County (Figure 1) and consists of a wastewater treatment works for the adjacent Lone Pine oil field (Appendix B, Photo 1). The principal products from the field include crude petroleum and natural gas. After oil and formation water are withdrawn from the field wells, initial oil/water separation occurs in vertical tanks (Photo 2). Separated crude oil is stored in different vertical tanks (Photo 3). Process wastewater is removed from the separation tanks and sent to a series of six settling ponds (aka “skim pits”) for treatment (Photo 4). Treatment consists of further oil/water physical separation utilizing oil booms, followed by alternating splash aeration and solids settling (Photo 5) (Colorado Department of Public Health and Environment [CDPHE 2010]). After treatment, water is discharged through a weir into a gully (Photo 6), and then travels approximately 370 feet to the northwest before draining into Spring Gulch Creek (Figure 1) (Photo 7), part of the headwaters of the North Platte River. The North Platte River is located approximately 8.5 stream miles downstream of the facility (Figure 1).

The facility discharge is regulated under the Colorado Discharge Permit System permit number COG-600000 for “Industrial Minimum Discharge” (CDPHE 2010). Lone Pine is authorized to discharge under

1 The TEC is considered to be the lowest concentration above which some effect or response will be produced.

2 The PEC is considered to be the lowest concentration above which an adverse effect is likely to be produced.

this permit via permit certification number COG-600464. This permit was scheduled to expire on July 31, 2006, but both the permit and certification have been administratively extended by the Colorado Water Quality Control Division (CDPHE 2010). A table of effluent parameters and discharge limits from the permit was included in Appendix C of the April trip report (UOS 2012c).

On or around December 15, 2011, operations at the facility resulted in a discharge of oil to the skim pits and then into Spring Gulch Creek. According to COGCC field inspection reports, free petroleum product was noted downstream from the facility on December 20, 2011. On January 3, 2012, oil was noted in all facility pits, and removal of contaminated soil from the gulley between the discharge and Spring Gulch Creek was underway.

The release was not reported to the EPA's National Response Center. The EPA Emergency Response program became aware of the release after concerned landowners contacted the EPA on April 3, 2012. An initial field assessment conducted by the OSC on April 5, 2012 confirmed impacts to Spring Gulch Creek to at least its confluence with Hell Creek. Impacts included oiled vegetation and staining, particularly at bends and turns in the creek. Oiled rocks were noted, but no hydrocarbon sheen was visible at the time.

The EPA has previously responded to a release from the Lone Pine oil field, which occurred when a break in a 4-inch pipeline operated by Lone Pine released an unknown amount of crude oil and production water into "upper"³ Hell Creek during the winter of 2006-2007 (UOS 2006). The EPA oversaw remediation activities at the site, including the placement of sorbent booms, removal of contaminated soil and snow, and pressure washing of oiled-stained stream banks. Impacts to Hell Creek were noted as far downstream as County Road 5 (approximately 3.5 miles downstream from the pipeline). Documentation of the EPA response assessment and remediation oversight activities from this earlier spill can be found at www.epaosc.org/lonepineoilspill.

Land use surrounding the facility and the creeks is primarily agricultural. Cattle use the creek for drinking water. It is understood that all local residents utilize groundwater for drinking purposes. U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory mapping shows the near-continuous presence of palustrine emergent wetlands from the facility to the North Platte River (USFWS 2012). During the June and August events, fish were observed in upper Hell Creek. Evidence of wildlife in lower Hell Creek included mink and deer tracks and a couple of beaver dams.

³ For this report, Hell Creek is segmented into "upper" and "lower" sections: upper Hell Creek is the stretch above the confluence with Spring Gulch Creek, and lower Hell Creek is below the confluence.

From the discharge weir of the facility, water travels down a gulley approximately 370 feet to Spring Gulch Creek (Figure 1) (Photos 6 and 7). Spring Gulch Creek flows generally northeast from the facility for 1.1 stream miles (i.e., not straight distance) before merging with Hell Creek (Figure 1) (Photo 8). Hell Creek then flows generally east for approximately 0.2 mile to an irrigation diversion (the Sorenson Ditch) (Photo 9), then 1 mile to the east to a second diversion (the Hell Creek Ditch) (Photo 10), and then meanders further east for approximately 1.8 miles to County Road 5 (CR5). After passing under CR5, Hell Creek meanders further east approximately 0.8 mile to a third diversion (the Homestead Ditch). Hell Creek then continues east a further 1.9 miles to where it drains into the North Fork of the North Platte River. The North Platte River is approximately 1.8 miles further downstream.

The total stream distance between the facility and the North Fork of the North Platte River is approximately 6.7 miles. The total stream distance between the facility and the North Platte River is approximately 8.5 miles. The total stream length of upper Hell Creek (i.e., from its confluence with Spring Gulch Creek to the location of the background sample collected on upper Hell Creek) is approximately 1.3 miles.

State water use classifications (uses for which the water bodies are presently suitable or intended to become suitable) assigned to Spring Gulch and Hell Creeks are as follows (CDPHE 2006a, b):

- “Class 1 – Cold Water Aquatic Life”: waters that (1) are currently capable of sustaining a wide variety of cold water biota, including sensitive species, or (2) could sustain such biota but for correctable water quality conditions;
- “Recreation E”: surface water that is used for primary contact recreation;
- “Water supply”: surface water that is suitable or intended to become suitable for potable water supply;
- “Agriculture”: surface waters that are suitable or intended to become suitable for irrigation of crops usually grown in Colorado and that are not hazardous as drinking water for stock.

3.0 SITE ASSESSMENT ACTIVITIES AND OBSERVATIONS

3.1 SUMMARY OF ASSESSMENT ACTIVITIES

Assessment activities were primarily conducted during two events that occurred in April and June 2012. An additional 1-day sampling event occurred in August 2012. In total, just over 8 stream miles were assessed and 115 environmental samples were collected. Of these, 108 samples were sent for laboratory analysis.

During each event, GPS surveying and photo documentation of impacted areas and sampling locations were conducted. Groundwater monitoring wells installed at the facility under direction from the COGCC in April were also surveyed (but not sampled by START) during the April event. Lone Pine is required to sample these wells in order to monitor the potential migration of oil from the oil waste pit to Spring Gulch Creek. Total Petroleum Hydrocarbon (TPH) and Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) results from the first round of sampling conducted by Lone Pine (Appendix F) revealed no petroleum groundwater contamination in the four wells sampled. Monitoring well locations are shown in Figure 2.

3.1.1 April 25-27, 2012

On Tuesday, April 24, 2012, prior to the April field event, START members Jeff Miller (project manager) and Nat Williams (Geographic Information System [GIS]/data manager) met with EPA OSCs Kerry Guy (project task monitor) and Martin McComb (data management) at the EPA Region 8 office to discuss project data needs and logistics.

The April event was conducted from April 25 through 27, 2012. The objectives of this initial trip to the site included visual assessment of stream impact and the collection of sediment and surface water samples (UOS 2012a). START initiated a GIS viewer on the first day of the event to guide assessment decisions and identify data gaps. Initially, screening-level analysis of sediment with immunoassay kits was conducted at seven locations on Spring Gulch Creek in an effort to determine the general nature of the contamination (i.e., relation between degree of sheen and degree of contamination, vertical extent of contamination on stream banks). Subsequently, laboratory confirmation samples were collected along both Spring Gulch Creek and Hell Creek (both upper and lower), as well as within two irrigation ditches along lower Hell Creek. Due to concerns expressed by a local rancher on the potential risk the contamination presented to livestock, a water sample was also collected from one location on lower Hell Creek (Timberman property) (Photo 11). This sample was collected after the water column and underlying sediments were agitated to simulate conditions that could occur when cattle were drinking. A second water sample was collected from the facility discharge to determine its quality compared to the permit limits.

In total, 26 laboratory samples (20 sediment, 2 soil, 2 water, and 3 quality assurance/quality control [QA/QC]) were collected during the April sampling event (UOS 2012d).

Sample locations were chosen to be approximately equidistant from each other within Spring Gulch Creek and Hell Creek. Once it was understood that the extent of contamination reached much farther downstream than was anticipated, additional sample locations (e.g., LP-SS-004 and LP-SS-024) were added to attempt to identify the downstream extent.

Sample analyses chosen for this first event focused on confirming the degree and extent of petroleum contamination to the creek and ditches (e.g., TPH in sediments), assessing sediment ecotoxicity (e.g., Massachusetts Department of Environmental Protection Method for Extractable Petroleum Hydrocarbons [MADEP EPH] in sediments, which includes limited PAH analysis), and to assess water quality in relation to the facility's permitted discharge limits (e.g., oil and grease in water) as well as ecotoxicity screening level concentrations. Three sediment samples were also analyzed for total organic carbon (TOC), as quantifying the amount of carbon present in stream sediments is required for the calculation of equilibrium partitioning benchmarks used to assess sediment ecotoxicity (see section 6.2 and Appendix E).

The April assessment activities identified significant oil contamination (e.g., sediments that could release hydrocarbon sheen) within Spring Gulch Creek, and then lower Hell Creek, to a point approximately 4.1 stream miles downstream of the facility. The downstream endpoint of contamination, as defined by the ability to generate sheen from sediment, could not be identified during the time available for the April assessment.

If significant oil contamination was present, disturbing stream sediments would result in the generation of hydrocarbon sheen (Photos 12, 13, 14). Detailed visual assessment of creek sediments indicated that spill impacts reached much farther downstream than initially believed, and the contamination observed appeared, at least in part, to be potentially related to prior releases from the facility, such as that which occurred in 2006 (UOS 2006).

In addition to the sediment contamination, approximately 1,370 linear feet of streamside vegetation along Spring Gulch Creek was found to be coated with weathered oil (Figure 3, Photos 15, 16).

Given these results, it was decided that additional investigation was warranted to further define the degree and extent of contamination, particularly the endpoint of significant contamination (e.g. where sheen could be generated from sediment) in lower Hell Creek, and also to further assess sediment toxicity to aquatic life.

3.1.2 June 11-13, 2012

The second assessment event was conducted from June 11 through 13, 2012. For this event, visual assessment and sampling of sediment were extended downstream to the point where Hell Creek enters the North Fork of the North Platte River, approximately 6.7 miles downstream from the facility. A background sediment sample on the North Fork was also collected. In an effort to further assess ecotoxicity of the sediment and surface water, analyses for both matrices were expanded to include metals and an extended PAH analysis. Additionally, one crude oil (Photo 17) and three sediment samples were collected for “fingerprint” analysis by the USCG MSL.

In total, 73 laboratory samples (57 sediment, 4 source/fingerprint, 9 water, and 3 QA/QC) were collected during the June sampling event. Sample locations were chosen to be approximately equidistant from each other, from the facility downstream to the North Fork of the North Platte River.

Sample analyses chosen for this second event focused both on confirming the degree and extent of petroleum contamination (e.g., TPH in sediments), as well as better defining the ecotoxicity of the contaminated sediments (e.g., extended PAH analysis using Method 8270C SIM). Water samples were collected from Spring Gulch Creek and Hell Creek (both upper and lower), as well as from the facility discharge, to assess ecotoxicity of the water, rather than to access possible discharge permit exceedances.

In summary, the second assessment identified the extent of significant hydrocarbon contamination (e.g. a sheen could be generated from sediment) to a point in lower Hell Creek approximately 4.4 stream miles downstream of the facility (to approximately sample location LP-SS-036). Below this point, a sheen could not be generated from sediments in Hell Creek at any location downstream to its confluence with the North Fork of the North Platte River.

In addition to Spring Gulch Creek and lower Hell Creek, contaminated sediments were identified within upper Hell Creek (Photo 18), which was not affected by the December 2011 release. This contamination is likely remnant contamination attributable to the 2006 release.

3.1.3 August 29, 2012

A final 1-day sampling event occurred on August 29, 2012. During this event, START collected nine additional sediment samples for TOC analysis. These sample locations were chosen to be approximately equidistant from three earlier TOC samples collected in April, and to be adjacent to sediment samples analyzed for PAHs during the June event.

Concurrently with this sampling event, the USFWS conducted periphyton (algae and other sessile organisms that live attached to the stream bottom) assessment and sampling activities. The purpose of the assessment was to determine if algal blooms noted in Hell Creek are related to the petroleum release. Algae was identified and quantified at six sites in Hell Creek and Spring Gulch Creek. A final report regarding this assessment was not available at the time of writing.

3.2 VISUAL ASSESSMENT

3.2.1 Sediment

The visual assessment technique employed by START during both the April and June events involved use of a Sharpshooter shovel⁴ to open a deep, narrow hole within low-energy areas of the stream that contained fine-grained sediment (e.g., point bars, cut off channels) (Photo 19). If oil was present, disturbing stream sediments in this manner would result in the generation of hydrocarbon sheen (Photos 12, 13, 14). The assessment revealed that nearly all areas of fine-grained sediment occurring within Spring Gulch Creek, and then on Hell Creek to a point approximately 4.4 stream miles away from the facility (i.e., at the LP-SS-037 sample location), would generate sheen when disturbed. The sheen generated at the lower extent of this contamination was faint and dissipated quickly.

⁴ During the June event, in order to better delineate vertical extent of contamination within the sediments, initial attempts were made to collect sediments with both a split-spoon core barrel sediment sampler and acetate Macrocore[®] sleeves. However, due to the lack of cohesion of the sediments and also the presence of gravel, neither method performed as well as using the shovel, so both methods were abandoned.

At most locations where disturbing the fine-grained sediment created sheen, an obvious layer of dark and/or opalescent contamination was present within the sediment (Photos 20, 21). This contamination was often found beneath 1-2 inches of “clean” sediment that appeared to have been deposited post-release by a high precipitation or snow melting event. The contaminated sediment layer varied in thickness, but was generally 1-2 inches thick (although as great as 7 inches thick), and as deep as 10 inches below the surface of the sediment.

As discussed above, within the 4.4 mile stretch of significant contamination, nearly all deposits of fine-grained sediment investigated (e.g., eddies, point bars, other low-energy areas) generated visible sheen to some degree when disturbed (Photos 12, 13, 14). In general, it appeared that the more fine-grained the sediment, the more sheen could be generated. More fine-grained sediment also appeared to be associated with a more consistent dark organic layer, even in downstream areas without obvious visual contamination (Photo 22).

Within much of Spring Gulch Creek, disturbing mid-stream gravels (riffles) and bank material, along even fast and narrow stretches, could also cause the generation of visible sheen. At a few locations in lower Hell Creek (e.g., LP-SS-043, LP-SS-053) coarser, mid-channel sediments (sands and gravels) were sampled to see if these higher-energy environments also contained petroleum contamination. Analytical results show hydrocarbons are present above background levels, but at much lower concentrations than nearby fine-grained sediments.

During the June assessment event, an effort was made to quantify the number of all significant fine-grained depositional areas (e.g., point bars) encountered within the contamination zone where the majority of contamination was anticipated to be captured. These depositional areas were much more prevalent within lower Hell Creek, where the stream profile was predominantly lower energy with a meandering stream channel. Spring Gulch Creek was generally higher energy with a narrower, straighter stream channel with more riffles. Within the area of contamination, a total of 39 depositional areas were identified. This number is likely biased low, as only significant areas of sediment near to or above the water surface were tallied. Depositional areas up to 80 feet in length were identified. The thickness of the sediment deposits was not determined, but in some areas was noted to be at least 18 inches deep. Only a few significant depositional

areas were recorded within Upper Hell Creek (e.g., at the LP-SS-061 and LP-SS-070 sample locations).

Sediment within the Sorenson and Hell Creek irrigation ditches appeared to be largely uncontaminated, with only a faint sheen noted within either ditch near its confluence with Hell Creek. It is believed that this is due to a lack of active water diversion occurring at the time of the latest release.

3.2.2 Vegetation and Bank Soils

During the first assessment event in April, areas of oiled vegetation were also documented by visual assessment. These areas were readily identifiable by the presence of a dark coating of weathered oil on the surface of vegetation (Photos 15, 16). Approximately 1,370 linear feet of streamside vegetation along Spring Gulch Creek was found to be coated with weathered oil (Figure 3). At the confluence of Spring Gulch Creek and lower Hell Creek, only lightly-oiled vegetation was noted. Downstream of this point, impacted vegetation was not discernible. Maps showing areas with impacted vegetation were sent to Lone Pine and the impacted vegetation was remediated by Lone Pine sometime prior to the assessment activities conducted in June.

At a few locations along Spring Gulch Creek, profile soil pits were dug within areas of heavily-oiled vegetation along the creek (Photo 23). Examination of the pits showed that the oil contamination in the areas investigated appeared to be confined to the surficial layer. One of these pits was sampled (samples LP-SS-012 and LP-SS-013), and the analytical results confirmed this observation. Results of this sampling are discussed in Section 5.2 and shown in Tables 4 and 6.

3.2.3 Surface Water

During all three assessment events, water being discharged from the facility to Spring Gulch Creek had hydrocarbon sheen on the surface (Photo 7). This sheen was evident for only a short distance downstream from the confluence of the gulley leading from the discharge weir and Spring Gulch Creek. Trapped oily foam was also evident at a few locations (Photo 24).

An ultrasonic flow meter has been installed by Lone Pine at the weir to record flow rates and temperatures of the facility discharge. During the time of the June event (June 13), the facility discharge rate was 61.3 gallons per minute.

START recorded general water quality parameters during the April and June sampling events. These parameters are summarized in Table 1 below:

TABLE 1
Water Quality Parameters (April and June, 2012)

Date/Time	Sample Location	pH	Temperature (°F / °C)	Conductivity (µS/cm)
4-26-12/ 1700	LP-SW-001	7.6	55/ 12.8	1,269
6-12-12/ 1430	LP-SW-009	7.36	59.4/ 15.3	1,620
6-13-12/ 0928	LP-SW-005	7.4	50/ 10.0	373
6-13-12/ 1032	LP-SW-004	7.56	52.2/ 11.2	334

Note: The temperature being measured by an ultrasonic flow meter installed at the facility discharge weir was 72.9 °F (22.7 °C) on June 13 at 1641 hours.

3.3 OTHER OBSERVATIONS

3.3.1 Creeks

Cattle appear to be able to access all areas of Spring Gulch Creek and Hell Creek (both upper and lower) for drinking water.

Fish were observed during all three sampling events, although only a single fish was documented during the April trip (in upper Hell Creek). Fish were documented in all three segments (Spring Gulch Creek, upper and lower Hell Creek) during the June event. Numerous caddisfly larvae casings were also noted within Spring Gulch Creek during the June event (Photo 26).

Algal matting was present within lower Hell Creek during the June sampling event, particularly between sample locations LP-SS-050 and LP-SS-055 (Photo 27). This algal growth was not as apparent during the August sampling event⁵. As mentioned previously, the USFWS conducted a periphyton assessment in August 2012 to determine if algal

⁵ A local rancher attributes the degree of algal matting to the rate of discharge of production water from the facility.

blooms noted in the Hell Creek are related to the petroleum release. A final report regarding this assessment was not available at the time of writing.

3.3.2 Facility

After the release in December 2011, Lone Pine excavated contaminated soil from the gully leading from the facility to Spring Gulch Creek and stockpiled it in an unlined area in the northwest corner of the facility (Photo 28). This soil was still present (and uncovered) during the August sampling event. Additional, smaller-scale and localized spills at the facility were evidenced by oil staining down the sides of various storage tanks (Photos 2, 17). The tanks all have secondary containment consisting of earthen berms.

The skim pit that contained a significant quantity of free petroleum during the April sampling event had been decommissioned and excavated under the direction of the COGCC sometime between the June and August sampling events (Photos 4 and 29). Contaminated soil from the excavation had been placed on site to the west of the excavation (Photo 30). No liner was apparent beneath this new pile and, as with the other older stockpile of contaminated soil, this stockpile was not covered during the August sampling event.

The Lone Pine facility is not bounded by fencing. Cattle were observed drinking water from one of the skim pits during the August sampling event (Photo 25). The water held in this pit had a slight hydrocarbon sheen.

Six groundwater monitoring wells have been installed around the perimeter of the skim pits under the direction of the COGCC. Four of these wells were sampled on behalf of Lone Pine by North Park Engineering and Consulting, Inc. on April 17, 2012. Results of the sampling are discussed in Section 5 below and provided in Appendix F. It is believed that the monitoring well MW1 (the only well directly downgradient of the ponds) was destroyed during the excavation of the holding pond but this has not been confirmed.

4.0 SAMPLE LOCATIONS AND ANALYTICAL METHODS

4.1 SAMPLING LOCATIONS

All START sampling locations and the rationale for their collection are summarized in Table 2 below. Sampling locations are also shown in Figures 2 and 6.

Sampling locations for groundwater and sediment sampling conducted by Lone Pine under the direction of the COGCC are shown on the map included in Appendix F. The locations of the monitoring wells are also shown in Figure 2.

TABLE 2
Laboratory Sample Locations and Rationale

Sample Matrix	Sample ID	Location	Rationale
Sediment	LP-SS-001	Lower Hell Creek	Document presence/absence of contamination. MS/MSD also collected here to test the precision of laboratory analytical methods. (Replicate sample is LP-SS-021.)
	LP-SS-002	Hell Creek Ditch	Document presence/absence of contamination.
	LP-SS-003	Sorenson Ditch	Document presence/absence of contamination.
	LP-SS-004	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-005	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-006	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-007	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-008	Spring Gulch Creek	Document presence/absence of contamination.
	LP-SS-009	Upper Hell Creek	Document presence/absence of contamination.
	LP-SS-010	Spring Gulch Creek	Document presence/absence of contamination.
	LP-SS-011	Spring Gulch Creek	Document presence/absence of contamination.
	LP-SS-014	Spring Gulch Creek	Document presence/absence of contamination.
	LP-SS-015	Spring Gulch Creek	Document presence/absence of contamination.
	LP-SS-016	Spring Gulch Creek	Document presence/absence of contamination.
	LP-SS-017	Spring Gulch Creek	Document presence/absence of contamination.
	LP-SS-018	Spring Gulch Creek	Document background concentrations on Spring Gulch Creek.
	LP-SS-019	Upper Hell Creek	Document presence/absence of contamination.
	LP-SS-020	Upper Hell Creek	Document background concentrations on Hell Creek.
	LP-SS-022	Lower Hell Creek	Document presence/absence of contamination. (Replicate sample is LP-SS-023.)
	LP-SS-024	Lower Hell Creek	Document presence/absence of contamination.

TABLE 2
Laboratory Sample Locations and Rationale

Sample Matrix	Sample ID	Location	Rationale
Sediment (cont.)	LP-SS-025	North Fork of the North Platte River	Document background concentrations on the North Fork of the North Platte River above Hell Creek.
	LP-SS-026	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-027	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-028	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-029	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-030	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-031	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-032	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-033	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-034	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-035	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-036	Lower Hell Creek	Document presence/absence of contamination.
	LP-SS-037	Lower Hell Creek	Document presence/absence of contamination, access ecotoxicity of PAHs.
	LP-SS-040	Lower Hell Creek	Document presence/absence of contamination. (Replicate sample is LP-SS-041.)
	LP-SS-042	Lower Hell Creek	Document presence/absence of contamination, access ecotoxicity of PAHs.
	LP-SS-043	Lower Hell Creek	Document presence/absence of contamination within mid-channel sands, access ecotoxicity of PAHs.
	LP-SS-044	Lower Hell Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-045	Hell Creek Ditch	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-046	Lower Hell Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-047	Sorenson Ditch	Document presence/absence of contamination, assess ecotoxicity of PAHs.

TABLE 2
Laboratory Sample Locations and Rationale

Sample Matrix	Sample ID	Location	Rationale
Sediment (cont.)	LP-SS-048	Lower Hell Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-049	Hell Creek Ditch	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-050	Lower Hell Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-051	Sorenson Ditch	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-052	Lower Hell Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-053	Lower Hell Creek	Document presence/absence of contamination within mid-channel sands, assess ecotoxicity of PAHs.
	LP-SS-054	Lower Hell Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-055	Lower Hell Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-056	Lower Hell Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-057	Upper Hell Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-058	Spring Gulch Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-059	Upper Hell Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-060	Spring Gulch Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs. (Replicate is LP-SS-064.)
	LP-SS-061	Upper Hell Creek	Document presence/absence of contamination.
	LP-SS-062	Spring Gulch Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-063	Spring Gulch Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-065	Lower Hell Creek	Document presence/absence of contamination in mid-channel.
	LP-SS-066	Spring Gulch Creek	Document presence/absence of contamination, assess ecotoxicity of PAHs.
	LP-SS-067	Spring Gulch Creek	Determine background TOC concentrations for ecotoxicity calculations.
	LP-SS-068	Spring Gulch Creek	Determine TOC concentrations for ecotoxicity calculations.

TABLE 2
Laboratory Sample Locations and Rationale

Sample Matrix	Sample ID	Location	Rationale
Sediment (cont.)	LP-SS-069	Spring Gulch Creek	Determine TOC concentrations for ecotoxicity calculations.
	LP-SS-070	Upper Hell Creek	Determine TOC concentrations for ecotoxicity calculations.
	LP-SS-071	Lower Hell Creek	Determine TOC concentrations for ecotoxicity calculations.
	LP-SS-072	Lower Hell Creek	Determine TOC concentrations for ecotoxicity calculations.
	LP-SS-073	Lower Hell Creek	Determine TOC concentrations for ecotoxicity calculations.
	LP-SS-074	Lower Hell Creek	Determine TOC concentrations for ecotoxicity calculations.
	LP-SS-075	Lower Hell Creek	Determine TOC concentrations for ecotoxicity calculations.
	LP-SS-076	Lower Hell Creek	Determine TOC concentrations for ecotoxicity calculations.
Soil	LP-SS-012	Spring Gulch Creek, at oil-impacted vegetation (0-2’')	Document degree of contamination in surface soils along bank of creek.
	LP-SS-013	Spring Gulch Creek, at same location as LP-SS-012 (2-6’')	Document presence/absence of contamination within subsurface soils along bank of creek.
Source/ fingerprint	LP-SO-001	Tank 5 on Lone Pine facility	Fingerprint analysis (crude oil)
	LP-SO-002	Spring Gulch Creek	Fingerprint analysis (sediment)
	LP-SO-003	Upper Hell Creek	Fingerprint analysis (sediment)
	LP-SO-004	Lower Hell Creek	Fingerprint analysis (sediment)
Surface Water	LP-SW-001	Discharge from facility (weir)	Document concentrations of various analytes as compared to discharge permit limits.
	LP-SW-003	Lower Hell Creek at Timberman property	Document presence/absence of contamination at a location where livestock access the creek to drink.
	LP-SW-004	Lower Hell Creek at Dumler property	Document presence/absence of contamination at a location where livestock access the creek to drink.
	LP-SW-005	Lower Hell Creek at Timberman property	Document presence/absence of contamination at a location where livestock access the creek to drink.
	LP-SW-006	Upper Hell Creek	Document water quality and degree of contamination.

TABLE 2
Laboratory Sample Locations and Rationale

Sample Matrix	Sample ID	Location	Rationale
Surface Water (cont.)	LP-SW-007	Spring Gulch Creek	Document water quality and degree of contamination.
	LP-SW-008	Upper Hell Creek	Document background water quality on upper Hell Creek.
	LP-SW-009	Discharge from facility (weir)	Document water quality and degree of contamination.
	LP-SW-011	Spring Gulch Creek	Document background water quality on Spring Gulch Creek.
QA/QC	LP-SS-021	Lower Hell Creek	Replicate sample of LP-SS-001 collected to document the precision of sample collection procedures and laboratory analyses.
	LP-SS-023	Lower Hell Creek	Replicate sample of LP-SS-022 collected to document the precision of sample collection procedures and laboratory analyses.
	LP-SS-041	Lower Hell Creek	Replicate sample of LP-SS-040 collected to document the precision of sample collection procedures and laboratory analyses.
	LP-SS-064	Spring Gulch Creek	Replicate sample of LP-SS-060 collected to document the precision of sample collection procedures and laboratory analyses.
	LP-SW-002	Trip Blank (VOC analyses only)	Document potential for contamination during sample transport.

Note: Sample IDs LP-SS-038, LP-SS-039, and LP-SW-010 were not used as the corresponding locations were dropped from the sampling plan.

4.1.1 Sediment Sample Locations

Sediment sample locations within the creeks were chosen to be approximately equidistant from each other, although the spacing of locations was closer in the higher reaches of the creeks near to the release. The average spacing of sediment samples along the 8 miles of stream sampled was approximately 620 feet (68 sediment sampling locations, not including QA/QC replicate samples) (Figure 2). Background sediment samples were also collected on Spring Gulch Creek (LP-SS-018, LP-SS-067 [TOC only]), Hell Creek (LP-SS-020), and the North Fork of the North Platte River (LP-SS-025) at locations upstream of any known influence from the Lone Pine site.

The vast majority of sediment samples were collected from fine-grained silts and sands located within depositional areas such as point bars and cut-off channels. A limited number of mid-channel locations were also sampled to determine if the heavier-end petroleum hydrocarbon compounds were present in areas with faster stream flow (e.g., LP-SS-043 and LP-SS-053).

Sediment samples were also collected by the COGCC on the Timberman and Dumler properties. COGCC sample locations are shown on a map included in Appendix F.

4.1.2 Soil Sample Locations

Two profile soil samples (sample locations LP-SS-012 [0-2-inch depth] and LP-SS-013 [2-6-inch depth]) (Photo 23) were also collected from an area of heavily oiled vegetation along Spring Gulch Creek (Figures 2 and 3).

4.1.3 Source Sample (Petroleum Fingerprinting) Locations

One sample of crude oil and three samples of contaminated sediment were collected during the June sampling event. The crude oil (LP-SO-001) was collected from Tank 5 at the facility by Lone Pine personnel with a container supplied by START and under START supervision (Photo 17). Sediment samples were collected from locations known to have significant contamination during the assessment activities conducted in April. One sediment sample was collected from each creek segment (i.e., Spring Gulch Creek [LP-SO-002], upper and lower Hell Creek [LP-SO-003 and LP-SO-004, respectively]) (Figure 2).

4.1.4 Surface Water Sample Locations

Surface water sample locations are shown in Table 2 and Figure 6. Surface water was collected during both the April and June sampling events. During April, samples were collected from the facility outfall (LP-SW-001) and from a location on lower Hell Creek used by cattle for drinking water (LP-SW-003) (Timberman property). During the June event, surface water samples were collected at background locations on both Spring Gulch Creek (LP-SW-011) and Hell Creek (LP-SW-008), on each creek immediately above their confluence (LP-SW-007 and LP-SW-006), and at two locations on lower Hell Creek used by cattle for drinking water (including the same Timberman property location [LP-SW-005] and at a location farther downstream [LP-SW-004] on the Dumler property). A sample was also collected from the facility discharge (LP-SW-009).

At the locations where cattle access the creek for drinking water, the surface water samples were collected after first agitating the water column and underlying sediments in order to more closely reproduce the conditions that would be expected while cattle were present (i.e., sediment would be kicked up and suspended in the water column). Using this method released hydrocarbon sheen to the water surface that was incorporated into the sample containers.

4.2 ANALYTICAL METHODS

All laboratory samples were hand-delivered by START to:

Accutest Laboratories
4036 Youngfield Street
Wheat Ridge, Colorado 80033

Each cooler delivered to the laboratory contained a temperature blank. The cooler with the water samples to be analyzed for VOCs (April sampling event) also contained a trip blank identified as LP-SW-002.

Upon completion of TPH analysis at the Wheat Ridge laboratory, a subset of sediment samples collected during the April sampling event was shipped to another Accutest laboratory located in Massachusetts for further analysis of TOC using analytical method SW846 9060M, and SVOCs using analytical method MADEP EPH Revision 1.1.

Accutest Laboratories of New England, Inc.

50 D'Angelo Drive

495 Technology Center West, Bldg. One

Marlborough, Massachusetts 01752

For the June sampling event, all sediment and water samples to be analyzed for EPA Method 8270C SIM were also forwarded to the Massachusetts laboratory.

Four samples (one crude oil and three contaminated sediment) were sent to the USCG Marine Safety Laboratory for petroleum fingerprint analysis:

U.S. Coast Guard Marine Safety Laboratory

1 Chelsea Street

New London, Connecticut 06320

A summary of analytical methods used per matrix and sampling event is provided in Table 3 below.

TABLE 3
Summary of Analytical Methods per Matrix and Sampling Event

Matrix	Sampling Event	Analyte	Analytical Method	Rationale
Sediment	April	TPH	EPA Draft Method 9074 (immunoassay)	Screening
	April and June	TPH	EPA Method 8015B (reported as DRO [C ₁₀ -C ₂₈] and ORO [>C ₂₈ -C ₄₀])	Determine overall degree of contamination
	April	SVOCs	MADEP EPH Revision 1.1 (reported as C ₁₁ -C ₂₂ aromatics, C ₉ -C ₁₈ aliphatics, C ₁₉ -C ₃₆ aliphatics, and 17 PAHs)	Determine degree of PAH contamination, ecotoxicity screening
	June	SVOCs	EPA Method 8270C SIM (reported as 19 PAHs, plus 22 alkylated PAH homolog groups)	Assess ecotoxicity
	June	Metals	EPA Method 6010C and 7470A (mercury only)	Assess ecotoxicity
	April and August	TOC	EPA Method 9060M	Ecotoxicity calculations
Source (oil and sediment)	June	-	ASTM Method D-3328 (GC)	Fingerprinting, enforcement
	June	-	ASTM Method D-5749 (GC-MS)	Fingerprinting, enforcement

TABLE 3
Summary of Analytical Methods per Matrix and Sampling Event

Matrix	Sampling Event	Analyte	Analytical Method	Rationale
Surface Water	April	VOCs	EPA Method 8260B	Comparison to discharge permit limits
	April	TSS	Method SM20-2540D	Comparison to discharge permit limits
	April	Oil and Grease	EPA Method 1664A	Comparison to discharge permit limits
	April	Metals	EPA Methods 200.8 and 245.1 (mercury only)	Comparison to discharge permit limits
	April and June	TPH	EPA Method 8015B (reported as DRO [C ₁₀ -C ₂₈] and ORO [>C ₂₈ -C ₄₀])	Determine degree of contamination, assess ecotoxicity
	June	SVOCs	EPA Method 8270C SIM	Assess ecotoxicity
	June	Metals	EPA Methods 6010C and 7470A (mercury only)	Assess ecotoxicity

Notes:

MADEP EPH Massachusetts Department of Environmental Protection Method for Extractable Petroleum Hydrocarbons
 ASTM American Society for Testing and Materials
 DRO Diesel-range organics
 GC Gas chromatography
 GC-MS Gas chromatography–Mass Spectrometry
 ORO Oil-range organics
 PAH Polyaromatic hydrocarbons
 SIM Selected ion monitoring
 SVOCs Semi-volatile organic compounds
 TOC Total organic carbon
 TPH Total petroleum hydrocarbons
 TSS Total suspended solids
 VOCs Volatile organic compounds

5.0 ANALYTICAL RESULTS

Complete analytical results from all laboratory samples are given in Tables 4 through 13, and laboratory data reports are included in Appendix D. (Groundwater and sediment analytical results from sampling conducted by Lone Pine under the direction of COGCC are presented in Appendix F.) Figure 2 shows all laboratory sample locations, as well as sample locations where hydrocarbon sheen could be generated when sediment was disturbed. A graphical representation of total TPH analytical results (combined TPH-gasoline-range organics [GRO] and TPH-oil-range organics [ORO] concentrations) in sediments is shown in Figure 4. A graphical representation of total PAH concentrations and summed equilibrium partitioning benchmark - toxic units (ESB-TUs) calculated from 34 PAHs (see EPA 2003 and Appendix E) are shown in Figure 5. Figure 6 shows select analytical results (TPH-GRO, TPH-ORO, and Total PAHs) for surface water samples.

Analytical results are discussed by matrix in the sections below, followed by a discussion on the potential ecotoxicity of contamination to both cattle accessing the creeks for drinking water and stream ecology.

5.1 SEDIMENT RESULTS

Sediment results are shown in Tables 4 through 8. Results are shown in numerical order by sample ID, from left to right (with the exception of replicate samples). [Note that soil results (LP-SS-12 and LP-SS-013) are also included within Tables 4 and 6.]

Immunoassay sample results collected during the first day of the April field event were discussed in detail in the trip report (UOS 2012d). In summary, these screening-level analytical results confirmed that sediments visually determined to have significant contamination contained elevated concentrations of TPH (in the range of 686 to 3,305 milligrams per kilogram [mg/kg]).

Analytical results from laboratory samples collected during the April and June sampling events confirmed that concentrations of TPH, PAHs, and metals were higher than background concentrations at nearly all sediment sample locations between the facility and a point approximately 4.4 stream miles downstream on lower Hell Creek. Although sheen could not be generated at locations downstream of this point, concentrations of TPH in sediment still revealed the presence of petroleum hydrocarbons at levels higher than background at most sediment sample locations on Hell Creek to its confluence with the North Fork of the North Platte River.

5.1.1 TPH

TPH analytical results from sediment samples are shown in Table 4 and Figure 4. The analytical method used for TPH in sediments was consistent through both the April and June sampling events, and TPH analytical results give the best indication of the degree and extent of contamination present within the creeks at the site.

Three background samples were collected during the investigation: LP-SS-18, collected from Spring Gulch Creek upstream of the facility; LP-SS-20, collected from upper Hell Creek upstream of the oil wells present in this area; and LP-SS-25, collected from the North Fork of the North Platte River upstream of its confluence with Hell Creek (Figures 2 and 4). Total TPH results from all three samples were below 100 mg/kg (Table 4). As all three samples were collected from areas that are not known to have been affected by a release of petroleum hydrocarbons, the TPH concentrations reported most likely result from naturally occurring biological organic compounds from plants and animals (e.g.,

fatty acids, alcohols, waxes) that are present in sediments. These compounds are extracted along with petroleum hydrocarbons (if present) during analysis procedures. It should be noted that aliquots from samples LP-SS-018 and LP-SS-020 were also analyzed using the MADEP EPH Method (Revision 1.1.), which utilizes a silica gel cleanup procedure that effectively removes all biological organic compounds from sample extracts and yields only the concentrations of petroleum hydrocarbons present in the sample. The petroleum fractionation results (i.e., C₁₁-C₂₂ aromatics, C₉-C₁₈ and C₁₉-C₃₆ aliphatics) from these two analyses were non-detect at detection limits of between 13 and 27 mg/kg, depending on the fraction (Table 6).

Given the results discussed above, the background sediment TPH concentration at the Lone Pine site is presumed to be less than or equal to approximately 100 mg/kg.

Concentrations of total TPH in sediments in Spring Gulch Creek below the facility (i.e., release samples) ranged from 366 mg/kg (LP-SS-062) to 40,000 mg/kg (LP-SS-010). Concentrations of total TPH in sediments in upper Hell Creek ranged from 54.1 mg/kg (LP-SS-020) to 2,159 mg/kg (LP-SS-061), and concentrations of total TPH in sediments in lower Hell Creek were as high as 6,410 mg/kg (LP-SS-056). Total TPH concentrations downstream of sample LP-SS-037 (approximately 4.4 stream miles below the facility and just east of where the creek is crossed by CR5), were all generally below 300 mg/kg.

Total TPH concentrations in sediment samples collected from the Sorenson Ditch were significantly lower than in lower Hell Creek, ranging from a high of 777 mg/kg at a point just below its confluence with lower Hell Creek (LP-SS-065), to non-detect (at a method detection limit of 150 mg/kg) (LP-SS-047). For the Hell Creek Ditch, which diverts water from lower Hell Creek at a point 1 mile farther downstream, concentrations were even lower, ranging from a high of 343 mg/kg (LP-SS-049) to a low of 266 mg/kg (LP-SS-002). It is believed that these relatively low TPH values are due to water not being diverted for irrigation during the time of the release.

A limited number of sediment samples were also collected in April by Lone Pine under the direction of COGCC. Samples were collected from the banks of Hell Creek on private land (exact sample locations are unknown) and analyzed for BTEX, TPH, PAHs and metals. The analytical results from this sampling, provided in Appendix F, confirmed the

presence of significant total TPH contamination (up to 4,904 mg/kg) in two of the samples.

5.1.2 PAHs

Sediment PAH results are provided in Tables 5 and 6. Two different methods were used to determine PAH concentrations within sediment. For the initial sampling event in April, the MADEP-EPH method was used, which reports results for the 17 “priority” PAHs, as well as petroleum hydrocarbons in the following carbon fractions: C₁₁-C₂₂ aromatics, C₉-C₁₈ aliphatics, C₁₉-C₃₆ aliphatics. These analytical results are shown in Table 6. When compared to NOAA SQuiRTs sediment screening benchmarks (Buchman 2008), concentrations of three PAHs (benzo(a)anthracene, phenanthrene, and pyrene) in 5 of 12 sediment samples collected exceeded the TEC⁶ benchmark. In three of these 5 samples, concentrations of these three PAHs also exceeded the PEC⁷ benchmark.

Due to these exceedances of the SQuiRTs screening-level benchmarks, it was determined that additional samples should be collected and analyzed using a more comprehensive PAH analysis in order to gain a better understanding of sediment PAH ecotoxicity. Therefore, for a follow up sampling event conducted in June, the analytical method 8270C SIM was used, which has lower detection limits and reports results on 19 PAHs, plus 22 alkylated PAH homolog groups. (These homolog groups tend to be equally or more toxic to aquatic life than their parent PAH compounds.) Twenty-six sediment samples were collected from 24 locations for this expanded sampling event. Results from these samples are provided in Table 5, and a graphical representation of these results is shown in Figure 5.

When compared to NOAA SQuiRTs sediment screening benchmarks (Buchman 2008), concentrations of seven PAHs (anthracene, chrysene, benzo(a)anthracene, benzo(a)pyrene, dibenz(a,h)anthracene, phenanthrene, and pyrene) in 6 of 26 sediment samples collected exceeded at least one TEC benchmark. Concentrations also exceeded the PEC benchmark in two of these samples for chrysene and in three of these samples for pyrene.

⁶ The TEC is considered to be the lowest concentration above which some effect or response will be produced.

⁷ The PEC is considered to be the lowest concentration above which an adverse effect is likely to be produced.

5.1.3 Metals

A limited number of sediment samples were analyzed for metals. Analytical results for metals in sediment samples are shown in Table 7. When compared to NOAA SQuiRTs benchmarks, the arsenic TEC was exceeded at one location, the cadmium TEC was exceeded at two locations, and the zinc TEC was exceeded at one location. All exceedances were from samples collected from Spring Gulch Creek. A comparison of these values to background concentrations cannot be made, as background samples were not analyzed for metals.

5.1.4 Total Organic Carbon

When organic carbon is present in sediment, PAHs bind to the organic carbon, making the PAHs less available to aquatic life, and thus lessening their toxicity. TOC within sediments is, therefore, a critical factor in determining the ecotoxicity of PAH-contaminated sediment and is used in the calculation of the equilibrium partitioning sediment benchmarks (see Section 5.1.2 above). For this reason, TOC analysis was conducted on 12 sediment samples collected from Spring Gulch Creek and upper and lower Hell Creek. The TOC results, which include both biological organic compounds and petroleum hydrocarbons, ranged from 11,500 mg/kg (1.15 percent) in the background sample on Spring Gulch Creek (LP-SS-018), to 106,000 mg/kg (10.6 percent) in the most contaminated sediment sample collected (LP-SS-010, on Spring Gulch Creek). TOC results are shown in Table 8.

5.2 SOIL RESULTS

Results from the two soil profile samples (sample locations LP-SS-012 [0-2-inch depth] and LP-SS-013 [2-6-inch depth]) collected from an area of heavily oiled riparian vegetation (i.e., upland vegetation located higher on the creek bank and outside the normal flow pattern) along Spring Gulch Creek showed that the oil contamination in this area appeared to be confined to the surficial layer. The TPH results from sample LP-SS-012 were 87,300 mg/kg while the deeper sample was only slightly elevated above the presumed sediment TPH background concentration of 100 mg/kg.

Soil sample LP-SS-012 was also analyzed for PAHs. TPH and PAH results for the two soil samples are shown in Tables 4 and 6, respectively.

5.3 PETROLEUM FINGERPRINTING RESULTS

Appendix C contains the USCG Oil Sample Analysis Report and a USCG memorandum that explains the findings within the report. In summary, the USCG determined that the crude oil sample (LP-SO-001) had a biomarker profile that indicated it was “closely related” to the spill samples from Spring Gulch Creek (LP-SO-002) and lower Hell Creek (LP-SO-004) and were “derived from the same chemical source.”

However, the USCG stated there were significant enough differences between the samples to indicate that the spill oil “did not originate directly from” the specific source from which sample LP-SO-001 was taken (Tank 5 sampled on June 13, 2012). This conclusion is reasonable in that the crude oil sampled from Tank 5 is not precisely representative of the crude oil mixture that was spilled in December 2011. Since the spill, the number of producing wells within the Lone Pine field has decreased, and the oil spilled into the creek has weathered. Differentiation between crude oil also occurs during transport and storage activities. According to the USCG, the exact fingerprint of crude oil in each specific tank at the site will continuously change as oil is added to and removed from a given tank. In other words, the fingerprint of any given source is essentially a snapshot in time.

5.4 SURFACE WATER RESULTS

Surface water analytical results are provided in Tables 9 through 13, and select results (TPH and Total PAHs) are shown on Figure 6. Within the tables, sample locations are shown in order from upstream (left) to downstream (right), with QA/QC samples (e.g., rinsate and trip blanks) being shown in the far right column.

Surface water sampling was conducted during the April sampling event primarily to assess water quality against permit discharge limits. Due to concerns raised about the potential toxicity of the surface water to cattle drinking from lower Hell Creek, additional surface water sampling was conducted in June to assess its ecotoxicity. Background samples were also collected in June for comparison to discharge and downstream sample locations.

It should be noted that the quality of the surface water downstream of the facility outfall sampled in April and June would likely have been significantly different than it was when the spill occurred. For instance, at the time of the spill, Lone Pine was pumping a higher volume of water from a larger number of wells than when the April and June sampling took place.

5.4.1 TPH

Surface water TPH analytical results are provided in Table 9. TPH concentrations in surface water samples collected in June were non-detect at both background locations and at locations on both creeks just above their confluence. At the sample locations where a sheen was observed on the water surface (LP-SW-009 at the facility outfall; and LP-SW-004 and LP-SW-005, locations where cattle access the creek and the sediment was agitated), TPH values ranged from 0.337 to 2.58 milligrams per liter (mg/L).

5.4.2 PAHs

Surface water PAH analytical results are provided in Table 10 in order of lighter to heavier molecular weight (top to bottom). Concentrations of numerous PAHs (the 18 parent compounds) and alkylated PAH homologs at the sample locations on Spring Gulch Creek and lower Hell Creek, as well as within the discharge water from the facility, were greater than the concentrations in background surface water samples from Hell Creek and Spring Gulch Creek.

Concentrations of PAH compounds in at least one of the samples collected to assess potential toxicity to cattle (i.e., LP-SW-004 collected from the Dumler property and LP-SW-005 collected from the Timberman property) were also greater than the concentrations in the background samples. As noted previously, sediment at each of these locations was disturbed prior to the collection of the surface water samples, to more closely reproduce the conditions that would be expected while cattle were present (i.e., water clouded with suspended sediment).

With the exception of benzo(a)pyrene, perylene, and indeno(1,2,3-cd)pyrene, more of the heavier molecular weight and less soluble parent compound PAHs and alkylated PAH homologs tended to be present in elevated concentrations rather than the lighter molecular weight compounds (e.g., naphthalene), as would be expected with an older crude oil spill. In addition, a greater number of alkylated PAH homologs than parent compound PAHs were elevated (91 percent of homologs versus 56 percent of parent PAHs) in the Dumler and Timberman samples. This would be expected when petrogenic (related to crude oil), rather than pyrogenic (generated by high temperatures such as during forest fires) PAHs are present (Irwin, et. al. 1997).

5.4.3 Metals

As discussed in the trip report for the April sampling (UOS 2012d), analytical results from metals analysis showed that the water being discharged from the treatment facility contained concentrations of total iron (1,440 micrograms per liter [$\mu\text{g/L}$]) elevated above the facility discharge permit limit of 1,000 $\mu\text{g/L}$. Concentrations of other metals appear to be elevated, including barium, which was elevated above the EPA maximum contaminant limit (MCL) of 2,000 $\mu\text{g/L}$ in both field samples (LP-SW-001: 4,560 $\mu\text{g/L}$; LP-SW-003: 4,350 $\mu\text{g/L}$).

Similar results were obtained during the June sampling event, with significantly elevated concentrations of barium, potassium, and sodium in facility discharge water when compared with background surface water results. The results from both the total and dissolved fraction of these metals were elevated (Tables 12 and 13).

5.5 GROUNDWATER RESULTS

Groundwater was sampled by Lone Pine under the direction of COGCC from four wells located around the perimeter of the skim pits in April (Appendix F). (Well locations are shown in the inset of Figure 2.) Samples were analyzed for BTEX, TPH, dissolved metals, and general water chemistry.

The analytical results show that, at the time of sampling, hydrocarbon contamination did not appear to be present in groundwater adjacent to the Lone Pine facility skim pits. Results for all analytes were below the concentration limits found within Table 910-1 of the COGCC 900 Series (Exploration and Production Waste Management) rules (COGCC 2011).

6.0 ECOTOXICITY ASSESSMENT

Toxicologists from the EPA conducted separate assessments of the potential toxicity presented by PAH concentrations to cattle drinking surface water (and to humans ingesting beef from them) and to benthic organisms residing within creek sediment. These assessments are discussed below. Ecotoxicity calculations are presented in Appendix E.

6.1 EFFECT OF PAHS IN SURFACE WATER ON CATTLE/LIVESTOCK

Two concerns were addressed in determining the possible effects of PAHs in contaminated surface water on cattle: possible direct adverse effects to the cattle themselves from drinking

contaminated water, and possible health effects on humans from consuming beef from these cattle.

Analytical results for PAHs from two surface water samples were compared to toxicity reference values (i.e., “safe levels”) for beef cattle found in *Characterizing Risks to Livestock from Petroleum Hydrocarbons* (Pattanayek and DeShields 2003). The two samples were collected from two separate locations on lower Hell Creek where cattle regularly access the creek for drinking water: LP-SS-004 was collected from the Dumler property and LP-SS-005 was collected from the Timberman property (see Figure 6). As the toxicity reference values were 10,000 to 100,000 times higher than the highest PAH concentrations recorded in the water samples, it follows that little risk appears to be present to cattle from ingesting water at the PAH concentrations detected (Appendix E).

In order to assess the potential risk to humans from ingesting beef from the cattle, the EPA toxicologist modeled the amount of PAH contamination that would be expected in beef tissue from cattle ingesting all of their surface water from Hell Creek. The amount of risk presented to a person whose entire beef intake was from the cattle was then computed based on standard exposure assumptions. The non-cancer risk computed was nine orders of magnitude below the EPA’s acceptable non-cancer hazard index of 1.0, and the cancer risk was computed to be 3 to 5 times lower than the EPA’s acceptable additional cancer risk range of 1×10^{-4} to 1×10^{-6} .

In conclusion, based on the surface water sampling PAH results and toxicity assessment, the EPA determined that there was no reason for concern about either the health of the cattle or ingesting the beef (Appendix E).

6.2 EFFECT OF PAHS IN SEDIMENTS ON BENTHIC ORGANISMS

The potential ecotoxicity of PAH concentrations in sediment on benthic organisms was assessed by the EPA by utilizing the equilibrium partitioning approach (EPA 2003).

While a detailed discussion on the equilibrium partitioning approach is beyond the scope of this report, in summary the approach allows for the derivation of concentrations of PAH mixtures in sediment that are protective of benthic organisms. Because PAHs occur in sediments as mixtures and their toxicities are additive or nearly additive, their combined toxicities must be considered when deriving sediment quality benchmark concentrations that should be protective of aquatic life (EPA 2003).

The approach accounts for the varying biological availability of PAHs in different sediments based on the biologically available concentration of the substance in the sediment. Analysis using the 8270C SIM method enables the computation of equilibrium partitioning sediment benchmarks (ESBs) for each sediment sample collected. ESB toxicity units (ESB-TUs) are then derived using PAH-specific ESBs derived from existing water quality criteria, total organic carbon concentrations with the sediment, and the concentrations of PAHs reported from each sediment sample. These ESB-TUs are summed, and if this summed value is less than 1.0, the specific mixture and concentrations of PAHs within the sediment are considered to be acceptable for the protection of benthic organisms. If the sum is greater than 1.0, then sensitive benthic organisms may be unacceptably affected. ESBs do not consider any additive, antagonistic, or synergistic effects of other sediment contaminants (EPA 2003).

ESB-TU calculations conducted by an EPA toxicologist show that summed ESB-TUs for sediments at three locations (comprising four samples, two locations in Spring Gulch Creek and one location in lower Hell Creek) exceed 1.0 and, therefore, sensitive benthic organisms at these locations may be unacceptably affected by the PAH concentrations present (Figure 5). Appendix E contains a summary of PAH ESBs for all locations where sediments were analyzed using the 8270C SIM method. These locations are also shown on Figure 5, where the corresponding ESB-TUs are graphically represented (i.e., >1.0 is shown in red).

7.0 CONCLUSIONS

A release of crude oil from the Lone Pine Gas, Inc. tank battery and treatment facility near Walden, Colorado occurred on or around December 15, 2011. START was tasked with assisting the EPA in assessing the impacts from the spill in order to allow the OSC to evaluate and assess the need for any future removal actions at the site. Specifically, START was tasked to assist the OSC with a thorough assessment and documentation of oil impacts to Spring Gulch Creek, and then Hell Creek, from a point immediately below the facility's waste water discharge point to the downstream extent of impacts. Assessment activities were primarily conducted during two events that occurred in April and June 2012. An additional 1-day event occurred in August 2012.

Through visual assessment and the collection of 115 environmental samples (primarily sediment), oil contamination within stream sediments was identified within Spring Gulch Creek and then lower Hell Creek to a point approximately 4.4 stream miles downstream of the facility outfall. Two irrigation ditches, Sorenson and Hell Creek ditches, did not appear to have detectable petroleum contamination beyond a

few hundred feet from their headwaters. Remnant oil contamination was also identified in upper Hell Creek at most locations downstream of the point where a release occurred during the winter of 2005-2006.

Concentrations of seven PAHs and three metals in sediments exceeded NOAA SQuIRTS TEC and/or PEC screening benchmarks at some sampling locations on Spring Gulch Creek and both upper and lower Hell Creek, indicating that adverse effects are probable at some creek locations.

Further toxicological assessment of sediment and surface water PAH concentrations by the EPA indicates that sediment toxicity at a few locations within Spring Gulch Creek and Hell Creek is likely high enough to cause an adverse effect to invertebrates. However, negligible risk appears to be present to cattle ingesting water from Hell Creek, or to humans consuming beef from these cattle.

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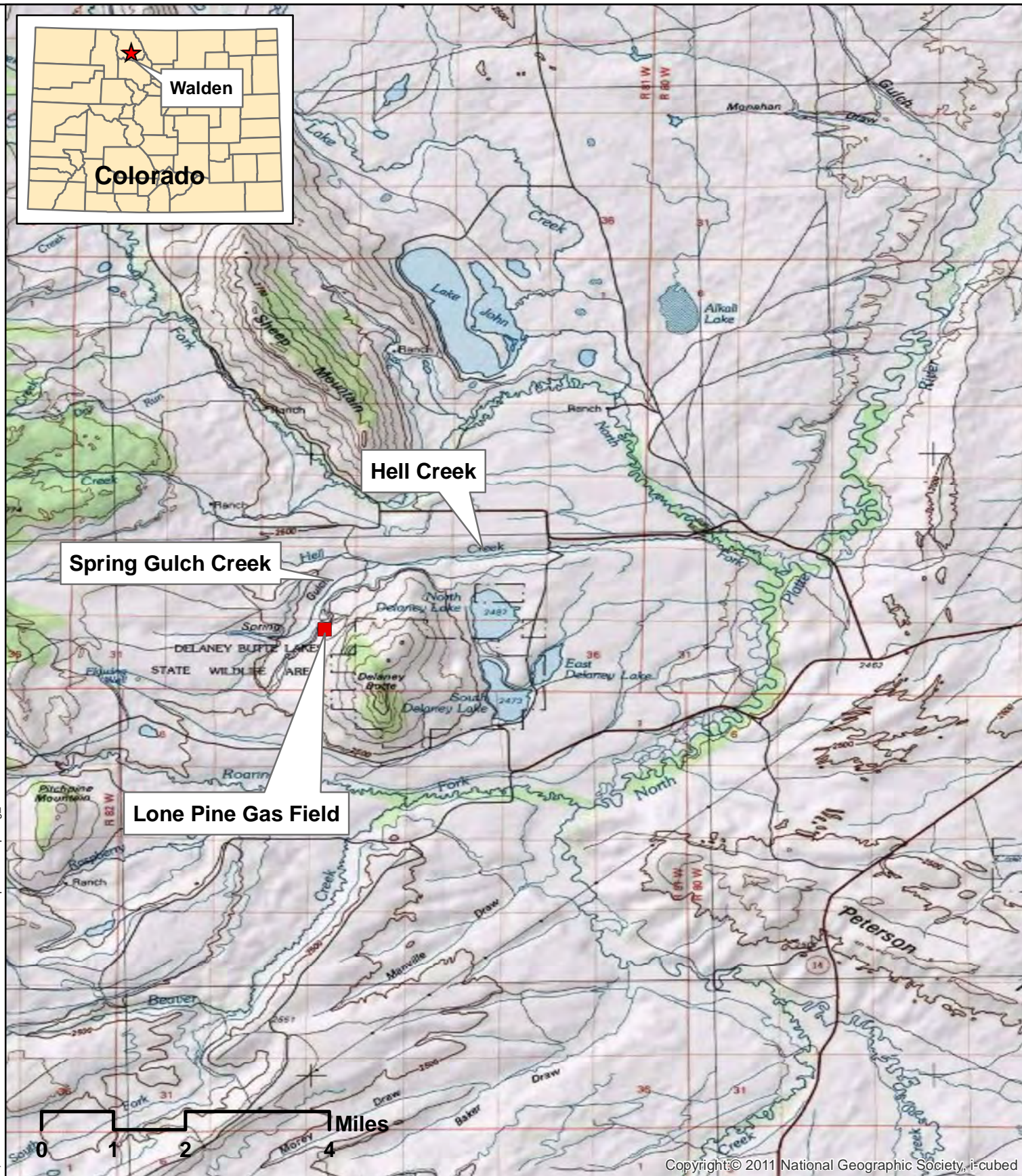
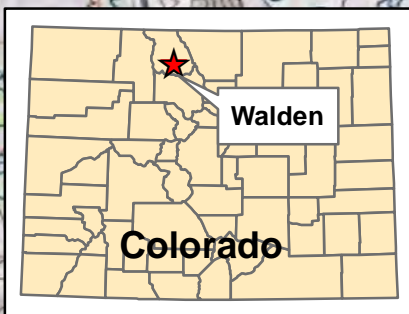
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1 in = 2 miles



TDD Title: **Lone Pine Gas Inc.
Oil Spill**

Figure: 1

Figure Title: **Site Location Map**

TDD County: Jackson
TDD State: CO

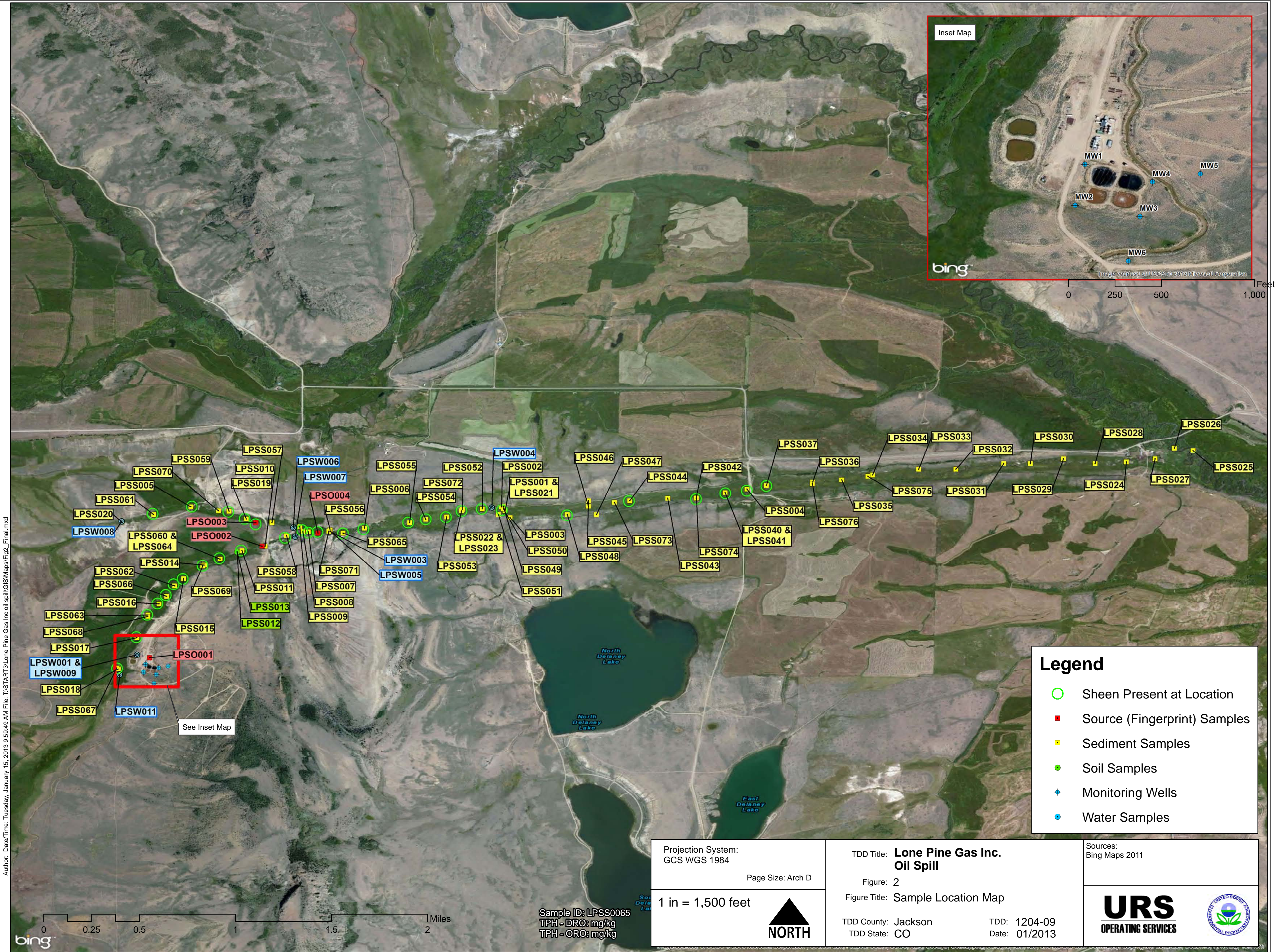
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Date: 01/2013

Sources:
Bing Maps 2011

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Sample ID: LPSS0065
TPH - DRO: mg/kg
TPH - ORO: mg/kg

Projection System:
GCS WGS 1984

Page Size: Arch D

1 in = 1,500 feet

 NORTH

TDD Title: **Lone Pine Gas Inc. Oil Spill**

Figure: 2

Figure Title: Sample Location Map

TDD County: Jackson

TDD State: CO

TDD: 1204-09







Date: 01/2013

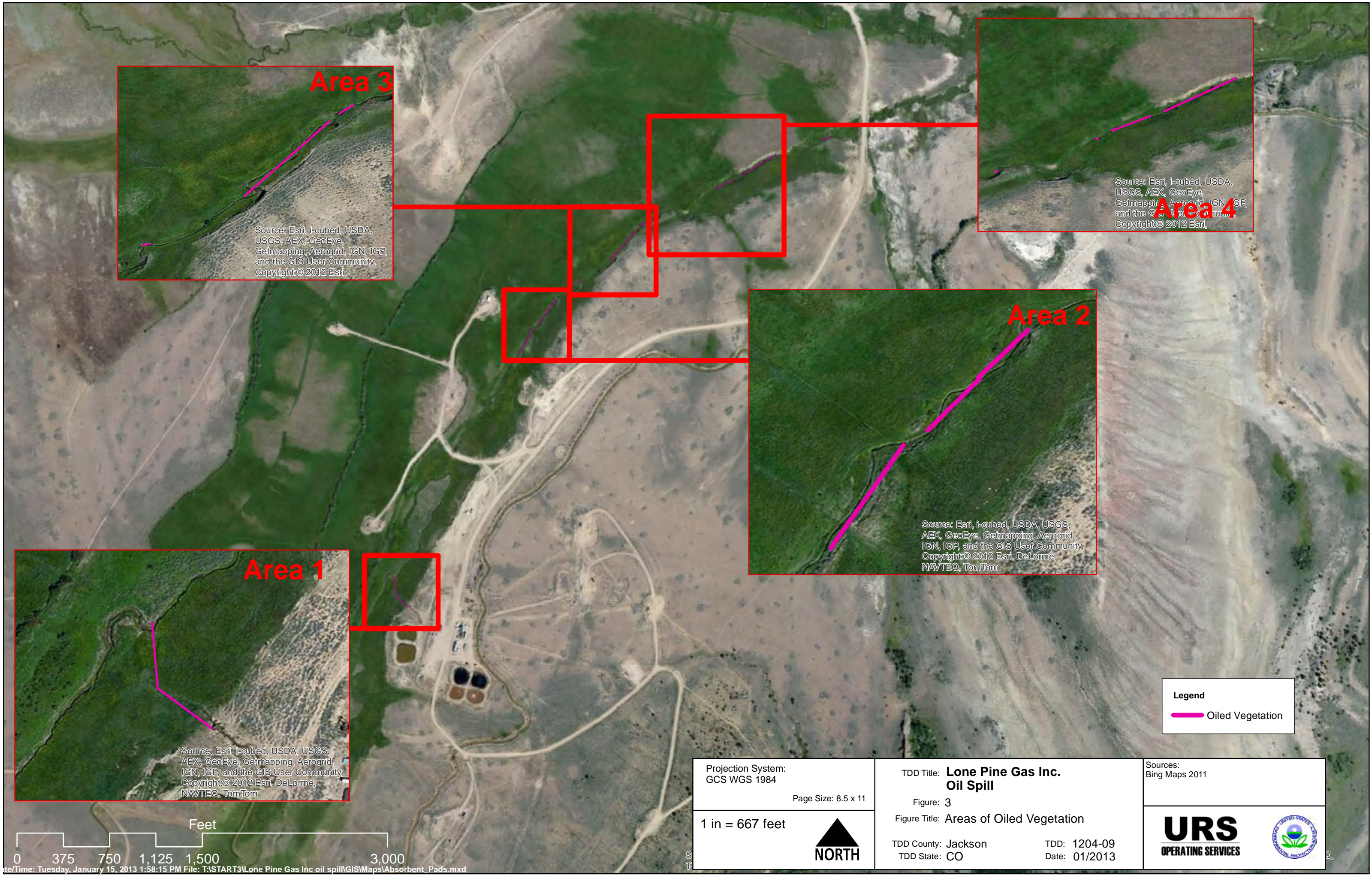
Sources:
Bing Maps 2011

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Legend

-  Sheen Present at Location
-  Source (Fingerprint) Samples
-  Sediment Samples
-  Soil Samples
-  Monitoring Wells
-  Water Samples



Area 3

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Area 4

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Area 2

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Area 1

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community, Copyright© 2012 Esri, DeLorme, NAVTEQ, TomTom

Legend

Oiled Vegetation

Projection System:
GCS WGS 1984

Page Size: 8.5 x 11

1 in = 667 feet



TDD Title: **Lone Pine Gas Inc.
Oil Spill**

Figure: 3

Figure Title: Areas of Oiled Vegetation

TDD County: Jackson
TDD State: CO

TDD: 1204-09
Date: 01/2013

Sources:
Bing Maps 2011

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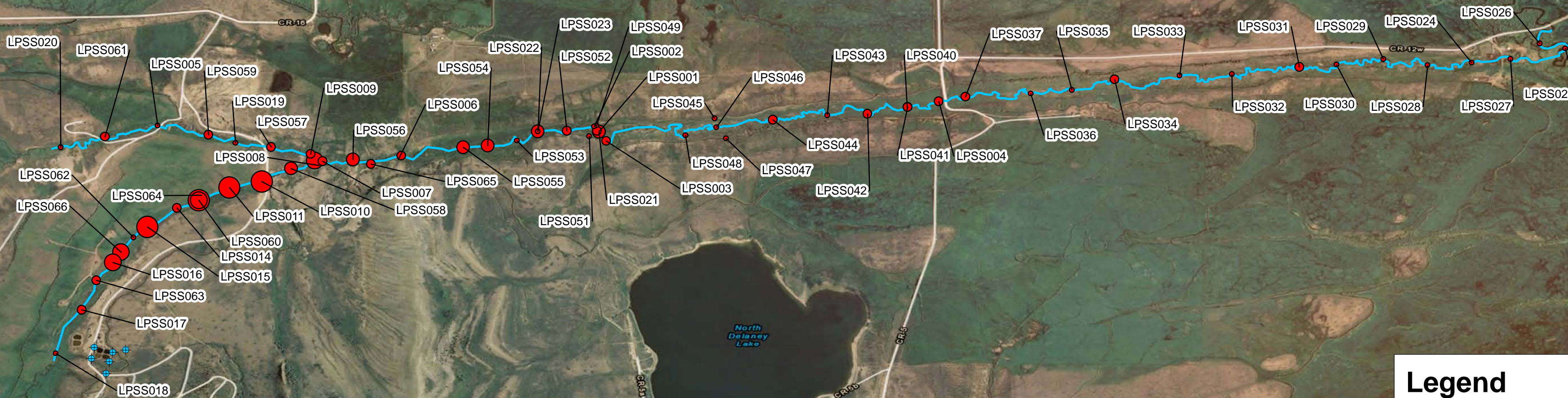


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Sediment TPH Concentrations



Sample Location	Total TPH mg/kg
LPSS001	4040
LPSS021	2970
LPSS002	266
LPSS003	721
LPSS004	2108
LPSS005	242.9
LPSS006	1532
LPSS007	2102
LPSS008	12040
LPSS009	585
LPSS010	40000
LPSS011	33200
LPSS012	87300
LPSS013	103
LPSS014	1923
LPSS015	24300
LPSS016	6770
LPSS017	1981
LPSS018	63.4
LPSS019	89
LPSS020	54.1
LPSS022	467
LPSS023	2670
LPSS024	109
LPSS025	42.4
LPSS026	95.2
LPSS027	380
LPSS028	0
LPSS029	50.6
LPSS030	298.6
LPSS031	501
LPSS032	366
LPSS033	239
LPSS034	568
LPSS035	104
LPSS036	213
LPSS037	849
LPSS040	622
LPSS041	743
LPSS042	1511
LPSS043	140
LPSS044	971
LPSS045	282.4
LPSS046	32.2
LPSS047	0
LPSS048	391
LPSS049	343
LPSS050	657
LPSS051	0
LPSS052	591
LPSS053	191.7
LPSS054	2720
LPSS055	5240
LPSS056	6410
LPSS057	2080
LPSS058	3390
LPSS059	803
LPSS060	19830
LPSS064	25500
LPSS061	2159
LPSS062	366
LPSS063	1172
LPSS065	777
LPSS066	16670



Legend

Sediment Samples

Total TPH (mg/kg)

- < 500
- 500 - 2,499
- 2,500 - 6,499
- 6,500 - 20,000
- > 20,000

Projection System:
GCS WGS 1984

Page Size: C

TDD Title: **Lone Pine Gas Inc. Oil Spill**

Figure: 4

Figure Title: **Sediment TPH Concentrations**

TDD County: Jackson

TDD State: CO

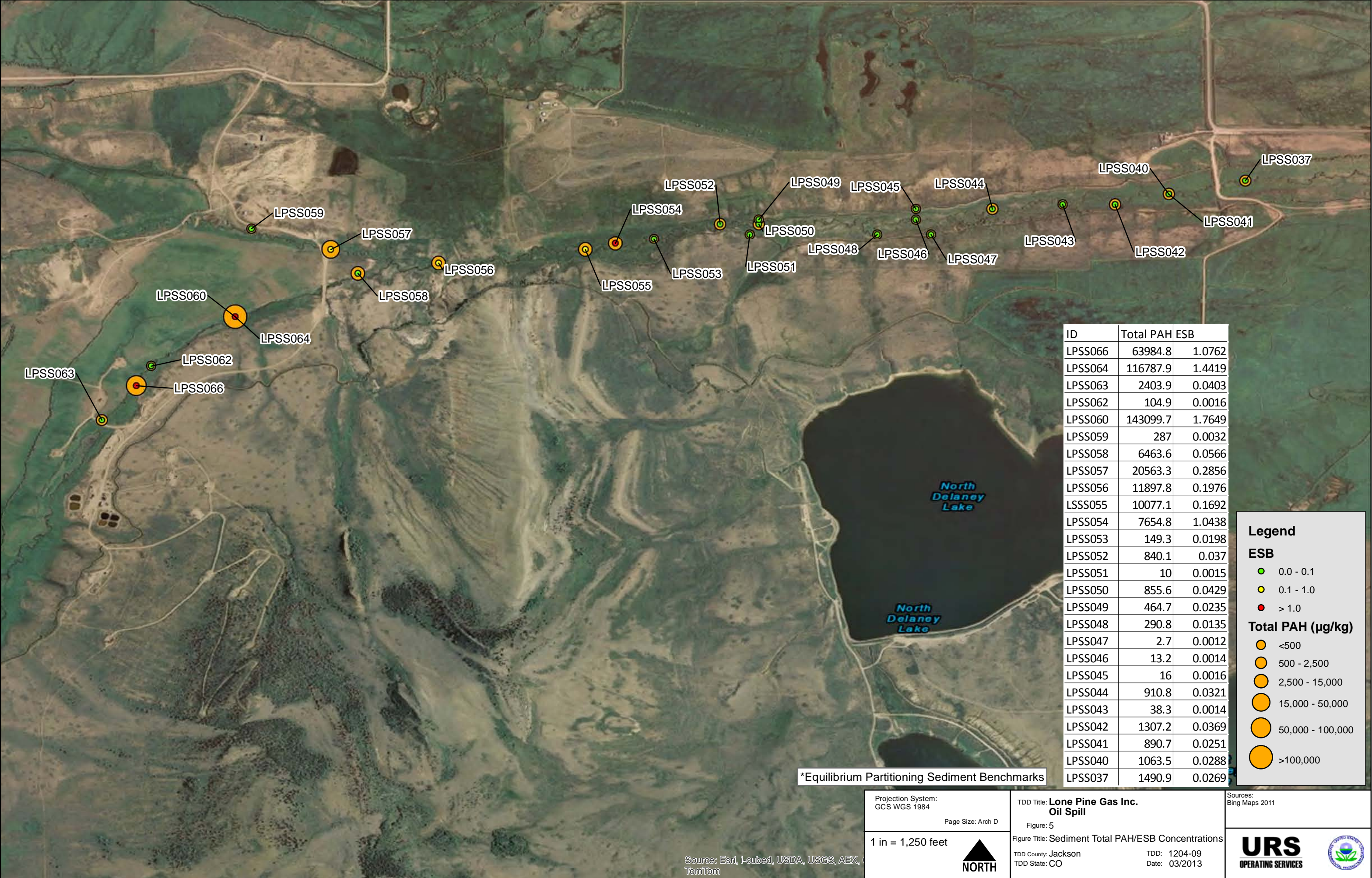
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Date: 01/2013

Sources:
Esri Imagery

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ID	Total PAH	ESB
LPSS066	63984.8	1.0762
LPSS064	116787.9	1.4419
LPSS063	2403.9	0.0403
LPSS062	104.9	0.0016
LPSS060	143099.7	1.7649
LPSS059	287	0.0032
LPSS058	6463.6	0.0566
LPSS057	20563.3	0.2856
LPSS056	11897.8	0.1976
LSSS055	10077.1	0.1692
LPSS054	7654.8	1.0438
LPSS053	149.3	0.0198
LPSS052	840.1	0.037
LPSS051	10	0.0015
LPSS050	855.6	0.0429
LPSS049	464.7	0.0235
LPSS048	290.8	0.0135
LPSS047	2.7	0.0012
LPSS046	13.2	0.0014
LPSS045	16	0.0016
LPSS044	910.8	0.0321
LPSS043	38.3	0.0014
LPSS042	1307.2	0.0369
LPSS041	890.7	0.0251
LPSS040	1063.5	0.0288
LPSS037	1490.9	0.0269

Legend

ESB

- 0.0 - 0.1
- 0.1 - 1.0
- > 1.0

Total PAH (µg/kg)

- <500
- 500 - 2,500
- 2,500 - 15,000
- 15,000 - 50,000
- 50,000 - 100,000
- >100,000

*Equilibrium Partitioning Sediment Benchmarks

Projection System:
GCS WGS 1984

Page Size: Arch D

1 in = 1,250 feet

NORTH

TDD Title: Lone Pine Gas Inc.
Oil Spill

Figure: 5

Figure Title: Sediment Total PAH/ESB Concentrations

TDD County: Jackson

TDD State: CO

TDD: 1204-09

Date: 03/2013

Sources:
Bing Maps 2011

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UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

Source: Esri, i-cubed, USDA, USGS, AEX, TomTom

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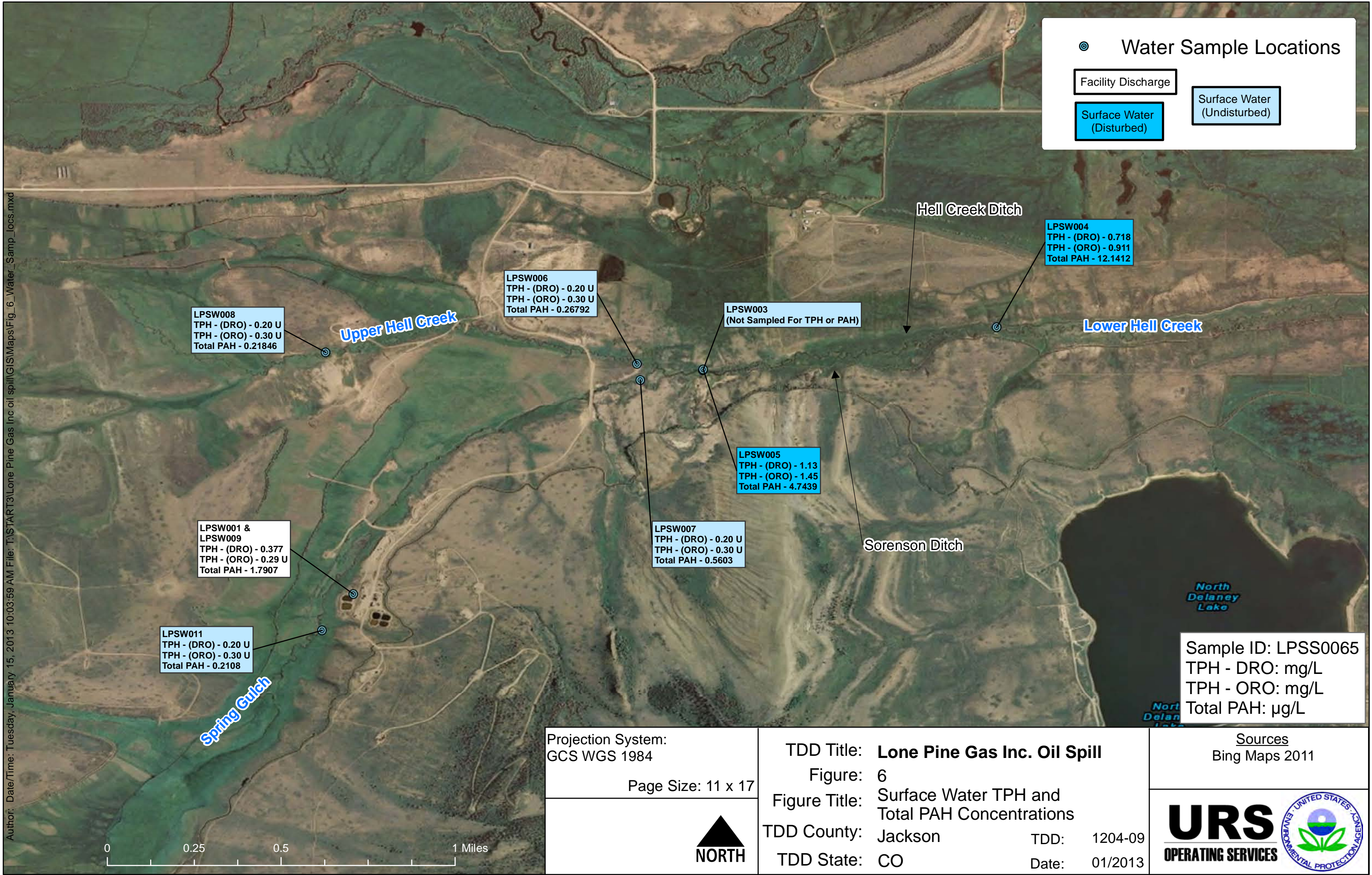


TABLE 4
Sediment Analytical Results
Total Petroleum Hydrocarbon (TPH) by EPA Method 8015B
Units in Milligrams per Kilogram (mg/kg) or Parts per Million (ppm)

Field Sample ID:	LP-SS-001	LP-SS-021	LP-SS-002	LP-SS-003	LP-SS-004	LP-SS-005	LP-SS-006	LP-SS-007	LP-SS-008	LP-SS-009	LP-SS-010
Lab Sample ID:	D34023-1	D34023-21	D34023-2	D34023-3	D34023-4R	D34023-5	D34023-6	D34023-7	D34023-8	D34023-9	D34023-10
Date Sampled:	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012
Matrix:	Sediment	Sediment (REP of LP-SS-001)	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
TPH-DRO (C ₁₀ -C ₂₈)	1,820	1,370	110 U	157 J	938	95.9 J	684	932	5,920	176	19,300
TPH-ORO (>C ₂₈ -C ₄₀)	2,220	1,600	266	564	1,170	147	848	1,170	6,120	409	20,700

U

Not detected above the reporting limit.

J

The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.

mg/kg

milligrams per kilogram

TABLE 4, continued
Sediment Analytical Results
Total Petroleum Hydrocarbon (TPH) by EPA Method 8015B
Units in Milligrams per Kilogram (mg/kg) or Parts per Million (ppm)

Field Sample ID:	LP-SS-011	LP-SS-012	LP-SS-013	LP-SS-014	LP-SS-015	LP-SS-016	LP-SS-017	LP-SS-018	LP-SS-019	LP-SS-020	LP-SS-022	LP-SS-023	LP-SS-024
Lab Sample ID:	D34023-11	D34023-12	D34023-13	D34023-14	D34023-15	D34023-16	D34023-17	D34023-18	D34023-19	D34023-20	D34023-22	D34023-23	D34023-24
Date Sampled:	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/27/2012	4/27/2012	4/27/2012	4/27/2012	4/27/2012
Matrix:	Sediment	Soil	Soil	Sediment	Sediment	Sediment	Sediment	Sediment (bg)	Sediment	Sediment (bg)	Sediment	Sediment (REP of LP-SS-022)	Sediment
TPH-DRO (C ₁₀ -C ₂₈)	17,000	46,400	71 U	883	12,200	3,490	941	120 U	120 U	120 U	142	1,410	100 U
TPH-ORO (>C ₂₈ -C ₄₀)	16,200	40,900	103	1,040	12,100	3,280	1,040	63.4	89	54.1	325	1,260	109

U

Not detected above the reporting limit.

J

The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.

mg/kg

milligrams per kilogram

bg

Background sample

REP

Replicate sample

TABLE 4, continued
Sediment Analytical Results
Total Petroleum Hydrocarbon (TPH) by EPA Method 8015B
Units in Milligrams per Kilogram (mg/kg) or Parts per Million (ppm)

Field Sample ID:	LP-SS-025	LP-SS-026	LP-SS-027	LP-SS-028	LP-SS-029	LP-SS-030	LP-SS-031	LP-SS-032	LP-SS-033	LP-SS-034	LP-SS-035	LP-SS-036	LP-SS-037	LP-SS-040
Lab Sample ID:	D35496-9	D35496-10	D35496-11	D35496-12	D35496-8	D35496-13	D35496-14	D35496-15	D35496-16	D35496-17	D35496-18	D35496-19	D35496-20	D35496-21
Date Sampled:	6/11/2012	6/11/2012	6/11/2012	6/11/2012	6/11/2012	6/11/2012	6/11/2012	6/11/2012	6/11/2012	6/11/2012	6/11/2012	6/11/2012	6/12/2012	6/12/2012
Matrix:	Sediment (bg)	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
TPH-DRO (C ₁₀ -C ₂₈)	17.5	35.1	127 J	92 U	17.6	99.6 J	167	110 J	120 U	192	100 U	130 U	296	254
TPH-ORO (>C ₂₈ -C ₄₀)	24.9 J	60.1	253	140 U	33	199	334	256	239	376	104 J	213	553	368

U

J

mg/kg

bg

Not detected above the reporting limit.
The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.
milligrams per kilogram
background

TABLE 4, continued
Sediment Analytical Results
Total Petroleum Hydrocarbon (TPH) by EPA Method 8015B
Units in Milligrams per Kilogram (mg/kg) or Parts per Million (ppm)

Field Sample ID:	LP-SS-041	LP-SS-042	LP-SS-043	LP-SS-044	LP-SS-045	LP-SS-046	LP-SS-047	LP-SS-048	LP-SS-049	LP-SS-050	LP-SS-051	LP-SS-052	LP-SS-053	LP-SS-054
Lab Sample ID:	D35496-22	D35496-23	D35496-24	D35496-25	D35496-26	D35496-27	D35496-28	D35496-29	D35496-30	D35496-31	D35496-32	D35496-33	D35496-34	D35496-35
Date Sampled:	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012
Matrix:	Sediment (REP of LP-SS-040)	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
TPH-DRO (C ₁₀ -C ₂₈)	319	612	100 U	425	97.4 J	12.1 J	100 U	159	121	264	120 U	243	65.7 J	1,230
TPH-ORO (>C ₂₈ -C ₄₀)	424	899	140 J	546	185 J	20.1 J	150 U	232	222	393	180 U	348	126 J	1,490

U

J

mg/kg

REP

Not detected above the reporting limit.
The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.
milligrams per kilogram
Replicate sample.

TABLE 4, continued
Sediment Analytical Results
Total Petroleum Hydrocarbon (TPH) by EPA Method 8015B
Units in Milligrams per Kilogram (mg/kg) or Parts per Million (ppm)

Field Sample ID:	LP-SS-055	LP-SS-056	LP-SS-057	LP-SS-058	LP-SS-059	LP-SS-060	LP-SS-064	LP-SS-061	LP-SS-062	LP-SS-063	LP-SS-065	LP-SS-066
Lab Sample ID:	D35496-36	D35496-37	D35496-38	D35496-39	D35496-41	D35496-42	D35496-46	D35496-43	D35496-44	D35496-45	D35496-40	D35496-47
Date Sampled:	6/12/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment (REP of LP-SS-060)	Sediment	Sediment	Sediment	Sediment	Sediment
TPH-DRO (C ₁₀ -C ₂₈)	2,340	2,950	1,060	1,600	262	10,600	12,900	579	107	514	238	8,240
TPH-ORO (>C ₂₈ -C ₄₀)	2,900	3,460	1,020	1,790	541	9,230	12,600	1,580	259	658	539	8,430

U

J

mg/kg

REP

Not detected above the reporting limit.
The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.
milligrams per kilogram
replicate

TABLE 5
Sediment Analytical Results
Semivolatile Organic Compounds (SVOCs) / Polyaromatic Hydrocarbons (PAHs) by EPA Method 8270C – Selective Ion Monitoring (SIM)
Units in Micrograms per Kilogram (µg/kg) or Parts per Billion (ppb)

Field Sample ID:	CAS#	SQuiRTs TEC	SQuiRTs PEC	LP-SS-037	LP-SS-040	LP-SS-041	LP-SS-042	LP-SS-043	LP-SS-044	LP-SS-045	LP-SS-046	LP-SS-047	LP-SS-048	LP-SS-049
Lab Sample ID:				D35496-20	D35496-21	D35496-22	D35496-23	D35496-24	D35496-25	D35496-26	D35496-27	D35496-28	D35496-29	D35496-30
Date Sampled:				6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012
Matrix:				Sediment	Sediment	Sediment (REP of LP-SS-040)	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Naphthalene	91-20-3	176	561	0.81	5.1 U	5.2 U	9.5 U	0.39 J	0.48 J	0.36 J	0.49	0.22 J	2.4 U	4.4 U
C1-Naphthalenes	-	-	-	1 U	5.1 U	5.2 U	9.5 U	0.45 U	0.79 U	0.54 U	0.50 U	0.42 U	2.4 U	4.4 U
C2-Naphthalenes	-	-	-	7.6	10.2	8.2	11.3	0.81	4.5	1	0.78	0.52	3.3	4.7
C3-Naphthalenes	-	-	-	22.3	15.5	12.2 U	15.3 U	0.83 U	6.3	0.91 U	0.70 U	0.48 U	4.8 U	5.6 U
C4-Naphthalenes	-	-	-	68.2	42.2	32.8	49.1	1.2	33.7	0.54 U	0.81	0.42 U	11.1	16.9
Acenaphthylene	208-96-8	-	-	1.1	5.1 U	5.2 U	9.5 U	0.43 U	1	0.54 U	0.47 U	0.42 U	2.4 U	4.4 U
Acenaphthene	83-32-9	-	-	0.55 U	5.1 U	5.2 U	9.5 U	0.43 U	0.5 U	0.54 U	0.47 U	0.42 U	2.4 U	4.4 U
Fluorene	86-73-7	423	2,230	0.55 U	3.4 J	2.8 J	5 J	0.29 J	0.5 U	0.29 J	0.35 J	0.42 U	2.4 U	2.2 J
C1-Fluorenes	-	-	-	10.7	5.1 U	5.2 U	9.5 U	0.55	0.5 U	0.49 J	0.47	0.27 J	2.4 U	4.4 U
C2-Fluorenes	-	-	-	36.2	33.6	21.7	29.6	0.84	21.7	0.63	0.47 U	0.42 U	7.8	13.9
C3-Fluorenes	-	-	-	79	59.6	50.5	75.1	0.43 U	51.8	0.54 U	0.47 U	0.42 U	17.4	36.4
Dibenzothiophene	132-65-0	-	-	0.55 U	5.1 U	5.2 U	9.5 U	0.43 U	0.5 U	0.54 U	0.47 U	0.42 U	2.4 U	4.4 U
C1-Dibenzothiophenes	-	-	-	11.5	9.5	9.5	15	0.43 U	7.8	0.54 U	0.47 U	0.42 U	2.4 U	4.4 U
C2-Dibenzothiophenes	-	-	-	26.2	19.9	17.4	23.2	0.65	17.5	0.46 J	0.24 J	0.42 U	5.6	9.2
C3-Dibenzothiophenes	-	-	-	45	37.3	31.4	50.3	0.92	29.9	0.54 U	0.47 U	0.42 U	9.5	17.7
C4-Dibenzothiophenes	-	-	-	31.2	27.2	22.3	34.1	0.75	19.4	0.54 U	0.47 U	0.42 U	8	12.9
Phenanthrene	85-01-8	204	1,170	0.55 U	5.5	4.8 J	7.8 J	0.59	0.5 U	0.59	0.64	0.32 J	2 J	3.2 J
Anthracene	120-12-7	57.2	845	0.55 U	5.1 U	5.2 U	9.5 U	0.43 U	0.5 U	0.54 U	0.47 U	0.42 U	2.4 U	4.4 U
C1-Phenanthrenes/Anthracenes	-	-	-	24.4	15.5	13.1	18.9	1	11.2	1	0.69	0.38 J	5.2	5.9
C2-Phenanthrenes/Anthracenes	-	-	-	106	66	61.4	86.2	2	71.1	1	0.87	0.42	19.4	29.8
C3-Phenanthrenes/Anthracenes	-	-	-	168	129	116	163	2.7	112	0.83	0.7	0.26 J	36.7	66.1
C4-Phenanthrenes/Anthracenes	-	-	-	97.7	74.3	60.1	92.4	1.8	60.8	0.54 U	0.47 U	0.42 U	22	32.3

U Not detected above the reporting limit.
J The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.
µg/kg microgram per kilogram
REP Replicate sample.
CAS# Chemical Abstracts Service Registry number
SQuiRTs National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables
TEC Threshold Effect Concentration
PEC Probable Effect Concentration

TABLE 5, continued
Sediment Analytical Results
Semivolatile Organic Compounds (SVOCs) / Polyaromatic Hydrocarbons (PAHs) by EPA Method 8270C – Selective Ion Monitoring (SIM)
Units in Micrograms per Kilogram (µg/kg) or Parts per Billion (ppb)

Field Sample ID:	CAS#	SQuiRTs TEC	SQuiRTs PEC	LP-SS-037	LP-SS-040	LP-SS-041	LP-SS-042	LP-SS-043	LP-SS-044	LP-SS-045	LP-SS-046	LP-SS-047	LP-SS-048	LP-SS-049
Lab Sample ID:				D35496-20	D35496-21	D35496-22	D35496-23	D35496-24	D35496-25	D35496-26	D35496-27	D35496-28	D35496-29	D35496-30
Date Sampled:				6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012
Matrix:				Sediment	Sediment	Sediment (REP of LP-SS-040)	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Fluoranthene	206-44-0	423	2,230	2	2.7 J	5.2 U	9.5 U	0.39 J	1.7	0.47 J	0.47	0.42 U	2.4 U	4.4 U
Pyrene	129-00-0	195	1,520	14.5	11.6	9.9	13.7	1	9.7	0.53 J	0.45 J	0.42 U	4	4.8
C1-Fluoranthenes/Pyrenes	-	-	-	56.1	44	41.7	53.3	2.7	37.1	0.93	0.57	0.26 J	12.8	18.2
C2-Fluoranthenes/Pyrenes	-	-	-	108	83.6	72.1	97.8	3.5	67.5	1.1	0.73	0.42 U	24.2	35.7
C3-Fluoranthenes/Pyrenes	-	-	-	119	93	79.6	116	3.3	75.8	1.2	0.47 U	0.42 U	26.6	40.3
Benzo(a)anthracene	56-55-3	108	1,050	4.8	4.3 J	3.8 J	6.5 J	0.34 J	3.4	0.36 J	0.33 J	0.42 U	2.4 U	2.7 J
Chrysene	218-01-9	166	1,290	29.5	21.3	18.1	25.1	1.5	18.4	0.94	0.59	0.42 U	6.3	8
C1-Benzo(a)anthracenes/Chrysenes	-	-	-	68	47.7	41.7	57.1	1.9	40.6	0.82	0.4 J	0.42 U	13.6	20.7
C2-Benzo(a)anthracenes/Chrysenes	-	-	-	102	77.6	66	99.6	2.6	59.1	1	0.63	0.42 U	21.4	34.3
C3-Benzo(a)anthracenes/Chrysenes	-	-	-	106	86.4	77.1	111	2.9	66.2	0.54 U	0.47 U	0.42 U	25.4	37
C4-Benzo(a)anthracenes/Chrysenes	-	-	-	92.6	5.1 U	5.2 U	9.5 U	0.43 U	55	0.54 U	0.47 U	0.42 U	2.4 U	4.4 U
Benzo(b)fluoranthene	205-99-2	-	-	8.4	6.8	5.5	9.2 J	0.53	5	0.43 J	0.38 J	0.42 U	1.8 J	2.5 J
Benzo(k)fluoranthene	207-08-9	-	-	1.8	5.1 U	5.2 U	9.5 U	0.29 J	0.98	0.31 J	0.33 J	0.42 U	2.4 U	4.4 U
Benzo(e)pyrene	192-97-2	-	-	24.1	17.2	14.3	21.2	1.1	13	0.57	0.26 J	0.42 U	4.9	6.8
Benzo(a)pyrene	50-32-8	150	1,450	3.1 J	3.3 J	5.2 UJ	5.3 J	0.28 J	1.9 J	0.54 UJ	0.24 J	0.42 UJ	2.4 UJ	4.4 UJ
Perylene	198-55-0	-	-	2.4	5.1 U	5.2 U	9.5 U	0.24 J	0.5 U	0.54 U	1.2	0.42 U	2.4 U	4.4 U
Indeno(1,2,3-cd)pyrene	193-39-5	-	-	1.8 J	3.1 J	5.2 UJ	6.4 J	0.29 J	0.97 J	0.28 J	0.27 J	0.42 UJ	2.4 UJ	4.4 UJ
Dibenz(a,h)anthracene	53-70-3	33	-	3 J	5.2 J	3.3 J	13.3 J	0.37 J	1.3 J	0.54 UJ	0.47 UJ	0.42 UJ	2.4 UJ	4.4 UJ
Benzo(g,h,i)perylene	191-24-2	-	-	7.9 J	7 J	5.6 J	10.7 J	0.53 J	4 J	0.4 J	0.32 J	0.42 UJ	1.8 J	2.5 J

U Not detected above the reporting limit.
J The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.
µg/kg microgram per kilogram
REP Replicate sample.
CAS# Chemical Abstracts Service Registry number
SQuiRTs National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables
TEC Threshold Effect Concentration
PEC Probable Effect Concentration

TABLE 5, continued
Sediment Analytical Results
Semivolatile Organic Compounds (SVOCs) / Polyaromatic Hydrocarbons (PAHs) by EPA Method 8270C – Selective Ion Monitoring (SIM)
Units in Micrograms per Kilogram (µg/kg) or Parts per Billion (ppb)

Field Sample ID:	CAS#	SQuiRTs TEC	SQuiRTs PEC	LP-SS-050	LP-SS-051	LP-SS-052	LP-SS-053	LP-SS-054	LP-SS-055	LP-SS-056	LP-SS-057	LP-SS-058	LP-SS-059
Lab Sample ID:				D35496-31	D35496-32	D35496-33	D35496-34	D35496-35	D35496-36	D35496-37	D35496-38	D35496-39	D35496-41
Date Sampled:				6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012
Matrix:				Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Naphthalene	91-20-3	176	561	4.7 U	0.26 J	0.67	0.42 U	30 U	32 U	34 U	13.4 J	26 U	0.92 U
C1-Naphthalenes	-	-	-	4.7 U	0.56 U	1.7 U	0.42 U	30 U	32 U	34 U	230	26 U	1.7
C2-Naphthalenes	-	-	-	8.7	0.57	8.5	1.3	35.2	30.7 J	40	2100	22.7 J	7.6
C3-Naphthalenes	-	-	-	16.7	0.89 U	18.2	2.3	138	166	258	3020	157	15.5
C4-Naphthalenes	-	-	-	37.4	0.46 J	39.4	6.1	432	522	732	1960	494	15.5
Acenaphthylene	208-96-8	-	-	4.7 U	0.51 U	0.63	0.42 U	30 U	32 U	34 U	17.3 J	26 U	0.48 J
Acenaphthene	83-32-9	-	-	4.7 U	0.51 U	0.62 U	0.42 U	30 U	32 U	34 U	12.1 J	26 U	0.56 U
Fluorene	86-73-7	423	2,230	2.8 J	0.51 U	1.3	0.42 U	30 U	32 U	34 U	155	26 U	1.1
C1-Fluorenes	-	-	-	10	0.51 U	7.9	1.4	59.6	83.9	117	640	68.6	4.1
C2-Fluorenes	-	-	-	25.1	0.51 U	24.1	3.8	256	352	482	988	255	6.5
C3-Fluorenes	-	-	-	52.1	0.51 U	48	7.6	492	664	784	947	443	11.1
Dibenzothiophene	132-65-0	-	-	4.7 U	0.51 U	0.93	0.42 U	30 U	32 U	34 U	68.7	26 U	0.89
C1-Dibenzothiophenes	-	-	-	8.4	0.51 U	9.5	0.42 U	69.4	32 U	108	304	61	6.2
C2-Dibenzothiophenes	-	-	-	18.4	0.32 J	18	3.1	172	222	285	456	147	5.9
C3-Dibenzothiophenes	-	-	-	30.9	0.32 J	27	4.7	296	368	381	343	217	6.4
C4-Dibenzothiophenes	-	-	-	21.3	0.51 U	18.3	3.4	164	222	241	170	140	4
Phenanthrene	85-01-8	204	1,170	4.4 J	0.45 J	2.9	0.54	18.6 J	19.3 J	25.4 J	400	16.6 J	3.5
Anthracene	120-12-7	57.2	845	4.7 U	0.51 U	0.54 J	0.42 U	30 U	32 U	19.7 J	30.3	26 U	0.41 J
C1-Phenanthrenes/Anthracenes	-	-	-	16.2	0.39 J	16.2	2.8	126	174	253	1480	135	16.3
C2-Phenanthrenes/Anthracenes	-	-	-	70.2	0.4 J	61.3	10.9	652	798	990	1820	534	20.4
C3-Phenanthrenes/Anthracenes	-	-	-	118	0.33 J	97.3	18.4	1100	1290	1560	1240	847	20.3
C4-Phenanthrenes/Anthracenes	-	-	-	56.4	0.51 U	49	9.1	456	671	729	482	377	13

U Not detected above the reporting limit.
J The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.
µg/kg microgram per kilogram
CAS# Chemical Abstracts Service Registry number
SQuiRTs National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables
TEC Threshold Effect Concentration
PEC Probable Effect Concentration
Sample concentration exceeds either the SQuiRTs TEC or PEC

TABLE 5, continued
Sediment Analytical Results
Semivolatile Organic Compounds (SVOCs) / Polyaromatic Hydrocarbons (PAHs) by EPA Method 8270C – Selective Ion Monitoring (SIM)
Units in Micrograms per Kilogram (µg/kg) or Parts per Billion (ppb)

Field Sample ID:	CAS#	SQuiRTs TEC	SQuiRTs PEC	LP-SS-050	LP-SS-051	LP-SS-052	LP-SS-053	LP-SS-054	LP-SS-055	LP-SS-056	LP-SS-057	LP-SS-058	LP-SS-059
Lab Sample ID:				D35496-31	D35496-32	D35496-33	D35496-34	D35496-35	D35496-36	D35496-37	D35496-38	D35496-39	D35496-41
Date Sampled:				6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012
Matrix:				Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Fluoranthene	206-44-0	423	2,230	4.7 U	0.4 J	1.7	0.33 J	30 U	16.9 J	18.3 J	24.7	26 U	1.3
Pyrene	129-00-0	195	1,520	9.2	0.44 J	10.5	2.4	76.7	107	112	94.6	68	2.7
C1-Fluoranthenes/Pyrenes	-	-	-	36.1	0.56	34.3	7.1	306	425	468	438	268	7.8
C2-Fluoranthenes/Pyrenes	-	-	-	64.3	0.54	59.3	12.1	548	778	838	623	436	15.5
C3-Fluoranthenes/Pyrenes	-	-	-	65.9	0.47 J	63	13.1	547	835	885	576	464	16.9
Benzo(a)anthracene	56-55-3	108	1,050	4.2 J	0.39 J	2.4	0.52	20.9 J	28.4 J	32.5 J	25.5	16.8 J	1.3
Chrysene	218-01-9	166	1,290	15.5	0.63	17.9	3.4	143	198	212	173	117	4.5
C1-Benzo(a)anthracenes/Chrysenes	-	-	-	36.4	0.42 J	37.3	7.3	330	472	505	329	279	9
C2-Benzo(a)anthracenes/Chrysenes	-	-	-	51.8	0.53	50.6	11.1	468	674	760	423	380	17.6
C3-Benzo(a)anthracenes/Chrysenes	-	-	-	56.3	0.51 U	47.4	11	455	675	762	388	370	20.4
C4-Benzo(a)anthracenes/Chrysenes	-	-	-	4.7 U	0.51 U	38.3	0.42 U	30 U	32 U	34 U	347	26 U	16.4
Benzo(b)fluoranthene	205-99-2	-	-	4.2 J	0.4 J	4.5	1	41	56.4	60.8	33.8	31	2.1
Benzo(k)fluoranthene	207-08-9	-	-	4.7 U	0.35 J	0.76	0.42 U	30 U	32 U	34 U	21 U	26 U	0.68
Benzo(e)pyrene	192-97-2	-	-	11.1	0.4 J	13.7	2.7	113	159	164	93.6	91.2	5.1
Benzo(a)pyrene	50-32-8	150	1,450	4.7 UJ	0.33 J	1.5	0.36 J	105	18.5 J	21.4 J	90.9	26 U	0.76
Perylene	198-55-0	-	-	4.7 U	0.51 U	1.4	0.42 U	30 U	32 U	34 U	21 U	26 U	0.67
Indeno(1,2,3-cd)pyrene	193-39-5	-	-	4.7 UJ	0.3 J	0.9	0.42 U	30 U	32 U	34 U	21 U	26 U	0.67
Dibenz(a,h)anthracene	53-70-3	33	-	4.7 UJ	0.51 U	1	0.29 J	30 U	32 U	34 U	21 U	26 U	0.68
Benzo(g,h,i)perylene	191-24-2	-	-	3.6 J	0.36 J	4	1.2	34.4	51	53.7	26.4	27.7	2.1

U
J
µg/kg
CAS#
SQuiRTs
TEC
PEC

Not detected above the reporting limit.
The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.
microgram per kilogram
Chemical Abstracts Service Registry number
National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables
Threshold Effect Concentration
Probable Effect Concentration
Sample concentration exceeds either the SQuiRTs TEC or PEC

TABLE 5, continued
Sediment Analytical Results
Semivolatile Organic Compounds (SVOCs) / Polyaromatic Hydrocarbons (PAHs) by EPA Method 8270C – Selective Ion Monitoring (SIM)
Units in Micrograms per Kilogram (µg/kg) or Parts per Billion (ppb)

Field Sample ID:	CAS#	SQuiRTs TEC	SQuiRTs PEC	LP-SS-060	LP-SS-062	LP-SS-063	LP-SS-064	LP-SS-066
Lab Sample ID:				D35496-42	D35496-44	D35496-45	D35496-46	D35496-47
Date Sampled:				6/13/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012
Matrix:				Sediment	Sediment	Sediment	Sediment (REP of LP-SS-060)	Sediment
Naphthalene	91-20-3	176	561	78 U	1.2 U	2.5 U	68 U	63 U
C1-Naphthalenes	-	-	-	73.7 J	1.7	2.3 J	58.5 J	44.7 J
C2-Naphthalenes	-	-	-	938	7.9	15.9	768	231
C3-Naphthalenes	-	-	-	7120	8.4	105	5940	2100
C4-Naphthalenes	-	-	-	12300	5.8	192	10300	5080
Acenaphthylene	208-96-8	-	-	72.7 J	0.32 J	1.5 J	61 J	63 U
Acenaphthene	83-32-9	-	-	78 U	0.39 J	2.5 U	68 U	63 U
Fluorene	86-73-7	423	2,230	88.2	1.2	1.8 J	74.7	63 U
C1-Fluorenes	-	-	-	2670	1.4	35.3	2020	816
C2-Fluorenes	-	-	-	7890	3	116	6670	3180
C3-Fluorenes	-	-	-	9340	3.4	163	7390	4300
Dibenzothiophene	132-65-0	-	-	117	0.8	2.1 J	96.5	46.2 J
C1-Dibenzothiophenes	-	-	-	1630	5	24.1	1330	595
C2-Dibenzothiophenes	-	-	-	3710	3	52.5	3300	1560
C3-Dibenzothiophenes	-	-	-	3810	5.6	69.2	3270	1910
C4-Dibenzothiophenes	-	-	-	1980	2.1	43.3	1640	1070
Phenanthrene	85-01-8	204	1,170	381	3 B	5.9 U	314	63 U
Anthracene	120-12-7	57.2	845	266	0.37 J	3.8	68 U	106
C1-Phenanthrenes/Anthracenes	-	-	-	6350	4.5	74.5	5000	1790
C2-Phenanthrenes/Anthracenes	-	-	-	15200	4.1	221	12200	6060
C3-Phenanthrenes/Anthracenes	-	-	-	15400	2.9	246	12800	7610
C4-Phenanthrenes/Anthracenes	-	-	-	6430	0.44 U	122	5250	3050

U Not detected above the reporting limit.

J The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.

µg/kg microgram per kilogram

CAS# Chemical Abstracts Service Registry number

REP replicate

SQuiRTs National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables

TEC Threshold Effect Concentration

PEC Probable Effect Concentration

Sample concentration exceeds either the SQuiRTs TEC or PEC

TABLE 5, continued
Sediment Analytical Results
Semivolatile Organic Compounds (SVOCs) / Polyaromatic Hydrocarbons (PAHs) by EPA Method 8270C – Selective Ion Monitoring (SIM)
Units in Micrograms per Kilogram (µg/kg) or Parts per Billion (ppb)

Field Sample ID:	CAS#	SQuiRTs TEC	SQuiRTs PEC	LP-SS-060	LP-SS-062	LP-SS-063	LP-SS-064	LP-SS-066
Lab Sample ID:				D35496-42	D35496-44	D35496-45	D35496-46	D35496-47
Date Sampled:				6/13/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012
Matrix:				Sediment	Sediment	Sediment	Sediment (REP of LP-SS-060)	Sediment
Fluoranthene	206-44-0	423	2,230	212	1.9	3.6	166	91.5
Pyrene	129-00-0	195	1,520	1210	3.9	17.2	1010	604
C1-Fluoranthenes/Pyrenes	-	-	-	5110	4.2	72.7	4120	2440
C2-Fluoranthenes/Pyrenes	-	-	-	7830	3.7	133	6540	4100
C3-Fluoranthenes/Pyrenes	-	-	-	7620	2.6	148	6080	4020
Benzo(a)anthracene	56-55-3	108	1,050	320	1.2	5.8	260	152
Chrysene	218-01-9	166	1,290	2280	1.7	33.6	1880	1120
C1-Benzo(a)anthracenes/Chrysenes	-	-	-	4560	1.8	80.6	3880	2330
C2-Benzo(a)anthracenes/Chrysenes	-	-	-	5900	1.6	123	4600	3000
C3-Benzo(a)anthracenes/Chrysenes	-	-	-	5340	1.5	130	4160	2930
C4-Benzo(a)anthracenes/Chrysenes	-	-	-	4310	0.44 U	110	3400	2260
Benzo(b)fluoranthene	205-99-2	-	-	471	1.3	9.7	385	241
Benzo(k)fluoranthene	207-08-9	-	-	84.8	0.95	1.9 J	68.8	47.2 J
Benzo(e)pyrene	192-97-2	-	-	1370	1.3	27.2	1100	703
Benzo(a)pyrene	50-32-8	150	1,450	179	0.95	3.1	147 J	92.4 J
Perylene	198-55-0	-	-	78 U	7.1	2.5 U	68 U	63 U
Indeno(1,2,3-cd)pyrene	193-39-5	-	-	55.3 J	0.86	1.6 J	70.4 J	43.3 J
Dibenz(a,h)anthracene	53-70-3	33	-	118	0.49	2.8	156 J	75.5 J
Benzo(g,h,i)perylene	191-24-2	-	-	363	3	8.8	282 J	186 J

U Not detected above the reporting limit.

J The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.

µg/kg microgram per kilogram

CAS# Chemical Abstracts Service Registry number

SQuiRTs National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables

REP replicate

TEC Threshold Effect Concentration

PEC Probable Effect Concentration

Sample concentration exceeds either the SQuiRTs TEC or PEC

TABLE 6
Sediment and Soil Analytical Results
Semivolatile Organic Compounds (SVOCs) / Polyaromatic Hydrocarbons (PAHs) by Massachusetts Department of Environmental Protection (MADEP) – Extractable Petroleum Hydrocarbons (EPH) Method Revision 1.1
Units in Micrograms per Kilogram (µg/kg) or Parts per Billion (ppb)

Field Sample ID:	SQiRTs TEC	SQiRTs PEC	LP-SS-001	LP-SS-021	LP-SS-004	LP-SS-008	LP-SS-009	LP-SS-010	LP-SS-011	LP-SS-012	LP-SS-015	LP-SS-016	LP-SS-018	LP-SS-020	LP-SS-023
Lab Sample ID:			D34023-1	D34023-21	D34023-4R	D34023-8	D34023-9	D34023-10	D34023-11	D34023-12	D34023-15	D34023-16	D34023-18	D34023-20	D34023-23
Date Sampled:			4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/26/2012	4/27/2012
Matrix:			Sediment	Sediment (REP of LP-SS-001)	Sediment	Sediment	Sediment	Sediment	Sediment	Soil	Sediment	Sediment	Sediment (bg)	Sediment (bg)	Sediment
Acenaphthene	-	-	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Acenaphthylene	-	-	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Anthracene	57.2	845	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Benzo(a)anthracene	108	1,050	680 U	770 U	710 U	1,680	900 U	3,020	758	3,280	3,140	814	650 U	670 U	630 U
Benzo(a)pyrene	150	1,450	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Benzo(b)fluoranthene	-	-	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Benzo(g,h,i)perylene	-	-	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Benzo(k)fluoranthene	-	-	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Chrysene	166	1,290	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Dibenz(a,h)anthracene	33	-	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Fluoranthene	423	2,230	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Fluorene	77.4	536	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Indeno(1,2,3-cd)pyrene	-	-	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
2-Methylnaphthalene	-	-	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Naphthalene	176	561	680 U	770 U	710 U	850 U	900 U	1,100 U	720 U	810 U	840 U	760 U	650 U	670 U	630 U
Phenanthrene	204	1,170	680 U	770 U	710 U	1,550	900 U	2,170	748	3,040	2,640	736 J	650 U	670 U	630 U
Pyrene	195	1,520	680 U	770 U	710 U	1,670	900 U	3,330	925	3,200	2,900	936	650 U	670 U	630 U
C ₁₁ -C ₂₂ Aromatics (Unadj.)	-	-	416,000	411,000	288,000	2,410,000	54,200	4,710,000	1,240,000	4,630,000	3,740,000	1,390,000	26,000 U	27,000 U	221,000
C ₉ -C ₁₈ Aliphatics	-	-	257,000	179,000	153,000	1,500,000	18,000 U	2,490,000	802,000	2,850,000	2,540,000	791,000	13,000 U	13,000 U	178,000
C ₁₉ -C ₃₆ Aliphatics	-	-	700,000	501,000	395,000	4,270,000	23,200	6,080,000	1,850,000	7,750,000	6,010,000	1,840,000	13,000 U	13,000 U	247,000
C ₁₁ -C ₂₂ Aromatics	-	-	415,000	411,000	288,000	2,400,000	53,900	4,700,000	1,240,000	4,620,000	3,730,000	1,380,000	26,000 U	27,000 U	220,000

U Not detected above the reporting limit.
J The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.
µg/kg microgram per kilogram
REP Replicate sample.
SQiRTs National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables
TEC Threshold Effect Concentration
PEC Probable Effect Concentration
Sample concentration exceeds either the SQiRTs TEC or PEC
Reporting limit is above benchmark concentration.

TABLE 7
Sediment Analytical Results
Metals by EPA method 6010C and 7470A (mercury only)
Units in Milligrams per Kilogram (mg/kg) or Parts per Million (ppm)

Field Sample ID:	CAS#	SQuiRTs TEC	SQuiRTs PEC	LP-SS-040	LP-SS-041	LP-SS-053	LP-SS-058	LP-SS-060	LP-SS-064	LP-SS-063
Lab Sample ID:				D35496-21	D35496-22	D35496-34	D35496-39	D35496-42	D35496-46	D35496-45
Date Sampled:				6/12/2012	6/12/2012	6/12/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012
Matrix:				Sediment	Sediment (REP of LP-SS-040)	Sediment	Sediment	Sediment	Sediment (REP of LP-SS-060)	Sediment
Aluminum	7429-90-5	-	-	3,360	3,920	3,380	5,730	4,890	5,630	6,120
Antimony	7440-36-0	-	-	4.4 U	4.5 U	3.9 U	4.6 U	7.2 U	6.3 U	4.6 U
Arsenic	7440-38-2	9.97	33.0	4.3	5.1	4.2	6.0	6.3	10	7.0
Barium	7440-39-3	-	-	176	219	142	433	573	566	296
Beryllium	7440-41-7	-	-	1.5 U	1.5 U	1.3 U	1.5 U	2.4 U	2.1 U	1.5 U
Cadmium	7440-43-9	0.990	4.98	1.5 U	1.5 U	1.3 U	1.7	2.4 U	2.1 U	1.5
Calcium	7440-70-2	-	-	15,100	15,200	10,600	25,300	9,150	8,990	6,770
Chromium	7440-47-3	43.4	111	6.1	6.9	6.0	9.2	7.8	8.7	9.7
Cobalt	7440-48-4	-	-	4.1	4.6	3.7	6.2	5.6	6.4	6.8
Copper	7440-50-8	31.6	149	6.0	8.4	7.1	14.3	10	11.2	12.6
Iron	7439-89-6	-	-	10,200	11,800	10,000	16,200	18,300	21,700	15,700
Lead	7439-92-1	35.8	128	7.4 U	7.5 U	6.4 U	9.3	12 U	10 U	9.7
Magnesium	7439-95-4	-	-	1,780	1,940	1,570	2,660	1,910	2,110	2,300
Manganese	7439-96-5	-	-	431	524	329	710	838	915	573
Mercury	7439-97-6	0.180	1.06	0.15 U	0.16 U	0.13 U	0.16 U	0.23 U	0.21 U	0.16 U
Nickel	7440-02-0	22.7	48.6	8.4	10.3	7.9	14.7	11.2	12.8	14.4
Potassium	7440-09-7	-	-	825	985	879	1,430	1,010	1,140	1,150
Selenium	7782-49-2	-	-	7.4 U	7.5 U	6.4 U	7.7 U	12 U	10 U	7.7 U
Silver	7440-22-4	-	-	4.4 U	4.5 U	3.9 U	4.6 U	7.2 U	6.3 U	4.6 U
Sodium	7440-23-5	-	-	94.4	89.2	99.3	88.8	95 U	84 U	80.8
Thallium	7440-28-0	-	-	1.5 U	1.5 U	1.3 U	1.5 U	2.4 U	2.1 U	1.5 U
Vanadium	7440-62-2	-	-	13.5	16.7	14	24.8	21.1	24.1	26.1
Zinc	7440-66-6	121	459	38	52.1	32.7	90	255	287	70.4

U Not detected above the reporting limit.

J The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.

µg/kg microgram per kilogram

CAS# Chemical Abstracts Service Registry number

SQuiRTs National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables

TEC Threshold Effect Concentration

PEC Probable Effect Concentration

Sample concentration exceeds either the SQuiRTs TEC or PEC

Reporting limit is above benchmark concentration.

TABLE 8
Sediment Analytical Results
Total Organic Carbon (TOC) by EPA Method 9060M

Units in Milligrams per Kilogram (mg/kg) or Parts per Million (ppm)

Field Sample ID:	Result Units	LP-SS-010	LP-SS-018	LP-SS-021	LP-SS-068	LP-SS-069	LP-SS-070	LP-SS-071	LP-SS-072	LP-SS-073	LP-SS-074	LP-SS-075	LP-SS-076
Lab Sample ID:		D34023-10	D34023-18	D34023-21	D38213-2	D38213-3	D38213-5	D38213-5	D38213-6	D38213-7	D38213-8	D38213-9	D38213-10
Date Sampled:		4/26/2012	4/26/2012	4/26/2012	8/29/2012	8/29/2012	8/29/2012	8/29/2012	8/29/2012	8/29/2012	8/29/2012	8/29/2012	8/29/2012
Matrix:		Sediment	Sediment (bg)	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Solids, Percent	%	41.5	68.3	55.6	51.1	60	34.2	37.7	75.8	53.7	45.1	45	57.9
Total Organic Carbon	mg/kg	106,000	11,500	18,100	53,100	77,900	72,600	50,600	6,540	20,600	30,300	40,800	13,500

mg/kg Milligrams per kilogram
bg Background sample

TABLE 9
Surface Water Analytical Results
Total Petroleum Hydrocarbon (TPH) by EPA Method 8015B, HEM Oil and Grease by EPA Method 1664A,
and Total Suspended Solids by Method SM20-2540D (mg/L)

Field Sample ID:	Units	LP-SW-011	LP-SW-008	LP-SW-001	LP-SW-009	LP-SW-006	LP-SW-007	LP-SW-005	LP-SW-003	LP-SW-004	LP-SW-012
Lab Sample ID:		D35496-7	D35496-5	D34022-1	D35496-6	D35496-5	D35496-4	D35496-2	D34022-3	D35496-1	D35496-48
Date Sampled:		6/12/2012	6/12/2012	4/26/2012	6/12/2012	6/12/2012	6/12/2012	6/13/2012	4/27/2012	6/13/2012	6/13/2012
Matrix:		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Sample Location:		Background (Spring Gulch Creek)	Background (Hell Creek)	Facility Discharge	Facility Discharge	Hell Creek (above confl.)	Spring Gulch (above confl.)	Timberman cattle access	Timberman cattle access	Dumler cattle access	Rinsate Blank
TPH-DRO (C ₁₀ -C ₂₈)	mg/L	0.20 U	0.20 U	-	0.377	0.20 U	0.20 U	1.13	-	0.718	0.20 U
TPH-ORO (>C ₂₈ -C ₄₀)	mg/L	0.30 U	0.30 U	-	0.29 U	0.30 U	0.30 U	1.45	-	0.911	0.30 U
(HEM) Oil & Grease	mg/L	-	-	9.2	-	-	-	-	7.3	-	-
Total Suspended Solids	mg/L	-	-	15	-	-	-	-	-	-	-

mg/L Milligrams per liter
U Not detected above the reporting limit.
HEM Hexane Extractable Materials
DRO Diesel Range Organics
ORO Oil Range Organics

TABLE 10
Surface Water Analytical Results
Semivolatile Organic Compounds (SVOCs) / Polyaromatic Hydrocarbons (PAHs)
by EPA Method 8270C – Selective Ion Monitoring (SIM)
Units in Micrograms per Kilogram (µg/L) or Parts per Billion (ppb)

Field Sample ID:	LP-SW-011	LP-SW-008	LP-SW-006	LP-SW-007	LP-SW-005	LP-SW-004	LP-SW-009
Lab Sample ID:	D35496-7	D35496-5	D35496-3	D35496-4	D35496-2	D35496-1	D35496-6
Date Sampled:	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/13/2012	6/13/2012	6/12/2012
Matrix:	Water	Water	Water	Water	Water	Water	Water
Sample Location: Analyte	Background (Spring Gulch Cr)	Background (Hell Cr)	Hell Creek (above confluence)	Spring Gulch Creek (above confluence)	Hell Creek Timberman cattle access	Hell Creek Dumler cattle access	Facility discharge
Naphthalene	0.011	0.0098 U	0.01 U	0.0058 J	0.0062 J	0.0075 J	0.0096 U
C1-Naphthalenes	0.0073 J	0.0063 J	0.01	0.012	0.0089 J	0.0093 J	0.0096 U
C2-Naphthalenes	0.007 J	0.0098 U	0.0084 J	0.0098 J	0.025	0.026	0.0096 U
C3-Naphthalenes	0.0058 J	0.0084 J	0.008 J	0.011	0.029	0.042	0.038
C4-Naphthalenes	0.0099 U	0.0098 U	0.009 J	0.016	0.1	0.24	0.16
Acenaphthylene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.0099 U	0.012	0.0096 U
Acenaphthene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.0099 U	0.0097 U	0.0096 U
Fluorene	0.0099 U	0.0051 J	0.0076 J	0.0082 J	0.0061 J	0.0072 J	0.0096 U
C1-Fluorenes	0.0099 U	0.0056 J	0.0061 J	0.0099 U	0.0099 U	0.048	0.011
C2-Fluorenes	0.0099 U	0.0098 U	0.01 U	0.015	0.0099 U	0.14	0.0096 U
C3-Fluorenes	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.2	0.48	0.19
Dibenzothiophene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.0099 U	0.0097 U	0.0053 J
C1-Dibenzothiophenes	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.0099 U	0.086	0.15
C2-Dibenzothiophenes	0.0099 U	0.0098 U	0.01 U	0.0074 J	0.058	0.14	0.074
C3-Dibenzothiophenes	0.0099 U	0.0098 U	0.01 U	0.013	0.15	0.39	0.0096 U
C4-Dibenzothiophenes	0.0099 U	0.0098 U	0.01 U	0.01	0.13	0.33	0.0096 U
Phenanthrene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.0099 U	0.0097 U	0.0096 U
Anthracene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.0099 U	0.0077 J	0.0096 U
C1-Phenanthrenes/Anthracenes	0.0058 J	0.0052 J	0.0057 J	0.0067 J	0.0099 U	0.061	0.023
C2-Phenanthrenes/Anthracenes	0.0061 J	0.0052 J	0.008 J	0.02	0.19	0.36	0.06
C3-Phenanthrenes/Anthracenes	0.0099 U	0.0098 U	0.0053 J	0.037	0.48	1.3	0.16
C4-Phenanthrenes/Anthracenes	0.0099 U	0.0098 U	0.01 U	0.024	0.33	0.92	0.073
Fluoranthene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.007 J	0.016	0.0096 U

TABLE 10, continued
Surface Water Analytical Results
Semivolatile Organic Compounds (SVOCs) / Polyaromatic Hydrocarbons (PAHs)
by EPA Method 8270C – Selective Ion Monitoring (SIM)
Units in Micrograms per Kilogram (µg/L) or Parts per Billion (ppb)

Field Sample ID:	LP-SW-011	LP-SW-008	LP-SW-006	LP-SW-007	LP-SW-005	LP-SW-004	LP-SW-009
Lab Sample ID:	D35496-7	D35496-5	D35496-3	D35496-4	D35496-2	D35496-1	D35496-6
Date Sampled:	6/12/2012	6/12/2012	6/12/2012	6/12/2012	6/13/2012	6/13/2012	6/12/2012
Matrix:	Water	Water	Water	Water	Water	Water	Water
Sample Location:	Background (Spring Gulch Cr)	Background (Hell Cr)	Hell Creek (above confluence)	Spring Gulch Creek (above confluence)	Hell Creek Timberman cattle access	Hell Creek Dumler cattle access	Facility discharge
Analyte							
Pyrene	0.0099 U	0.0098 U	0.01 U	0.01	0.061	0.15	0.031
C1-Fluoranthenes/Pyrenes	0.0099 U	0.0098 U	0.01 U	0.025	0.26	0.62	0.064
C2-Fluoranthenes/Pyrenes	0.0099 U	0.0098 U	0.01 U	0.034	0.39	1.1	0.15
C3-Fluoranthenes/Pyrenes	0.0099 U	0.0098 U	0.01 U	0.03	0.46	1.2	0.14
Benzo(a)anthracene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.0095 J	0.04	0.0096 U
Chrysene	0.0099 U	0.0098 U	0.01 U	0.012	0.098	0.29	0.045
C1-Benzo(a)anthracenes/Chrysenes	0.0099 U	0.0098 U	0.01 U	0.018	0.24	0.66	0.062
C2-Benzo(a)anthracenes/Chrysenes	0.0099 U	0.0098 U	0.01 U	0.026	0.39	1	0.072
C3-Benzo(a)anthracenes/Chrysenes	0.0099 U	0.0098 U	0.01 U	0.026	0.43	0.99	0.057
C4-Benzo(a)anthracenes/Chrysenes	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.34	0.81	0.0096 U
Benzo(b)fluoranthene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.032	0.077	0.0085 J
Benzo(k)fluoranthene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.0073 J	0.015	0.0096 U
Benzo(e)pyrene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.015	0.032	0.0096 U
Benzo(a)pyrene	0.0099 U	0.0098 U	0.01 U	0.0076 J	0.091	0.24	0.022
Perylene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.0099 U	0.0097 U	0.0096 U
Indeno(1,2,3-cd)pyrene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.0097 J	0.026	0.006 J
Dibenzo(a,h)anthracene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.019 U	0.052	0.013 U
Benzo(g,h,i)perylene	0.0099 U	0.0098 U	0.01 U	0.0099 U	0.034	0.076	0.0082 J

italics Background sample

µg/L microgram per kilogram

U Compound not detected above the reporting limit.

J The associated numerical value is an estimated quantity because the result is between the detection and reporting limits which are outside the calibration range.

TABLE 11
Surface Water Analytical Results
Volatile Organic Compounds (VOCs) by EPA Method 8260B
Units in Micrograms per Kilogram (µg/L) or Parts per Billion (ppb)

Field Sample ID:	LP-SW-001	LP-SW-003	LP-SW-002
Lab Sample ID:	D34022-1	D34022-3	D34022-2
Date Sampled:	4/26/2012	4/27/2012	4/26/2012
Matrix:	Water	Water	Water
Sample Location:	Facility Discharge	Timberman cattle access	Trip Blank
Acetone	10 U	10 U	10 U
Benzene	1.0 U	1.0 U	1.0 U
Bromodichloromethane	2.0 U	2.0 U	2.0 U
Bromoform	2.0 U	2.0 U	2.0 U
Chlorobenzene	2.0 U	2.0 U	2.0 U
Chloroethane	2.0 U	2.0 U	2.0 U
Chloroform	2.0 U	2.0 U	2.0 U
2-Chloroethyl vinyl ether	2.0 U	2.0 U	2.0 U
Carbon disulfide	2.0 U	2.0 U	2.0 U
Carbon tetrachloride	2.0 U	2.0 U	2.0 U
1,1-Dichloroethane	2.0 U	2.0 U	2.0 U
1,1-Dichloroethylene	2.0 U	2.0 U	2.0 U
1,2-Dichloroethane	2.0 U	2.0 U	2.0 U
1,2-Dichloropropane	2.0 U	2.0 U	2.0 U
Dibromochloromethane	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethylene	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	2.0 U	2.0 U	2.0 U
m-Dichlorobenzene	2.0 U	2.0 U	2.0 U
o-Dichlorobenzene	2.0 U	2.0 U	2.0 U
p-Dichlorobenzene	2.0 U	2.0 U	2.0 U
trans-1,2-Dichloroethylene	2.0 U	2.0 U	2.0 U
trans-1,3-Dichloropropene	5.0 U	5.0 U	5.0 U
Ethylbenzene	2.0 U	2.0 U	2.0 U
2-Hexanone	2.0 U	2.0 U	2.0 U
4-Methyl-2-pentanone	10 U	10 U	10 U
Methyl bromide	5.0 U	5.0 U	5.0 U
Methyl chloride	2.0 U	2.0 U	2.0 U
Methylene chloride	4.0 U	4.0 U	4.0 U
Methyl ethyl ketone	10 U	10 U	10 U
Styrene	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	2.0 U	2.0 U	2.0 U
1,1,2,2-Tetrachloroethane	2.0 U	2.0 U	2.0 U
1,1,2-Trichloroethane	2.0 U	2.0 U	2.0 U
Tetrachloroethylene	2.0 U	2.0 U	2.0 U
Toluene	2.0 U	2.0 U	2.0 U
Trichloroethylene	2.0 U	2.0 U	2.0 U
Vinyl chloride	2.0 U	2.0 U	2.0 U
Vinyl Acetate	30 U	30 U	30 U
Xylene (total)	4.0 U	4.0 U	4.0 U

U Not detected above the reporting limit.
µg/L micrograms per liter

TABLE 12
Surface Water Analytical Results
Total Metals by EPA Methods 200.8 and 245.1 (mercury only) – April Sampling, and EPA Methods 6010C and 7470A (mercury only) – June Sampling
Units in Micrograms per Kilogram (µg/L) or Parts per Billion (ppb)

Field Sample ID:	MCL (µg/L)	LP-SW-011	LP-SW-008	LP-SW-001	LP-SW-009	LP-SW-006	LP-SW-007	LP-SW-005	LP-SW-003	LP-SW-004	LP-SW-012
Lab Sample ID:		D35496-7	D35496-5	D34022-1	D35496-6	D35496-3	D35496-4	D35496-2	D34022-3	D35496-1	D35496-48
Date Sampled:		6/12/2012	6/12/2012	4/26/2012	6/12/2012	6/12/2012	6/12/2012	6/13/2012	4/27/2012	6/13/2012	6/13/2012
Matrix:		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Sample Location:		Background (Spring Gulch Creek)	Background (Hell Creek)	Facility Discharge	Facility discharge	Hell Cr (above confl.)	Spring Gulch (above confl.)	Timberman cattle access	Timberman cattle access	Dumler cattle access	Rinsate Blank
Aluminum	-	130	100 U	105	100 U	100 U	264	6,870	6,410	6,260	100 U
Antimony	6	30 U	30 U	0.80 U	30 U	30 U	30 U	30 U	0.80 U	30 U	30 U
Arsenic	10	25 U	25 U	1.6 U	25 U	25 U	25 U	25 U	8.6	25 U	25 U
Barium	2,000	38.5	65.6	4,560	4,450	54.5	195	430	673	608	10 U
Beryllium	4	10 U	10 U	0.40 U	10 U	10 U	10 U	10 U	0.85	10 U	10 U
Cadmium	5	10 U	10 U	0.20 U	10 U	10 U	10 U	10 U	1.6	10 U	10 U
Calcium	-	18,100	46,700	31,500	26,300	64,600	29,500	59,100	61,100	72,000	400 U
Chromium	100	10 U	10 U	4.0 U	10 U	10 U	10 U	10.3	7.6	10.2	10 U
Cobalt	-	5.0 U	5.0 U	0.40 U	5.0 U	5.0 U	5.0 U	6.0	6.8	7.5	5.0 U
Copper	1,300	10 U	10 U	4.0 U	10 U	10 U	10 U	13.8	15.4	15	10 U
Iron	-	637	492	1,440	566	458	796	16,600	16,300	21,600	70 U
Lead	15	50 U	50 U	1.0 U	50 U	50 U	50 U	50 U	10.4	50 U	50 U
Magnesium	-	3,820	17,800	10,500	10,500	19,400	6,080	15,800	23,800	13,100	200 U
Manganese	-	91.4	131	223	134	77.4	98.1	1,210	1,200	1,220	5.0 U
Mercury	2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nickel	-	30 U	30 U	4.0 U	30 U	30 U	30 U	30 U	16.2	30 U	30 U
Potassium	-	1,000 U	1,000 U	12,800	13,100	1,000 U	1,360	2,670	5,270	3,480	1,000 U
Selenium	50	50 U	50 U	0.80 U	50 U	50 U	50 U	50 U	0.80 U	50 U	50 U
Silver	-	30 U	30 U	0.20 U	30 U	30 U	30 U	30 U	0.20 U	30 U	30 U
Sodium	-	3,220	5,500	373,000	401,000	8,010	24,700	16,000	31,200	13,300	400 U
Thallium	2	10 U	10 U	0.40 U	10 U	10 U	10 U	10 U	0.40 U	10 U	10 U
Vanadium	-	10 U	10 U	2.0 U	10 U	10 U	10 U	29.1	21.1	29.6	10 U
Zinc	-	30 U	30 U	153	30 U	30 U	30 U	122	145	132	30 U

U Not detected above the reporting limit.
µg/L micrograms per liter
bg Background

TABLE 13
Surface Water Analytical Results
Dissolved Metals by EPA Methods 200.8 and 245.1 (mercury only) – April Sampling, and EPA Methods 6010C and 7470A (mercury only) – June Sampling
Units in Micrograms per Kilogram (µg/L) or Parts per Billion (ppb)

Field Sample ID:	MCL (µg/L)	LP-SW-011	LP-SW-008	LP-SW-001	LP-SW-009	LP-SW-006	LP-SW-007	LP-SW-005	LP-SW-003	LP-SW-004	LP-SW-012
Lab Sample ID:		D35496-7F	D35496-5F	D34022-1F	D35496-6F	D35496-3F	D35496-4F	D35496-2F	D34022-3F	D35496-1F	D35496-48F
Date Sampled:		6/12/2012	6/12/2012	4/26/2012	6/12/2012	6/12/2012	6/12/2012	6/13/2012	4/27/2012	6/13/2012	6/13/2012
Matrix:		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Sample Location:		Background (Spring Gulch Creek)	Background (Hell Creek)	Facility Discharge	Facility discharge	Hell Creek (above confl.)	Spring Gulch (above confl.)	Timberman cattle access	Timberman cattle access	Dumler cattle access	Rinsate Blank
Aluminum	-	100 U	100 U	100 U	100 U	100 U	100 U	100 U	1,230	100 U	100 U
Antimony	6	30 U	30 U	0.80 U	30 U	30 U	30 U	30 U	0.80 U	30 U	30 U
Arsenic	10	25 U	25 U	1.6 U	25 U	25 U	25 U	25 U	7.3	25 U	25 U
Barium	2,000	35.1	60.2	4,350	4,250	50.8	177	245	663	142	10 U
Beryllium	4	10 U	10 U	0.40 U	10 U	10 U	10 U	10 U	0.89	10 U	10 U
Cadmium	5	10 U	10 U	0.20 U	10 U	10 U	10 U	10 U	2.6	10 U	10 U
Calcium	-	18,700	46,300	31,700	25,100	64,500	29,500	51,000	74,200	49,300	400 U
Chromium	100	10 U	10 U	4.0 U	10 U	10 U	10 U	10 U	4.0 U	10 U	10 U
Cobalt	-	5.0 U	5.0 U	0.40 U	5.0 U	5.0 U	5.0 U	5.0 U	7.0	5.0 U	5.0 U
Copper	1,300	10 U	10 U	4.0 U	10 U	10 U	10 U	10 U	9.2	10 U	10 U
Iron	-	193	70 U	171	70 U	105	218	216	13,100	387	70 U
Lead	15	50 U	50 U	1.0 U	50 U	50 U	50 U	50 U	8.7	50 U	50 U
Magnesium	-	3,910	17,500	10,300	10,600	19,200	5,980	12,600	21,100	10,200	200 U
Manganese	-	67.7	96.1	222	23.4	51.2	71.6	1,190	1,740	198	5.0 U
Mercury	2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nickel	-	30 U	30 U	4.0 U	30 U	30 U	30 U	30 U	12.5	30 U	30 U
Potassium	-	1,000 U	1,000 U	12,600	12,900	1,000 U	1190	1270	4,200	1,860	1,000 U
Selenium	50	50 U	50 U	0.80 U	50 U	50 U	50 U	50 U	0.80 U	50 U	50 U
Silver	-	30 U	30 U	0.20 U	30 U	30 U	30 U	30 U	0.20 U	30 U	30 U
Sodium	-	3,240	5,340	372,000	401,000	7,800	24,300	15,000	27,500	12,900	400 U
Thallium	2	10 U	10 U	0.40 U	10 U	10 U	10 U	10 U	0.40 U	10 U	10 U
Vanadium	-	10 U	10 U	2.0 U	10 U	10 U	10 U	10 U	17.5	10 U	10 U
Zinc	-	30 U	30 U	59.3	30 U	30 U	30 U	30 U	139	30 U	30 U

U Not detected above the reporting limit.
µg/L micrograms per liter
Bg Background
RB Rinsate blank

APPENDIX A
Project Logbooks

"Outdoor writing products...
...for outdoor writing people."

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"Rite in the Rain"
ALL-WEATHER
JOURNAL
No. 391

Lone Pine Gas Inc. Oil Spill
(Margaret Spaulding Tank
Battery Treatment Facility)
~10 miles west of Walden, CO
TDD No. 1204-09
EI No. 36549247

Book 1

"It's in the Rain"
ALL-WEATHER WRITING PAPER

ALL-WEATHER WRITING PAPER



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JEFF MILLER
SENIOR ENVIRONMENTAL SCIENTIST

Phi

Ad

Project

Heavy Gun	ERA	303	312	7288	w
303	305	3831	c		

303	312	7488	m
303	105	3831	c

Kim Power 307 760 2244

307 760 2247

Tom Campbell-WKS 303 740 2781

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April 20, 2012 FRIDAY

- 1130 Received call from Chuck Baker about oil spill. Told to call Kerry Guy, EPA regarding site visit following week.
- 1500 Called Kerry Guy (KG) and discussed site:
 - oil spill last Dec. (2011), just recently reported.
 - plan on trip to facility near Walden, CO next week to document extent + degree of oil contamination that has occurred to Spring Creek & Hell Cr.

[Signature]
4/20/12

April 23, 2012 MONDAY

- 0930 Called KG to discuss site. Still on for weeks. (25th) departure 2-3 days in field. Sample for TPH - DRO/RRO along adjacent creeks. Photos document & GPS to construct viewer.
- 1030 met Williams (NW) on board as data manager/GIS person. I began writing Sampling Analysis Plan, NW writing H²S Plan. Amy Gray working on procurement, for remainder of day.

[Signature]
4/23/12

April 24, 2012 Tuesday

0815 Meeting at EPA, New York, NY
KLB + Marky, McLomb (EPA, NM)

Present:

Discussed data needs for

Waters:

- every photo is a point on map.
 - will delineate areas of concern as lines w/ GPS
 - will make every attempt to use Air Mobile app so as to be able to have water ready w/in 24 hours, but as this will involve constructing a custom app/dictionary, it might take a while to set up. Will use Teramune as backup.
- Plan for field:

Wednesday: drive to site. Begin

recen (GPS locations,

collect immunosay, fill

screen samples, photos documents). Walk affected stream.

Thursday: Go back to worst affected areas + collect debris + live food samples.

April 24, 12 (cont.)

Thursday: also collect H₂O samples from outfall at Pond 5, upstream + downstream of site on Spring Gulch.

Friday: wrap up. Drop off samples.

Marky

6
April 25, 2012 WEDNESDAY

0700 To office. Get vehicle.
Drive to warehouse.

0730 meet NW at warehouse.
Load equip. To office to
get GPS units & other equip.
0900 leave Denver. Call Kto
with update.

1200 Arrive site. Quick
lunch & call to Kto. Kto
will be on site 2-3 pm.

1230 Trying to get GPS up.

1300 Bob Timborman stops
by (local algal landlubber).

[Ray Power, lone pine
307 760 2247.] Ray told Bob
that Ray had a crew on site
w/ 2 weeks ago who reaped the
entire stream length removing
algalbed grass, etc.

1345 Bob Timborman leaves. NW
has GPS working.

Began walking downstream from
road that crosses Spring Gulch
~ 500' downstream of tank battery.

Observed a small SPS where
Gann April 25, 2012

April 25, cont WEDNESDAY

A sheen can be generated w/
shovel. No large-scale grass
within yds. Numerous places
where bacteria on surface of
standing water above stream channel
creates a "sheen" but this is not
petroleum. Bubbles, rather than
smeears.

[WEATHER: overcast (THU), WARM
(mid-60s), breezy with occasional
gusts.]

Have walked another ~ 300-400'
down Spring Gulch to bend in stream
to east. Small sand bank. Can
create sheen from glob (baseball-
sized) of oily material, as well as
from sand & water line. Area
is about 20' in length. Took two
pics: 100-3395 (glob) w/ sheen

100-3396 sand w/ sheen

1415 Collected immunoassay TPH
sample 1 from same location
as photo 100-3396.
~~15~~ 1P-IS-01

100-3397 is overview photo,
looking W.

Apr 125, 2012 (cont) WEDNESDAY

~50' downstream, located
5' long patch of deeper sand,
seems much more heavily
contaminated.

1440 Collected LP-IS-02

from sand described above.

Photo 100-3398

1445 Ray Power arrives to
discuss issue & spill. Asked
him to speak w/ Kenny Guy
who will be on site.

1455 Kenny Guy on site. Outlined
our observations & approach.

Convinced my conversations
with BT & RP.

~1500 Photo 100-3399, ^{first} obvious

line of oil-crusted vegetation

E. bank. Now makes GPS

line. Photo 100-3400 as

above, looking south. Continued

line of oil-crusted vegetation

on left (east) side of creek.

Small bit on right end.

~50' further downstream

beginning a second intermittent

Apr 125, 2012 (cont) WEDNESDAY

both-sides area of oil-crusted
veg. (light to heavy contamination)

Photo 100-3401 From middle

Photo 100-3402 close up of

oil-crusted veg near northern

end of above line.

1535 Collected LP-IS-03

1540 " LP-IS-04

Samples above collected

from exposed bank. 03

from above suspected oil

line, 04 from below.

Photo 100-3403 as above

First old open top drum. Photo 100-

3404 Oil-crusted veg below.

Photo 100-3405 heavy contam.

oil-crusted veg.

1619 Day profile below ^{collected} oil-crusted

veg. Collected LP-IS-05

from ~6" bgs. No obvious

oil contam. No smell of

petrol. Photo 100-3406

Moving further downstream, same

April 25, 2012 (cont.)

WEDNESDAY

SDM, not as much oil-crustal veg. but all low-lying areas can create stream.

100-3408 Shows steepness of bank w/o oil veg.

100-3409 upstream starts at significant length of oil-crustal veg. 60' long bank of ice/snow w/ oil beneath

Photo 100-3410

Another ~50' of lightly-used.

oil-crustal veg. further

downtown. Photo 100-3411

Photos 100-3412 & 3413 =

more stream ~200' downstream of large culvert under road to Lone Pine. Still above Heller.

1730 Took short video of confluence of stream ~250' downstream of culvert.

1740 Two photos of area

April 25, 2012 (cont.)

WEDNESDAY

06 confluence of Spring Gulch & Heller Cr. still stream.

100-3416 & 3417.

1750 collected

CS-IS-06 from "oil covered" rocks below Heller Cr./Spring Cr. confluence. Photo 100-3418

Photos 100-3419 & 3420 KG creek stream.

Photo 100-3421 & 3422 KG doing some w/ NW 6FS in locates.

Photo 100-3423 oily foam with stream on edge, caught on fence line.

Photo 100-3424 KG starting in cone access, still stream.

Photo 100-3425 ^{the} ~~the~~ ^{Sorenson?} ~~the~~ ^{location?}

ditch diversion. Tales significant portion of

flow curvy.

April 25, 2012 (cont.) WEDNESDAY

100-3426 Sample location

1828 CP-IS-07 collected.

Strong sheen from sediment pockets entire length of Bob Timberman property.

100-3427 eastern end of

Bob T.'s property line.

Still strong sheen.

Decide to wait it a day in the

field. Will need to run

immunoassay samples, foraging & upload files into for viewer.

1915 left field for Wolder

1940 To Wolder's Check in

hotel.

2000 Had dinner at 146.

2030 Checked in to hotel finally.

2100 Meet w/ KLG to discuss tomorrow plan.

April 25, 2012 (cont.) WEDNESDAY

2130 Begin setup & running of

immunoassay screening samples.

Dried samples significantly

first.

2150 Had to run to store to get 9V battery for optical reader.

2220 Prepared reagent blank & cal. std vials for calibrating reader.

Results: ppm

Blank 0

cal. standard 1,000

CP-S1-01 1,664

02 3,305

03 190

04 115

05 303

06 52

07 686

2315 Checked emails. Have

received ITR SAMPLING PLAN

from Rebecca Lammie (SRA)

Deputy leader) and more info

on IATs.

2330 End of day

4/25/12

April 26th, 2012

0630 Up and completing labels.

Printed out SAP active addressing review comments.

0800 Meets with KG to discuss

plan for day, results from immuno assay testing, etc.

0845 Talled to Amy Green (chemist)

re analyses.

20 - TPH (RO/RRO) = 81,395

3 - BTEX, O₄G, Cu, Fe, TSS = 8618

81,993

 4/26/12

April 26th, 2012

Checklist for day:

- 1.) downstream about (stand in diversion #2)
- 2.) fill upstream gap
- 3.) collect ~20 TPH
- 4.) Helt Cr above Spring Gulch lot (road crossing)

1040 Have arrived at pt on

Helt Cr just below where

2nd diversion (to north) occurs

noted 3-4 locations on southern most diversion: no visible stream

This diversion is called the Sorenson

Ditch on the topo.

On Helt Cr (middle water body)

Still stream, but faint.

1050 collected LP-SS-001

+MS/MSD

1055 collected LP-SS-021 (amp)

Photo 100-3428

Over to N-most ditch 2-3 p.m.

April 26th, 2012

broken. No stem. Recent ditch excavation through, but thinking spill occurred before active water diversion.

1105 Collected LP-SS- $\Phi\Phi$ 2
Photos 100-3429

1110 Collected LP-SS- $\Phi\Phi$ 3
from S-most irrigation ditch/diversion. No stem.

Photo 100-3430
1130 Back to truck. Patch samples.

Drove back to road, to cutbank ~2 mi down from Spring Gulch/Hell Cr. cond. Still stem in sed.

1145 Collected LP-SS- $\Phi\Phi$ 4
1200 To location on Hell Cr upstream of confluence w/ Spring Gulch. Stem present.

1205 Collected LP-SS- $\Phi\Phi$ 5
from ~10' upgradient of west

cutbank on Hell Cr.
1250 Collected LP-SS- $\Phi\Phi$ 6
from ~50' upgrad of
Bob Timberman prop. line

April 26th, 2012

Photos 100-3433

WEATHER: P to M cloudy, good chance of rain & storms, ~70°F

1310 Collected LP-SS- $\Phi\Phi$ 7 from ~100' downstream from Hell Cr/Spring Cr. cond. on Hell Cr.
Photos 100-3434

1320 Collected LP-SS- $\Phi\Phi$ 8 from Spring Gulch ~50' above cond. w/ Hell Cr. Photos 100-3435
walked upstream of confluence on Hell Cr. Noted 6" fish ~150' upstream. water clean, unlike Spring Gulch. Slight stem in sed. through.

1330 Collected LP-SS- $\Phi\Phi$ 9
Also noted leech on bottom of stream (Hell Cr.)

1350 Hiked out to truck. Unbad samples into cooler. Drove farther up Spring Gulch.

1400 Collected LP-SS- $\Phi\Phi$ 10

1410 " " $\Phi\Phi$ 11 from just below snow/ice bank

Apr 126th, 2012

Walked above snow bank
took profile samp. of oil-croster

veg.

1425 collected LP-SS- ϕ 12

O-2"

1430

ϕ 13

2'-6" bgs.

many, many roots. tight
clay matrix.

1455 collected LP-SS- ϕ 14

Photo 100-3440

1510

ϕ 15

Photo 100-3441

1520 collected ^{in P}LP-SS- ϕ 16

Photo 100-3442

1550 collected LP-SS- ϕ 17

Photo 100-3443

walked to outfall disking with
w/ Spring Creek Conduits stream
of discolored water with steam.

Much off-gassed veg. Photo:

100-3444 + 3445

Apr 126th, 2012

1610 collected LP-SS- ϕ 18

Photo 100-3446

from upstream of tank

battery on Spring Creek Rd

Seen at this or any other of

3 locations photographed

1630 walked last bit of Spring Creek
just below outfall gully. No

abandoned veg.

1700 collected LP-SS- ϕ 19

from outfall Photo 100-3447

New bump checked pH/temp/T meter

all good.

Temp = 12.8°C

Cond = 1269 μ S

pH = 7.60

1705 Large +- storm moving into
area. Will try to leave
field for day.

Photo 100-3448 is of material

excavated from just below
outfall.

April 26th, 2012

1710 Collected CP-Siv-Q02.

TRIP blank, now that
all samples for day are
in cooler.

1730 To store for more ice.

NOTE ON TRIP BLANK:

JUG of DI water had cap
fall off at some pt.

during day.

- 1735 Met with KLG to discuss

plan for tomorrow.

- leave hotel ~ 07:30

- collect additional samples in
data gaps.

- more water samples?

- back to hotel for later
check out.

- leave site by 2.

1800 E-mail photos, shrink video,
logbook, etc. Preserve samples.

1940 To dinner.

2030 Complete labels, pack +

re-ice samples.

2200 Done for day

[Signature]

April 27th, 2012 FRIDAY

0600 Begin chains of custody;
packing equipment.

0735 met w/ KLG plan is:

- look at 'good' pockets
of sed in upper Spiny Gully.

- collect additional samples
on Upper Hdd Cr. less big
samp.]

- water sample on Timberman
property.

0800 Out to site for river

staged to the:

0815 Crossed to large pocket
of sed. Pulled up profile for
KLG to set. It's ~ 1" 'clean'

sed overlying dark oily sed
with shewn on pebbles. It's ~ 2-3"
thick but hard to tell as is

unconsolidated + showed disturbs it.

0830 Up to ponds + river still

visible shewn at both. Some
for junction as outfall discharge

+ Spiny Gully. Is still above condt.

0905 Collected CP-SS-Q19

0930 " CP-SS-Q20

April 27th, 2012 FRIDAY

M. of 22nd to Party to GFS

MW3.

Plus 100-3452 = MW4 ps depth

100-3453 = MW3 SE of pond

100-3454 = MW6 76g wells?

100-3455 = MW5

100-3456 = MW2 SW corner of pond

100-3457 = MW1 - only to 0' of
bottom pond

1015 Over to Tinkering properly to

collect sulfate ^{with} samples.

LP-SW-003

1030 Collected LP-SW-003

1120 Collected LP-SS-022

1125 - LP-SS-023 (dip)

Heavy oil content. 100 3462

1210 collected LP-SS-024

set up pump clean.

Judy ^{Levi's} ~~Levi's~~ prep.

WEATHER: mid-low 30's

sun from 8- after 12 noon.

then m. cloudy breezy.

1235 Creek out of hotel

pressure samples.

April 27th, 2012 Friday

1310 After buying more ice &

icing samples, started to go

sandwiches and left Walden

for lab in Westmont.

1610 Arrive lab. Rollers samples.

1700 Back to warehouse. End of day

W. J. Kirk

11 JUNE 2012

MONDAY

Jhr

Beginning of 'Phase 2', additional sampling. Plan is to collect additional sediments & water samples along Hell & Spring Gulch creeks, as well as ponds/seed samples for fingerprinting by the Coast Guard. Water & seed samples will be analyzed for 8270 SIM PATHs, TPH DRO/OKO (sets only) and metals.

0800 To warehouse after getting supplies from office.

0900 Truck loaded. Went back.

0910 Leave warehouse to drive to Walden. Will stop for ice, etc.

on way.

1230 Arrive Walden. meet KG

Start at LP-SS-025 loc. on

N Fork of N. Platte

1350 Collected LP-SS-025

1400 " " 026

1425 " " 027

1500 " " 031

1525 " " 030 (fish 10)

1545 " " 029 (fish 6)

1610 " " 028

Ways
O & U

MONDAY (cont)

Jhr 25

1655 Collected LP-SS-032

dark layer 2-4" no star
clean sands to 12"

1720 " LP-SS-033 ~~fish 10~~

is black layer, w/
clean sands above &

below

1745 " LP-SS-034 2x5" fish

evidence of beaver

disturbance ~ 400' downstream

1800 " LP-SS-035 more

small beaver dam 4/6-8"

1825 collected LP-SS-036 1-3"

Heard back to vehicles.

1840 Done in field for day.

To dinner. Discussed plan

for tomorrow.

2100 Back to hotel to download,

sync, and send pics to

Alex M. for review.


11 June 12

12 June 12

TUESDAY

Jin

0715 Meet Nabe. Gather ice

0730 To visitor's cabin to wait for K6.

0740 Collected K6. He is waiting for

us at CR5.

0800 To CR5

0835 To river LP-SS-037

Location ~ 350' down stream
of CR5 culverts are 14' deep.
Are able to create a stream, and
not significant and disappearing
periodically.

100-3491

CR35 Collected LP-SS-037 4'-6"

TPH, PATHs, ms/msd

Total # of shingles: $\frac{\text{stream}}{\text{L' x W'}}$
with stream R 20 3

L 15 x 2

Very minimal wood 20 x 4

conform. Collected

CR5 L 20 x 2

R 20 x 2

L 30 x 4

R 10 x 2

10' trout... L 12 x 2

R 5 x 2

L 10 x 2

0840 Realise by GBs that we have 27

skipped LP-SS-039 (although spawning has been good. Also, note of stream)

0920 Decide to acknowledge

skipped locations & return to

Sample locations in SAP

0925 Sampled LP-SS-041 (up) 2'-6"

(LP-SS-040

mud, PATHs, TPH

stream L' x W' side

L 6 x 4

R 10 x 2

R 4 x 2

Stream still R 5 x 1

minor, but R 5 x 2

consistent L 8 x 2

Photo 100-3492 146' x 141'

accession bank (on stream bank)

0955 Collected LP-SS-042

Photo 100-0013 R. 100'

R 20 x 2

R 10 x 2

1020 Collected LP-SS-043

from mid channel sands.

6" fish. Stream has been

fairly narrow & deep with

lack of significant sand beds.

on track very large R 5 x 2

17 Jun 12 (cont)

1056 Collected LP-SS-044 6'x8" R 10 x 2

Photo 100-0015

dark organic
limp

L 5 x 1

Photo 3493 of K6 along

just above SS-044 location

1120 LP-SS-047 (Samson

Ditch) 5'-6" nice brown

clean looking sand. No

stream. Small fm fish.

Photo 100-0016

1135 LP-SS-046 (Hellen)

no stream, sampled anyway

no real organic layer - coarse

1145 LP-SS-045 collected (Hell

Creek Ditch)

R 15 x 2

1200 Very little stream at

LP-SS-048 location

Photo 3494 (Hell cr.)

Out of jets. Begin hike back
to vehicles.

12/12

6/12/12 Northwell

1230 Lunch and meet Samie Miller in Walden

1345 Meet K Guy. Back to field

Nullman and K Guy to continue sed

sampling while Jim & Stu collect water

samples

1455 Collect ~~LP~~ LPSS49 - TAY and BOGS

collected in Hell Creek strata on Hell Creek

Ranch property 200 ft below start

of diversion & cattle crossing

Soft sed, rainbow stream visible

Photo 100-0020

- slow water soft sed, w/ organics

1515 Collect LPSS50 2 jets BOGS/TAY

Hell Creek. Abundant stream 2.6"

slow backwater area; soft sed w/

organics. Photo: 100-0021

1525 Collect LPSS51 2 jets

Samson ditch. Clayey sed, no stream

steep bank and heavy grass.

- On Hell Creek Soft sed

L 5.30 20 x 3'

to fence line to E

- On Hell Creek from Hell Creek diversion

steep undercut bank w/ heavy

stream visible on deep disturbed sed

10/21/12 6/12/12

Bank is undercut ^{up} on both sides
Cleanup from confluence to LPS552
and wider stream w/ tall cut bank S
side of creek

1545 Collect LPS552 2 jars TBM 8015

Heavy stream in sds under 1 foot of
water on steep banks

From large cut bank upstream of
52 deep < low channel w/ red
algae mats; some green visible
along stretch in deep (~2' water)

0.2 small shoal areas w/ slight

Shena. Minor Shena. Red algae mat t.o.

+ Right bank 10' x 3'

+ Left 20' x 2' (near previous)

+ Left 10' x 1'

narrow channel 5' x 1'

+ Left 10' x 1' soft sand

+ Left 5' x 1'

Contaminated (shena) on sds from

LPS552 to 553 = ~5%

1640 Collect LPS553 2 jars (+ note)

- Middle of stream sds in large band
of silt. Red algae mats, coarse floor.

Sds are fine to med gravel

6/12/12 10/21/12

Continue upstream

Right 20' x 4' - oblong heavy
exposed

Left 5' x 2' - slack shallow
black logs + shena

water (LPS505)

1715 Collect LPS5054 Left bank

shallow water area; calm; fine sds
w/ red and green algae matting on top
Collect black material + light color
odor(?) and angle shena.

Continue up creek. Red algae mat in
under stream w/ rocky bottom. Few
slow sds areas

1740 Collect LPS5055 Left bank

1-2' below surface in slow water
area 0 head of 30' diameter pool.

Only shena and odor(?) visible

Collect B8015 and P1115

Back to vehicles. Meet up w/

SM/SM.

Drive to facility. Transport
sample of SM/SM.

1840 Depart from site

10/21/12
6/12/12

6/13/12 NW Mill.

0730 Meet term @ Walden vs. for
Kick / Caloossee.

Today: Jamie Miller, Jeff Miller, Kersey
Guy, N Williams

Sunny early ~ 70°F

Hub to Facility JM collects source

Sample while NW and JM sort bottles.

0900 Set up to sed and water sample
on Hill creek where left off

0932 Collected LPS556-061312

Sed sample allocated w/ fingerprint
water sample @ cattle crossing.

Photo 100-0030. JM collected GTS

prints.

1000 Collect LPS5065-061312

in middle of channel so feet
above Sorenson diversion.

Black organic layer w/ sheen
under 2' of water calm water

in ditch, mild blue stream.

Collect 1 TPH & jar

Photo 100-0032-31

1030 Collect LPS5058.

on Spring Gulch. @ cut bank
seeds on edge of pool.

6/13/12 (cont)

Black layer in silty soils under 1" of
clean material. Left bank

Collect TPH and ~~OTPH~~ PTH

Area ~ 20' x 2' Left bank

15' x 2' seeds in calm fl bank

10' x 2' rocky sed w/ sheen in silty

Shed produced in most low energy

Sed environments from LPS5058 to

road (upstream) including soft

seeds in pool under culvert

1100 Collect LPS5057-061312 in

Hill Creek ~ 200' below road

Soft seeds in calm environment

10' x 2' collected @ 1-9" below

sed surface

1200 Collect LPS5059-061312 in

Hill Creek. Calm sed left bank

Organic layer 1-4" w/ sheen / black

Photo 100-0034

Notes by Jeff Miller & J

on Spring Gulch. @ above culvert

Soft seeds on both sides of

Stream can generate sheen for long

distances (~~upstream~~) 80' x 1' x 2' both sides

Photo 100-3506 10' x 3' Right

2 small fish. + 3 x 8" fish

6/13/12 (cont.)

100-3507 site of old snow bank. Still mostly oil under new healthy green grass.

100-3508 Overrun looking up Spring gulch or towards LP-55-060 location showing healthy vegetation. Creek is fairly narrow & fast through this stretch, with very little low energy environments. All banks seem to be able to grow stems.

100-3509 Caddis fly (?) larva shells under rock from middle of SC Creek.

100-3510ⁱⁿ Plants showing stems generated at LP-55-060 (Det replicates) location. (TPT, SMT, PATH, metals)

1300 LP-55-060 + 064 collected
064 is replicate.

6/13/12

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BOOK 2

"It's in the Rain"
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JEFF MILLER

SENIOR ENVIRONMENTAL SCIENTIST



Phone _____

Project _____

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12 JUNE 12 Tuesday W.

1420 Jamie Miller and JRB
miller out to facility to
collect water samples

1430 LP-SW-009 collected

T	pH	alt	TDS	Cond
15.3°C	7.36	906	1.15 ppm	1620 µS

Filtered dissolved metals at
vehicle.

1515 LP-SW-011 collected (upstream
of facility on Spring Gulch Cr.)

under aquat. param. in 6PS
1550 LP-SW-008 collected (upstream
of facility on Hell Cr.)
Probs 100-3497

8 or 10" U" fish on Hell Cr.

1630 LP-SW-006 collected, just

up from condt. w/ Spring Gulch Cr.
1630 Prob. 100-3498 6" fish

1650 LP-SW-007 collected on
Spring Gulch Cr. just above condt.

then with Hell Cr.

~~1810~~ LP-SO-003 Coast Guard

1809 fingerprint sediments collected
decent stream. 100-0027

WEATHER: low 70s, breezy, P. cloudy, dry

THESDAY (cont).

1830 LP-SO-002 collected from
Spring Gulch Cr. above culvert & above
confluence w/ Hell Cr.

Prob. 100-3500 stream from

LP-SO-002 location

Prob. 100-3501 stream stirred up
at location on Spring Gulch Cr.

just above culvert.

1850 left site for wallen.

Feed sample coolers, then
went to dinner w/ KLG to
discuss tomorrow's plan.
At hotel, downloaded pics.

[Signature]

13 June 12

0715 Meet w/ Jamie & Matt. Tex
for 1445 contour. Exchanging GPS
& compass.

0735 Meet K.C. at carbon north
point.

- additional work: access
very clean up already
performed.

- pin flag worst areas.

from Hells Cr. / SPC comb down,
previous Hells Cr. SP11?; SPC
up & down (surface contour) from
recent SP11?

David Shlepy (Lone Pine)

will collect product sample

0830 LP-50-001 collected by

David from Tank 5.

0907 LP-50-004 collected

100 - 0029

0928 LP-50-005 collected

water quad:

Temp: 10.0 Cond 373 ppm

pH 7.4 TDS 265 ppm

1032 LP-50-004 collected.

(lower 'cath' sample)

13 June 12 (cont)

water quad

cond: 334 ppm TDS 238 ppm

pH 7.56 Temp: 11.2

100 3504, 3505 (slight stream)

Sample collected at Hells Cr.
Hells Cr. Ditch junction.

1300 To town to get vans for

additional samples.

1445. Collected LP-55-062 from

~~the~~ Spring Gulch Creek. Added

SIMPAT. Photo 100-0037. Seeds

along Bank still produce stem, something

newly, just as downstream.

1510 50' long stretch of soft sandy/

silty bottom that produced heavy

stem. Decid. to add sample

TPH + PATHS (LP-55-066)

1550 LP-55-063 collected from

just below large culvert on road

to mid-field. TPH + PATHS + Metab.

1630 Continued walking up SGC to

outfall condense. ~100' down

from outfall went past numerous

caddis nymphs. Many areas

still generate significant stem.

13 June '12 (cont)

1715 L.P. 55-061 collected (Apr 1964). Heavy bloom (15-3512 gwt)

TPH only

left site for hotel. Re-iced samples.

1900 Colburn CP-544-012

Rinse blank using DI water pouring into the 55 bowl & spoon that was used during assembly.

Sample to be analyzed for
TPH & metals.

Bowl & spoon were rinsed
in creek after last sample
above and then stood in
a cooler until rinse water
collected.

13 June 12

7

APPENDIX B

Photolog



PHOTO 1

Lone Pine Gas, Inc. facility overview, looking north (April 2012).



PHOTO 2

Separation tanks at Lone Pine Gas, Inc. facility, looking southeast (August 2012).



PHOTO 3
Crude oil storage tanks, looking northwest (June 2012).



PHOTO 4
Production water holding pond, looking north (April 2012).



PHOTO 5

Production water holding pond showing aeration, looking west (August 2012).



PHOTO 6

Jamie Miller (EPA START) collecting water sample from facility discharge weir (June 2012).



PHOTO 7

Confluence of discharge from facility to Spring Gulch Creek (flows from right to left). Note discolored water (below feet of Nat Williams [EPA START]). Looking southeast. (April 2012).



PHOTO 8

Nat Williams (EPA START) surveying at confluence of Hell Creek (flows from bottom left towards the top) and Spring Gulch Creek (at middle right). Looking north. (April 2012).



PHOTO 9

Confluence of Hell Creek (on left) with Sorenson Ditch (flows to right). Looking north. (April 2012).



PHOTO 10

Jeff Miller (EPA START) sampling at confluence of Hell Creek (on right) and Hell Creek Ditch (lower left). Flow is from right to left. Looking west. (June 2012).



PHOTO 11

Nat Williams (EPA START) at sample location LP-SW-003 (cattle access – Timberman property). Looking south. (April 2012).



PHOTO 12

Nat Williams (EPA START) and Kerry Guy (EPA) at location on Hell Creek below confluence with Spring Gulch Creek. Note sheen in water. Looking west. (April 2012).



PHOTO 13

Close-up of sheen created when sediment is disturbed. Hell Creek below confluence with Spring Gulch Creek. (April 2012).



PHOTO 14

Sheen being created within Spring Gulch Creek at LP-SO-002 (petroleum fingerprint – sediment) location. (June 2012).



PHOTO 15

Oiled vegetation (on right) and snow bank within Spring Gulch Creek. Looking north.
(April 2012).



PHOTO 16

Close-up of oiled vegetation along Spring Gulch Creek. (April 2012).



PHOTO 17

Top of crude oil storage tank (Tank 5) where petroleum fingerprint sample LP-SO-001 was collected. (June 2012).



PHOTO 18

Sample location LP-SS-061 on Upper Hell Creek showing sheen created when sediment was disturbed. (June 2012).



PHOTO 19

Nat Williams (EPA START, center) and Jeff Miller (EPA START, left) at sampling location LP-SO-002 on Spring Gulch Creek. Looking north. (June 2012).



PHOTO 20

Typical layer of dark, organic-rich layer of sediment where petroleum contamination was observed. (June 2012).



PHOTO 21

Sediment showing slight opalescence due to petroleum contamination at LP-SS-069 sample location on Spring Gulch Creek. (August 2012).



PHOTO 22

Dark organic layer at “clean” sample location LP-SS-026 on Lower Hell Creek. (June 2012).



PHOTO 23

Location of profile soil sampling (LP-SS-012 and LP-SS-013) of Spring Gulch Creek in area with oiled vegetation. (April 2012).



PHOTO 24

Oily foam captured behind a fence crossing on Lower Hell Creek. (April 2012).



PHOTO 25

Cattle within boundary of Lone Pine facility. (Note black cattle in middle-left of photo drinking water from pond.) Looking north. (August 2012).



PHOTO 26

Caddisfly larvae spun cases attached to a rock from Spring Gulch Creek. (June 2012).



PHOTO 27

Algal mats within Lower Hell Creek at LP-SS-055 sample location. Looking northwest. (June 2012).



PHOTO 28

Stockpile of petroleum-contaminated soil from December 2011. Note lack of liner. Looking west. (April 2012).



PHOTO 29

Excavation of area previously occupied by holding pond (same pond as in Photo 4). Looking south. (August 2012).



PHOTO 30

Petroleum-contaminated soil at south side of facility. Looking west. (August 2012).


APPENDIX C

US Coast Guard Fingerprint Samples – Memo, Oil Sample Analysis Report, and COCs



16400
17JUL2012

MEMORANDUM


From: Kristy L. Juare
CG MSL

To: Kerry Guy
8EPR-SA

Subj: OIL SAMPLE ANALYSIS REPORT 12-178, FEDERAL PROJECT NUMBER
E12807

1. This correspondence is prepared in response to our telephone conversation on 27Jun2012, during which you requested clarification of Marine Safety Laboratory (MSL) Case Report 12-178. The chemical relationship between EPA samples LP-SO-001, LP-SO-002 and LP-SO-004 shall be addressed. These samples were submitted in replicate; the replicates will be referenced by a single sample number for each set since chemical analyses confirmed each set has the same fingerprint.
2. The chemical composition of crude oil is dependent upon many factors, such as the climate conditions present during oil formation, migration of oil between reservoirs, biological input, and source rock maturation. The unique combination of conditions present at any given reservoir results in a unique chemical "fingerprint" for each crude oil. Crude oil reservoirs in close proximity to each other may be very similar to each other but are distinguishable at the molecular level.

Biomarkers are compounds present in crude oil and heavier refined products that are derived from biological sources (i.e., plant material, bacterial cell membranes, etc.) during oil formation. These biomarker compounds are useful during comparison analyses because they are source specific and relatively unaltered by weathering processes. Similarities in biomarker profiles indicate a common relationship between two oil samples even if other parameters, such as the polycyclic aromatic hydrocarbon (PAH) distribution, are different.

3. In addition to these primary controls on the petroleum oil fingerprint, further differentiation occurs during refining, storage and transport activities. As oils are mixed together, a new, unique fingerprint is formed. One analogy is mixing paint; if blue paint

is mixed with red paint, the result is purple paint. A lot of different shades of purple are possible depending on the exact combination of paints mixed together. For two oil samples to be a match they have to contain the exact same mixture of the exact same original products, specific down to the batch coming out of the refinery.

4. You indicated there are several storage tanks located on the facility sampled for MSL Case 12-178. It is important to note that for reasons stated above, each one of these storage tanks will have its own unique chemical fingerprint. Furthermore, each fingerprint will continuously change as oil is added to and removed from a given tank. The fingerprint of any given source is essentially a snapshot in time.
5. MSL Case Report 12-178 specifies that EPA samples LP-SO-002 and LP-SO-004 represent different portions of the same spilled oil. They are a match, and they are derived from the same chemical source.

Sample LP-SO-001 contains petroleum oil with a biomarker profile that indicates it is closely related to spill samples LP-SO-002 and LP-SO-004 through a common chemical source. There are differences between the samples, however, that indicate the spilled oil did not originate directly from suspected source LP-SO-001. The samples are too similar to be random but too different to be a match under strict comparison criteria.

6. In summary, LP-SO-001 was determined to be a non-match to spill samples LP-SO-002 and LP-SO-004 because it does not represent the exact source from which the spill originated. However, the similarities between the samples are important and they are sufficient to conclude that the spill originated from a closely related source, such as a different tank at the same facility.
7. Questions concerning this correspondence or MSL Case Report 12-178 should be directed to Kristy Juare at 860-271-2784.

#

Oil Sample Analysis Report

U. S. EPA Region VIII

Case Number E12807

Marine Safety Laboratory

Case Number 12-178



U.S. Department of
Homeland Security

**United States
Coast Guard**



Manager
U.S. Coast Guard
Marine Safety Laboratory

1 Chelsea Street
New London, CT 06320
Phone: (860) 271-2704
Fax: (860) 271-2641

16450
20 Jun 2012

U. S. Environmental Protection Agency
Attn: On-Scene Coordinator
Mail Code: 8 EPR-SA
1595 Wynkoop Street
Denver, CO 80202

Dear On-Scene Coordinator:

The laboratory analysis of this case has been completed and our report is forwarded. The technical data supporting the report (spectrograms and chromatograms) have been archived at our facility and are available upon request. We will maintain the oil samples in refrigerated storage pending final case disposition.

Questions concerning this report or the analytical methods used should be directed to the Supervisor of Analysis, Kristy Juare.


K. JUARE
By direction

Encl: (1) MSL Report 12-178

**United States Coast Guard
Marine Safety Laboratory
Oil Spill Identification Report
12-178**

Requestor: U. S. EPA Region VIII

Unit Case/Activity Number: E12807

Received: 18-Jun-12

Via: Federal Express 8710 4134 4013

Number Of Samples: 9

Lab NO. of Spills: 2, 3, 4, 5, 6, 7, 8 and 9

Lab NO. of Suspects: 1

Lab NO. of Background: n/a

Analysis Methods:

- ☒ GAS CHROMATOGRAPHY (GC)
- ☒ GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS)
- ☐ INFRARED SPECTROSCOPY (IR)

Laboratory's Conclusion (as explained below):NON-MATCH

RESULTS:

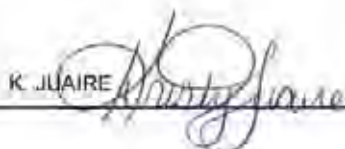
1. Samples 12-178-2, 3, 4, 5, 6, 7, 8 and 9 were specified to be representative of spilled oil. Analysis indicates:
 - A. Samples 12-178-2, 3, 4, 8 and 9 are similar to each other and contain slightly to moderately degraded heavy petroleum oil. Differences observed are attributable to weathering and to the non-petroleum contamination present in each sample.
 - B. Samples 12-178-5, 6 and 7 contain petroleum oil. The quantity is not sufficient for comparison purposes based on the analysis conducted.
2. Suspected source sample 12-178-1 contains heavy petroleum oil with overall characteristics somewhat similar to those of spill samples 12-178-2, 3, 4, 8 and 9. Important similarities suggest these samples are related to each other through a common source of petroleum oil. However, there are differences not attributable to weathering or non-petroleum contamination present between the samples.

CONCLUSIONS:

1. Samples 12-178-2, 3, 4, 8 and 9 represent different portions of the same spilled oil.
2. Suspected source sample 12-178-1 does not represent the direct source of spill samples 12-178-2, 3, 4, 8 and 9 based on the analysis conducted.
3. Samples 12-178-5, 6 and 7 do not contain a quantity of petroleum oil sufficient for comparison purposes.

SUPERVISOR OF ANALYSIS

K. JUAIRE



DATE 20-Jun-12

**United States Coast Guard
Marine Safety Laboratory**

**Oil Spill Identification Analysis
Cost Recovery Documentation**

Laboratory Case Number:	12-178
Requestor:	U. S. EPA Region VIII
Unit Case Number:	E12807
Number of Samples:	10
Cost Per Sample Prepared:	\$20.00
Total Costs of Sample Preparation:	\$200.00
Number of Analyses:	22
Cost Per Sample Analyzed:	\$86.00
Total Costs for Analysis:	\$1,892.00
TOTAL COSTS:	\$2,092.00

This documentation is provided for purposes of Phase IV - Documentation and
Cost Recovery under the National Oil and Hazardous Substances Pollution
Contingency Plan (40 CFR Part 300)

Signature:



Date: 20 Jun 2012

**United States Coast Guard
Marine Safety Laboratory Sample
Check-In Log**

MSL Case/Activity Number: 12-178

Requestor: U. S. EPA Region VIII

Unit Case Number E12807

Federal Project Number: E12807

Delivery Method: Federal Express

Received Date: 18 Jun 12

Delivery Number: 8710 4134 4013

Priority: Yes

Rush: No

Comparison No

Lab Number 12-178	Sample Descriptions from Sample Jars	Spill	Source
1	LP-SO-001 6 13 12 0830	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	LP-SO-002 6 12 12 1830	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	LP-SO-002 6 12 12 1830	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	LP-SO-002 6 12 12 1830	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	LP-SO-003 6 12 12 1809	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	LP-SO-003 6 12 12 1809	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	LP-SO-003 6 12 12 1809	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	LP-SO-004 6 12 12 0907	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9	LP-SO-004 6 12 12 0907	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10		<input type="checkbox"/>	<input type="checkbox"/>

Remarks: Spill/Source designations taken from CoC.

Samples checked in by: YN2 VERONICA RZOTKIEWICZ

Date: 18 Jun 12

Sample Custodian: MST3 MICHELLE KOSMO

Date: 18 Jun 12

Supervisor of Analysis: K. JUAIRE

Date: 20 Jun 12

CHAIN OF CUSTODY RECORD

United States Coast Guard
Commanding Officer

Name: Kerry Guy, USEPA On-Scene Coordinator

FPN Number: E12807

[illegible]

CHAIN OF CUSTODY RECORD

United States Coast Guard
Commanding Officer

Name: Kerry Guy, USEPA On-Scene Coordinator

FPN Number: E12807

Sample Number	Check Sample Type:			SAMPLE DESCRIPTIONS FROM JAR LABELS (Record additional information in parentheses)		
	Spill	Source	Back-ground			
LP-SO-002	X			(3 x 8 oz. jars - sediment collected from Spring Gulch Creek downstream of Lone Pine Gas Inc. facility)		
LP-SO-003	X			(3 x 8 oz. jars - sediment collected from Hell Creek, above confluence with Spring Gulch Creek)		
LP-SO-004	X			(2 x 8 oz. jars - sediment collected from Hell Creek, below confluence with Spring Gulch Creek, downstream of Lone Pine Gas Inc. facility)		
Sample Numbers	Relinquished By		Date/Time	Received By	Date/Time	Reason for Transfer
	Print Name: Jeff Miller		Date:	Print Name: Federal Express	Date:	
	Sign:		Time:	Sign:	Time:	
	Print Name:		Date:	Print Name:	Date:	
	Sign:		Time:	Sign:	Time:	
	Print Name:		Date:	Print Name:	Date:	
	Sign:		Time:	Sign:	Time:	
	Print Name:		Date:	Print Name:	Date:	
	Sign:		Time:	Sign:	Time:	
	Print Name:		Date:	Print Name:	Date:	
	Sign:		Time:	Sign:	Time:	

APPENDIX D

Accutest Laboratory Analytical Results, COCs and Data Validation Package for PAHs

April Sampling Event



05/08/12

Technical Report for

URS Operating Services, Inc.

36549247

Accutest Job Number: D34023

Sampling Dates: 04/26/12 - 04/27/12

Report to:

URS Operating Services, Inc.
999 18th Street STE 900
Denver, CO 80202
jeff.miller@URSCorp.com; amy.k.gray@urs.com

ATTN: Jeff Miller

Total number of pages in report: **612**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Brad Madadian
Laboratory Director

Client Service contact: Ann Doerr 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP C000049), TX (T104704511-12-1)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Test results relate only to samples analyzed.

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Sample Summary

URS Operating Services, Inc.

Job No: D34023

36549247

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D34023-1	04/26/12	10:50 JKM	04/27/12	SO	Soil	LP-SS-001
D34023-1D	04/26/12	10:50 JKM	04/27/12	SO	Soil Dup/MSD	LP-SS-001
D34023-1M	04/26/12	10:50 JKM	04/27/12	SO	Soil Matrix Spike	LP-SS-001
D34023-2	04/26/12	11:05 JKM	04/27/12	SO	Soil	LP-SS-002
D34023-3	04/26/12	11:10 JKM	04/27/12	SO	Soil	LP-SS-003
D34023-4	04/26/12	11:45 JKM	04/27/12	SO	Soil	LP-SS-004
D34023-5	04/26/12	12:05 JKM	04/27/12	SO	Soil	LP-SS-005
D34023-6	04/26/12	12:50 JKM	04/27/12	SO	Soil	LP-SS-006
D34023-7	04/26/12	13:10 JKM	04/27/12	SO	Soil	LP-SS-007
D34023-8	04/26/12	13:20 JKM	04/27/12	SO	Soil	LP-SS-008
D34023-9	04/26/12	13:30 JKM	04/27/12	SO	Soil	LP-SS-009
D34023-10	04/26/12	14:00 JKM	04/27/12	SO	Soil	LP-SS-010
D34023-11	04/26/12	14:10 JKM	04/27/12	SO	Soil	LP-SS-011

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



Sample Summary

(continued)

URS Operating Services, Inc.

Job No: D34023

36549247

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D34023-12	04/26/12	14:25 JKM	04/27/12	SO	Soil	LP-SS-012
D34023-13	04/26/12	14:30 JKM	04/27/12	SO	Soil	LP-SS-013
D34023-14	04/26/12	14:55 JKM	04/27/12	SO	Soil	LP-SS-014
D34023-15	04/26/12	15:10 JKM	04/27/12	SO	Soil	LP-SS-015
D34023-16	04/26/12	15:20 JKM	04/27/12	SO	Soil	LP-SS-016
D34023-17	04/26/12	15:50 JKM	04/27/12	SO	Soil	LP-SS-017
D34023-18	04/26/12	16:10 JKM	04/27/12	SO	Soil	LP-SS-018
D34023-19	04/27/12	09:05 JKM	04/27/12	SO	Soil	LP-SS-019
D34023-19R	04/27/12	09:05 JKM	04/27/12	SO	Soil	LP-SS-019
D34023-20	04/27/12	09:30 JKM	04/27/12	SO	Soil	LP-SS-020
D34023-21	04/26/12	10:55 JKM	04/27/12	SO	Soil	LP-SS-021
D34023-22	04/27/12	11:20 JKM	04/27/12	SO	Soil	LP-SS-022
D34023-23	04/27/12	11:25 JKM	04/27/12	SO	Soil	LP-SS-023

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



Sample Summary
(continued)

URS Operating Services, Inc.
36549247

Job No: D34023

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D34023-24	04/27/12	12:10	JKM	04/27/12	SO	Soil	LP-SS-024

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: URS Operating Services, Inc.

Job No D34023

Site: 36549247

Report Date 5/8/2012 11:01:47 AM

On 04/27/2012, 26 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 5.2 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D34023 was assigned to the project. The lab sample IDs, client sample IDs, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Extractables by GC By Method SW846-8015B

Matrix SO

Batch ID: OP5799

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34023-1MS, D34023-1MSD were used as the QC samples indicated.

Matrix SO

Batch ID: OP5800

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34023-22MS, D34023-22MSD were used as the QC samples indicated.

Matrix SO

Batch ID: OP5830

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34023-19RMS, D34023-19RMSD were used as the QC samples indicated.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN14743

- The data for SM19 2540B M meets quality control requirements.

Matrix SO

Batch ID: GN14751

- The data for SM19 2540B M meets quality control requirements.

Matrix SO

Batch ID: GN14760

- The data for SM19 2540B M meets quality control requirements.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.



Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

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3.1

3

Client Sample ID:	LP-SS-001		
Lab Sample ID:	D34023-1	Date Sampled:	04/26/12
Matrix:	SO - Soil	Date Received:	04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids:	65.2
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05573.D	1	04/30/12	AV	04/30/12	OP5799	GFI414
Run #2							

	Initial Weight	Final Volume
Run #1	5.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	1820	120	77	mg/kg	
	TPH-ORO (> C28-C40)	2220	47	36	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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3.2

3

Client Sample ID:	LP-SS-001	Date Sampled:	04/26/12
Lab Sample ID:	D34023-1D	Date Received:	04/27/12
Matrix:	SO - Soil Dup/MSD	Percent Solids:	65.2
Project:	36549247		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent	65.2		%	1	04/30/12	SWT	SM19 2540B M

RL = Reporting Limit

Report of Analysis



Client Sample ID: LP-SS-001
Lab Sample ID: D34023-1M
Matrix: SO - Soil Matrix Spike
Project: 36549247

Date Sampled: 04/26/12
Date Received: 04/27/12
Percent Solids: 65.2

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent	65.2		%	1	04/30/12	SWT	SM19 2540B M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

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3.4

3

Client Sample ID:	LP-SS-002		
Lab Sample ID:	D34023-2	Date Sampled:	04/26/12
Matrix:	SO - Soil	Date Received:	04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids:	72.2
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05575.D	1	04/30/12	AV	04/30/12	OP5799	GFI414
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	110	71	mg/kg	
	TPH-ORO (> C28-C40)	266	44	33	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	74%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

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3.5

3

Client Sample ID:	LP-SS-003	
Lab Sample ID:	D34023-3	Date Sampled: 04/26/12
Matrix:	SO - Soil	Date Received: 04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids: 44.8
Project:	36549247	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05577.D	1	04/30/12	AV	04/30/12	OP5799	GFI414
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	157	170	110	mg/kg	J
	TPH-ORO (> C28-C40)	564	70	52	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	80%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

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3.6
3

Client Sample ID:	LP-SS-004	
Lab Sample ID:	D34023-4	Date Sampled: 04/26/12
Matrix:	SO - Soil	Date Received: 04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids: 62.4
Project:	36549247	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05579.D	1	04/30/12	AV	04/30/12	OP5799	GFI414
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	938	130	83	mg/kg	
	TPH-ORO (> C28-C40)	1170	51	38	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	84%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.7

3

Client Sample ID:	LP-SS-005		
Lab Sample ID:	D34023-5	Date Sampled:	04/26/12
Matrix:	SO - Soil	Date Received:	04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids:	60.3
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05581.D	1	04/30/12	AV	04/30/12	OP5799	GFI414
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	95.9	130	86	mg/kg	J
	TPH-ORO (> C28-C40)	147	53	40	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	82%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.8

3

Client Sample ID:	LP-SS-006		
Lab Sample ID:	D34023-6	Date Sampled:	04/26/12
Matrix:	SO - Soil	Date Received:	04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids:	72.3
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05583.D	1	04/30/12	AV	04/30/12	OP5799	GFI414
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	684	110	72	mg/kg	
	TPH-ORO (> C28-C40)	848	44	33	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.9

3

Client Sample ID:	LP-SS-007		
Lab Sample ID:	D34023-7	Date Sampled:	04/26/12
Matrix:	SO - Soil	Date Received:	04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids:	63.5
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05585.D	1	04/30/12	AV	04/30/12	OP5799	GFI414
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	932	130	82	mg/kg	
	TPH-ORO (> C28-C40)	1170	50	38	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	76%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.10
3

Client Sample ID:	LP-SS-008	
Lab Sample ID:	D34023-8	Date Sampled: 04/26/12
Matrix:	SO - Soil	Date Received: 04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids: 51.6
Project:	36549247	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05587.D	1	04/30/12	AV	04/30/12	OP5799	GFI414
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	5920	150	100	mg/kg	
	TPH-ORO (> C28-C40)	6120	62	46	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	84%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.11

3

Client Sample ID:	LP-SS-009	
Lab Sample ID:	D34023-9	Date Sampled: 04/26/12
Matrix:	SO - Soil	Date Received: 04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids: 47.8
Project:	36549247	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05589.D	1	04/30/12	AV	04/30/12	OP5799	GFI414
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	176	170	110	mg/kg	
	TPH-ORO (> C28-C40)	409	66	50	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	80%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.12
3

Client Sample ID:	LP-SS-010		
Lab Sample ID:	D34023-10	Date Sampled:	04/26/12
Matrix:	SO - Soil	Date Received:	04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids:	41.5
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05635.D	10	05/01/12	AV	04/30/12	OP5799	GFI416
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	19300	1900	1200	mg/kg	
	TPH-ORO (> C28-C40)	20700	770	580	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	80%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.13
3

Client Sample ID:	LP-SS-011	
Lab Sample ID:	D34023-11	Date Sampled: 04/26/12
Matrix:	SO - Soil	Date Received: 04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids: 58.1
Project:	36549247	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05636.D	10	05/01/12	AV	04/30/12	OP5799	GFI416
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	17000	1400	890	mg/kg	
	TPH-ORO (> C28-C40)	16200	550	410	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	79%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.14
3

Client Sample ID:	LP-SS-012						
Lab Sample ID:	D34023-12					Date Sampled:	04/26/12
Matrix:	SO - Soil					Date Received:	04/27/12
Method:	SW846-8015B	SW846	3546			Percent Solids:	55.0
Project:	36549247						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05637.D	10	05/01/12	AV	04/30/12	OP5799	GFI416
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	46400	1500	950	mg/kg	
	TPH-ORO (> C28-C40)	40900	580	440	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.15
3

Client Sample ID:	LP-SS-013		
Lab Sample ID:	D34023-13	Date Sampled:	04/26/12
Matrix:	SO - Soil	Date Received:	04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids:	71.9
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05638.D	1	05/01/12	AV	04/30/12	OP5799	GFI416
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	110	71	mg/kg	
	TPH-ORO (> C28-C40)	103	44	33	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.16
3

Client Sample ID:	LP-SS-014	
Lab Sample ID:	D34023-14	Date Sampled: 04/26/12
Matrix:	SO - Soil	Date Received: 04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids: 54.1
Project:	36549247	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05639.D	1	05/01/12	AV	04/30/12	OP5799	GFI416
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	883	150	96	mg/kg	
	TPH-ORO (> C28-C40)	1040	59	44	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	79%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.17
3

Client Sample ID:	LP-SS-015	
Lab Sample ID:	D34023-15	Date Sampled: 04/26/12
Matrix:	SO - Soil	Date Received: 04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids: 52.7
Project:	36549247	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05640.D	10	05/01/12	AV	04/30/12	OP5799	GFI416
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	12200	1500	980	mg/kg	
	TPH-ORO (> C28-C40)	12100	600	450	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	86%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.18
3

Client Sample ID:	LP-SS-016		
Lab Sample ID:	D34023-16	Date Sampled:	04/26/12
Matrix:	SO - Soil	Date Received:	04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids:	58.3
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05641.D	1	05/01/12	AV	04/30/12	OP5799	GFI416
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	3490	140	88	mg/kg	
	TPH-ORO (> C28-C40)	3280	54	41	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	75%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.19
3

Client Sample ID:	LP-SS-017	
Lab Sample ID:	D34023-17	Date Sampled: 04/26/12
Matrix:	SO - Soil	Date Received: 04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids: 66.3
Project:	36549247	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05643.D	1	05/01/12	AV	04/30/12	OP5799	GFI416
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	941	120	78	mg/kg	
	TPH-ORO (> C28-C40)	1040	48	36	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	74%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.20
3

Client Sample ID:	LP-SS-018	
Lab Sample ID:	D34023-18	Date Sampled: 04/26/12
Matrix:	SO - Soil	Date Received: 04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids: 68.3
Project:	36549247	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05644.D	1	05/02/12	AV	04/30/12	OP5799	GFI416
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	120	75	mg/kg	
	TPH-ORO (> C28-C40)	63.4	46	35	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

3.21

3

Client Sample ID:	LP-SS-019		
Lab Sample ID:	D34023-19	Date Sampled:	04/27/12
Matrix:	SO - Soil	Date Received:	04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids:	66.0
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05645.D	1	05/02/12	AV	04/30/12	OP5799	GFI416
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	120	77	mg/kg	
	TPH-ORO (> C28-C40)	55.7	48	36	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.22

3

Client Sample ID:	LP-SS-019		
Lab Sample ID:	D34023-19R	Date Sampled:	04/27/12
Matrix:	SO - Soil	Date Received:	04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids:	66.0
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05659.D	1	05/04/12	AV	05/04/12	OP5830	GFI417
Run #2							

	Initial Weight	Final Volume
Run #1	5.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	120	76	mg/kg	
	TPH-ORO (> C28-C40)	89	48	36	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	71%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.23

3

Client Sample ID:	LP-SS-020						
Lab Sample ID:	D34023-20					Date Sampled:	04/27/12
Matrix:	SO - Soil					Date Received:	04/27/12
Method:	SW846-8015B	SW846	3546			Percent Solids:	67.4
Project:	36549247						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05646.D	1	05/02/12	AV	04/30/12	OP5799	GFI416
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	120	76	mg/kg	
	TPH-ORO (> C28-C40)	54.1	47	35	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	76%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.24

3

Client Sample ID:	LP-SS-021	
Lab Sample ID:	D34023-21	Date Sampled: 04/26/12
Matrix:	SO - Soil	Date Received: 04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids: 55.6
Project:	36549247	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05578.D	1	04/30/12	AV	04/30/12	OP5800	GFI415
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	1370	140	94	mg/kg	
	TPH-ORO (> C28-C40)	1600	58	43	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	89%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.25

3

Client Sample ID:	LP-SS-022		
Lab Sample ID:	D34023-22	Date Sampled:	04/27/12
Matrix:	SO - Soil	Date Received:	04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids:	75.0
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05576.D	1	04/30/12	AV	04/30/12	OP5800	GFI415
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	142	110	69	mg/kg	
	TPH-ORO (> C28-C40)	325	43	32	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	87%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.26
3

Client Sample ID:	LP-SS-023						
Lab Sample ID:	D34023-23					Date Sampled:	04/27/12
Matrix:	SO - Soil					Date Received:	04/27/12
Method:	SW846-8015B	SW846	3546			Percent Solids:	66.7
Project:	36549247						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05580.D	1	04/30/12	AV	04/30/12	OP5800	GFI415
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	1410	120	77	mg/kg	
	TPH-ORO (> C28-C40)	1260	47	35	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		43-136%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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3.27

3

Client Sample ID:	LP-SS-024		
Lab Sample ID:	D34023-24	Date Sampled:	04/27/12
Matrix:	SO - Soil	Date Received:	04/27/12
Method:	SW846-8015B SW846 3546	Percent Solids:	78.5
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI05582.D	1	04/30/12	AV	04/30/12	OP5800	GFI415
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	100	66	mg/kg	
	TPH-ORO (> C28-C40)	109	41	31	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

D34023 1 of 2

UOS URS Operating Services, Inc. 1099 18 th Street, STE 200 900 Denver, CO 80202 303-291-8200		SHIP TO: Accutest 4036 Youngfield St. Wheatridge, CO 80033 Attn: Ann Doerr		CHAIN OF CUSTODY RECORD				
PROJECT NUMBER / PURCHASE ORDER NUMBER: 36549247		SITE MANAGER / PHONE NUMBER: Jeff Miller 303 291 8212 720 810 0790		TURNAROUND REQUESTED: 3 day				
SAMPLER'S SIGNATURE: <i>[Signature]</i> Jeff K. Miller								
SAMPLE ID	DATE	TIME	COMP/GRAB	REMARKS	Number of Containers	TPH	DRD-RLO	TAG NUMBERS
⁽¹⁾ LP-SS-001	4/26/12	1050	Grab	includes ms/msp	2			01
⁽²⁾ LP-SS-002		1105			1			02
⁽³⁾ LP-SS-003		1110			1			03
⁽⁴⁾ LP-SS-004		1145			1			04
⁽⁵⁾ LP-SS-005		1205			1			05
⁽⁶⁾ LP-SS-006		1250			1			06
⁽⁷⁾ LP-SS-007		1310			1			07
⁽⁸⁾ LP-SS-008		1320			1			08
⁽⁹⁾ LP-SS-009		1330			1			09
⁽¹⁰⁾ LP-SS-010		1400			1			10
⁽¹¹⁾ LP-SS-011		1410			1			11
⁽¹²⁾ LP-SS-012		1425		0-2"	1			12
⁽¹³⁾ LP-SS-013		1430		2-6"	1			13
⁽¹⁴⁾ LP-SS-014		1455			1			14
⁽¹⁵⁾ LP-SS-015	✓	1510	✓		✓	✓		15 <i>DR4/27</i>
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)		OTHER INFORMATION:		
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)		all bottle/jar labels are missing a zero in sample ID C0C is correct		
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)		DATE	TIME	AIRBILL NUMBER: LAB REMARKS:
<i>[Signature]</i>		4/27/12	1615	<i>[Signature]</i>		4/27/12	1615	

White - Original to Accompany Samples

Yellow - UOS Chemist

Pink - UOS Project Manager

HD 5.2 DN 7316 N.A.B. *[Signature]* 4/27/12

D34023: Chain of Custody

Page 1 of 4

White - Original to Accompany Samples Yellow - UOS Chemist Pink - UOS Project Manager **HD 5.2** DN 7317 N.A.P. 12/7/12



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D34023 Client: URS OPERATING SERVICES INC. Immediate Client Services Action Required: No
Date / Time Received: 4/27/2012 4:15:00 PM No. Coolers: 1 Client Service Action Required at Login: No
Project: 36549247 Airbill #'s: HD

Cooler Security Y or N Y or N
1. Custody Seals Present: ☒ ☐ 3. COC Present: ☒ ☐
2. Custody Seals Intact: ☒ ☐ 4. Smpl Dates/Time OK ☒ ☐

Cooler Temperature Y or N
1. Temp criteria achieved: ☒ ☐
2. Cooler temp verification: Infrared gun
3. Cooler media: Ice (bag)

Quality Control Preservation Y or N N/A
1. Trip Blank present / cooler: ☐ ☐
2. Trip Blank listed on COC: ☐ ☐
3. Samples preserved properly: ☒ ☐
4. VOCs headspace free: ☐ ☐ ☒

Sample Integrity - Documentation Y or N
1. Sample labels present on bottles: ☒ ☐
2. Container labeling complete: ☒ ☐
3. Sample container label / COC agree: ☒ ☐

Sample Integrity - Condition Y or N
1. Sample recvd within HT: ☒ ☐
2. All containers accounted for: ☒ ☐
3. Condition of sample: Intact

Sample Integrity - Instructions Y or N N/A
1. Analysis requested is clear: ☒ ☐
2. Bottles received for unspecified tests: ☐ ☒
3. Sufficient volume rec'd for analysis: ☒ ☐
4. Compositing instructions clear: ☐ ☐ ☒
5. Filtering instructions clear: ☐ ☐ ☒

Comments

Accutest Laboratories
V:(303) 425-6021

4036 Youngfield Street
F: (303) 425-6854

Wheat Ridge, CO
www.accutest.com

D34023: Chain of Custody
Page 3 of 4

Job Change Order: D34023_5/3/2012

Requested	5/3/2012	Received	4/27/2012
Account	URS Operating Services, Inc.	Due Date:	5/2/2012
Project	38549247	Deliverable:	FULT1
CSR	RR	TAT (Days):	3
Sample		Change:	The client would like the sample re-extracted and re-analyzed. The sample should be thoroughly homogenized prior to extraction.
D34023-19			
LP-SS-019			

Above Changes

Client

Date: 5/3/2012

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1



GC Semi-volatiles

5

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Page 1 of 1

Job Number: D34023
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5799-MB	FI05565.D	1	04/30/12	AV	04/30/12	OP5799	GFI414

The QC reported here applies to the following samples:

Method: SW846-8015B

D34023-1, D34023-2, D34023-3, D34023-4, D34023-5, D34023-6, D34023-7, D34023-8, D34023-9, D34023-10, D34023-11, D34023-12, D34023-13, D34023-14, D34023-15, D34023-16, D34023-17, D34023-18, D34023-19, D34023-20

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	13	8.7	mg/kg	
	TPH-ORO (> C28-C40)	ND	5.3	4.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	82% 43-136%

5.1.1
5

Method Blank Summary

Page 1 of 1

Job Number: D34023
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5800-MB	FI05570.D	1	04/30/12	AV	04/30/12	OP5800	GFI415

The QC reported here applies to the following samples:

Method: SW846-8015B

D34023-21, D34023-22, D34023-23, D34023-24

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	13	8.7	mg/kg	
	TPH-ORO (> C28-C40)	ND	5.3	4.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	88% 43-136%

Method Blank Summary

Page 1 of 1

Job Number: D34023
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5830-MB	FI05678.D	1	05/07/12	AV	05/04/12	OP5830	GFI418

The QC reported here applies to the following samples:

Method: SW846-8015B

D34023-19R

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	13	8.7	mg/kg	
	TPH-ORO (> C28-C40)	ND	20	13	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	79% 43-136%

5.1.3

5

Blank Spike Summary

Page 1 of 1

Job Number: D34023
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5800-BS	FI05566.D	1	04/30/12	AV	04/30/12	OP5800	GFI415

The QC reported here applies to the following samples:

Method: SW846-8015B

D34023-21, D34023-22, D34023-23, D34023-24

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	556	83	58-130
	TPH-ORO (> C28-C40)	267	234	88	46-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	90%	43-136%

5.2.1

5

Blank Spike Summary

Page 1 of 1

Job Number: D34023**Account:** URSCOD URS Operating Services, Inc.**Project:** 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5799-BS	FI05567.D	1	04/30/12	AV	04/30/12	OP5799	GFI414

The QC reported here applies to the following samples:**Method:** SW846-8015B

D34023-1, D34023-2, D34023-3, D34023-4, D34023-5, D34023-6, D34023-7, D34023-8, D34023-9, D34023-10, D34023-11, D34023-12, D34023-13, D34023-14, D34023-15, D34023-16, D34023-17, D34023-18, D34023-19, D34023-20

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	508	76	58-130
	TPH-ORO (> C28-C40)	267	227	85	46-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	83%	43-136%

5.2.2

5

Blank Spike Summary

Page 1 of 1

Job Number: D34023**Account:** URSCOD URS Operating Services, Inc.**Project:** 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5830-BS	FI05656.D	1	05/04/12	AV	05/04/12	OP5830	GFI417

The QC reported here applies to the following samples:**Method:** SW846-8015B

D34023-19R

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	436	65	58-130
	TPH-ORO (> C28-C40)	267	214	80	46-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	76%	43-136%

5.2.3

5

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D34023
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5799-MS	FI05569.D	1	04/30/12	AV	04/30/12	OP5799	GFI414
OP5799-MSD	FI05571.D	1	04/30/12	AV	04/30/12	OP5799	GFI414
D34023-1	FI05573.D	1	04/30/12	AV	04/30/12	OP5799	GFI414

The QC reported here applies to the following samples:

Method: SW846-8015B

D34023-1, D34023-2, D34023-3, D34023-4, D34023-5, D34023-6, D34023-7, D34023-8, D34023-9, D34023-10, D34023-11, D34023-12, D34023-13, D34023-14, D34023-15, D34023-16, D34023-17, D34023-18, D34023-19, D34023-20

CAS No.	Compound	D34023-1		Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
		mg/kg	Q							
	TPH-DRO (C10-C28)	1820		5960	5630	64	6090	70	8	20-183/43
	TPH-ORO (> C28-C40)	2220		2380	3300	45	3830	66	15	20-223/51

CAS No.	Surrogate Recoveries	MS	MSD	D34023-1	Limits
84-15-1	o-Terphenyl	80%	83%	81%	43-136%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D34023
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5800-MS	FI05572.D	1	04/30/12	AV	04/30/12	OP5800	GFI415
OP5800-MSD	FI05574.D	1	04/30/12	AV	04/30/12	OP5800	GFI415
D34023-22	FI05576.D	1	04/30/12	AV	04/30/12	OP5800	GFI415

The QC reported here applies to the following samples:

Method: SW846-8015B

D34023-21, D34023-22, D34023-23, D34023-24

CAS No.	Compound	D34023-22 mg/kg	Spike Q	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	142	5280	4190	77	4280	78	2	20-183/43
	TPH-ORO (> C28-C40)	325	2110	1830	71	2080	82	13	20-223/51

CAS No.	Surrogate Recoveries	MS	MSD	D34023-22	Limits
84-15-1	o-Terphenyl	86%	85%	87%	43-136%

5.3.2

5

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D34023
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5830-MS	FI05657.D	1	05/04/12	AV	05/04/12	OP5830	GFI417
OP5830-MSD	FI05658.D	1	05/04/12	AV	05/04/12	OP5830	GFI417
D34023-19R	FI05659.D	1	05/04/12	AV	05/04/12	OP5830	GFI417

The QC reported here applies to the following samples:

Method: SW846-8015B

D34023-19R

CAS No.	Compound	D34023-19R		Spike	MS	MS	MSD	MSD	RPD	Limits
		mg/kg	Q	mg/kg	mg/kg	%	mg/kg	%		Rec/RPD
	TPH-DRO (C10-C28)	ND		5900	3960	67	3790	64	4	20-183/43
	TPH-ORO (> C28-C40)	89		2360	2060	87	1920	81	7	20-223/51

CAS No.	Surrogate Recoveries	MS	MSD	D34023-19R Limits
84-15-1	o-Terphenyl	80%	76%	71% 43-136%

5.3.3

5



General Chemistry

QC Data Summaries

7

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Page 1 of 5

Job Number: D34023
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample: D34023-1 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-001

Wet Weight (Total)	11.24	g
Tare Weight	1.17	g
Dry Weight (Total)	7.74	g
Solids, Percent	65.2	%

Sample: D34023-2 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-002

Wet Weight (Total)	13.09	g
Tare Weight	1.2	g
Dry Weight (Total)	9.78	g
Solids, Percent	72.2	%

Sample: D34023-3 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-003

Wet Weight (Total)	11.19	g
Tare Weight	1.17	g
Dry Weight (Total)	5.66	g
Solids, Percent	44.8	%

Sample: D34023-4 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-004

Wet Weight (Total)	12.78	g
Tare Weight	1.17	g
Dry Weight (Total)	8.41	g
Solids, Percent	62.4	%

Sample: D34023-5 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-005

Wet Weight (Total)	12.52	g
Tare Weight	1.17	g
Dry Weight (Total)	8.01	g
Solids, Percent	60.3	%

Sample: D34023-6 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-006

Wet Weight (Total)	15.1	g
Tare Weight	1.19	g
Dry Weight (Total)	11.25	g
Solids, Percent	72.3	%

7.1

7

Percent Solids Raw Data Summary

Page 2 of 5

Job Number: D34023
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample: D34023-7 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-007

Wet Weight (Total)	11.52	g
Tare Weight	1.15	g
Dry Weight (Total)	7.74	g
Solids, Percent	63.5	%

Sample: D34023-8 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-008

Wet Weight (Total)	11.52	g
Tare Weight	1.17	g
Dry Weight (Total)	6.51	g
Solids, Percent	51.6	%

Sample: D34023-9 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-009

Wet Weight (Total)	11.45	g
Tare Weight	1.18	g
Dry Weight (Total)	6.09	g
Solids, Percent	47.8	%

Sample: D34023-10 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-010

Wet Weight (Total)	11.76	g
Tare Weight	1.17	g
Dry Weight (Total)	5.56	g
Solids, Percent	41.5	%

Sample: D34023-11 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-011

Wet Weight (Total)	11.77	g
Tare Weight	1.18	g
Dry Weight (Total)	7.33	g
Solids, Percent	58.1	%

Sample: D34023-12 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-012

Wet Weight (Total)	11.83	g
Tare Weight	1.15	g
Dry Weight (Total)	7.02	g
Solids, Percent	55	%

7.1
7

Percent Solids Raw Data Summary

Page 3 of 5

Job Number: D34023
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample: D34023-13 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-013

Wet Weight (Total)	12.55	g
Tare Weight	1.17	g
Dry Weight (Total)	9.35	g
Solids, Percent	71.9	%

Sample: D34023-14 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-014

Wet Weight (Total)	11.43	g
Tare Weight	1.16	g
Dry Weight (Total)	6.72	g
Solids, Percent	54.1	%

Sample: D34023-15 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-015

Wet Weight (Total)	12.44	g
Tare Weight	1.18	g
Dry Weight (Total)	7.11	g
Solids, Percent	52.7	%

Sample: D34023-16 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-016

Wet Weight (Total)	11.27	g
Tare Weight	1.18	g
Dry Weight (Total)	7.06	g
Solids, Percent	58.3	%

Sample: D34023-17 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-017

Wet Weight (Total)	12.01	g
Tare Weight	1.17	g
Dry Weight (Total)	8.36	g
Solids, Percent	66.3	%

Sample: D34023-18 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-018

Wet Weight (Total)	12.75	g
Tare Weight	1.17	g
Dry Weight (Total)	9.08	g
Solids, Percent	68.3	%

7.1

7

Percent Solids Raw Data Summary

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Job Number: D34023
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample: D34023-19 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-019

Wet Weight (Total)	11.6	g
Tare Weight	1.16	g
Dry Weight (Total)	8.05	g
Solids, Percent	66	%

Sample: D34023-1D **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-001

Wet Weight (Total)	11.24	g
Tare Weight	1.17	g
Dry Weight (Total)	7.74	g
Solids, Percent	65.2	%

Sample: D34023-1M **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-001

Wet Weight (Total)	11.24	g
Tare Weight	1.17	g
Dry Weight (Total)	7.74	g
Solids, Percent	65.2	%

Sample: D34023-20 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-020

Wet Weight (Total)	11.22	g
Tare Weight	1.17	g
Dry Weight (Total)	7.94	g
Solids, Percent	67.4	%

Sample: D34023-21 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-021

Wet Weight (Total)	12.07	g
Tare Weight	1.18	g
Dry Weight (Total)	7.24	g
Solids, Percent	55.6	%

Sample: D34023-22 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-022

Wet Weight (Total)	12.04	g
Tare Weight	1.18	g
Dry Weight (Total)	9.32	g
Solids, Percent	75	%

7.1

7

Percent Solids Raw Data Summary

Page 5 of 5

Job Number: D34023
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample: D34023-23 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-023

Wet Weight (Total)	11.19	g
Tare Weight	1.18	g
Dry Weight (Total)	7.86	g
Solids, Percent	66.7	%

Sample: D34023-24 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-024

Wet Weight (Total)	11.23	g
Tare Weight	1.18	g
Dry Weight (Total)	9.07	g
Solids, Percent	78.5	%

7.1
7



05/14/12

Technical Report for

URS Operating Services, Inc.

36549247

Accutest Job Number: D34023R

Sampling Dates: 04/26/12 - 04/27/12

Report to:

URS Operating Services, Inc.

amy.k.gray@urs.com

ATTN: Amy Gray

Total number of pages in report: **630**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read 'Brad Madadian'.

Brad Madadian
Laboratory Director

Client Service contact: Ann Doerr 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP CO00049), TX (T104704511-12-1)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Test results relate only to samples analyzed.

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Sample Summary

URS Operating Services, Inc.

Job No: D34023R

36549247

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D34023-1R	04/26/12	10:50	JKM	04/27/12	SO	Soil	LP-SS-001
D34023-4R	04/26/12	11:45	JKM	04/27/12	SO	Soil	LP-SS-004
D34023-8R	04/26/12	13:20	JKM	04/27/12	SO	Soil	LP-SS-008
D34023-9R	04/26/12	13:30	JKM	04/27/12	SO	Soil	LP-SS-009
D34023-10R	04/26/12	14:00	JKM	04/27/12	SO	Soil	LP-SS-010
D34023-11R	04/26/12	14:10	JKM	04/27/12	SO	Soil	LP-SS-011
D34023-12R	04/26/12	14:25	JKM	04/27/12	SO	Soil	LP-SS-012
D34023-15R	04/26/12	15:10	JKM	04/27/12	SO	Soil	LP-SS-015
D34023-16R	04/26/12	15:20	JKM	04/27/12	SO	Soil	LP-SS-016
D34023-18R	04/26/12	16:10	JKM	04/27/12	SO	Soil	LP-SS-018
D34023-20R	04/27/12	09:30	JKM	04/27/12	SO	Soil	LP-SS-020
D34023-21R	04/26/12	10:55	JKM	04/27/12	SO	Soil	LP-SS-021
D34023-23R	04/27/12	11:25	JKM	04/27/12	SO	Soil	LP-SS-023

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: URS Operating Services, Inc.

Job No D34023R

Site: 36549247

Report Date 5/14/2012 8:29:03 AM

On 04/27/2012, 13 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 5.2 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D34023R was assigned to the project. The lab sample IDs, client sample IDs, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Extractables by GC By Method MADEP EPH REV 1.1

Matrix SO

Batch ID: M:OP28867

- The data for MADEP EPH REV 1.1 meets quality control requirements.
- All samples: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method SW 846 9060M

Matrix SO

Batch ID: M:GP14504

- The data for SW 846 9060M meets quality control requirements.
- D34023-10R, D34023-18R, and D34023-21R for Total Organic Carbon: Analysis performed at Accutest Laboratories, Marlborough, MA.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest Mountain States

Job No D34023R

Site: URSCOD: 36549247

Report Date 5/14/2012 10:04:09 AM

13 Sample(s) were collected on between 04/26/2012 and 04/27/2012 and were received at Accutest on 04/27/2012 properly preserved, at 1.1 Deg. C and intact. These Samples received an Accutest job number of D34023R. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GC By Method MADEP EPH REV 1.1

Matrix SO	Batch ID: OP28867
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) F92632-1MS, F92632-1MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for C9-C18 Aliphatics are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- OP28867-BS/BSD for C11-C22 Aromatics (Unadj.): Aromatic breakthrough (naphthalene and/or 2-methylnaphthalene) exceeded 5% method limit.
- Matrix Spike Duplicate Recovery(s) for C11-C22 Aromatics (Unadj.), C9-C18 Aliphatics, C19-C36 Aliphatics are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Wet Chemistry By Method SW 846 9060M

Matrix SO	Batch ID: GP14504
------------------	--------------------------

- All samples were distilled within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34023-18RMS, D34023-18RMSD were used as the QC samples for Total Organic Carbon.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D34023R).



Sample Results

Report of Analysis

Accutest LabLink@7689 12:04 14-May-2012

Report of Analysis

Page 1 of 1

3.1

3

Client Sample ID:	LP-SS-001	Date Sampled:	04/26/12
Lab Sample ID:	D34023-1R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	65.2
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10781.D	1	05/11/12	AMA	05/09/12	M:OP28867	M:GBJ411
Run #2							

	Initial Weight	Final Volume
Run #1	11.3 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	680	540	ug/kg	
208-96-8	Acenaphthylene	ND	680	540	ug/kg	
120-12-7	Anthracene	ND	680	540	ug/kg	
56-55-3	Benzo(a)anthracene	ND	680	540	ug/kg	
50-32-8	Benzo(a)pyrene	ND	680	540	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	680	540	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	680	540	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	680	540	ug/kg	
218-01-9	Chrysene	ND	680	540	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	680	540	ug/kg	
206-44-0	Fluoranthene	ND	680	540	ug/kg	
86-73-7	Fluorene	ND	680	540	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	680	540	ug/kg	
91-57-6	2-Methylnaphthalene	ND	680	540	ug/kg	
91-20-3	Naphthalene	ND	680	540	ug/kg	
85-01-8	Phenanthrene	ND	680	540	ug/kg	
129-00-0	Pyrene	ND	680	540	ug/kg	
	C11-C22 Aromatics (Unadj.)	416000	27000	27000	ug/kg	
	C9-C18 Aliphatics	257000	14000	14000	ug/kg	
	C19-C36 Aliphatics	700000	14000	14000	ug/kg	
	C11-C22 Aromatics	415000	27000	27000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	69%		40-140%
321-60-8	2-Fluorobiphenyl	76%		40-140%
580-13-2	2-Bromonaphthalene	53%		40-140%
3386-33-2	1-Chlorooctadecane	54%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
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 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-004	Date Sampled:	04/26/12
Lab Sample ID:	D34023-4R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	62.4
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10779.D	1	05/11/12	AMA	05/09/12	M:OP28867	M:GBJ411
Run #2							

	Initial Weight	Final Volume
Run #1	11.3 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	710	570	ug/kg	
208-96-8	Acenaphthylene	ND	710	570	ug/kg	
120-12-7	Anthracene	ND	710	570	ug/kg	
56-55-3	Benzo(a)anthracene	ND	710	570	ug/kg	
50-32-8	Benzo(a)pyrene	ND	710	570	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	710	570	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	710	570	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	710	570	ug/kg	
218-01-9	Chrysene	ND	710	570	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	710	570	ug/kg	
206-44-0	Fluoranthene	ND	710	570	ug/kg	
86-73-7	Fluorene	ND	710	570	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	710	570	ug/kg	
91-57-6	2-Methylnaphthalene	ND	710	570	ug/kg	
91-20-3	Naphthalene	ND	710	570	ug/kg	
85-01-8	Phenanthrene	ND	710	570	ug/kg	
129-00-0	Pyrene	ND	710	570	ug/kg	
	C11-C22 Aromatics (Unadj.)	288000	28000	28000	ug/kg	
	C9-C18 Aliphatics	153000	14000	14000	ug/kg	
	C19-C36 Aliphatics	395000	14000	14000	ug/kg	
	C11-C22 Aromatics	288000	28000	28000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	69%		40-140%
321-60-8	2-Fluorobiphenyl	76%		40-140%
580-13-2	2-Bromonaphthalene	60%		40-140%
3386-33-2	1-Chlorooctadecane	50%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
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J = Indicates an estimated value
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 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-008	Date Sampled:	04/26/12
Lab Sample ID:	D34023-8R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	51.6
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10794.D	1	05/12/12	AMA	05/09/12	M:OP28867	M:GBJ411
Run #2							

	Initial Weight	Final Volume
Run #1	11.4 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	850	680	ug/kg	
208-96-8	Acenaphthylene	ND	850	680	ug/kg	
120-12-7	Anthracene	ND	850	680	ug/kg	
56-55-3	Benzo(a)anthracene	1680	850	680	ug/kg	
50-32-8	Benzo(a)pyrene	ND	850	680	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	850	680	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	850	680	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	850	680	ug/kg	
218-01-9	Chrysene	ND	850	680	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	850	680	ug/kg	
206-44-0	Fluoranthene	ND	850	680	ug/kg	
86-73-7	Fluorene	ND	850	680	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	850	680	ug/kg	
91-57-6	2-Methylnaphthalene	ND	850	680	ug/kg	
91-20-3	Naphthalene	ND	850	680	ug/kg	
85-01-8	Phenanthrene	1550	850	680	ug/kg	
129-00-0	Pyrene	1670	850	680	ug/kg	
	C11-C22 Aromatics (Unadj.)	2410000	34000	34000	ug/kg	
	C9-C18 Aliphatics	1500000	17000	17000	ug/kg	
	C19-C36 Aliphatics	4270000	17000	17000	ug/kg	
	C11-C22 Aromatics	2400000	34000	34000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	47%		40-140%
321-60-8	2-Fluorobiphenyl	72%		40-140%
580-13-2	2-Bromonaphthalene	53%		40-140%
3386-33-2	1-Chlorooctadecane	61%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

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Client Sample ID:	LP-SS-009	Date Sampled:	04/26/12
Lab Sample ID:	D34023-9R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	47.8
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10777.D	1	05/11/12	AMA	05/09/12	M:OP28867	M:GBJ411
Run #2							

	Initial Weight	Final Volume
Run #1	11.6 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	900	720	ug/kg	
208-96-8	Acenaphthylene	ND	900	720	ug/kg	
120-12-7	Anthracene	ND	900	720	ug/kg	
56-55-3	Benzo(a)anthracene	ND	900	720	ug/kg	
50-32-8	Benzo(a)pyrene	ND	900	720	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	900	720	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	900	720	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	900	720	ug/kg	
218-01-9	Chrysene	ND	900	720	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	900	720	ug/kg	
206-44-0	Fluoranthene	ND	900	720	ug/kg	
86-73-7	Fluorene	ND	900	720	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	900	720	ug/kg	
91-57-6	2-Methylnaphthalene	ND	900	720	ug/kg	
91-20-3	Naphthalene	ND	900	720	ug/kg	
85-01-8	Phenanthrene	ND	900	720	ug/kg	
129-00-0	Pyrene	ND	900	720	ug/kg	
	C11-C22 Aromatics (Unadj.)	54200	36000	36000	ug/kg	
	C9-C18 Aliphatics	ND	18000	18000	ug/kg	
	C19-C36 Aliphatics	23200	18000	18000	ug/kg	
	C11-C22 Aromatics	53900	36000	36000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	69%		40-140%
321-60-8	2-Fluorobiphenyl	74%		40-140%
580-13-2	2-Bromonaphthalene	51%		40-140%
3386-33-2	1-Chlorooctadecane	50%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

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Client Sample ID:	LP-SS-010	Date Sampled:	04/26/12
Lab Sample ID:	D34023-10R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	41.5
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10790.D	1	05/12/12	AMA	05/09/12	M:OP28867	M:GBJ411
Run #2							

	Initial Weight	Final Volume
Run #1	11.3 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	1100	860	ug/kg	
208-96-8	Acenaphthylene	ND	1100	860	ug/kg	
120-12-7	Anthracene	ND	1100	860	ug/kg	
56-55-3	Benzo(a)anthracene	3020	1100	860	ug/kg	
50-32-8	Benzo(a)pyrene	ND	1100	860	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	1100	860	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	1100	860	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	1100	860	ug/kg	
218-01-9	Chrysene	ND	1100	860	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	1100	860	ug/kg	
206-44-0	Fluoranthene	ND	1100	860	ug/kg	
86-73-7	Fluorene	ND	1100	860	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1100	860	ug/kg	
91-57-6	2-Methylnaphthalene	ND	1100	860	ug/kg	
91-20-3	Naphthalene	ND	1100	860	ug/kg	
85-01-8	Phenanthrene	2170	1100	860	ug/kg	
129-00-0	Pyrene	3330	1100	860	ug/kg	
	C11-C22 Aromatics (Unadj.)	4710000	43000	43000	ug/kg	
	C9-C18 Aliphatics	2490000	21000	21000	ug/kg	
	C19-C36 Aliphatics	6080000	21000	21000	ug/kg	
	C11-C22 Aromatics	4700000	43000	43000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	57%		40-140%
321-60-8	2-Fluorobiphenyl	100%		40-140%
580-13-2	2-Bromonaphthalene	71%		40-140%
3386-33-2	1-Chlorooctadecane	61%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

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Client Sample ID:	LP-SS-010	Date Sampled:	04/26/12
Lab Sample ID:	D34023-10R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	41.5
Project:	36549247		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Total Organic Carbon ^a	106000	4600	mg/kg	1	05/11/12 10:39	AMA	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit

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Client Sample ID:	LP-SS-011	Date Sampled:	04/26/12
Lab Sample ID:	D34023-11R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	58.1
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10784.D	1	05/12/12	AMA	05/09/12	M:OP28867	M:GBJ411
Run #2							

	Initial Weight	Final Volume
Run #1	11.9 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	720	580	ug/kg	
208-96-8	Acenaphthylene	ND	720	580	ug/kg	
120-12-7	Anthracene	ND	720	580	ug/kg	
56-55-3	Benzo(a)anthracene	758	720	580	ug/kg	
50-32-8	Benzo(a)pyrene	ND	720	580	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	720	580	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	720	580	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	720	580	ug/kg	
218-01-9	Chrysene	ND	720	580	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	720	580	ug/kg	
206-44-0	Fluoranthene	ND	720	580	ug/kg	
86-73-7	Fluorene	ND	720	580	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	720	580	ug/kg	
91-57-6	2-Methylnaphthalene	ND	720	580	ug/kg	
91-20-3	Naphthalene	ND	720	580	ug/kg	
85-01-8	Phenanthrene	748	720	580	ug/kg	
129-00-0	Pyrene	925	720	580	ug/kg	
	C11-C22 Aromatics (Unadj.)	1240000	29000	29000	ug/kg	
	C9-C18 Aliphatics	802000	14000	14000	ug/kg	
	C19-C36 Aliphatics	1850000	14000	14000	ug/kg	
	C11-C22 Aromatics	1240000	29000	29000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	49%		40-140%
321-60-8	2-Fluorobiphenyl	76%		40-140%
580-13-2	2-Bromonaphthalene	61%		40-140%
3386-33-2	1-Chlorooctadecane	54%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

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Client Sample ID:	LP-SS-012	Date Sampled:	04/26/12
Lab Sample ID:	D34023-12R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	55.0
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10797.D	1	05/12/12	AMA	05/09/12	M:OP28867	M:GBJ411
Run #2							

	Initial Weight	Final Volume
Run #1	11.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	810	650	ug/kg	
208-96-8	Acenaphthylene	ND	810	650	ug/kg	
120-12-7	Anthracene	ND	810	650	ug/kg	
56-55-3	Benzo(a)anthracene	3280	810	650	ug/kg	
50-32-8	Benzo(a)pyrene	ND	810	650	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	810	650	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	810	650	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	810	650	ug/kg	
218-01-9	Chrysene	ND	810	650	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	810	650	ug/kg	
206-44-0	Fluoranthene	ND	810	650	ug/kg	
86-73-7	Fluorene	ND	810	650	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	810	650	ug/kg	
91-57-6	2-Methylnaphthalene	ND	810	650	ug/kg	
91-20-3	Naphthalene	ND	810	650	ug/kg	
85-01-8	Phenanthrene	3040	810	650	ug/kg	
129-00-0	Pyrene	3200	810	650	ug/kg	
	C11-C22 Aromatics (Unadj.)	4630000	32000	32000	ug/kg	
	C9-C18 Aliphatics	2850000	16000	16000	ug/kg	
	C19-C36 Aliphatics	7750000	16000	16000	ug/kg	
	C11-C22 Aromatics	4620000	32000	32000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	57%		40-140%
321-60-8	2-Fluorobiphenyl	79%		40-140%
580-13-2	2-Bromonaphthalene	65%		40-140%
3386-33-2	1-Chlorooctadecane	111%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

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J = Indicates an estimated value
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 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-015	Date Sampled:	04/26/12
Lab Sample ID:	D34023-15R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	52.7
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10800.D	1	05/12/12	AMA	05/09/12	M:OP28867	M:GBJ411
Run #2							

	Initial Weight	Final Volume
Run #1	11.3 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	840	670	ug/kg	
208-96-8	Acenaphthylene	ND	840	670	ug/kg	
120-12-7	Anthracene	ND	840	670	ug/kg	
56-55-3	Benzo(a)anthracene	3140	840	670	ug/kg	
50-32-8	Benzo(a)pyrene	ND	840	670	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	840	670	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	840	670	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	840	670	ug/kg	
218-01-9	Chrysene	ND	840	670	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	840	670	ug/kg	
206-44-0	Fluoranthene	ND	840	670	ug/kg	
86-73-7	Fluorene	ND	840	670	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	840	670	ug/kg	
91-57-6	2-Methylnaphthalene	ND	840	670	ug/kg	
91-20-3	Naphthalene	ND	840	670	ug/kg	
85-01-8	Phenanthrene	2640	840	670	ug/kg	
129-00-0	Pyrene	2900	840	670	ug/kg	
	C11-C22 Aromatics (Unadj.)	3740000	34000	34000	ug/kg	
	C9-C18 Aliphatics	2540000	17000	17000	ug/kg	
	C19-C36 Aliphatics	6010000	17000	17000	ug/kg	
	C11-C22 Aromatics	3730000	34000	34000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	56%		40-140%
321-60-8	2-Fluorobiphenyl	79%		40-140%
580-13-2	2-Bromonaphthalene	62%		40-140%
3386-33-2	1-Chlorooctadecane	79%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

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J = Indicates an estimated value
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Client Sample ID:	LP-SS-016	Date Sampled:	04/26/12
Lab Sample ID:	D34023-16R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	58.3
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10787.D	1	05/12/12	AMA	05/09/12	M:OP28867	M:GBJ411
Run #2							

	Initial Weight	Final Volume
Run #1	11.3 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	760	610	ug/kg	
208-96-8	Acenaphthylene	ND	760	610	ug/kg	
120-12-7	Anthracene	ND	760	610	ug/kg	
56-55-3	Benzo(a)anthracene	814	760	610	ug/kg	
50-32-8	Benzo(a)pyrene	ND	760	610	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	760	610	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	760	610	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	760	610	ug/kg	
218-01-9	Chrysene	ND	760	610	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	760	610	ug/kg	
206-44-0	Fluoranthene	ND	760	610	ug/kg	
86-73-7	Fluorene	ND	760	610	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	760	610	ug/kg	
91-57-6	2-Methylnaphthalene	ND	760	610	ug/kg	
91-20-3	Naphthalene	ND	760	610	ug/kg	
85-01-8	Phenanthrene	736	760	610	ug/kg	J
129-00-0	Pyrene	936	760	610	ug/kg	
	C11-C22 Aromatics (Unadj.)	1390000	30000	30000	ug/kg	
	C9-C18 Aliphatics	791000	15000	15000	ug/kg	
	C19-C36 Aliphatics	1840000	15000	15000	ug/kg	
	C11-C22 Aromatics	1380000	30000	30000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	56%		40-140%
321-60-8	2-Fluorobiphenyl	81%		40-140%
580-13-2	2-Bromonaphthalene	69%		40-140%
3386-33-2	1-Chlorooctadecane	59%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest LabLink@7689 12:04 14-May-2012

Report of Analysis

Page 1 of 1

3.10
3

Client Sample ID:	LP-SS-018	Date Sampled:	04/26/12
Lab Sample ID:	D34023-18R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	68.3
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10769.D	1	05/11/12	AMA	05/09/12	M:OP28867	M:GBJ411
Run #2							

	Initial Weight	Final Volume
Run #1	11.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	650	520	ug/kg	
208-96-8	Acenaphthylene	ND	650	520	ug/kg	
120-12-7	Anthracene	ND	650	520	ug/kg	
56-55-3	Benzo(a)anthracene	ND	650	520	ug/kg	
50-32-8	Benzo(a)pyrene	ND	650	520	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	650	520	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	650	520	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	650	520	ug/kg	
218-01-9	Chrysene	ND	650	520	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	650	520	ug/kg	
206-44-0	Fluoranthene	ND	650	520	ug/kg	
86-73-7	Fluorene	ND	650	520	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	650	520	ug/kg	
91-57-6	2-Methylnaphthalene	ND	650	520	ug/kg	
91-20-3	Naphthalene	ND	650	520	ug/kg	
85-01-8	Phenanthrene	ND	650	520	ug/kg	
129-00-0	Pyrene	ND	650	520	ug/kg	
	C11-C22 Aromatics (Unadj.)	ND	26000	26000	ug/kg	
	C9-C18 Aliphatics	ND	13000	13000	ug/kg	
	C19-C36 Aliphatics	ND	13000	13000	ug/kg	
	C11-C22 Aromatics	ND	26000	26000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	74%		40-140%
321-60-8	2-Fluorobiphenyl	81%		40-140%
580-13-2	2-Bromonaphthalene	72%		40-140%
3386-33-2	1-Chlorooctadecane	52%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

3.10
3

Client Sample ID:	LP-SS-018	Date Sampled:	04/26/12
Lab Sample ID:	D34023-18R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	68.3
Project:	36549247		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Total Organic Carbon ^a	11500	1400	mg/kg	1	05/11/12 10:28	AMA	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit

Accutest LabLink@7689 12:04 14-May-2012

Report of Analysis

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3.11
3

Client Sample ID:	LP-SS-020	Date Sampled:	04/27/12
Lab Sample ID:	D34023-20R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	67.4
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10770.D	1	05/11/12	AMA	05/09/12	M:OP28867	M:GBJ411
Run #2							

	Initial Weight	Final Volume
Run #1	11.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	670	530	ug/kg	
208-96-8	Acenaphthylene	ND	670	530	ug/kg	
120-12-7	Anthracene	ND	670	530	ug/kg	
56-55-3	Benzo(a)anthracene	ND	670	530	ug/kg	
50-32-8	Benzo(a)pyrene	ND	670	530	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	670	530	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	670	530	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	670	530	ug/kg	
218-01-9	Chrysene	ND	670	530	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	670	530	ug/kg	
206-44-0	Fluoranthene	ND	670	530	ug/kg	
86-73-7	Fluorene	ND	670	530	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	670	530	ug/kg	
91-57-6	2-Methylnaphthalene	ND	670	530	ug/kg	
91-20-3	Naphthalene	ND	670	530	ug/kg	
85-01-8	Phenanthrene	ND	670	530	ug/kg	
129-00-0	Pyrene	ND	670	530	ug/kg	
	C11-C22 Aromatics (Unadj.)	ND	27000	27000	ug/kg	
	C9-C18 Aliphatics	ND	13000	13000	ug/kg	
	C19-C36 Aliphatics	ND	13000	13000	ug/kg	
	C11-C22 Aromatics	ND	27000	27000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	79%		40-140%
321-60-8	2-Fluorobiphenyl	85%		40-140%
580-13-2	2-Bromonaphthalene	68%		40-140%
3386-33-2	1-Chlorooctadecane	51%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

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 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest LabLink@7689 12:04 14-May-2012

Report of Analysis

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3.12
3

Client Sample ID:	LP-SS-021	Date Sampled:	04/26/12
Lab Sample ID:	D34023-21R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	55.6
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10808.D	1	05/12/12	AMA	05/09/12	M:OP28867	M:GBJ412
Run #2							

	Initial Weight	Final Volume
Run #1	11.7 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	770	610	ug/kg	
208-96-8	Acenaphthylene	ND	770	610	ug/kg	
120-12-7	Anthracene	ND	770	610	ug/kg	
56-55-3	Benzo(a)anthracene	ND	770	610	ug/kg	
50-32-8	Benzo(a)pyrene	ND	770	610	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	770	610	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	770	610	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	770	610	ug/kg	
218-01-9	Chrysene	ND	770	610	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	770	610	ug/kg	
206-44-0	Fluoranthene	ND	770	610	ug/kg	
86-73-7	Fluorene	ND	770	610	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	770	610	ug/kg	
91-57-6	2-Methylnaphthalene	ND	770	610	ug/kg	
91-20-3	Naphthalene	ND	770	610	ug/kg	
85-01-8	Phenanthrene	ND	770	610	ug/kg	
129-00-0	Pyrene	ND	770	610	ug/kg	
	C11-C22 Aromatics (Unadj.)	411000	31000	31000	ug/kg	
	C9-C18 Aliphatics	179000	15000	15000	ug/kg	
	C19-C36 Aliphatics	501000	15000	15000	ug/kg	
	C11-C22 Aromatics	411000	31000	31000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	73%		40-140%
321-60-8	2-Fluorobiphenyl	81%		40-140%
580-13-2	2-Bromonaphthalene	64%		40-140%
3386-33-2	1-Chlorooctadecane	49%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
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 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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3.12

3

Client Sample ID: LP-SS-021
Lab Sample ID: D34023-21R
Matrix: SO - Soil
Project: 36549247

Date Sampled: 04/26/12
Date Received: 04/27/12
Percent Solids: 55.6

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Total Organic Carbon ^a	18100	1600	mg/kg	1	05/11/12 11:17	AMA	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit

Accutest LabLink@7689 12:04 14-May-2012

Report of Analysis

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3.13
3

Client Sample ID:	LP-SS-023	Date Sampled:	04/27/12
Lab Sample ID:	D34023-23R	Date Received:	04/27/12
Matrix:	SO - Soil	Percent Solids:	66.7
Method:	MADEP EPH REV 1.1 SW846 3546		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	BJ10773.D	1	05/11/12	AMA	05/09/12	M:OP28867	M:GBJ411
Run #2							

	Initial Weight	Final Volume
Run #1	11.8 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	630	510	ug/kg	
208-96-8	Acenaphthylene	ND	630	510	ug/kg	
120-12-7	Anthracene	ND	630	510	ug/kg	
56-55-3	Benzo(a)anthracene	ND	630	510	ug/kg	
50-32-8	Benzo(a)pyrene	ND	630	510	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	630	510	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	630	510	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	630	510	ug/kg	
218-01-9	Chrysene	ND	630	510	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	630	510	ug/kg	
206-44-0	Fluoranthene	ND	630	510	ug/kg	
86-73-7	Fluorene	ND	630	510	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	630	510	ug/kg	
91-57-6	2-Methylnaphthalene	ND	630	510	ug/kg	
91-20-3	Naphthalene	ND	630	510	ug/kg	
85-01-8	Phenanthrene	ND	630	510	ug/kg	
129-00-0	Pyrene	ND	630	510	ug/kg	
	C11-C22 Aromatics (Unadj.)	221000	25000	25000	ug/kg	
	C9-C18 Aliphatics	178000	13000	13000	ug/kg	
	C19-C36 Aliphatics	247000	13000	13000	ug/kg	
	C11-C22 Aromatics	220000	25000	25000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	71%		40-140%
321-60-8	2-Fluorobiphenyl	80%		40-140%
580-13-2	2-Bromonaphthalene	71%		40-140%
3386-33-2	1-Chlorooctadecane	49%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

D34023 1 of 2

UOS URS Operating Services, Inc. 1899 18 th Street, STE 200 Denver, CO 80202 303-291-8200		SHIP TO: Accutest 4036 Youngfield St. Wheatridge, CO 80033 Attn: Ann Doerr		CHAIN OF CUSTODY RECORD			
PROJECT NUMBER / PURCHASE ORDER NUMBER: 36549247		SITE MANAGER / PHONE NUMBER: Jeff Miller 303 291 8212 720 810 0790		TURNAROUND REQUESTED: 3 day			
SAMPLER'S SIGNATURE: <i>[Signature]</i> Jeff K. Miller							
SAMPLE ID	DATE	TIME	COMP/GRAB	REMARKS	Number of Containers	TAG NUMBERS	
1) LP-SS-001	4/26/12	1050	Grab	includes ms/msp	2		01
2) LP-SS-002		1105			1		02
3) LP-SS-003		1110			1		03
4) LP-SS-004		1145			1		04
5) LP-SS-005		1205			1		05
6) LP-SS-006		1250			1		06
7) LP-SS-007		1310			1		07
8) LP-SS-008		1320			1		08
9) LP-SS-009		1330			1		09
10) LP-SS-010		1400			1		10
11) LP-SS-011		1410			1		11
12) LP-SS-012		1425		0-2"	1		12
13) LP-SS-013		1430		2-6"	1		13
14) LP-SS-014		1455			1		14
15) LP-SS-015	✓	1510	✓		✓		15 <i>DR4/12</i>
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)		OTHER INFORMATION:	
						all bottle/jar labels are missing a zero in sample ID COC is correct	
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)			
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)		DATE	TIME
<i>[Signature]</i>		4/27/12	1615	<i>[Signature]</i>		4/27/12	1615
						AIRBILL NUMBER:	LAB REMARKS:

White - Original to Accompany Samples

Yellow - UOS Chemist

Pink - UOS Project Manager

HD 5.2 DN 7316 N.A.B. *[Signature]* 4/27/12

D34023R: Chain of Custody

Page 1 of 3

D34023 2 of 2

UOS URS Operating Services, Inc. 777 1099 18 th Street, STE 900 Denver, CO 80202 303-291-8200		SHIP TO: Accutest 4036 Youngfield St. Wheatbridge, CO 80033 Attn: Ann Doerr		CHAIN OF CUSTODY RECORD			
PROJECT NUMBER / PURCHASE ORDER NUMBER: 36549247		SITE MANAGER / PHONE NUMBER: Jeff Miller 303 291 8212 720 810 0796		TURNAROUND REQUESTED: 3 day			
SAMPLER'S SIGNATURE: <i>[Signature]</i> Jeff K. Miller				Number of Containers: <i>TPH ORD-RRD</i>			
SAMPLE ID	DATE	TIME	COMP/GRAB	REMARKS		TAG NUMBERS	
1) LP-SS-016	4/26/12	1520	Grab			16	
2) LP-SS-017	↓	1550	↓			17	
3) LP-SS-018	↓	1610	↓			18	
4) LP-SS-019	4/27/12	0905	↓			19	
5) LP-SS-020	↓	0930	↓			20	
6) LP-SS-021	4/26/12	1055	↓			21	
7) LP-SS-022	4/27/12	1120	↓			22	
8) LP-SS-023	↓	1125	↓			23	
9) LP-SS-024	↓	1210	↓			24	
10)							
11)							
12)							
13)							
14)							
15)							
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)		OTHER INFORMATION: all bottle/jar labels are missing a zero in sample ID CDC is correct	
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)			
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)		DATE	TIME
<i>[Signature]</i>		4/27/12	1615	<i>[Signature]</i>		4/27/12	1615
						AIRBILL NUMBER:	
						LAB REMARKS:	

White - Original to Accompany Samples

Yellow - UOS Chemist

Pink - UOS Project Manager

HD 5.2

DN 7317

NAB. *[Signature]* 4/27/12

D34023R: Chain of Custody

Page 2 of 3

Job Change Order: D34023_5/8/2012

Requested	5/8/2012	Received	4/27/2012
Account	URS Operating Services, Inc.	Due Date:	5/2/2012
Project	36549247	Deliverable:	FULT1
CSR	RR	TAT (Days):	3
Sample	D34023-1,4,8,9,10,11,12,15,16,18,20,21,23.	Change:	Client has requested that samples be analyzed for MA EPH. Samples will be sub-contracted to Accutest Massachusetts.
Sample	D34023-9,18,21	Change:	Client has requested that samples be analyzed for TOC. Samples will be sub-contracted to Accutest Massachusetts.

Above Changes client

Date: 5/8/2012

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

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Misc. Forms

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Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Chain of Custody



CHAIN OF CUSTODY

4036 Youngfield St., Wheat Ridge, CO 80033
303-425-6021 FAX: 303-425-6854

2 pages

Accutest Job #:	D34023R
Accutest Quote #:	0
AMS P.O. #:	
Project No.:	

Client Information			Subcontract Laboratory Information										Analytical Information									
Name Accutest Mountain States (AMS)			Name Accutest - New England										BMAEPH TOC									
Address 4036 Youngfield St.			Address 495 Technology Center West, BLDG C																			
City Wheat Ridge,	State CO	Zip 80033	City Marlborough	State MA	Zip 01752																	
Send Report to: Andrew Fluegel			Contact: Sample Management																			
Any questions contact: Renea Jackson																						
Phone/Fax #: (303) 425-6021; (303) 425-6854			Phone: (508) 481-6200																			
Field ID / Point of Collection			Collection			Matrix	# of bottles	Preservation				Comments										
			Date	Time			HCL	NaOH	HNO3	H2SO4	None											
D34023R -1R			4/26/12	10:50 AM		Soil	1						X									
-4R				11:45 AM		Soil	1						X									
-8R				1:20 PM		Soil	1						X									
-9R				1:30 PM		Soil	1						X									
-10R				2:00 PM		Soil	1						X	X								
-11R				2:10 PM		Soil	1						X									
-12R				2:25 PM		Soil	1						X									
-15R				3:10 PM		Soil	1						X			2E						
-16R				3:20 PM		Soil	1						X									
-18R				4:10 PM		Soil	1						X	X								
Turnaround Information:			Data Deliverable Information										Comments / Remarks									
<input checked="" type="checkbox"/> 3 - 5 Business Day Rush <input type="checkbox"/> Other (Days) Monday 5/14			Approved By:			<input type="checkbox"/> Commercial "A" <input type="checkbox"/> Commercial "B" <input type="checkbox"/> Commercial "BN" <input type="checkbox"/> Reduced Tier 1 <input type="checkbox"/> Full Tier 1					<input type="checkbox"/> PDF <input type="checkbox"/> Compact Disk Deliverable <input type="checkbox"/> Electronic Delivery: <input type="checkbox"/> State Forms <input type="checkbox"/> Other (Specify)					Please use Colorado regulations and RLs.						
10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.																						
Sample Custody must be documented below each time samples change possession, including courier delivery.																		For Subcontract Laboratory Use Only				
Relinquished by: 1 E.P.X			Date & Time: 5-9-12 8:30			Received By: 1 [Signature]			Date & Time: 1			Seal #:		Headspace: Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>								
Relinquished by: 2			Date & Time:			Received By: 2			Date & Time: 2			Preserved where applicable: <input type="checkbox"/>										
Relinquished by: 3			Date & Time:			Received By: 3			Date & Time: 3			Temperature °C 44		On Ice <input checked="" type="checkbox"/>								

D34023R: Chain of Custody

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Accutest Labs of New England, Inc.



CHAIN OF CUSTODY

4036 Youngfield St., Wheat Ridge, CO 80033
303-425-6021 FAX: 303-425-6854

Accutest Job #:	D34023R
Accutest Quote #:	0
AMS P.O. #:	
Project No.:	

Client Information			Subcontract Laboratory Information										Analytical Information						
Name Accutest Mountain States (AMS)			Name Accutest - New England										BMAEPH	TOC					
Address 4036 Youngfield St.			Address 495 Technology Center West, BLDG C																
City Wheat Ridge,	State CO	Zip 80033	City Marlborough	State MA	Zip 01752														
Send Report to: Andrew Fluegel			Contact: Sample Management																
Any questions contact: Renea Jackson																			
Phone/Fax #: (303) 425-6021; (303) 425-6854			Phone: (508) 481-6200																
Field ID / Point of Collection			Collection		Matrix	# of bottles	Preservation												
	Date	Time					HCL	NaOH	HNO3	H2SO4	None								
D34023R -20R	4/27/12	9:30 AM			Soil	1							X						
-21R	4/26/12	10:55 AM			Soil	1							X	X					
-23R	4/27/12	11:25 AM			Soil	1							X						
Turnaround Information			Data Deliverable Information										Comments / Remarks						
<input checked="" type="checkbox"/> 3 - 5 Business Day Rush <input type="checkbox"/> Other _____ (Days) Monday 5/14			Approved By: _____		<input type="checkbox"/> Commercial "A" <input type="checkbox"/> Commercial "B" <input type="checkbox"/> Commercial "BN" <input type="checkbox"/> Reduced Tier 1 <input type="checkbox"/> Full Tier 1					<input type="checkbox"/> PDF <input type="checkbox"/> Compact Disk Deliverable <input type="checkbox"/> Electronic Delivery: <input type="checkbox"/> State Forms <input type="checkbox"/> Other (Specify) _____					Please use Colorado regulations and RLs.				
10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.																			
Sample Custody must be documented below each time samples change possession, including courier delivery.																			
For Subcontract Laboratory Use Only																			
Relinquished by: 1	Date & Time: 5-9-12 930		Received By: 1	Date & Time: 1		Seal #:	Headspace: Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>												
Relinquished by: 2	Date & Time:		Received By: 2	Date & Time: 2		Preserved where applicable: <input type="checkbox"/>													
Relinquished by: 3	Date & Time:		Received By: 3	Date & Time: 3		Temperature °C <u>6.1</u> On Ice <input checked="" type="checkbox"/>													

D34023R: Chain of Custody

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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D34023R

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 5/9/2012

Delivery Method:

Client Service Action Required at Login: No

Project: SUB

No. Coolers: 1

Airbill #'s:

Cooler Security

Y or N

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | Infrared gun | |
| 3. Cooler media: | Ice (bag) | |

Quality Control Preservation

Y or N

N/A

- | | | | |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. VOCs headspace free: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

Accutest Laboratories
V:508.481.6200

495 Technology Center West, Bldg One
F: 508.481.7753

Marlborough, MA
www.accutest.com

D34023R: Chain of Custody
Page 3 of 3



GC Semi-volatiles

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Page 1 of 1

Job Number: D34023R
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP28867-MB	BI11622.D	1	05/11/12	AL	05/09/12	OP28867	GBI469

The QC reported here applies to the following samples:

Method: MADEP EPH REV 1.1

D34023-1R, D34023-4R, D34023-8R, D34023-9R, D34023-10R, D34023-11R, D34023-12R, D34023-15R, D34023-16R, D34023-18R, D34023-20R, D34023-21R, D34023-23R

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	440	350	ug/kg	
208-96-8	Acenaphthylene	ND	440	350	ug/kg	
120-12-7	Anthracene	ND	440	350	ug/kg	
56-55-3	Benzo(a)anthracene	ND	440	350	ug/kg	
50-32-8	Benzo(a)pyrene	ND	440	350	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	440	350	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	440	350	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	440	350	ug/kg	
218-01-9	Chrysene	ND	440	350	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	440	350	ug/kg	
206-44-0	Fluoranthene	ND	440	350	ug/kg	
86-73-7	Fluorene	ND	440	350	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	440	350	ug/kg	
91-57-6	2-Methylnaphthalene	ND	440	350	ug/kg	
91-20-3	Naphthalene	ND	440	350	ug/kg	
85-01-8	Phenanthrene	ND	440	350	ug/kg	
129-00-0	Pyrene	ND	440	350	ug/kg	
	C11-C22 Aromatics (Unadj.)	ND	17000	17000	ug/kg	
	C9-C18 Aliphatics	ND	8700	8700	ug/kg	
	C19-C36 Aliphatics	ND	8700	8700	ug/kg	
	C11-C22 Aromatics	ND	17000	17000	ug/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	81% 40-140%
321-60-8	2-Fluorobiphenyl	88% 40-140%
580-13-2	2-Bromonaphthalene	58% 40-140%
3386-33-2	1-Chlorooctadecane	88% 40-140%

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 2

Job Number: D34023R

Account: ALMS Accutest Mountain States

Project: URSCOD: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP28867-BS	BI11623.D	1	05/11/12	AL	05/09/12	OP28867	GBI469
OP28867-BSD	BI11624.D	1	05/11/12	AL	05/09/12	OP28867	GBI469

The QC reported here applies to the following samples:

Method: MADEP EPH REV 1.1

D34023-1R, D34023-4R, D34023-8R, D34023-9R, D34023-10R, D34023-11R, D34023-12R, D34023-15R, D34023-16R, D34023-18R, D34023-20R, D34023-21R, D34023-23R

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	4370	4260	97	3640	82	16	40-140/25
208-96-8	Acenaphthylene	4370	4120	94	3510	79	16	40-140/25
120-12-7	Anthracene	4370	4820	110	4000	90	19	40-140/25
56-55-3	Benzo(a)anthracene	4370	5370	123	4490	101	18	40-140/25
50-32-8	Benzo(a)pyrene	4370	4790	110	3940	88	19	40-140/25
205-99-2	Benzo(b)fluoranthene	4370	5360	123	4490	101	18	40-140/25
191-24-2	Benzo(g,h,i)perylene	4370	5440	124	4520	101	18	40-140/25
207-08-9	Benzo(k)fluoranthene	4370	5290	121	4420	99	18	40-140/25
218-01-9	Chrysene	4370	5180	119	4320	97	18	40-140/25
53-70-3	Dibenz(a,h)anthracene	4370	5400	124	4460	100	19	40-140/25
206-44-0	Fluoranthene	4370	5010	115	4200	94	18	40-140/25
86-73-7	Fluorene	4370	4400	101	3750	84	16	40-140/25
193-39-5	Indeno(1,2,3-cd)pyrene	4370	5370	123	4480	100	18	40-140/25
91-57-6	2-Methylnaphthalene	4370	3930	90	3420	77	14	40-140/25
91-20-3	Naphthalene	4370	3610	83	3240	73	11	40-140/25
85-01-8	Phenanthrene	4370	4910	112	4160	93	17	40-140/25
129-00-0	Pyrene	4370	4910	112	4130	93	17	40-140/25
	C11-C22 Aromatics (Unadj.)	69900	94200	135 ^a	81200	114 ^a	15	40-140/25
	C9-C18 Aliphatics	26200	26600	101	25400	95	5	40-140/25
	C19-C36 Aliphatics	35000	43400	124	40200	113	8	40-140/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	110%	90%	40-140%
321-60-8	2-Fluorobiphenyl	105%	88%	40-140%
580-13-2	2-Bromonaphthalene	63%	64%	40-140%
3386-33-2	1-Chlorooctadecane	107%	96%	40-140%

Sample	Compound	Col #1	Col #2	Breakthrough Limit
OP28867-BS	2-Methylnaphthalene	3930	249	6.0% *
OP28867-BS	Naphthalene	3610	508	12.3% *
OP28867-BSD	2-Methylnaphthalene	3420	136	3.8% *
OP28867-BSD	Naphthalene	3240	280	8.0% *

Blank Spike/Blank Spike Duplicate Summary

Page 2 of 2

Job Number: D34023R

Account: ALMS Accutest Mountain States

Project: URSCOD: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP28867-BS	BI11623.D	1	05/11/12	AL	05/09/12	OP28867	GBI469
OP28867-BSD	BI11624.D	1	05/11/12	AL	05/09/12	OP28867	GBI469

The QC reported here applies to the following samples:

Method: MADEP EPH REV 1.1

D34023-1R, D34023-4R, D34023-8R, D34023-9R, D34023-10R, D34023-11R, D34023-12R, D34023-15R, D34023-16R, D34023-18R, D34023-20R, D34023-21R, D34023-23R

(a) Aromatic breakthrough (naphthalene and/or 2-methylnaphthalene) exceeded 5% method limit.

6.2.1

6

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D34023R

Account: ALMS Accutest Mountain States

Project: URSCOD: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP28867-MS	BI11625.D	1	05/11/12	AL	05/09/12	OP28867	GBI469
OP28867-MSD	BI11626.D	1	05/11/12	AL	05/09/12	OP28867	GBI469
F92632-1	BI11627.D	1	05/11/12	AL	05/09/12	OP28867	GBI469

The QC reported here applies to the following samples:

Method: MADEP EPH REV 1.1

D34023-1R, D34023-4R, D34023-8R, D34023-9R, D34023-10R, D34023-11R, D34023-12R, D34023-15R, D34023-16R, D34023-18R, D34023-20R, D34023-21R, D34023-23R

CAS No.	Compound	F92632-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	480 U	4560	3980	87	3560	78	11	40-140/25
208-96-8	Acenaphthylene	480 U	4560	5860	128	4840	106	19	40-140/25
120-12-7	Anthracene	480 U	4560	5040	110	4300	94	16	40-140/25
56-55-3	Benzo(a)anthracene	480 U	4560	4270	94	3970	87	7	40-140/25
50-32-8	Benzo(a)pyrene	480 U	4560	3790	83	3500	76	8	40-140/25
205-99-2	Benzo(b)fluoranthene	480 U	4560	4260	93	3950	86	8	40-140/25
191-24-2	Benzo(g,h,i)perylene	480 U	4560	4260	93	3980	87	7	40-140/25
207-08-9	Benzo(k)fluoranthene	480 U	4560	4180	92	3900	85	7	40-140/25
218-01-9	Chrysene	480 U	4560	4130	90	3850	84	7	40-140/25
53-70-3	Dibenz(a,h)anthracene	480 U	4560	4280	94	3970	87	8	40-140/25
206-44-0	Fluoranthene	480 U	4560	4130	90	3920	86	5	40-140/25
86-73-7	Fluorene	480 U	4560	4630	101	4200	92	10	40-140/25
193-39-5	Indeno(1,2,3-cd)pyrene	480 U	4560	4230	93	3910	85	8	40-140/25
91-57-6	2-Methylnaphthalene	480 U	4560	3210	70	3220	70	0	40-140/25
91-20-3	Naphthalene	480 U	4560	2510	55	2680	59	7	40-140/25
85-01-8	Phenanthrene	480 U	4560	4550	100	4220	92	8	40-140/25
129-00-0	Pyrene	480 U	4560	4150	91	3870	84	7	40-140/25
	C11-C22 Aromatics (Unadj.)	379000	73000	411000	44	370000	-12* a	10	40-140/25
	C9-C18 Aliphatics	2720000	27400	2730000	37* a	2480000	-873* a	10	40-140/25
	C19-C36 Aliphatics	439000	36500	478000	107	419000	-55* a	13	40-140/25

CAS No.	Surrogate Recoveries	MS	MSD	F92632-1	Limits
84-15-1	o-Terphenyl	97%	92%	91%	40-140%
321-60-8	2-Fluorobiphenyl	99%	94%	100%	40-140%
580-13-2	2-Bromonaphthalene	43%	67%	59%	40-140%
3386-33-2	1-Chlorooctadecane	98%	90%	88%	40-140%

(a) Outside control limits due to high level in sample relative to spike amount.

Semivolatile Surrogate Recovery Summary

Page 1 of 1

Job Number: D34023R

Account: ALMS Accutest Mountain States

Project: URSCOD: 36549247

Method: MADEP EPH REV 1.1

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 ^a	S2 ^a	S3 ^a	S4 ^b
D34023-1R	BJ10781.D	69.0	76.0	53.0	54.0
D34023-4R	BJ10779.D	69.0	76.0	60.0	50.0
D34023-8R	BJ10794.D	47.0	72.0	53.0	61.0
D34023-9R	BJ10777.D	69.0	74.0	51.0	50.0
D34023-10R	BJ10790.D	57.0	100.0	71.0	61.0
D34023-11R	BJ10784.D	49.0	76.0	61.0	54.0
D34023-12R	BJ10797.D	57.0	79.0	65.0	111.0
D34023-15R	BJ10800.D	56.0	79.0	62.0	79.0
D34023-16R	BJ10787.D	56.0	81.0	69.0	59.0
D34023-18R	BJ10769.D	74.0	81.0	72.0	52.0
D34023-20R	BJ10770.D	79.0	85.0	68.0	51.0
D34023-21R	BJ10808.D	73.0	81.0	64.0	49.0
D34023-23R	BJ10773.D	71.0	80.0	71.0	49.0
OP28867-BS	BI11623.D	110.0	105.0	63.0	107.0
OP28867-BSD	BI11624.D	90.0	88.0	64.0	96.0
OP28867-MB	BI11622.D	81.0	88.0	58.0	88.0
OP28867-MS	BI11625.D	97.0	99.0	43.0	98.0
OP28867-MSD	BI11626.D	92.0	94.0	67.0	90.0

Surrogate Compounds

Recovery Limits

S1 = o-Terphenyl	40-140%
S2 = 2-Fluorobiphenyl	40-140%
S3 = 2-Bromonaphthalene	40-140%
S4 = 1-Chlorooctadecane	40-140%

(a) Recovery from GC signal #1

(b) Recovery from GC signal #2

6.4.1

6

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: D34023R
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Check Std: GBI469-CC449	Injection Date: 05/11/12
Lab File ID: BI11621.D	Injection Time: 01:14
Instrument ID: GCBI	Method: MADEP EPH REV 1.1

	S1 ^a RT	S2 ^a RT	S3 ^a RT	S4 ^b RT
Check Std	11.60	8.14	8.95	12.20

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S2 ^a RT	S3 ^a RT	S4 ^b RT
OP28867-MB	BI11622.D	05/11/12	01:43	11.60	8.14	8.95	12.20
OP28867-BS	BI11623.D	05/11/12	02:12	11.60	8.14	8.95	12.20
OP28867-BSD	BI11624.D	05/11/12	02:41	11.60	8.14	8.95	12.20
OP28867-MS	BI11625.D	05/11/12	03:10	11.60	8.14	8.95	12.20
OP28867-MSD	BI11626.D	05/11/12	03:39	11.60	8.14	8.95	12.20
F92632-1	BI11627.D	05/11/12	04:08	11.60	8.14	8.95	12.20
ZZZZZZ	BI11628.D	05/11/12	04:37	11.60	8.14	8.95	12.20
ZZZZZZ	BI11629.D	05/11/12	05:06	11.60	8.14	8.95	12.20
GBI469-ECC449	BI11630.D	05/11/12	05:34	11.60	8.14	8.95	12.20

Surrogate Compounds

S1 = o-Terphenyl
S2 = 2-Fluorobiphenyl
S3 = 2-Bromonaphthalene
S4 = 1-Chlorooctadecane

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

6.5.1
6

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: D34023R
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Check Std:	GBJ411-CC390	Injection Date:	05/11/12
Lab File ID:	BJ10766.D	Injection Time:	15:19
Instrument ID:	GCBJ	Method:	MADEP EPH REV 1.1

	S1 ^a RT	S2 ^a RT	S3 ^a RT	S4 ^b RT
Check Std	11.79	8.30	9.12	12.33

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S2 ^a RT	S3 ^a RT	S4 ^b RT
ZZZZZZ	BJ10767.D	05/11/12	16:30	11.79	8.30	9.12	12.33
ZZZZZZ	BJ10768.D	05/11/12	17:00	11.79	8.30	9.12	12.33
D34023-18R	BJ10769.D	05/11/12	17:30	11.79	8.30	9.12	12.33
D34023-20R	BJ10770.D	05/11/12	18:00	11.79	8.30	9.12	12.33
ZZZZZZ	BJ10771.D	05/11/12	18:31	11.79	8.30	9.12	12.33

Surrogate Compounds

S1 = o-Terphenyl

S2 = 2-Fluorobiphenyl

S3 = 2-Bromonaphthalene

S4 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

(b) Retention time from GC signal #2

6.5.2
6

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: D34023R
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Check Std:	GBJ411-CC390	Injection Date:	05/11/12
Lab File ID:	BJ10772.D	Injection Time:	19:01
Instrument ID:	GCBJ	Method:	MADEP EPH REV 1.1

	S1 ^a RT	S2 ^a RT	S3 ^a RT	S4 ^b RT
Check Std	11.79	8.30	9.12	12.33

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S2 ^a RT	S3 ^a RT	S4 ^b RT
D34023-23R	BJ10773.D	05/11/12	19:31	11.79	8.30	9.12	12.33
D34023-9R	BJ10777.D	05/11/12	21:31	11.79	8.30	9.12	12.33
D34023-4R	BJ10779.D	05/11/12	22:31	11.79	8.30	9.12	12.33
D34023-1R	BJ10781.D	05/11/12	23:30	11.79	8.30	9.12	12.33

Surrogate Compounds

S1 = o-Terphenyl
S2 = 2-Fluorobiphenyl
S3 = 2-Bromonaphthalene
S4 = 1-Chlorooctadecane

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

6.5.3
6

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: D34023R
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Check Std: GBJ411-CC390	Injection Date: 05/12/12
Lab File ID: BJ10783.D	Injection Time: 00:30
Instrument ID: GCBJ	Method: MADEP EPH REV 1.1

	S1 ^a RT	S2 ^a RT	S3 ^a RT	S4 ^b RT
Check Std	11.79	8.30	9.12	12.33

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S2 ^a RT	S3 ^a RT	S4 ^b RT
D34023-11R	BJ10784.D	05/12/12	01:00	11.79	8.30	9.12	12.33
D34023-16R	BJ10787.D	05/12/12	01:59	11.79	8.30	9.12	12.33
D34023-10R	BJ10790.D	05/12/12	02:59	11.79	8.30	9.12	12.33

Surrogate Compounds

S1 = o-Terphenyl
S2 = 2-Fluorobiphenyl
S3 = 2-Bromonaphthalene
S4 = 1-Chlorooctadecane

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

6.5.4
6

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: D34023R
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Check Std: GBJ411-CC390	Injection Date: 05/12/12
Lab File ID: BJ10793.D	Injection Time: 03:58
Instrument ID: GCBJ	Method: MADEP EPH REV 1.1

	S1 ^a RT	S2 ^a RT	S3 ^a RT	S4 ^b RT
Check Std	11.79	8.30	9.12	12.33

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S2 ^a RT	S3 ^a RT	S4 ^b RT
D34023-8R	BJ10794.D	05/12/12	04:28	11.79	8.30	9.12	12.33
D34023-12R	BJ10797.D	05/12/12	05:57	11.79	8.30	9.12	12.34
D34023-15R	BJ10800.D	05/12/12	07:26	11.79	8.30	9.12	12.33
GBJ411-ECC390	BJ10803.D	05/12/12	08:56	11.79	8.30	9.12	12.33

Surrogate Compounds

S1 = o-Terphenyl
S2 = 2-Fluorobiphenyl
S3 = 2-Bromonaphthalene
S4 = 1-Chlorooctadecane

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

6.5.5
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GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: D34023R
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Check Std:	GBJ412-CC390	Injection Date:	05/12/12
Lab File ID:	BJ10807.D	Injection Time:	11:28
Instrument ID:	GCBJ	Method:	MADEP EPH REV 1.1

	S1 ^a RT	S2 ^a RT	S3 ^a RT	S4 ^b RT
Check Std	11.79	8.30	9.13	12.33

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S2 ^a RT	S3 ^a RT	S4 ^b RT
D34023-21R	BJ10808.D	05/12/12	12:01	11.79	8.30	9.12	12.32

Surrogate Compounds

S1 = o-Terphenyl
S2 = 2-Fluorobiphenyl
S3 = 2-Bromonaphthalene
S4 = 1-Chlorooctadecane

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

6.5.6
9



General Chemistry

QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

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Job Number: D34023R
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample: D34023-1 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-001

Wet Weight (Total)	11.24	g
Tare Weight	1.17	g
Dry Weight (Total)	7.74	g
Solids, Percent	65.2	%

Sample: D34023-4 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-004

Wet Weight (Total)	12.78	g
Tare Weight	1.17	g
Dry Weight (Total)	8.41	g
Solids, Percent	62.4	%

Sample: D34023-8 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-008

Wet Weight (Total)	11.52	g
Tare Weight	1.17	g
Dry Weight (Total)	6.51	g
Solids, Percent	51.6	%

Sample: D34023-9 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-009

Wet Weight (Total)	11.45	g
Tare Weight	1.18	g
Dry Weight (Total)	6.09	g
Solids, Percent	47.8	%

Sample: D34023-10 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-010

Wet Weight (Total)	11.76	g
Tare Weight	1.17	g
Dry Weight (Total)	5.56	g
Solids, Percent	41.5	%

Sample: D34023-11 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-011

Wet Weight (Total)	11.77	g
Tare Weight	1.18	g
Dry Weight (Total)	7.33	g
Solids, Percent	58.1	%

10.1
10

Percent Solids Raw Data Summary

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Job Number: D34023R
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample: D34023-12 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-012

Wet Weight (Total)	11.83	g
Tare Weight	1.15	g
Dry Weight (Total)	7.02	g
Solids, Percent	55	%

Sample: D34023-15 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-015

Wet Weight (Total)	12.44	g
Tare Weight	1.18	g
Dry Weight (Total)	7.11	g
Solids, Percent	52.7	%

Sample: D34023-16 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-016

Wet Weight (Total)	11.27	g
Tare Weight	1.18	g
Dry Weight (Total)	7.06	g
Solids, Percent	58.3	%

Sample: D34023-18 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-018

Wet Weight (Total)	12.75	g
Tare Weight	1.17	g
Dry Weight (Total)	9.08	g
Solids, Percent	68.3	%

Sample: D34023-20 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-020

Wet Weight (Total)	11.22	g
Tare Weight	1.17	g
Dry Weight (Total)	7.94	g
Solids, Percent	67.4	%

Sample: D34023-21 **Analyzed:** 30-APR-12 by SWT **Method:** SM19 2540B M
ClientID: LP-SS-021

Wet Weight (Total)	12.07	g
Tare Weight	1.18	g
Dry Weight (Total)	7.24	g
Solids, Percent	55.6	%

10.1
10

Percent Solids Raw Data Summary

Job Number: D34023R
Account: URSCOD URS Operating Services, Inc.
Project: 36549247

Sample: D34023-23		Analyzed: 30-APR-12 by SWT		Method: SM19 2540B M	
ClientID: LP-SS-023					
Wet Weight (Total)		11.19		g	
Tare Weight		1.18		g	
Dry Weight (Total)		7.86		g	
Solids, Percent		66.7		%	



05/08/12

Technical Report for

URS Operating Services, Inc.

36549247

Accutest Job Number: D34022

Sampling Dates: 04/26/12 - 04/27/12

Report to:

URS Operating Services, Inc.


amy.k.gray@urs.com

ATTN: Amy Gray

Total number of pages in report: **21**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Brad Madadian
Laboratory Director

Client Service contact: Ann Doerr 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP CO00049), TX (T104704511-12-1)

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Test results relate only to samples analyzed.

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Sample Summary

URS Operating Services, Inc.

Job No: D34022

36549247

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D34022-1	04/26/12	17:00 JKM	04/27/12	AQ	Water	LP-SW-001
D34022-1F	04/26/12	17:00 JKM	04/27/12	AQ	Water Filtered	LP-SW-001
D34022-2	04/26/12	17:10 JKM	04/27/12	AQ	Trip Blank Water	LP-SW-002
D34022-3	04/27/12	10:30 JKM	04/27/12	AQ	Water	LP-SW-003
D34022-3F	04/27/12	10:30 JKM	04/27/12	AQ	Potentially Diss. AQ	LP-SW-003



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: URS Operating Services, Inc.

Job No D34022

Site: 36549247

Report Date 5/3/2012 4:40:05 PM

On 04/27/2012, 3 sample(s), 1 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 5.2 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D34022 was assigned to the project. The lab sample IDs, client sample IDs, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: V6V705
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34015-1MS, D34015-1MSD were used as the QC samples indicated.
- The matrix spike (MS) recovery(s) of 2-Chloroethyl vinyl ether are outside control limits. Probable cause due to matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of 2-Chloroethyl vinyl ether are outside control limits. Probable cause due to matrix interference.
- D34015-1MS for 2-Chloroethyl vinyl ether: Recovery of 2-chloroethyl vinyl ether is affected by sample preservation.

Metals By Method EPA 200.8

Matrix AQ	Batch ID: MP7377
------------------	-------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34025-1FMS, D34025-1FMSD were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Selenium are outside control limits. Spike recovery indicates possible matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of Selenium, Iron are outside control limits. High RPD due to possible sample matrix or nonhomogeneity.
- The matrix spike (MS) recovery(s) of Calcium, Magnesium, Manganese, Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The RPD(s) for the MS and MSD recoveries of Iron, Sodium are outside control limits for sample MP7377-S2. High RPD due to possible sample matrix or nonhomogeneity.

Metals By Method EPA 245.1

Matrix AQ	Batch ID: MP7381
------------------	-------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34022-1MS, D34022-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method EPA 1664A

Matrix AQ	Batch ID: GP7082
------------------	-------------------------

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method SM20 2540D

Matrix AQ

Batch ID: GN14764

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D33993-1DUP were used as the QC samples for the Solids, Total Suspended analysis.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.



Sample Results

Report of Analysis

Report of Analysis

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3.1

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Client Sample ID:	LP-SW-001	Date Sampled:	04/26/12
Lab Sample ID:	D34022-1	Date Received:	04/27/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6V13349.D	1	04/28/12	BR	n/a	n/a	V6V705
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.27	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	0.38	ug/l	
75-25-2	Bromoform	ND	2.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.34	ug/l	
75-00-3	Chloroethane	ND	2.0	0.61	ug/l	
67-66-3	Chloroform	ND	2.0	0.38	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	2.0	0.80	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.56	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	0.27	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	0.26	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.46	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.38	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.38	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	0.53	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.47	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.25	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	0.37	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	0.32	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	0.35	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.36	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	3.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.33	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.75	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	5.0	ug/l	
74-83-9	Methyl bromide	ND	5.0	2.3	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	4.0	2.5	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.9	ug/l	
100-42-5	Styrene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.28	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.34	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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3.1

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Client Sample ID: LP-SW-001
Lab Sample ID: D34022-1
Matrix: AQ - Water
Method: SW846 8260B
Project: 36549247

Date Sampled: 04/26/12
Date Received: 04/27/12
Percent Solids: n/a

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.42	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.41	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.36	ug/l	
108-05-4	Vinyl Acetate	ND	30	15	ug/l	
1330-20-7	Xylene (total)	ND	4.0	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	100%		67-131%
2037-26-5	Toluene-D8	107%		65-130%
460-00-4	4-Bromofluorobenzene	114%		65-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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3.1

3

Client Sample ID: LP-SW-001
Lab Sample ID: D34022-1
Matrix: AQ - Water
Project: 36549247

Date Sampled: 04/26/12
Date Received: 04/27/12
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	105	100	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵
Antimony	< 0.80	0.80	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Arsenic	< 1.6	1.6	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵
Barium	4560	4.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Beryllium	< 0.40	0.40	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Cadmium	< 0.20	0.20	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Calcium	31500	800	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Chromium	< 4.0	4.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Cobalt	< 0.40	0.40	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵
Copper	< 4.0	4.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Iron	1440	80	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Lead	< 1.0	1.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Magnesium	10500	200	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵
Manganese	223	2.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Mercury	< 0.10	0.10	ug/l	1	05/01/12	05/01/12 JB	EPA 245.1 ²	EPA 245.1 ⁶
Nickel	< 4.0	4.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Potassium	12800	400	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵
Selenium	< 0.80	0.80	ug/l	2	04/30/12	05/03/12 GJ	EPA 200.8 ⁴	EPA 200.8 ⁵
Silver	< 0.20	0.20	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Sodium	373000	10000	ug/l	20	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵
Thallium	< 0.40	0.40	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Vanadium	< 2.0	2.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Zinc	153	20	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵

- (1) Instrument QC Batch: MA2378
 (2) Instrument QC Batch: MA2381
 (3) Instrument QC Batch: MA2383
 (4) Instrument QC Batch: MA2388
 (5) Prep QC Batch: MP7377
 (6) Prep QC Batch: MP7381

 RL = Reporting Limit

Report of Analysis

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Client Sample ID: LP-SW-001**Lab Sample ID:** D34022-1**Matrix:** AQ - Water**Project:** 36549247**Date Sampled:** 04/26/12**Date Received:** 04/27/12**Percent Solids:** n/a**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
HEM Oil and Grease	9.2	5.2	mg/l	1	05/01/12	SWT	EPA 1664A
Solids, Total Suspended	15.0	5.0	mg/l	1	05/01/12	JD	SM20 2540D

RL = Reporting Limit

Report of Analysis

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3.2

3

Client Sample ID: LP-SW-001**Lab Sample ID:** D34022-1F**Matrix:** AQ - Water Filtered**Project:** 36549247**Date Sampled:** 04/26/12**Date Received:** 04/27/12**Percent Solids:** n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Antimony	< 0.80	0.80	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Arsenic	< 1.6	1.6	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Barium	4350	4.0	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Beryllium	< 0.40	0.40	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁶
Cadmium	< 0.20	0.20	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Calcium	31700	800	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁶
Cobalt	< 0.40	0.40	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Copper	< 4.0	4.0	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Iron	171	80	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Lead	< 1.0	1.0	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ⁴	EPA 200.8 ⁶
Magnesium	10300	200	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Manganese	222	2.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁶
Mercury	< 0.10	0.10	ug/l	1	05/01/12	05/01/12 JB	EPA 245.1 ²	EPA 245.1 ⁷
Nickel	< 4.0	4.0	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Potassium	12600	400	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Selenium	< 0.80	0.80	ug/l	2	04/30/12	05/03/12 GJ	EPA 200.8 ⁵	EPA 200.8 ⁶
Silver	< 0.20	0.20	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Sodium	372000	10000	ug/l	20	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Thallium	< 0.40	0.40	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ⁴	EPA 200.8 ⁶
Vanadium	< 2.0	2.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁶
Zinc	59.3	20	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶

(1) Instrument QC Batch: MA2378

(2) Instrument QC Batch: MA2381

(3) Instrument QC Batch: MA2383

(4) Instrument QC Batch: MA2386

(5) Instrument QC Batch: MA2388

(6) Prep QC Batch: MP7377

(7) Prep QC Batch: MP7381

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	LP-SW-002	Date Sampled:	04/26/12
Lab Sample ID:	D34022-2	Date Received:	04/27/12
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6V13350.D	1	04/28/12	BR	n/a	n/a	V6V705
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.27	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	0.38	ug/l	
75-25-2	Bromoform	ND	2.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.34	ug/l	
75-00-3	Chloroethane	ND	2.0	0.61	ug/l	
67-66-3	Chloroform	ND	2.0	0.38	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	2.0	0.80	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.56	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	0.27	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	0.26	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.46	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.38	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.38	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	0.53	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.47	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.25	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	0.37	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	0.32	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	0.35	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.36	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	3.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.33	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.75	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	5.0	ug/l	
74-83-9	Methyl bromide	ND	5.0	2.3	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	4.0	2.5	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.9	ug/l	
100-42-5	Styrene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.28	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.34	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	LP-SW-002	Date Sampled:	04/26/12
Lab Sample ID:	D34022-2	Date Received:	04/27/12
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	36549247		

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.42	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.41	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.36	ug/l	
108-05-4	Vinyl Acetate	ND	30	15	ug/l	
1330-20-7	Xylene (total)	ND	4.0	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%		67-131%
2037-26-5	Toluene-D8	110%		65-130%
460-00-4	4-Bromofluorobenzene	115%		65-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SW-003	Date Sampled:	04/27/12
Lab Sample ID:	D34022-3	Date Received:	04/27/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	36549247		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6V13351.D	1	04/28/12	BR	n/a	n/a	V6V705
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.27	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	0.38	ug/l	
75-25-2	Bromoform	ND	2.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.34	ug/l	
75-00-3	Chloroethane	ND	2.0	0.61	ug/l	
67-66-3	Chloroform	ND	2.0	0.38	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	2.0	0.80	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.56	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	0.27	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	0.26	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.46	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.38	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.38	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	0.53	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.47	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.25	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	0.37	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	0.32	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	0.35	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.36	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	3.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.33	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.75	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	5.0	ug/l	
74-83-9	Methyl bromide	ND	5.0	2.3	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	4.0	2.5	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.9	ug/l	
100-42-5	Styrene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.28	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.34	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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3

Client Sample ID: LP-SW-003
Lab Sample ID: D34022-3
Matrix: AQ - Water
Method: SW846 8260B
Project: 36549247

Date Sampled: 04/27/12
Date Received: 04/27/12
Percent Solids: n/a

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.42	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.41	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.36	ug/l	
108-05-4	Vinyl Acetate	ND	30	15	ug/l	
1330-20-7	Xylene (total)	ND	4.0	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	101%		67-131%
2037-26-5	Toluene-D8	109%		65-130%
460-00-4	4-Bromofluorobenzene	116%		65-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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3

Client Sample ID: LP-SW-003
Lab Sample ID: D34022-3
Matrix: AQ - Water
Project: 36549247

Date Sampled: 04/27/12
Date Received: 04/27/12
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	6410	100	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵
Antimony	< 0.80	0.80	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Arsenic	8.6	1.6	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵
Barium	673	4.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Beryllium	0.85	0.40	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Cadmium	1.6	0.20	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Calcium	61100	800	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Chromium	7.6	4.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Cobalt	6.8	0.40	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵
Copper	15.4	4.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Iron	16300	80	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Lead	10.4	1.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Magnesium	23800	200	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵
Manganese	1200	2.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Mercury	< 0.10	0.10	ug/l	1	05/01/12	05/01/12 JB	EPA 245.1 ²	EPA 245.1 ⁶
Nickel	16.2	4.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Potassium	5270	400	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵
Selenium	< 0.80	0.80	ug/l	2	04/30/12	05/03/12 GJ	EPA 200.8 ⁴	EPA 200.8 ⁵
Silver	< 0.20	0.20	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Sodium	31200	1000	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵
Thallium	< 0.40	0.40	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Vanadium	21.1	2.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁵
Zinc	145	20	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁵

- (1) Instrument QC Batch: MA2378
 (2) Instrument QC Batch: MA2381
 (3) Instrument QC Batch: MA2383
 (4) Instrument QC Batch: MA2388
 (5) Prep QC Batch: MP7377
 (6) Prep QC Batch: MP7381

RL = Reporting Limit

Report of Analysis

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3.4

3

Client Sample ID: LP-SW-003**Lab Sample ID:** D34022-3**Matrix:** AQ - Water**Project:** 36549247**Date Sampled:** 04/27/12**Date Received:** 04/27/12**Percent Solids:** n/a**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
HEM Oil and Grease	7.3	5.6	mg/l	1	05/01/12	SWT	EPA 1664A

RL = Reporting Limit

Report of Analysis

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3

Client Sample ID: LP-SW-003**Lab Sample ID:** D34022-3F**Matrix:** AQ - Potentially Diss. AQ**Project:** 36549247**Date Sampled:** 04/27/12**Date Received:** 04/27/12**Percent Solids:** n/a

Potentially Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	1230	100	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Antimony	< 0.80	0.80	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Arsenic	7.3	1.6	ug/l	2	04/30/12	05/03/12 GJ	EPA 200.8 ⁵	EPA 200.8 ⁶
Barium	663	4.0	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Beryllium	0.89	0.40	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁶
Cadmium	2.6	0.20	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Calcium	74200	800	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁶
Cobalt	7.0	0.40	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Copper	9.2	4.0	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Iron	13100	80	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁶
Lead	8.7	1.0	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ⁴	EPA 200.8 ⁶
Magnesium	21100	200	ug/l	2	04/30/12	05/03/12 GJ	EPA 200.8 ⁵	EPA 200.8 ⁶
Manganese	1740	2.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁶
Mercury	< 0.10	0.10	ug/l	1	05/01/12	05/01/12 JB	EPA 245.1 ²	EPA 245.1 ⁷
Nickel	12.5	4.0	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Potassium	4200	400	ug/l	2	04/30/12	05/03/12 GJ	EPA 200.8 ⁵	EPA 200.8 ⁶
Selenium	< 0.80	0.80	ug/l	2	04/30/12	05/03/12 GJ	EPA 200.8 ⁵	EPA 200.8 ⁶
Silver	< 0.20	0.20	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶
Sodium	27500	1000	ug/l	2	04/30/12	05/03/12 GJ	EPA 200.8 ⁵	EPA 200.8 ⁶
Thallium	< 0.40	0.40	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ⁴	EPA 200.8 ⁶
Vanadium	17.5	2.0	ug/l	2	04/30/12	05/01/12 GJ	EPA 200.8 ¹	EPA 200.8 ⁶
Zinc	139	20	ug/l	2	04/30/12	05/02/12 GJ	EPA 200.8 ³	EPA 200.8 ⁶

(1) Instrument QC Batch: MA2378

(2) Instrument QC Batch: MA2381

(3) Instrument QC Batch: MA2383

(4) Instrument QC Batch: MA2386

(5) Instrument QC Batch: MA2388

(6) Prep QC Batch: MP7377

(7) Prep QC Batch: MP7381

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

D34022

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UOS URS Operating Services, Inc. 1099 18 th Street, STE 710 Denver, CO 80202 303-291-8200		SHIP TO: <i>Accutest</i> 4036 Youngfield St. Wheatbridge, CO 80037		CHAIN OF CUSTODY RECORD									
PROJECT NUMBER / PURCHASE ORDER NUMBER: <i>36549247</i>				SITE MANAGER / PHONE NUMBER: <i>Jeff K. Miller</i> 303 291 8212 720 816 0790				TURNAROUND REQUESTED: <i>3 day</i>					
SAMPLER'S SIGNATURE: <i>[Signature]</i> <i>Jeff K. Miller</i>								TAG NUMBERS					
SAMPLE ID	DATE	TIME	COMP/GRAB	REMARKS	Number of Containers	Total Suspended Solids	Oil and Grease	potentially bio dissolved metals	total recoverable	total metals	VOCs		
<i>1) LP-SW-001</i>	<i>4/26/12</i>	<i>1700</i>	<i>Grab</i>	<i>outfall</i>	<i>8</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>		
<i>2) LP-SW-002</i>	<i>4/26/12</i>	<i>1710</i>	<i>I</i>	<i>trip blank</i>	<i>2</i>					<i>2</i>	<i>2</i>		
<i>3) LP-SW-003</i>	<i>4/27/12</i>	<i>1030</i>	<i>I</i>	<i>Timberman prop.</i>		<i>1</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>		
4)													
5)													
6)													
7)													
8)													
9)													
10)													
11)													
12)													
13)													
14)													
15)													
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	OTHER INFORMATION: <i>Full suite metals for both dissolved + total, LP-SW-003 phase rm con, potentially bio dissolved metals</i> <i>* No WAP, FRTSS on SW-003</i> <i>NOT used - p</i>									
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)										
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)										
<i>[Signature]</i>	<i>4/27/12</i>	<i>1615</i>	<i>Jacob Portol</i>	DATE	TIME	AIRBILL NUMBER:	LAB REMARKS:						
				<i>4/27/12</i>	<i>1615</i>								

White - Original to Accompany Samples

Yellow - UOS Chemist

Pink - UOS Project Manager

HP 5.2

DN

7318

N.A.B. (P) *polimlin*

D34022: Chain of Custody

Page 1 of 2



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D34022 Client: URS OPERATING SERVICES INC. Immediate Client Services Action Required: No
Date / Time Received: 4/27/2012 4:15:00 PM No. Coolers: 1 Client Service Action Required at Login: No
Project: 36549247 Airbill #'s: HD

Cooler Security Y or N Y or N
1. Custody Seals Present: ☒ ☐ 3. COC Present: ☒ ☐
2. Custody Seals Intact: ☒ ☐ 4. Smpl Dates/Time OK ☒ ☐

Cooler Temperature Y or N
1. Temp criteria achieved: ☒ ☐
2. Cooler temp verification: Infrared gun
3. Cooler media: Ice (bag)

Quality Control Preservation Y or N N/A
1. Trip Blank present / cooler: ☒ ☐
2. Trip Blank listed on COC: ☒ ☐
3. Samples preserved properly: ☒ ☐
4. VOCs headspace free: ☒ ☐ ☐

Sample Integrity - Documentation Y or N
1. Sample labels present on bottles: ☒ ☐
2. Container labeling complete: ☒ ☐
3. Sample container label / COC agree: ☒ ☐

Sample Integrity - Condition Y or N
1. Sample recvd within HT: ☒ ☐
2. All containers accounted for: ☒ ☐
3. Condition of sample: Intact

Sample Integrity - Instructions Y or N N/A
1. Analysis requested is clear: ☒ ☐
2. Bottles received for unspecified tests: ☐ ☒
3. Sufficient volume rec'd for analysis: ☒ ☐
4. Compositing instructions clear: ☐ ☐ ☒
5. Filtering instructions clear: ☐ ☐ ☒

Comments

Accutest Laboratories
V:(303) 425-6021

4036 Youngfield Street
F: (303) 425-6854

Wheat Ridge, CO
www.accutest.com

D34022: Chain of Custody
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June Sampling Event



01/22/13

Technical Report for

URS Operating Services, Inc.

36549247.00000

PO# KBM3/2012-65

Accutest Job Number: D35496

Sampling Dates: 06/11/12 - 06/13/12

Report to:

URS Operating Services, Inc.


kent.alexander@urs.com

ATTN: Kent Alexander

Total number of pages in report: **2865**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Brad Madadian
Laboratory Director

Client Service contact: Ann Doerr 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP CO00049), TX (T104704511-12-1)

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Test results relate only to samples analyzed.

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Sample Summary

URS Operating Services, Inc.

Job No: D35496

36549247.00000

Project No: PO# KBM3/2012-65

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D35496-1	06/13/12	10:32 JM	06/14/12	AQ	Water	LP-SW-004_061312
D35496-1F	06/13/12	10:32 JM	06/14/12	AQ	Water Filtered	LP-SW-004_061312
D35496-2	06/13/12	09:28 JM	06/14/12	AQ	Water	LP-SW-005_061312
D35496-2F	06/13/12	09:28 JM	06/14/12	AQ	Water Filtered	LP-SW-005_061312
D35496-3	06/12/12	16:30 JM	06/14/12	AQ	Water	LP-SW-006_061212
D35496-3F	06/12/12	16:30 JM	06/14/12	AQ	Water Filtered	LP-SW-006_061212
D35496-4	06/12/12	16:50 JM	06/14/12	AQ	Water	LP-SW-007_061212
D35496-4F	06/12/12	16:50 JM	06/14/12	AQ	Water Filtered	LP-SW-007_061212
D35496-5	06/12/12	15:50 JM	06/14/12	AQ	Water	LP-SW-008_061212
D35496-5F	06/12/12	15:50 JM	06/14/12	AQ	Water Filtered	LP-SW-008_061212
D35496-6	06/12/12	14:30 JM	06/14/12	AQ	Water	LP-SW-009_061212
D35496-6F	06/12/12	14:30 JM	06/14/12	AQ	Water Filtered	LP-SW-009_061212
D35496-7	06/12/12	15:15 JM	06/14/12	AQ	Water	LP-SW-011_061212

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



Sample Summary

(continued)

URS Operating Services, Inc.

Job No: D35496

36549247.00000

Project No: PO# KBM3/2012-65

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D35496-7F	06/12/12	15:15 JM	06/14/12	AQ	Water Filtered	LP-SW-011_061212
D35496-8	06/11/12	15:45 JM	06/14/12	SO	Soil	LP-SS-029_061112
D35496-9	06/11/12	13:50 JM	06/14/12	SO	Soil	LP-SS-025_061112
D35496-10	06/11/12	14:00 JM	06/14/12	SO	Soil	LP-SS-026_061112
D35496-11	06/11/12	14:25 JM	06/14/12	SO	Soil	LP-SS-027_061112
D35496-12	06/11/12	16:10 JM	06/14/12	SO	Soil	LP-SS-028_061112
D35496-13	06/11/12	15:25 JM	06/14/12	SO	Soil	LP-SS-030_061112
D35496-14	06/11/12	15:00 JM	06/14/12	SO	Soil	LP-SS-031_061112
D35496-15	06/11/12	16:55 JM	06/14/12	SO	Soil	LP-SS-032_061112
D35496-16	06/11/12	17:20 JM	06/14/12	SO	Soil	LP-SS-033_061112
D35496-17	06/11/12	17:45 JM	06/14/12	SO	Soil	LP-SS-034_061112
D35496-18	06/11/12	18:00 JM	06/14/12	SO	Soil	LP-SS-035_061112
D35496-19	06/11/12	18:25 JM	06/14/12	SO	Soil	LP-SS-036_061112

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

**Sample Summary**

(continued)

URS Operating Services, Inc.

Job No: D35496

36549247.00000

Project No: PO# KBM3/2012-65

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D35496-20	06/12/12	08:35	JM	06/14/12	SO	Soil	LP-SS-037_061212
D35496-20D	06/12/12	08:35	JM	06/14/12	SO	Soil Dup/MSD	LP-SS-037_061212
D35496-20M	06/12/12	08:35	JM	06/14/12	SO	Soil Matrix Spike	LP-SS-037_061212
D35496-21	06/12/12	09:25	JM	06/14/12	SO	Soil	LP-SS-040_061212
D35496-22	06/12/12	09:25	JM	06/14/12	SO	Soil	LP-SS-041_061212
D35496-23	06/12/12	09:55	JM	06/14/12	SO	Soil	LP-SS-042_061212
D35496-24	06/12/12	10:20	JM	06/14/12	SO	Soil	LP-SS-043_061212
D35496-25	06/12/12	10:50	JM	06/14/12	SO	Soil	LP-SS-044_061212
D35496-26	06/12/12	11:45	JM	06/14/12	SO	Soil	LP-SS-045_061212
D35496-27	06/12/12	11:35	JM	06/14/12	SO	Soil	LP-SS-046_061212
D35496-28	06/12/12	11:20	JM	06/14/12	SO	Soil	LP-SS-047_061212
D35496-29	06/12/12	12:00	JM	06/14/12	SO	Soil	LP-SS-048_061212
D35496-30	06/12/12	14:55	JM	06/14/12	SO	Soil	LP-SS-049_061212

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



Sample Summary

(continued)

URS Operating Services, Inc.

Job No: D35496

36549247.00000

Project No: PO# KBM3/2012-65

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D35496-31	06/12/12	15:15 JM	06/14/12	SO	Soil	LP-SS-050_061212
D35496-32	06/12/12	15:25 JM	06/14/12	SO	Soil	LP-SS-051_061212
D35496-33	06/12/12	15:45 JM	06/14/12	SO	Soil	LP-SS-052_061212
D35496-34	06/12/12	16:40 JM	06/14/12	SO	Soil	LP-SS-053_061212
D35496-35	06/12/12	17:15 JM	06/14/12	SO	Soil	LP-SS-054_061212
D35496-36	06/12/12	17:40 JM	06/14/12	SO	Soil	LP-SS-055_061212
D35496-37	06/13/12	09:30 JM	06/14/12	SO	Soil	LP-SS-056_061312
D35496-38	06/13/12	11:00 JM	06/14/12	SO	Soil	LP-SS-057_061312
D35496-39	06/13/12	10:30 JM	06/14/12	SO	Soil	LP-SS-058_061312
D35496-40	06/13/12	10:00 JM	06/14/12	SO	Soil	LP-SS-065_061312
D35496-41	06/13/12	12:00 JM	06/14/12	SO	Soil	LP-SS-059_061312
D35496-42	06/13/12	13:00 JM	06/14/12	SO	Soil	LP-SS-060_061312
D35496-43	06/13/12	17:15 JM	06/14/12	SO	Soil	LP-SS-061_061312

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

**Sample Summary**

(continued)

URS Operating Services, Inc.

Job No: D35496

36549247.00000

Project No: PO# KBM3/2012-65

Sample Number	Collected		Matrix Code	Type	Client Sample ID
	Date	Time By			
D35496-44	06/13/12	14:45 JM	06/14/12	SO Soil	LP-SS-062_061312
D35496-45	06/13/12	15:50 JM	06/14/12	SO Soil	LP-SS-063_061312
D35496-46	06/13/12	13:00 JM	06/14/12	SO Soil	LP-SS-064_061312
D35496-47	06/13/12	15:10 JM	06/14/12	SO Soil	LP-SS-066_061312
D35496-48	06/13/12	19:00 JM	06/14/12	AQ Water	LP-SW-012_061312

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: URS Operating Services, Inc.

Job No D35496

Site: 36549247

Report Date 7/12/2012 12:17:27 PM

On 06/14/2012, 48 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D35496 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Extractables by GCMS By Method D5739-06/8270C SIM

Matrix	AQ	Batch ID:	M:OP29323
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- The data for D5739-06/8270C SIM meets quality control requirements.
- The following samples were run outside of holding time for method D5739-06/8270C SIM: D35496-1, D35496-2, D35496-3, D35496-4, D35496-5, D35496-6, D35496-7
- D35496-7: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-4: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-3: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-6: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-1: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-2: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-5: Analysis performed at Accutest Laboratories, Marlborough, MA.

Matrix	SO	Batch ID:	M:OP29354
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- The data for D5739-06/8270C SIM meets quality control requirements.
- The following samples were run outside of holding time for method D5739-06/8270C SIM: D35496-32, D35496-33, D35496-34, D35496-35, D35496-36, D35496-37, D35496-38, D35496-39
- D35496-25: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-33: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-32: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-31: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-30: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-29: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-28: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-26: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-34: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-39: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-24: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-23: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-22: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-21: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-20: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-27: Analysis performed at Accutest Laboratories, Marlborough, MA.

Extractables by GCMS By Method D5739-06/8270C SIM

Matrix	SO	Batch ID:	M:OP29354
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- D35496-36: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-38: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-37: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-35: Analysis performed at Accutest Laboratories, Marlborough, MA.

Matrix	SO	Batch ID:	M:OP29355
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- The data for D5739-06/8270C SIM meets quality control requirements.
- D35496-45: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-46: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-44: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-42: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-41: Analysis performed at Accutest Laboratories, Marlborough, MA.
- D35496-47: Analysis performed at Accutest Laboratories, Marlborough, MA.

Extractables by GC By Method SW846-8015B

Matrix	AQ	Batch ID:	OP6072
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D35294-26MS, D35294-26MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix	SO	Batch ID:	OP6096
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35496-18MS, D35496-18MSD were used as the QC samples indicated.

Matrix	SO	Batch ID:	OP6111
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35496-20MS, D35496-20MSD were used as the QC samples indicated.

Matrix	SO	Batch ID:	OP6126
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35738-2MS, D35738-2MSD were used as the QC samples indicated.
- The matrix spike (MS) recovery(s) of TPH-ORO (>C28-C40) are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Metals By Method SW846 6010C

Matrix AQ	Batch ID: MP7673
------------------	-------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35451-1MS, D35451-1MSD were used as the QC samples for the metals analysis.

Matrix AQ	Batch ID: MP7805
------------------	-------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35496-1FMS, D35496-1FMSD, D35496-1FSDL were used as the QC samples for the metals analysis.
- The blank spike (BS) recovery(s) of Beryllium are outside control limits.
- The serial dilution RPD(s) for Arsenic, Chromium, Cobalt, Potassium, Vanadium, Zinc are outside control limits for sample MP7805-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP7805-B1 for Beryllium: All sample results < RL.

Matrix SO	Batch ID: MP7677
------------------	-------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35489-1MS, D35489-1MSD, D35489-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Antimony are outside control limits. Spike recovery indicates possible matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of Antimony are outside control limits. Probable cause due to matrix interference.
- The matrix spike (MS) recovery(s) of Aluminum, Iron are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Arsenic, Cadmium, Silver, Aluminum, Barium, Cobalt, Copper, Iron, Lead, Magnesium, Nickel, Sodium, Zinc are outside control limits for sample MP7677-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP7677-SD1 for Sodium: Serial dilution indicates possible matrix interference.
- MP7677-SD1 for Aluminum: Serial dilution indicates possible matrix interference.
- MP7677-SD1 for Iron: Serial dilution indicates possible matrix interference.
- MP7677-SD1 for Lead: Serial dilution indicates possible matrix interference.
- MP7677-SD1 for Cobalt: Serial dilution indicates possible matrix interference.
- MP7677-SD1 for Copper: Serial dilution indicates possible matrix interference.
- MP7677-SD1 for Magnesium: Serial dilution indicates possible matrix interference.
- MP7677-SD1 for Barium: Serial dilution indicates possible matrix interference.
- MP7677-SD1 for Zinc: Serial dilution indicates possible matrix interference.
- MP7677-MB1 for Iron: All sample results >10x method blank concentration or ND
- MP7677-SD1 for Nickel: Serial dilution indicates possible matrix interference.

Metals By Method SW846 7470A

Matrix AQ	Batch ID: MP7684
------------------	-------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35496-6MS, D35496-6MSD were used as the QC samples for the metals analysis.

Matrix AQ	Batch ID: MP7803
------------------	-------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35913-1MS, D35913-1MSD were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix SO	Batch ID: MP7695
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- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35291-1MS, D35291-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO	Batch ID: GN15434
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- The data for SM19 2540B M meets quality control requirements.

Matrix SO	Batch ID: GN15453
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- The data for SM19 2540B M meets quality control requirements.

Matrix SO	Batch ID: GN15461
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- The data for SM19 2540B M meets quality control requirements.

Matrix SO	Batch ID: GN15479
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- The data for SM19 2540B M meets quality control requirements.

Matrix SO	Batch ID: GN15496
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- The data for SM19 2540B M meets quality control requirements.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

The following corrections were made that reflect changes in the reported results.

1. The previously reported results were censored using the incorrect sample specific reporting limits (RLs). The RL was adjusted to the correct value based on the lowest calibration point.
2. The previously reported results did not utilize a method detection limit (MDL) for limiting secondary “J” qualifiers for estimated values. An MDL field was added that represents a value of $\frac{1}{2}$ the RL for secondary “J” qualifying. This value is equal to the RL in the previously reported results.
3. The previously reported results did not utilize a “B” qualifier for sample results that were detected at a level less than 10 times the level detected in the associated method blank. The “B” qualifier was added where appropriate.
4. The previously reported results for benzo(a)pyrene and indeno(1,2,3-cd)pyrene utilized a curve fit that did not pass through the origin. This curve fit resulted in a high bias for results detected near the MDL. The curve fit was corrected to pass through the origin and the results were recalculated and reported.
5. Several previously reported soil samples included incorrect “ND” results for the alkylated PAH ranges C1-dibenzothiophenes and C2-phenanthrenes/anthracenes. The incorrect “ND” result was reported due to a LIMS subtraction calculation that should not have been applied to these ranges. The following samples received corrections...
 - a. C1-dibenzothiophenes: D35496-21, D35496-22, D35496-23, D35496-25, D35496-31, D35496-33, D35496-35, D35496-37, D35496-38, D35496-39, D35496-42, D35496-45, D35496-46, D35496-47.
 - b. C2-phenanthrenes/anthracenes: D35496-21, D35496-22, D35496-23, D35496-24, D35496-25, D35496-26, D35496-27, D35496-28, D35496-29, D35496-30, D35496-31, D35496-32, D35496-33, D35496-34, D35496-35, D35496-36, D35496-37, D35496-38, D35496-39, D35496-42, D35496-45, D35496-46, D35496-47.
6. The method detection limit (MDL) referenced on the summary reports reflect a value of $\frac{1}{2}$ the reporting limit (RL). Results reported between the RL and MDL are flagged with a “J” qualifier and reported as estimated value.



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest Mountain States

Job No D35496

Site: URSCOD: 36549247

Report Date 1/9/2013 12:17:43 PM

33 Sample(s) were collected on between 06/12/2012 and 06/13/2012 and were received at Accutest on 06/14/2012 properly preserved, at 0.6 Deg. C and intact. These Samples received an Accutest job number of D35496. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method D5739-06/8270C SIM

Matrix AQ	Batch ID: OP29323
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC11583-6MS, MC11583-6MSD were used as the QC samples indicated.
- Sample(s) D35496-1, D35496-2, D35496-3, D35496-4, D35496-5, D35496-6 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.
- Initial calibration verification standard MSW127-ICV127 for Perylene-d12, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene exceeds 20% difference.

Matrix SO	Batch ID: OP29354
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D35496-20MS, D35496-20MSD were used as the QC samples indicated.
- Sample(s) D35496-20, D35496-24, D35496-25, D35496-26, D35496-27, D35496-28, D35496-29, D35496-32, D35496-33, D35496-34 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.
- D35496-36,38 for Perylene-d12: Outside control limits due to dilution.

Matrix SO	Batch ID: OP29355
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D35496-42MS, D35496-42MSD were used as the QC samples indicated.
- Sample(s) D35496-41, D35496-44 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.
- Matrix Spike Recovery(s) for Anthracene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Anthracene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Fluoranthene, Naphthalene, Phenanthrene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Calibration check standard MSW127-CC127 for Dibenz(a,h)anthracene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene exceeds 20% difference.
- Matrix Spike Duplicate Recovery(s) for Pyrene, Chrysene, Benzo(e)pyrene are outside control limits. Outside control limits due to high level in sample relative to spike amount.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D35496).

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D35496-1	LP-SW-004_061312					
Naphthalene ^a		0.0075 J	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C1-Naphthalenes ^a		0.0093 J	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C2-Naphthalenes ^a		0.026	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C3-Naphthalenes ^a		0.042	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C4-Naphthalenes ^a		0.24	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Acenaphthylene ^a		0.012	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Fluorene ^a		0.0072 J	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C1-Fluorenes ^a		0.048	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C2-Fluorenes ^a		0.14	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C3-Fluorenes ^a		0.48	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a		0.086	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a		0.14	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a		0.39	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a		0.33	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Phenanthrene ^a		0.0085 JB	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Anthracene ^a		0.0077 J	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a		0.061	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a		0.36	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		1.3	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a		0.92	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Fluoranthene ^a		0.016	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Pyrene ^a		0.15	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		0.62	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		1.1	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		1.2	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Benzo(a)anthracene ^a		0.040	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Chrysene ^a		0.29	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		0.66	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		1.0	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		0.99	0.0097	0.0049	ug/l	D5739-06/8270C SIM
C4-Benzo(a)anthracenes/Chrysenes ^a		0.81	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		0.077	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a		0.015	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Benzo(e)pyrene ^a		0.24	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Benzo(a)pyrene ^a		0.032	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a		0.026	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		0.052 B	0.0097	0.0049	ug/l	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		0.076	0.0097	0.0049	ug/l	D5739-06/8270C SIM
TPH-DRO (C10-C28)		0.718	0.20	0.13	mg/l	SW846-8015B
TPH-ORO (> C28-C40)		0.911	0.30	0.20	mg/l	SW846-8015B
Aluminum		6260	100		ug/l	SW846 6010C
Barium		608	10		ug/l	SW846 6010C
Calcium		72000	400		ug/l	SW846 6010C

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
Chromium		10.2	10		ug/l	SW846 6010C
Cobalt		7.5	5.0		ug/l	SW846 6010C
Copper		15.0	10		ug/l	SW846 6010C
Iron		21600	70		ug/l	SW846 6010C
Magnesium		13100	200		ug/l	SW846 6010C
Manganese		1220	5.0		ug/l	SW846 6010C
Potassium		3480	1000		ug/l	SW846 6010C
Sodium		13300	400		ug/l	SW846 6010C
Vanadium		29.6	10		ug/l	SW846 6010C
Zinc		132	30		ug/l	SW846 6010C

D35496-1F LP-SW-004_061312

Barium	142	10		ug/l	SW846 6010C
Calcium	49300	400		ug/l	SW846 6010C
Iron	387	70		ug/l	SW846 6010C
Magnesium	10200	200		ug/l	SW846 6010C
Manganese	198	5.0		ug/l	SW846 6010C
Potassium	1860	1000		ug/l	SW846 6010C
Sodium	12900	400		ug/l	SW846 6010C

D35496-2 LP-SW-005_061312

Naphthalene ^a	0.0062 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C1-Naphthalenes ^a	0.0089 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Naphthalenes ^a	0.025	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C3-Naphthalenes ^a	0.029	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C4-Naphthalenes ^a	0.10	0.0099	0.0050	ug/l	D5739-06/8270C SIM
Fluorene ^a	0.0061 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C3-Fluorenes ^a	0.20	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	0.058	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	0.15	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	0.13	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	0.19	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	0.48	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	0.33	0.0099	0.0050	ug/l	D5739-06/8270C SIM
Fluoranthene ^a	0.0070 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
Pyrene ^a	0.061	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	0.26	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	0.39	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a	0.46	0.0099	0.0050	ug/l	D5739-06/8270C SIM
Benzo(a)anthracene ^a	0.0095 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
Chrysene ^a	0.098	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a	0.24	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a	0.39	0.0099	0.0050	ug/l	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Analyte	Qual	RL	MDL	Units	Method
C3-Benzo(a)anthracenes/Chrysenes	^a	0.43		0.0099	0.0050	ug/l	D5739-06/8270C SIM
C4-Benzo(a)anthracenes/Chrysenes	^a	0.34		0.0099	0.0050	ug/l	D5739-06/8270C SIM
Benzo(b)fluoranthene	^a	0.032		0.0099	0.0050	ug/l	D5739-06/8270C SIM
Benzo(k)fluoranthene	^a	0.0073 J		0.0099	0.0050	ug/l	D5739-06/8270C SIM
Benzo(e)pyrene	^a	0.091		0.0099	0.0050	ug/l	D5739-06/8270C SIM
Benzo(a)pyrene	^a	0.015		0.0099	0.0050	ug/l	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene	^a	0.0097 J		0.0099	0.0050	ug/l	D5739-06/8270C SIM
Dibenzo(a,h)anthracene	^a	0.019 B		0.0099	0.0050	ug/l	D5739-06/8270C SIM
Benzo(g,h,i)perylene	^a	0.034		0.0099	0.0050	ug/l	D5739-06/8270C SIM
TPH-DRO (C10-C28)		1.13		0.20	0.13	mg/l	SW846-8015B
TPH-ORO (> C28-C40)		1.45		0.30	0.20	mg/l	SW846-8015B
Aluminum		6870		100		ug/l	SW846 6010C
Barium		430		10		ug/l	SW846 6010C
Calcium		59100		400		ug/l	SW846 6010C
Chromium		10.3		10		ug/l	SW846 6010C
Cobalt		6.0		5.0		ug/l	SW846 6010C
Copper		13.8		10		ug/l	SW846 6010C
Iron		16600		70		ug/l	SW846 6010C
Magnesium		15800		200		ug/l	SW846 6010C
Manganese		1210		5.0		ug/l	SW846 6010C
Potassium		2670		1000		ug/l	SW846 6010C
Sodium		16000		400		ug/l	SW846 6010C
Vanadium		29.1		10		ug/l	SW846 6010C
Zinc		122		30		ug/l	SW846 6010C

D35496-2F LP-SW-005_061312

Barium	245	10		ug/l	SW846 6010C
Calcium	51000	400		ug/l	SW846 6010C
Iron	216	70		ug/l	SW846 6010C
Magnesium	12600	200		ug/l	SW846 6010C
Manganese	1190	5.0		ug/l	SW846 6010C
Potassium	1270	1000		ug/l	SW846 6010C
Sodium	15000	400		ug/l	SW846 6010C

D35496-3 LP-SW-006_061212

C1-Naphthalenes	^a	0.010		0.010	0.0052	ug/l	D5739-06/8270C SIM
C2-Naphthalenes	^a	0.0084 J		0.010	0.0052	ug/l	D5739-06/8270C SIM
C3-Naphthalenes	^a	0.0080 J		0.010	0.0052	ug/l	D5739-06/8270C SIM
C4-Naphthalenes	^a	0.0090 J		0.010	0.0052	ug/l	D5739-06/8270C SIM
Fluorene	^a	0.0076 J		0.010	0.0052	ug/l	D5739-06/8270C SIM
C1-Fluorenes	^a	0.0061 J		0.010	0.0052	ug/l	D5739-06/8270C SIM
Phenanthrene	^a	0.0093 JB		0.010	0.0052	ug/l	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes	^a	0.0057 J		0.010	0.0052	ug/l	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
C2-Phenanthrenes/Anthracenes ^a		0.0080 J	0.010	0.0052	ug/l	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		0.0053 J	0.010	0.0052	ug/l	D5739-06/8270C SIM
Barium		54.5	10		ug/l	SW846 6010C
Calcium		64600	400		ug/l	SW846 6010C
Iron		458	70		ug/l	SW846 6010C
Magnesium		19400	200		ug/l	SW846 6010C
Manganese		77.4	5.0		ug/l	SW846 6010C
Sodium		8010	400		ug/l	SW846 6010C

D35496-3F LP-SW-006_061212

Barium	50.8	10		ug/l	SW846 6010C
Calcium	64500	400		ug/l	SW846 6010C
Iron	105	70		ug/l	SW846 6010C
Magnesium	19200	200		ug/l	SW846 6010C
Manganese	51.2	5.0		ug/l	SW846 6010C
Sodium	7800	400		ug/l	SW846 6010C

D35496-4 LP-SW-007_061212

Naphthalene ^a	0.0058 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C1-Naphthalenes ^a	0.012	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Naphthalenes ^a	0.0098 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C3-Naphthalenes ^a	0.011	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C4-Naphthalenes ^a	0.016	0.0099	0.0050	ug/l	D5739-06/8270C SIM
Fluorene ^a	0.0082 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Fluorenes ^a	0.015	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	0.0074 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	0.013	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	0.010	0.0099	0.0050	ug/l	D5739-06/8270C SIM
Phenanthrene ^a	0.0096 JB	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	0.0067 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	0.020	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	0.037	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	0.024	0.0099	0.0050	ug/l	D5739-06/8270C SIM
Pyrene ^a	0.010	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	0.025	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	0.034	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a	0.030	0.0099	0.0050	ug/l	D5739-06/8270C SIM
Chrysene ^a	0.012	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a	0.018	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a	0.026	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a	0.026	0.0099	0.0050	ug/l	D5739-06/8270C SIM
Benzo(e)pyrene ^a	0.0076 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
Aluminum	264	100		ug/l	SW846 6010C

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Barium		195	10		ug/l	SW846 6010C
Calcium		29500	400		ug/l	SW846 6010C
Iron		796	70		ug/l	SW846 6010C
Magnesium		6080	200		ug/l	SW846 6010C
Manganese		98.1	5.0		ug/l	SW846 6010C
Potassium		1360	1000		ug/l	SW846 6010C
Sodium		24700	400		ug/l	SW846 6010C

D35496-4F LP-SW-007_061212

Barium	177	10		ug/l	SW846 6010C
Calcium	29500	400		ug/l	SW846 6010C
Iron	218	70		ug/l	SW846 6010C
Magnesium	5980	200		ug/l	SW846 6010C
Manganese	71.6	5.0		ug/l	SW846 6010C
Potassium	1190	1000		ug/l	SW846 6010C
Sodium	24300	400		ug/l	SW846 6010C

D35496-5 LP-SW-008_061212

C1-Naphthalenes ^a	0.0063 J	0.0098	0.0049	ug/l	D5739-06/8270C SIM
C3-Naphthalenes ^a	0.0084 J	0.0098	0.0049	ug/l	D5739-06/8270C SIM
Fluorene ^a	0.0051 J	0.0098	0.0049	ug/l	D5739-06/8270C SIM
C1-Fluorenes ^a	0.0056 J	0.0098	0.0049	ug/l	D5739-06/8270C SIM
Phenanthrene ^a	0.0085 JB	0.0098	0.0049	ug/l	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	0.0052 J	0.0098	0.0049	ug/l	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	0.0052 J	0.0098	0.0049	ug/l	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a	0.0052 JB	0.0098	0.0049	ug/l	D5739-06/8270C SIM
Barium	65.6	10		ug/l	SW846 6010C
Calcium	46700	400		ug/l	SW846 6010C
Iron	492	70		ug/l	SW846 6010C
Magnesium	17800	200		ug/l	SW846 6010C
Manganese	131	5.0		ug/l	SW846 6010C
Sodium	5500	400		ug/l	SW846 6010C

D35496-5F LP-SW-008_061212

Barium	60.2	10		ug/l	SW846 6010C
Calcium	46300	400		ug/l	SW846 6010C
Magnesium	17500	200		ug/l	SW846 6010C
Manganese	96.1	5.0		ug/l	SW846 6010C
Sodium	5340	400		ug/l	SW846 6010C

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
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D35496-6 LP-SW-009_061212

C3-Naphthalenes ^a	0.038	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C4-Naphthalenes ^a	0.16	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C1-Fluorenes ^a	0.011	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C3-Fluorenes ^a	0.19	0.0096	0.0048	ug/l	D5739-06/8270C SIM
Dibenzothiophene ^a	0.0053 J	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	0.15	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	0.074	0.0096	0.0048	ug/l	D5739-06/8270C SIM
Phenanthrene ^a	0.0058 JB	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	0.023	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	0.060	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	0.16	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	0.073	0.0096	0.0048	ug/l	D5739-06/8270C SIM
Pyrene ^a	0.031	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	0.064	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	0.15	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a	0.14	0.0096	0.0048	ug/l	D5739-06/8270C SIM
Chrysene ^a	0.045	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a	0.062	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a	0.072	0.0096	0.0048	ug/l	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a	0.057	0.0096	0.0048	ug/l	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a	0.0085 J	0.0096	0.0048	ug/l	D5739-06/8270C SIM
Benzo(e)pyrene ^a	0.022	0.0096	0.0048	ug/l	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a	0.0060 J	0.0096	0.0048	ug/l	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a	0.013 B	0.0096	0.0048	ug/l	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a	0.0082 J	0.0096	0.0048	ug/l	D5739-06/8270C SIM
TPH-DRO (C10-C28)	0.377	0.19	0.12	mg/l	SW846-8015B
Barium	4450	10		ug/l	SW846 6010C
Calcium	26300	400		ug/l	SW846 6010C
Iron	566	70		ug/l	SW846 6010C
Magnesium	10500	200		ug/l	SW846 6010C
Manganese	134	5.0		ug/l	SW846 6010C
Potassium	13100	1000		ug/l	SW846 6010C
Sodium	401000	400		ug/l	SW846 6010C

D35496-6F LP-SW-009_061212

Barium	4250	10	ug/l	SW846 6010C
Calcium	25100	400	ug/l	SW846 6010C
Magnesium	10600	200	ug/l	SW846 6010C
Manganese	23.4	5.0	ug/l	SW846 6010C
Potassium	12900	1000	ug/l	SW846 6010C
Sodium	401000	400	ug/l	SW846 6010C

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D35496-7 LP-SW-011_061212

Naphthalene ^a	0.011	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C1-Naphthalenes ^a	0.0073 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Naphthalenes ^a	0.0070 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C3-Naphthalenes ^a	0.0058 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	0.0058 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	0.0061 J	0.0099	0.0050	ug/l	D5739-06/8270C SIM
Aluminum	130	100		ug/l	SW846 6010C
Barium	38.5	10		ug/l	SW846 6010C
Calcium	18100	400		ug/l	SW846 6010C
Iron	637	70		ug/l	SW846 6010C
Magnesium	3820	200		ug/l	SW846 6010C
Manganese	91.4	5.0		ug/l	SW846 6010C
Sodium	3220	400		ug/l	SW846 6010C

D35496-7F LP-SW-011_061212

Barium	35.1	10		ug/l	SW846 6010C
Calcium	18700	400		ug/l	SW846 6010C
Iron	193	70		ug/l	SW846 6010C
Magnesium	3910	200		ug/l	SW846 6010C
Manganese	67.7	5.0		ug/l	SW846 6010C
Sodium	3240	400		ug/l	SW846 6010C

D35496-8 LP-SS-029_061112

TPH-DRO (C10-C28)	17.6	16	10	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	33.0	24	16	mg/kg	SW846-8015B

D35496-9 LP-SS-025_061112

TPH-DRO (C10-C28)	17.5	17	11	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	24.9 J	26	17	mg/kg	SW846-8015B

D35496-10 LP-SS-026_061112

TPH-DRO (C10-C28)	35.1	21	14	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	60.1	32	21	mg/kg	SW846-8015B

D35496-11 LP-SS-027_061112

TPH-DRO (C10-C28)	127 J	160	110	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	253	250	160	mg/kg	SW846-8015B

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D35496-12 LP-SS-028_061112

No hits reported in this sample.

D35496-13 LP-SS-030_061112

TPH-DRO (C10-C28)	99.6 J	100	67	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	199	160	100	mg/kg	SW846-8015B

D35496-14 LP-SS-031_061112

TPH-DRO (C10-C28)	167	120	75	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	334	170	120	mg/kg	SW846-8015B

D35496-15 LP-SS-032_061112

TPH-DRO (C10-C28)	110 J	120	76	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	256	180	120	mg/kg	SW846-8015B

D35496-16 LP-SS-033_061112

TPH-ORO (> C28-C40)	239	180	120	mg/kg	SW846-8015B
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D35496-17 LP-SS-034_061112

TPH-DRO (C10-C28)	192	140	93	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	376	220	140	mg/kg	SW846-8015B

D35496-18 LP-SS-035_061112

TPH-ORO (> C28-C40)	104 J	160	100	mg/kg	SW846-8015B
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D35496-19 LP-SS-036_061112

TPH-ORO (> C28-C40)	213	200	130	mg/kg	SW846-8015B
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D35496-20 LP-SS-037_061212

Naphthalene ^a	0.81	0.55	0.28	ug/kg	D5739-06/8270C SIM
C1-Naphthalenes ^a	1.0 B	0.55	0.28	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	7.6	0.55	0.28	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	22.3	0.55	0.28	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	68.2	0.55	0.28	ug/kg	D5739-06/8270C SIM
Acenaphthylene ^a	1.1	0.55	0.28	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	10.7	0.55	0.28	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
C2-Fluorenes ^a		36.2	0.55	0.28	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a		79.0	0.55	0.28	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a		11.5	0.55	0.28	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a		26.2	0.55	0.28	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a		45.0	0.55	0.28	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a		31.2	0.55	0.28	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a		24.4	0.55	0.28	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a		106	0.55	0.28	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		168	0.55	0.28	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a		97.7	0.55	0.28	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a		2.0	0.55	0.28	ug/kg	D5739-06/8270C SIM
Pyrene ^a		14.5	0.55	0.28	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		56.1	0.55	0.28	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		108	0.55	0.28	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		119	0.55	0.28	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		4.8	0.55	0.28	ug/kg	D5739-06/8270C SIM
Chrysene ^a		29.5	0.55	0.28	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		68.0	0.55	0.28	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		102	0.55	0.28	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		106	0.55	0.28	ug/kg	D5739-06/8270C SIM
C4-Benzo(a)anthracenes/Chrysenes ^a		92.6	0.55	0.28	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		8.4	0.55	0.28	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a		1.8	0.55	0.28	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		24.1	0.55	0.28	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		3.1	0.55	0.28	ug/kg	D5739-06/8270C SIM
Perylene ^a		2.4	0.55	0.28	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a		1.8	0.55	0.28	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		3.0	0.55	0.28	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		7.9	0.55	0.28	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		296	130	85	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		553	200	130	mg/kg	SW846-8015B

D35496-21 LP-SS-040_061212

C1-Naphthalenes ^a	4.2 J	5.1	2.6	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	10.2	5.1	2.6	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	15.5	5.1	2.6	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	42.2	5.1	2.6	ug/kg	D5739-06/8270C SIM
Fluorene ^a	3.4 J	5.1	2.6	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	33.6	5.1	2.6	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	59.6	5.1	2.6	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	9.5	5.1	2.6	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	19.9	5.1	2.6	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	37.3	5.1	2.6	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	27.2	5.1	2.6	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Phenanthrene ^a		5.5	5.1	2.6	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a		15.5	5.1	2.6	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a		66.0	5.1	2.6	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		129	5.1	2.6	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a		74.3	5.1	2.6	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a		2.7 J	5.1	2.6	ug/kg	D5739-06/8270C SIM
Pyrene ^a		11.6	5.1	2.6	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		44.0	5.1	2.6	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		83.6	5.1	2.6	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		93.0	5.1	2.6	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		4.3 J	5.1	2.6	ug/kg	D5739-06/8270C SIM
Chrysene ^a		21.3	5.1	2.6	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		47.7	5.1	2.6	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		77.6	5.1	2.6	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		86.4	5.1	2.6	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		6.8	5.1	2.6	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		17.2	5.1	2.6	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		3.3 J	5.1	2.6	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a		3.1 J	5.1	2.6	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		5.2	5.1	2.6	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		7.0	5.1	2.6	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		254	120	78	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		368	180	120	mg/kg	SW846-8015B
Aluminum		3360	15		mg/kg	SW846 6010C
Arsenic		4.3	3.7		mg/kg	SW846 6010C
Barium		176	1.5		mg/kg	SW846 6010C
Calcium		15100	59		mg/kg	SW846 6010C
Chromium		6.1	1.5		mg/kg	SW846 6010C
Cobalt		4.1	0.74		mg/kg	SW846 6010C
Copper		6.0	1.5		mg/kg	SW846 6010C
Iron		10200	10		mg/kg	SW846 6010C
Magnesium		1780	30		mg/kg	SW846 6010C
Manganese		431	0.74		mg/kg	SW846 6010C
Nickel		8.4	4.4		mg/kg	SW846 6010C
Potassium		825	300		mg/kg	SW846 6010C
Sodium		94.4	59		mg/kg	SW846 6010C
Vanadium		13.5	1.5		mg/kg	SW846 6010C
Zinc		38.0	4.4		mg/kg	SW846 6010C

D35496-22 LP-SS-041_061212

C1-Naphthalenes ^a	3.7 J	5.2	2.6	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	8.2	5.2	2.6	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	12.2	5.2	2.6	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	32.8	5.2	2.6	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Fluorene ^a		2.8 J	5.2	2.6	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a		21.7	5.2	2.6	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a		50.5	5.2	2.6	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a		9.5	5.2	2.6	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a		17.4	5.2	2.6	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a		31.4	5.2	2.6	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a		22.3	5.2	2.6	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a		4.8 J	5.2	2.6	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a		13.1	5.2	2.6	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a		61.4	5.2	2.6	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		116	5.2	2.6	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a		60.1	5.2	2.6	ug/kg	D5739-06/8270C SIM
Pyrene ^a		9.9	5.2	2.6	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		41.7	5.2	2.6	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		72.1	5.2	2.6	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		79.6	5.2	2.6	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		3.8 J	5.2	2.6	ug/kg	D5739-06/8270C SIM
Chrysene ^a		18.1	5.2	2.6	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		41.7	5.2	2.6	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		66.0	5.2	2.6	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		77.1	5.2	2.6	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		5.5	5.2	2.6	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		14.3	5.2	2.6	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		3.3 J	5.2	2.6	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		5.6	5.2	2.6	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		319	120	79	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		424	180	120	mg/kg	SW846-8015B
Aluminum		3920	15		mg/kg	SW846 6010C
Arsenic		5.1	3.7		mg/kg	SW846 6010C
Barium		219	1.5		mg/kg	SW846 6010C
Calcium		15200	60		mg/kg	SW846 6010C
Chromium		6.9	1.5		mg/kg	SW846 6010C
Cobalt		4.6	0.75		mg/kg	SW846 6010C
Copper		8.4	1.5		mg/kg	SW846 6010C
Iron		11800	10		mg/kg	SW846 6010C
Magnesium		1940	30		mg/kg	SW846 6010C
Manganese		524	0.75		mg/kg	SW846 6010C
Nickel		10.3	4.5		mg/kg	SW846 6010C
Potassium		985	300		mg/kg	SW846 6010C
Sodium		89.2	60		mg/kg	SW846 6010C
Vanadium		16.7	1.5		mg/kg	SW846 6010C
Zinc		52.1	4.5		mg/kg	SW846 6010C

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
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D35496-23 LP-SS-042_061212

C1-Naphthalenes ^a	5.6 J	9.5	4.8	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	11.3	9.5	4.8	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	15.3	9.5	4.8	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	49.1	9.5	4.8	ug/kg	D5739-06/8270C SIM
Fluorene ^a	5.0 J	9.5	4.8	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	29.6	9.5	4.8	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	75.1	9.5	4.8	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	15.0	9.5	4.8	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	23.2	9.5	4.8	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	50.3	9.5	4.8	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	34.1	9.5	4.8	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	7.8 J	9.5	4.8	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	18.9	9.5	4.8	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	86.2	9.5	4.8	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	163	9.5	4.8	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	92.4	9.5	4.8	ug/kg	D5739-06/8270C SIM
Pyrene ^a	13.7	9.5	4.8	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	53.3	9.5	4.8	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	97.8	9.5	4.8	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a	116	9.5	4.8	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a	6.5 J	9.5	4.8	ug/kg	D5739-06/8270C SIM
Chrysene ^a	25.1	9.5	4.8	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a	57.1	9.5	4.8	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a	99.6	9.5	4.8	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a	111	9.5	4.8	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a	9.2 J	9.5	4.8	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a	21.2	9.5	4.8	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a	5.3 J	9.5	4.8	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a	6.4 J	9.5	4.8	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a	13.3	9.5	4.8	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a	10.7	9.5	4.8	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)	612	230	150	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	899	350	230	mg/kg	SW846-8015B

D35496-24 LP-SS-043_061212

Naphthalene ^a	0.39 J	0.43	0.22	ug/kg	D5739-06/8270C SIM
C1-Naphthalenes ^a	0.45 B	0.43	0.22	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	0.81	0.43	0.22	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	0.83 B	0.43	0.22	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	1.2	0.43	0.22	ug/kg	D5739-06/8270C SIM
Fluorene ^a	0.29 J	0.43	0.22	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	0.55	0.43	0.22	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
C2-Fluorenes ^a		0.84	0.43	0.22	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a		0.65	0.43	0.22	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a		0.92	0.43	0.22	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a		0.75	0.43	0.22	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a		0.59	0.43	0.22	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a		1.0	0.43	0.22	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a		2.0	0.43	0.22	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		2.7	0.43	0.22	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a		1.8	0.43	0.22	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a		0.39 J	0.43	0.22	ug/kg	D5739-06/8270C SIM
Pyrene ^a		1.0	0.43	0.22	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		2.7	0.43	0.22	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		3.5	0.43	0.22	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		3.3	0.43	0.22	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		0.34 J	0.43	0.22	ug/kg	D5739-06/8270C SIM
Chrysene ^a		1.5	0.43	0.22	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		1.9	0.43	0.22	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		2.6	0.43	0.22	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		2.9	0.43	0.22	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		0.53	0.43	0.22	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a		0.29 J	0.43	0.22	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		1.1	0.43	0.22	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		0.28 J	0.43	0.22	ug/kg	D5739-06/8270C SIM
Perylene ^a		0.24 J	0.43	0.22	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a		0.29 J	0.43	0.22	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		0.37 J	0.43	0.22	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		0.53	0.43	0.22	ug/kg	D5739-06/8270C SIM
TPH-ORO (> C28-C40)		140 J	150	100	mg/kg	SW846-8015B

D35496-25 LP-SS-044_061212

Naphthalene ^a	0.48 J	0.50	0.25	ug/kg	D5739-06/8270C SIM
C1-Naphthalenes ^a	0.79 B	0.50	0.25	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	4.5	0.50	0.25	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	6.3	0.50	0.25	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	33.7	0.50	0.25	ug/kg	D5739-06/8270C SIM
Acenaphthylene ^a	1.0	0.50	0.25	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	21.7	0.50	0.25	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	51.8	0.50	0.25	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	7.8	0.50	0.25	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	17.5	0.50	0.25	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	29.9	0.50	0.25	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	19.4	0.50	0.25	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	11.2	0.50	0.25	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	71.1	0.50	0.25	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
C3-Phenanthrenes/Anthracenes ^a		112	0.50	0.25	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a		60.8	0.50	0.25	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a		1.7	0.50	0.25	ug/kg	D5739-06/8270C SIM
Pyrene ^a		9.7	0.50	0.25	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		37.1	0.50	0.25	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		67.5	0.50	0.25	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		75.8	0.50	0.25	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		3.4	0.50	0.25	ug/kg	D5739-06/8270C SIM
Chrysene ^a		18.4	0.50	0.25	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		40.6	0.50	0.25	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		59.1	0.50	0.25	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		66.2	0.50	0.25	ug/kg	D5739-06/8270C SIM
C4-Benzo(a)anthracenes/Chrysenes ^a		55.0	0.50	0.25	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		5.0	0.50	0.25	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a		0.98	0.50	0.25	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		13.0	0.50	0.25	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		1.9	0.50	0.25	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a		0.97	0.50	0.25	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		1.3	0.50	0.25	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		4.0	0.50	0.25	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		425	120	78	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		546	180	120	mg/kg	SW846-8015B

D35496-26 LP-SS-045_061212

Naphthalene ^a	0.36 J	0.54	0.27	ug/kg	D5739-06/8270C SIM
C1-Naphthalenes ^a	0.50 JB	0.54	0.27	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	1.0	0.54	0.27	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	0.91 B	0.54	0.27	ug/kg	D5739-06/8270C SIM
Fluorene ^a	0.29 J	0.54	0.27	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	0.49 J	0.54	0.27	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	0.63	0.54	0.27	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	0.46 J	0.54	0.27	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	0.59	0.54	0.27	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	1.0	0.54	0.27	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	1.0	0.54	0.27	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	0.83	0.54	0.27	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a	0.47 J	0.54	0.27	ug/kg	D5739-06/8270C SIM
Pyrene ^a	0.53 J	0.54	0.27	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	0.93	0.54	0.27	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	1.1	0.54	0.27	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a	1.2	0.54	0.27	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a	0.36 J	0.54	0.27	ug/kg	D5739-06/8270C SIM
Chrysene ^a	0.94	0.54	0.27	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a	0.82	0.54	0.27	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
C2-Benzo(a)anthracenes/Chrysenes ^a		1.0	0.54	0.27	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		0.43 J	0.54	0.27	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a		0.31 J	0.54	0.27	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		0.57	0.54	0.27	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a		0.28 J	0.54	0.27	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		0.40 J	0.54	0.27	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		97.4 J	130	83	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		185 J	190	130	mg/kg	SW846-8015B

D35496-27 LP-SS-046_061212

Naphthalene ^a	0.49	0.47	0.23	ug/kg	D5739-06/8270C SIM
C1-Naphthalenes ^a	0.50 B	0.47	0.23	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	0.78	0.47	0.23	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	0.70 B	0.47	0.23	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	0.81	0.47	0.23	ug/kg	D5739-06/8270C SIM
Fluorene ^a	0.35 J	0.47	0.23	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	0.47	0.47	0.23	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	0.24 J	0.47	0.23	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	0.64	0.47	0.23	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	0.69	0.47	0.23	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	0.87	0.47	0.23	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	0.70	0.47	0.23	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a	0.47	0.47	0.23	ug/kg	D5739-06/8270C SIM
Pyrene ^a	0.45 J	0.47	0.23	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	0.57	0.47	0.23	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	0.73	0.47	0.23	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a	0.33 J	0.47	0.23	ug/kg	D5739-06/8270C SIM
Chrysene ^a	0.59	0.47	0.23	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a	0.40 J	0.47	0.23	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a	0.63	0.47	0.23	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a	0.38 J	0.47	0.23	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a	0.33 J	0.47	0.23	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a	0.26 J	0.47	0.23	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a	0.24 J	0.47	0.23	ug/kg	D5739-06/8270C SIM
Perylene ^a	1.2	0.47	0.23	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a	0.27 J	0.47	0.23	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a	0.32 J	0.47	0.23	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)	12.1 J	19	12	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	20.1 J	28	19	mg/kg	SW846-8015B

D35496-28 LP-SS-047_061212

Naphthalene ^a	0.22 J	0.42	0.21	ug/kg	D5739-06/8270C SIM
C1-Naphthalenes ^a	0.42 B	0.42	0.21	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
C2-Naphthalenes ^a		0.52	0.42	0.21	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a		0.48 B	0.42	0.21	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a		0.27 J	0.42	0.21	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a		0.32 J	0.42	0.21	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a		0.38 J	0.42	0.21	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a		0.42	0.42	0.21	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		0.26 J	0.42	0.21	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		0.26 J	0.42	0.21	ug/kg	D5739-06/8270C SIM

D35496-29 LP-SS-048_061212

C1-Naphthalenes ^a	1.6 JB	2.4	1.2	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	3.3	2.4	1.2	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	4.8	2.4	1.2	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	11.1	2.4	1.2	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	7.8	2.4	1.2	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	17.4	2.4	1.2	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	5.6	2.4	1.2	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	9.5	2.4	1.2	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	8.0	2.4	1.2	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	2.0 J	2.4	1.2	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	5.2	2.4	1.2	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	19.4	2.4	1.2	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	36.7	2.4	1.2	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	22.0	2.4	1.2	ug/kg	D5739-06/8270C SIM
Pyrene ^a	4.0	2.4	1.2	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	12.8	2.4	1.2	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	24.2	2.4	1.2	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a	26.6	2.4	1.2	ug/kg	D5739-06/8270C SIM
Chrysene ^a	6.3	2.4	1.2	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a	13.6	2.4	1.2	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a	21.4	2.4	1.2	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a	25.4	2.4	1.2	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a	1.8 J	2.4	1.2	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a	4.9	2.4	1.2	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a	1.8 J	2.4	1.2	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)	159	110	74	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	232	170	110	mg/kg	SW846-8015B

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C1-Naphthalenes ^a	2.7 J	4.4	2.2	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	4.7	4.4	2.2	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	5.6	4.4	2.2	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	16.9	4.4	2.2	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Fluorene ^a		2.2 J	4.4	2.2	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a		13.9	4.4	2.2	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a		36.4	4.4	2.2	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a		9.2	4.4	2.2	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a		17.7	4.4	2.2	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a		12.9	4.4	2.2	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a		3.2 J	4.4	2.2	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a		5.9	4.4	2.2	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a		29.8	4.4	2.2	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		66.1	4.4	2.2	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a		32.3	4.4	2.2	ug/kg	D5739-06/8270C SIM
Pyrene ^a		4.8	4.4	2.2	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		18.2	4.4	2.2	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		35.7	4.4	2.2	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		40.3	4.4	2.2	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		2.7 J	4.4	2.2	ug/kg	D5739-06/8270C SIM
Chrysene ^a		8.0	4.4	2.2	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		20.7	4.4	2.2	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		34.3	4.4	2.2	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		37.0	4.4	2.2	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		2.5 J	4.4	2.2	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		6.8	4.4	2.2	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		2.5 J	4.4	2.2	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		121	100	68	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		222	160	100	mg/kg	SW846-8015B

D35496-31 LP-SS-050_061212

C1-Naphthalenes ^a	3.1 J	4.7	2.4	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	8.7	4.7	2.4	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	16.7	4.7	2.4	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	37.4	4.7	2.4	ug/kg	D5739-06/8270C SIM
Fluorene ^a	2.8 J	4.7	2.4	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	10	4.7	2.4	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	25.1	4.7	2.4	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	52.1	4.7	2.4	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	8.4	4.7	2.4	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	18.4	4.7	2.4	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	30.9	4.7	2.4	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	21.3	4.7	2.4	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	4.4 J	4.7	2.4	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	16.2	4.7	2.4	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	70.2	4.7	2.4	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	118	4.7	2.4	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	56.4	4.7	2.4	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
Pyrene ^a		9.2	4.7	2.4	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		36.1	4.7	2.4	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		64.3	4.7	2.4	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		65.9	4.7	2.4	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		4.2 J	4.7	2.4	ug/kg	D5739-06/8270C SIM
Chrysene ^a		15.5	4.7	2.4	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		36.4	4.7	2.4	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		51.8	4.7	2.4	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		56.3	4.7	2.4	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		4.2 J	4.7	2.4	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		11.1	4.7	2.4	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		3.6 J	4.7	2.4	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		264	110	73	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		393	170	110	mg/kg	SW846-8015B

D35496-32 LP-SS-051_061212

Naphthalene ^a	0.26 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
C1-Naphthalenes ^a	0.56 B	0.51	0.25	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	0.57	0.51	0.25	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	0.89 B	0.51	0.25	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	0.46 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	0.32 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	0.32 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	0.45 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	0.39 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	0.40 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	0.33 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a	0.40 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
Pyrene ^a	0.44 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	0.56	0.51	0.25	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	0.54	0.51	0.25	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a	0.47 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a	0.39 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
Chrysene ^a	0.63	0.51	0.25	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a	0.42 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a	0.53	0.51	0.25	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a	0.40 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a	0.35 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a	0.40 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a	0.33 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a	0.30 J	0.51	0.25	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a	0.36 J	0.51	0.25	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D35496-33	LP-SS-052_061212					
Naphthalene ^a		0.67	0.62	0.31	ug/kg	D5739-06/8270C SIM
C1-Naphthalenes ^a		1.7 B	0.62	0.31	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a		8.5	0.62	0.31	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a		18.2	0.62	0.31	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a		39.4	0.62	0.31	ug/kg	D5739-06/8270C SIM
Acenaphthylene ^a		0.63	0.62	0.31	ug/kg	D5739-06/8270C SIM
Fluorene ^a		1.3	0.62	0.31	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a		7.9	0.62	0.31	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a		24.1	0.62	0.31	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a		48.0	0.62	0.31	ug/kg	D5739-06/8270C SIM
Dibenzothiophene ^a		0.93	0.62	0.31	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a		9.5	0.62	0.31	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a		18.0	0.62	0.31	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a		27.0	0.62	0.31	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a		18.3	0.62	0.31	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a		2.9	0.62	0.31	ug/kg	D5739-06/8270C SIM
Anthracene ^a		0.54 J	0.62	0.31	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a		16.2	0.62	0.31	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a		61.3	0.62	0.31	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		97.3	0.62	0.31	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a		49.0	0.62	0.31	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a		1.7	0.62	0.31	ug/kg	D5739-06/8270C SIM
Pyrene ^a		10.5	0.62	0.31	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		34.3	0.62	0.31	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		59.3	0.62	0.31	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		63.0	0.62	0.31	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		2.4	0.62	0.31	ug/kg	D5739-06/8270C SIM
Chrysene ^a		17.9	0.62	0.31	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		37.3	0.62	0.31	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		50.6	0.62	0.31	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		47.4	0.62	0.31	ug/kg	D5739-06/8270C SIM
C4-Benzo(a)anthracenes/Chrysenes ^a		38.3	0.62	0.31	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		4.5	0.62	0.31	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a		0.76	0.62	0.31	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		13.7	0.62	0.31	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		1.5	0.62	0.31	ug/kg	D5739-06/8270C SIM
Perylene ^a		1.4	0.62	0.31	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a		0.90	0.62	0.31	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		1.0	0.62	0.31	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		4.0	0.62	0.31	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		243	140	94	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		348	220	140	mg/kg	SW846-8015B

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D35496-34	LP-SS-053_061212					
C1-Naphthalenes ^a		0.39 JB	0.42	0.21	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a		1.3	0.42	0.21	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a		2.3	0.42	0.21	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a		6.1	0.42	0.21	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a		1.4	0.42	0.21	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a		3.8	0.42	0.21	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a		7.6	0.42	0.21	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a		3.1	0.42	0.21	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a		4.7	0.42	0.21	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a		3.4	0.42	0.21	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a		0.54	0.42	0.21	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a		2.8	0.42	0.21	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a		10.9	0.42	0.21	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		18.4	0.42	0.21	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a		9.1	0.42	0.21	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a		0.33 J	0.42	0.21	ug/kg	D5739-06/8270C SIM
Pyrene ^a		2.4	0.42	0.21	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		7.1	0.42	0.21	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		12.1	0.42	0.21	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		13.1	0.42	0.21	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		0.52	0.42	0.21	ug/kg	D5739-06/8270C SIM
Chrysene ^a		3.4	0.42	0.21	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		7.3	0.42	0.21	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		11.1	0.42	0.21	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		11.0	0.42	0.21	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		1.0	0.42	0.21	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		2.7	0.42	0.21	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		0.36 J	0.42	0.21	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		0.29 J	0.42	0.21	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		1.2	0.42	0.21	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		65.7 J	99	64	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		126 J	150	99	mg/kg	SW846-8015B
Aluminum		3380	13		mg/kg	SW846 6010C
Arsenic		4.2	3.2		mg/kg	SW846 6010C
Barium		142	1.3		mg/kg	SW846 6010C
Calcium		10600	51		mg/kg	SW846 6010C
Chromium		6.0	1.3		mg/kg	SW846 6010C
Cobalt		3.7	0.64		mg/kg	SW846 6010C
Copper		7.1	1.3		mg/kg	SW846 6010C
Iron		10000	9.0		mg/kg	SW846 6010C
Magnesium		1570	26		mg/kg	SW846 6010C
Manganese		329	0.64		mg/kg	SW846 6010C
Nickel		7.9	3.9		mg/kg	SW846 6010C

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Potassium		879	260		mg/kg	SW846 6010C
Sodium		99.3	51		mg/kg	SW846 6010C
Vanadium		14.0	1.3		mg/kg	SW846 6010C
Zinc		32.7	3.9		mg/kg	SW846 6010C

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C2-Naphthalenes ^a	35.2	30	15	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	138	30	15	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	432	30	15	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	59.6	30	15	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	256	30	15	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	492	30	15	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	69.4	30	15	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	172	30	15	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	296	30	15	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	164	30	15	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	18.6 J	30	15	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	126	30	15	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	652	30	15	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	1100	30	15	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	456	30	15	ug/kg	D5739-06/8270C SIM
Pyrene ^a	76.7	30	15	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	306	30	15	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	548	30	15	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a	547	30	15	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a	20.9 J	30	15	ug/kg	D5739-06/8270C SIM
Chrysene ^a	143	30	15	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a	330	30	15	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a	468	30	15	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a	455	30	15	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a	41.0	30	15	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a	113	30	15	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a	105	30	15	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a	34.4	30	15	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)	1230	140	92	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	1490	210	140	mg/kg	SW846-8015B

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C2-Naphthalenes ^a	30.7 J	32	16	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	166	32	16	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	522	32	16	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	83.9	32	16	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	352	32	16	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
C3-Fluorenes ^a		664	32	16	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a		222	32	16	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a		368	32	16	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a		222	32	16	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a		19.3 J	32	16	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a		174	32	16	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a		798	32	16	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		1290	32	16	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a		671	32	16	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a		16.9 J	32	16	ug/kg	D5739-06/8270C SIM
Pyrene ^a		107	32	16	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		425	32	16	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		778	32	16	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		835	32	16	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		28.4 J	32	16	ug/kg	D5739-06/8270C SIM
Chrysene ^a		198	32	16	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		472	32	16	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		674	32	16	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		675	32	16	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		56.4	32	16	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		159	32	16	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		18.5 J	32	16	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		51.0	32	16	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		2340	150	99	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		2900	230	150	mg/kg	SW846-8015B

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C2-Naphthalenes ^a	40.0	34	17	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	258	34	17	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	732	34	17	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	117	34	17	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	482	34	17	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	784	34	17	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	108	34	17	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	285	34	17	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	381	34	17	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	241	34	17	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	25.4 J	34	17	ug/kg	D5739-06/8270C SIM
Anthracene ^a	19.7 J	34	17	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	253	34	17	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	990	34	17	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	1560	34	17	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	729	34	17	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a	18.3 J	34	17	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Analyte	Qual	RL	MDL	Units	Method
Pyrene ^a		112		34	17	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		468		34	17	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		838		34	17	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		885		34	17	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		32.5 J		34	17	ug/kg	D5739-06/8270C SIM
Chrysene ^a		212		34	17	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		505		34	17	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		760		34	17	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		762		34	17	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		60.8		34	17	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		164		34	17	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		21.4 J		34	17	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		53.7		34	17	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		2950		160	110	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		3460		250	160	mg/kg	SW846-8015B

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Naphthalene ^a	13.4 J	21	10	ug/kg	D5739-06/8270C SIM
C1-Naphthalenes ^a	230	21	10	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	2100	21	10	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	3020	21	10	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	1960	21	10	ug/kg	D5739-06/8270C SIM
Acenaphthylene ^a	17.3 J	21	10	ug/kg	D5739-06/8270C SIM
Acenaphthene ^a	12.1 J	21	10	ug/kg	D5739-06/8270C SIM
Fluorene ^a	155	21	10	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	640	21	10	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	988	21	10	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	947	21	10	ug/kg	D5739-06/8270C SIM
Dibenzothiophene ^a	68.7	21	10	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	304	21	10	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	456	21	10	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	343	21	10	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	170	21	10	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	400	21	10	ug/kg	D5739-06/8270C SIM
Anthracene ^a	30.3	21	10	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	1480	21	10	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	1820	21	10	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	1240	21	10	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	482	21	10	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a	24.7	21	10	ug/kg	D5739-06/8270C SIM
Pyrene ^a	94.6	21	10	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	438	21	10	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	623	21	10	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a	576	21	10	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Analyte	Qual	RL	MDL	Units	Method
Benzo(a)anthracene ^a		25.5		21	10	ug/kg	D5739-06/8270C SIM
Chrysene ^a		173		21	10	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		329		21	10	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		423		21	10	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		388		21	10	ug/kg	D5739-06/8270C SIM
C4-Benzo(a)anthracenes/Chrysenes ^a		347		21	10	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		33.8		21	10	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		93.6		21	10	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		90.9		21	10	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		26.4		21	10	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		1060		98	64	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		1020		150	98	mg/kg	SW846-8015B

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C2-Naphthalenes ^a	22.7 J	26	13	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	157	26	13	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	494	26	13	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	68.6	26	13	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	255	26	13	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	443	26	13	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	61.0	26	13	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	147	26	13	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	217	26	13	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	140	26	13	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	16.6 J	26	13	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	135	26	13	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	534	26	13	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	847	26	13	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	377	26	13	ug/kg	D5739-06/8270C SIM
Pyrene ^a	68.0	26	13	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	268	26	13	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	436	26	13	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a	464	26	13	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a	16.8 J	26	13	ug/kg	D5739-06/8270C SIM
Chrysene ^a	117	26	13	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a	279	26	13	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a	380	26	13	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a	370	26	13	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a	31.0	26	13	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a	91.2	26	13	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a	27.7	26	13	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)	1600	130	82	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	1790	190	130	mg/kg	SW846-8015B
Aluminum	5730	15		mg/kg	SW846 6010C

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
Arsenic		6.0	3.8		mg/kg	SW846 6010C
Barium		433	1.5		mg/kg	SW846 6010C
Cadmium		1.7	1.5		mg/kg	SW846 6010C
Calcium		25300	61		mg/kg	SW846 6010C
Chromium		9.2	1.5		mg/kg	SW846 6010C
Cobalt		6.2	0.77		mg/kg	SW846 6010C
Copper		14.3	1.5		mg/kg	SW846 6010C
Iron		16200	11		mg/kg	SW846 6010C
Lead		9.3	7.7		mg/kg	SW846 6010C
Magnesium		2660	31		mg/kg	SW846 6010C
Manganese		710	0.77		mg/kg	SW846 6010C
Nickel		14.7	4.6		mg/kg	SW846 6010C
Potassium		1430	310		mg/kg	SW846 6010C
Sodium		88.8	61		mg/kg	SW846 6010C
Vanadium		24.8	1.5		mg/kg	SW846 6010C
Zinc		90.0	4.6		mg/kg	SW846 6010C

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TPH-DRO (C10-C28)	238	120	81	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	539	190	120	mg/kg	SW846-8015B

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Naphthalene ^a	0.92 B	0.56	0.28	ug/kg	D5739-06/8270C SIM
C1-Naphthalenes ^a	1.7	0.56	0.28	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	7.6	0.56	0.28	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	15.5	0.56	0.28	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	15.5	0.56	0.28	ug/kg	D5739-06/8270C SIM
Acenaphthylene ^a	0.48 J	0.56	0.28	ug/kg	D5739-06/8270C SIM
Fluorene ^a	1.1	0.56	0.28	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	4.1	0.56	0.28	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	6.5	0.56	0.28	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	11.1	0.56	0.28	ug/kg	D5739-06/8270C SIM
Dibenzothiophene ^a	0.89	0.56	0.28	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	6.2	0.56	0.28	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	5.9	0.56	0.28	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	6.4	0.56	0.28	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	4.0	0.56	0.28	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	3.5	0.56	0.28	ug/kg	D5739-06/8270C SIM
Anthracene ^a	0.41 J	0.56	0.28	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	16.3	0.56	0.28	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	20.4	0.56	0.28	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	20.3	0.56	0.28	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	13.0	0.56	0.28	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
Fluoranthene ^a		1.3	0.56	0.28	ug/kg	D5739-06/8270C SIM
Pyrene ^a		2.7	0.56	0.28	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		7.8	0.56	0.28	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		15.5	0.56	0.28	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		16.9	0.56	0.28	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		1.3	0.56	0.28	ug/kg	D5739-06/8270C SIM
Chrysene ^a		4.5	0.56	0.28	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		9.0	0.56	0.28	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		17.6	0.56	0.28	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		20.4	0.56	0.28	ug/kg	D5739-06/8270C SIM
C4-Benzo(a)anthracenes/Chrysenes ^a		16.4	0.56	0.28	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		2.1	0.56	0.28	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a		0.68	0.56	0.28	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		5.1	0.56	0.28	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		0.76	0.56	0.28	ug/kg	D5739-06/8270C SIM
Perylene ^a		0.67	0.56	0.28	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a		0.67	0.56	0.28	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		0.68	0.56	0.28	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		2.1	0.56	0.28	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		262	130	86	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		541	200	130	mg/kg	SW846-8015B

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C1-Naphthalenes ^a	73.7 J	78	39	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	938	78	39	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	7120	78	39	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	12300	78	39	ug/kg	D5739-06/8270C SIM
Acenaphthylene ^a	72.7 J	78	39	ug/kg	D5739-06/8270C SIM
Fluorene ^a	88.2	78	39	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	2670	78	39	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	7890	78	39	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	9340	78	39	ug/kg	D5739-06/8270C SIM
Dibenzothiophene ^a	117	78	39	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	1630	78	39	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	3710	78	39	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	3810	78	39	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	1980	78	39	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	381	78	39	ug/kg	D5739-06/8270C SIM
Anthracene ^a	266	78	39	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	6350	78	39	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	15200	78	39	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	15400	78	39	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	6430	78	39	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a	212	78	39	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Pyrene ^a		1210	78	39	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		5110	78	39	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		7830	78	39	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		7620	78	39	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		320	78	39	ug/kg	D5739-06/8270C SIM
Chrysene ^a		2280	78	39	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		4560	78	39	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		5900	78	39	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		5340	78	39	ug/kg	D5739-06/8270C SIM
C4-Benzo(a)anthracenes/Chrysenes ^a		4310	78	39	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		471	78	39	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a		84.8	78	39	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		1370	78	39	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		179	78	39	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a		55.3 J	78	39	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		118	78	39	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		363	78	39	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		10600	930	600	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		9230	1400	930	mg/kg	SW846-8015B
Aluminum		4890	24		mg/kg	SW846 6010C
Arsenic		6.3	6.0		mg/kg	SW846 6010C
Barium		573	2.4		mg/kg	SW846 6010C
Calcium		9150	95		mg/kg	SW846 6010C
Chromium		7.8	2.4		mg/kg	SW846 6010C
Cobalt		5.6	1.2		mg/kg	SW846 6010C
Copper		10	2.4		mg/kg	SW846 6010C
Iron		18300	17		mg/kg	SW846 6010C
Magnesium		1910	48		mg/kg	SW846 6010C
Manganese		838	1.2		mg/kg	SW846 6010C
Nickel		11.2	7.2		mg/kg	SW846 6010C
Potassium		1010	480		mg/kg	SW846 6010C
Vanadium		21.1	2.4		mg/kg	SW846 6010C
Zinc		255	7.2		mg/kg	SW846 6010C

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TPH-DRO (C10-C28)	579	160	100	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)	1580	230	160	mg/kg	SW846-8015B

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Naphthalene ^a	1.2 B	0.44	0.22	ug/kg	D5739-06/8270C SIM
C1-Naphthalenes ^a	1.7	0.44	0.22	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	7.9	0.44	0.22	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	8.4	0.44	0.22	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
C4-Naphthalenes ^a		5.8	0.44	0.22	ug/kg	D5739-06/8270C SIM
Acenaphthylene ^a		0.32 J	0.44	0.22	ug/kg	D5739-06/8270C SIM
Acenaphthene ^a		0.39 J	0.44	0.22	ug/kg	D5739-06/8270C SIM
Fluorene ^a		1.2	0.44	0.22	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a		1.4	0.44	0.22	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a		3.0	0.44	0.22	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a		3.4	0.44	0.22	ug/kg	D5739-06/8270C SIM
Dibenzothiophene ^a		0.80	0.44	0.22	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a		5.0	0.44	0.22	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a		3.0	0.44	0.22	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a		5.6	0.44	0.22	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a		2.1	0.44	0.22	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a		3.0 B	0.44	0.22	ug/kg	D5739-06/8270C SIM
Anthracene ^a		0.37 J	0.44	0.22	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a		4.5	0.44	0.22	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a		4.1	0.44	0.22	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		2.9	0.44	0.22	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a		1.9	0.44	0.22	ug/kg	D5739-06/8270C SIM
Pyrene ^a		3.9	0.44	0.22	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		4.2	0.44	0.22	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		3.7	0.44	0.22	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		2.6	0.44	0.22	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		1.2	0.44	0.22	ug/kg	D5739-06/8270C SIM
Chrysene ^a		1.7	0.44	0.22	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		1.8	0.44	0.22	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		1.6	0.44	0.22	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		1.5	0.44	0.22	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		1.3	0.44	0.22	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a		0.95	0.44	0.22	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		1.3	0.44	0.22	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		0.95	0.44	0.22	ug/kg	D5739-06/8270C SIM
Perylene ^a		7.1	0.44	0.22	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a		0.86	0.44	0.22	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		0.49	0.44	0.22	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		3.0	0.44	0.22	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		107	100	65	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		259	150	100	mg/kg	SW846-8015B

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C1-Naphthalenes ^a	2.3 J	2.5	1.2	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	15.9	2.5	1.2	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	105	2.5	1.2	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	192	2.5	1.2	ug/kg	D5739-06/8270C SIM
Acenaphthylene ^a	1.5 J	2.5	1.2	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Fluorene ^a		1.8 J	2.5	1.2	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a		35.3	2.5	1.2	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a		116	2.5	1.2	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a		163	2.5	1.2	ug/kg	D5739-06/8270C SIM
Dibenzothiophene ^a		2.1 J	2.5	1.2	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a		24.1	2.5	1.2	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a		52.5	2.5	1.2	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a		69.2	2.5	1.2	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a		43.3	2.5	1.2	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a		5.9	2.5	1.2	ug/kg	D5739-06/8270C SIM
Anthracene ^a		3.8	2.5	1.2	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a		74.5	2.5	1.2	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a		221	2.5	1.2	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a		246	2.5	1.2	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a		122	2.5	1.2	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a		3.6	2.5	1.2	ug/kg	D5739-06/8270C SIM
Pyrene ^a		17.2	2.5	1.2	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a		72.7	2.5	1.2	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a		133	2.5	1.2	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a		148	2.5	1.2	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a		5.8	2.5	1.2	ug/kg	D5739-06/8270C SIM
Chrysene ^a		33.6	2.5	1.2	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		80.6	2.5	1.2	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		123	2.5	1.2	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		130	2.5	1.2	ug/kg	D5739-06/8270C SIM
C4-Benzo(a)anthracenes/Chrysenes ^a		110	2.5	1.2	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		9.7	2.5	1.2	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a		1.9 J	2.5	1.2	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		27.2	2.5	1.2	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		3.1	2.5	1.2	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a		1.6 J	2.5	1.2	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		2.8	2.5	1.2	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		8.8	2.5	1.2	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		514	110	74	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		658	170	110	mg/kg	SW846-8015B
Aluminum		6120	15		mg/kg	SW846 6010C
Arsenic		7.0	3.9		mg/kg	SW846 6010C
Barium		296	1.5		mg/kg	SW846 6010C
Cadmium		1.5	1.5		mg/kg	SW846 6010C
Calcium		6770	62		mg/kg	SW846 6010C
Chromium		9.7	1.5		mg/kg	SW846 6010C
Cobalt		6.8	0.77		mg/kg	SW846 6010C
Copper		12.6	1.5		mg/kg	SW846 6010C
Iron		15700	11		mg/kg	SW846 6010C
Lead		9.7	7.7		mg/kg	SW846 6010C

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Magnesium		2300	31		mg/kg	SW846 6010C
Manganese		573	0.77		mg/kg	SW846 6010C
Nickel		14.4	4.6		mg/kg	SW846 6010C
Potassium		1150	310		mg/kg	SW846 6010C
Sodium		80.8	62		mg/kg	SW846 6010C
Vanadium		26.1	1.5		mg/kg	SW846 6010C
Zinc		70.4	4.6		mg/kg	SW846 6010C

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C1-Naphthalenes ^a	58.5 J	68	34	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	768	68	34	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	5940	68	34	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	10300	68	34	ug/kg	D5739-06/8270C SIM
Acenaphthylene ^a	61.0 J	68	34	ug/kg	D5739-06/8270C SIM
Fluorene ^a	74.7	68	34	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	2020	68	34	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	6670	68	34	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	7390	68	34	ug/kg	D5739-06/8270C SIM
Dibenzothiophene ^a	96.5	68	34	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	1330	68	34	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	3300	68	34	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	3270	68	34	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	1640	68	34	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	314	68	34	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	5000	68	34	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	12200	68	34	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	12800	68	34	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	5250	68	34	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a	166	68	34	ug/kg	D5739-06/8270C SIM
Pyrene ^a	1010	68	34	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	4120	68	34	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	6540	68	34	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a	6080	68	34	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a	260	68	34	ug/kg	D5739-06/8270C SIM
Chrysene ^a	1880	68	34	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a	3880	68	34	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a	4600	68	34	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a	4160	68	34	ug/kg	D5739-06/8270C SIM
C4-Benzo(a)anthracenes/Chrysenes ^a	3400	68	34	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a	385	68	34	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a	68.8	68	34	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a	1100	68	34	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a	147	68	34	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a	70.4	68	34	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Dibenzo(a,h)anthracene ^a		156	68	34	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		282	68	34	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		12900	280	180	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		12600	420	280	mg/kg	SW846-8015B
Aluminum		5630	21		mg/kg	SW846 6010C
Arsenic		10	5.2		mg/kg	SW846 6010C
Barium		566	2.1		mg/kg	SW846 6010C
Calcium		8990	84		mg/kg	SW846 6010C
Chromium		8.7	2.1		mg/kg	SW846 6010C
Cobalt		6.4	1.0		mg/kg	SW846 6010C
Copper		11.2	2.1		mg/kg	SW846 6010C
Iron		21700	15		mg/kg	SW846 6010C
Magnesium		2110	42		mg/kg	SW846 6010C
Manganese		915	1.0		mg/kg	SW846 6010C
Nickel		12.8	6.3		mg/kg	SW846 6010C
Potassium		1140	420		mg/kg	SW846 6010C
Vanadium		24.1	2.1		mg/kg	SW846 6010C
Zinc		287	6.3		mg/kg	SW846 6010C

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C1-Naphthalenes ^a	44.7 J	63	32	ug/kg	D5739-06/8270C SIM
C2-Naphthalenes ^a	231	63	32	ug/kg	D5739-06/8270C SIM
C3-Naphthalenes ^a	2100	63	32	ug/kg	D5739-06/8270C SIM
C4-Naphthalenes ^a	5080	63	32	ug/kg	D5739-06/8270C SIM
C1-Fluorenes ^a	816	63	32	ug/kg	D5739-06/8270C SIM
C2-Fluorenes ^a	3180	63	32	ug/kg	D5739-06/8270C SIM
C3-Fluorenes ^a	4300	63	32	ug/kg	D5739-06/8270C SIM
Dibenzothiophene ^a	46.2 J	63	32	ug/kg	D5739-06/8270C SIM
C1-Dibenzothiophenes ^a	595	63	32	ug/kg	D5739-06/8270C SIM
C2-Dibenzothiophenes ^a	1560	63	32	ug/kg	D5739-06/8270C SIM
C3-Dibenzothiophenes ^a	1910	63	32	ug/kg	D5739-06/8270C SIM
C4-Dibenzothiophenes ^a	1070	63	32	ug/kg	D5739-06/8270C SIM
Phenanthrene ^a	58.0 J	63	32	ug/kg	D5739-06/8270C SIM
Anthracene ^a	106	63	32	ug/kg	D5739-06/8270C SIM
C1-Phenanthrenes/Anthracenes ^a	1790	63	32	ug/kg	D5739-06/8270C SIM
C2-Phenanthrenes/Anthracenes ^a	6060	63	32	ug/kg	D5739-06/8270C SIM
C3-Phenanthrenes/Anthracenes ^a	7610	63	32	ug/kg	D5739-06/8270C SIM
C4-Phenanthrenes/Anthracenes ^a	3050	63	32	ug/kg	D5739-06/8270C SIM
Fluoranthene ^a	91.5	63	32	ug/kg	D5739-06/8270C SIM
Pyrene ^a	604	63	32	ug/kg	D5739-06/8270C SIM
C1-Fluoranthenes/Pyrenes ^a	2440	63	32	ug/kg	D5739-06/8270C SIM
C2-Fluoranthenes/Pyrenes ^a	4100	63	32	ug/kg	D5739-06/8270C SIM
C3-Fluoranthenes/Pyrenes ^a	4020	63	32	ug/kg	D5739-06/8270C SIM
Benzo(a)anthracene ^a	152	63	32	ug/kg	D5739-06/8270C SIM

Summary of Hits

Job Number: D35496
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 06/11/12 thru 06/13/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Chrysene ^a		1120	63	32	ug/kg	D5739-06/8270C SIM
C1-Benzo(a)anthracenes/Chrysenes ^a		2330	63	32	ug/kg	D5739-06/8270C SIM
C2-Benzo(a)anthracenes/Chrysenes ^a		3000	63	32	ug/kg	D5739-06/8270C SIM
C3-Benzo(a)anthracenes/Chrysenes ^a		2930	63	32	ug/kg	D5739-06/8270C SIM
C4-Benzo(a)anthracenes/Chrysenes ^a		2260	63	32	ug/kg	D5739-06/8270C SIM
Benzo(b)fluoranthene ^a		241	63	32	ug/kg	D5739-06/8270C SIM
Benzo(k)fluoranthene ^a		47.2 J	63	32	ug/kg	D5739-06/8270C SIM
Benzo(e)pyrene ^a		703	63	32	ug/kg	D5739-06/8270C SIM
Benzo(a)pyrene ^a		92.4	63	32	ug/kg	D5739-06/8270C SIM
Indeno(1,2,3-cd)pyrene ^a		43.3 J	63	32	ug/kg	D5739-06/8270C SIM
Dibenzo(a,h)anthracene ^a		75.5	63	32	ug/kg	D5739-06/8270C SIM
Benzo(g,h,i)perylene ^a		186	63	32	ug/kg	D5739-06/8270C SIM
TPH-DRO (C10-C28)		8240	260	170	mg/kg	SW846-8015B
TPH-ORO (> C28-C40)		8430	380	260	mg/kg	SW846-8015B

D35496-48 **LP-SW-012_061312**

No hits reported in this sample.

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.



Sample Results

Report of Analysis

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Report of Analysis

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Client Sample ID:	LP-SW-004_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-1	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2569.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127
Run #2 ^a	W2569A.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127

	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2	1030 ml	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.0075	0.0097	0.0049	ug/l	J
	C1-Naphthalenes	0.0093	0.0097	0.0049	ug/l	J
	C2-Naphthalenes	0.026	0.0097	0.0049	ug/l	
	C3-Naphthalenes	0.042	0.0097	0.0049	ug/l	
	C4-Naphthalenes	0.24	0.0097	0.0049	ug/l	
208-96-8	Acenaphthylene	0.012	0.0097	0.0049	ug/l	
83-32-9	Acenaphthene	ND	0.0097	0.0049	ug/l	
86-73-7	Fluorene	0.0072	0.0097	0.0049	ug/l	J
	C1-Fluorenes	0.048	0.0097	0.0049	ug/l	
	C2-Fluorenes	0.14	0.0097	0.0049	ug/l	
	C3-Fluorenes	0.48	0.0097	0.0049	ug/l	
132-65-0	Dibenzothiophene	ND	0.0097	0.0049	ug/l	
	C1-Dibenzothiophenes	0.086	0.0097	0.0049	ug/l	
	C2-Dibenzothiophenes	0.14	0.0097	0.0049	ug/l	
	C3-Dibenzothiophenes	0.39	0.0097	0.0049	ug/l	
	C4-Dibenzothiophenes	0.33	0.0097	0.0049	ug/l	
85-01-8	Phenanthrene	0.0085	0.0097	0.0049	ug/l	JB
120-12-7	Anthracene	0.0077	0.0097	0.0049	ug/l	J
	C1-Phenanthrenes/Anthracene	0.061	0.0097	0.0049	ug/l	
	C2-Phenanthrenes/Anthracene	0.36	0.0097	0.0049	ug/l	
	C3-Phenanthrenes/Anthracene	1.3	0.0097	0.0049	ug/l	
	C4-Phenanthrenes/Anthracene	0.92	0.0097	0.0049	ug/l	
206-44-0	Fluoranthene	0.016	0.0097	0.0049	ug/l	
129-00-0	Pyrene	0.15	0.0097	0.0049	ug/l	
	C1-Fluoranthenes/Pyrenes	0.62	0.0097	0.0049	ug/l	
	C2-Fluoranthenes/Pyrenes	1.1	0.0097	0.0049	ug/l	
	C3-Fluoranthenes/Pyrenes	1.2	0.0097	0.0049	ug/l	
56-55-3	Benzo(a)anthracene	0.040	0.0097	0.0049	ug/l	
218-01-9	Chrysene	0.29	0.0097	0.0049	ug/l	
	C1-Benzo(a)anthracenes/Chrys	0.66	0.0097	0.0049	ug/l	
	C2-Benzo(a)anthracenes/Chrys	1.0	0.0097	0.0049	ug/l	
	C3-Benzo(a)anthracenes/Chrys	0.99	0.0097	0.0049	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	LP-SW-004_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-1	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	0.81	0.0097	0.0049	ug/l	
205-99-2	Benzo(b)fluoranthene	0.077	0.0097	0.0049	ug/l	
207-08-9	Benzo(k)fluoranthene	0.015	0.0097	0.0049	ug/l	
192-97-2	Benzo(e)pyrene	0.24	0.0097	0.0049	ug/l	
50-32-8	Benzo(a)pyrene	0.032 ^b	0.0097	0.0049	ug/l	
198-55-0	Perylene	ND	0.0097	0.0049	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.026 ^b	0.0097	0.0049	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.052	0.0097	0.0049	ug/l	B
191-24-2	Benzo(g,h,i)perylene	0.076	0.0097	0.0049	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	64%		40-120%
1517-22-2	Phenanthrene-d10	66%		40-120%
	Perylene-d12	93%		40-120%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Report of Analysis

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Client Sample ID:	LP-SW-004_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-1	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846-8015B SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06173.D	1	06/26/12	AV	06/15/12	OP6072	GFI449
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	0.718	0.20	0.13	mg/l	
	TPH-ORO (> C28-C40)	0.911	0.30	0.20	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	84%		25-146%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SW-004_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-1	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	36549247.00000		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	6260	100	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Antimony	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Arsenic	< 25	25	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Barium	608	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Beryllium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cadmium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Calcium	72000	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Chromium	10.2	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cobalt	7.5	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Copper	15.0	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Iron	21600	70	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Lead	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Magnesium	13100	200	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Manganese	1220	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.10	0.10	ug/l	1	06/18/12	06/18/12 JB	SW846 7470A ²	SW846 7470A ⁴
Nickel	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Potassium	3480	1000	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Selenium	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Silver	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Sodium	13300	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Thallium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Vanadium	29.6	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Zinc	132	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2520

(3) Prep QC Batch: MP7673

(4) Prep QC Batch: MP7684

RL = Reporting Limit

Report of Analysis

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Client Sample ID: LP-SW-004_061312
Lab Sample ID: D35496-1F
Matrix: AQ - Water Filtered
Project: 36549247.00000

Date Sampled: 06/13/12
Date Received: 06/14/12
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Antimony	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Arsenic	< 25	25	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Barium	142	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Beryllium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cadmium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Calcium	49300	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Chromium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cobalt	< 5.0	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Copper	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Iron	387	70	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Lead	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Magnesium	10200	200	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Manganese	198	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Mercury	< 0.10	0.10	ug/l	1	07/03/12	07/03/12 JB	SW846 7470A ²	SW846 7470A ³
Nickel	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Potassium	1860	1000	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Selenium	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Silver	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Sodium	12900	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Thallium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Vanadium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Zinc	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴

(1) Instrument QC Batch: MA2568

(2) Instrument QC Batch: MA2569

(3) Prep QC Batch: MP7803

(4) Prep QC Batch: MP7805

RL = Reporting Limit

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Report of Analysis

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Client Sample ID:	LP-SW-005_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-2	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2570.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127
Run #2 ^a	W2570A.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127

	Initial Volume	Final Volume
Run #1	1010 ml	1.0 ml
Run #2	1010 ml	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.0062	0.0099	0.0050	ug/l	J
	C1-Naphthalenes	0.0089	0.0099	0.0050	ug/l	J
	C2-Naphthalenes	0.025	0.0099	0.0050	ug/l	
	C3-Naphthalenes	0.029	0.0099	0.0050	ug/l	
	C4-Naphthalenes	0.10	0.0099	0.0050	ug/l	
208-96-8	Acenaphthylene	ND	0.0099	0.0050	ug/l	
83-32-9	Acenaphthene	ND	0.0099	0.0050	ug/l	
86-73-7	Fluorene	0.0061	0.0099	0.0050	ug/l	J
	C1-Fluorenes	ND	0.0099	0.0050	ug/l	
	C2-Fluorenes	ND	0.0099	0.0050	ug/l	
	C3-Fluorenes	0.20	0.0099	0.0050	ug/l	
132-65-0	Dibenzothiophene	ND	0.0099	0.0050	ug/l	
	C1-Dibenzothiophenes	ND	0.0099	0.0050	ug/l	
	C2-Dibenzothiophenes	0.058	0.0099	0.0050	ug/l	
	C3-Dibenzothiophenes	0.15	0.0099	0.0050	ug/l	
	C4-Dibenzothiophenes	0.13	0.0099	0.0050	ug/l	
85-01-8	Phenanthrene	ND	0.0099	0.0050	ug/l	
120-12-7	Anthracene	ND	0.0099	0.0050	ug/l	
	C1-Phenanthrenes/Anthracene	ND	0.0099	0.0050	ug/l	
	C2-Phenanthrenes/Anthracene	0.19	0.0099	0.0050	ug/l	
	C3-Phenanthrenes/Anthracene	0.48	0.0099	0.0050	ug/l	
	C4-Phenanthrenes/Anthracene	0.33	0.0099	0.0050	ug/l	
206-44-0	Fluoranthene	0.0070	0.0099	0.0050	ug/l	J
129-00-0	Pyrene	0.061	0.0099	0.0050	ug/l	
	C1-Fluoranthenes/Pyrenes	0.26	0.0099	0.0050	ug/l	
	C2-Fluoranthenes/Pyrenes	0.39	0.0099	0.0050	ug/l	
	C3-Fluoranthenes/Pyrenes	0.46	0.0099	0.0050	ug/l	
56-55-3	Benzo(a)anthracene	0.0095	0.0099	0.0050	ug/l	J
218-01-9	Chrysene	0.098	0.0099	0.0050	ug/l	
	C1-Benzo(a)anthracenes/Chrys	0.24	0.0099	0.0050	ug/l	
	C2-Benzo(a)anthracenes/Chrys	0.39	0.0099	0.0050	ug/l	
	C3-Benzo(a)anthracenes/Chrys	0.43	0.0099	0.0050	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	LP-SW-005_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-2	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	0.34	0.0099	0.0050	ug/l	
205-99-2	Benzo(b)fluoranthene	0.032	0.0099	0.0050	ug/l	
207-08-9	Benzo(k)fluoranthene	0.0073	0.0099	0.0050	ug/l	J
192-97-2	Benzo(e)pyrene	0.091	0.0099	0.0050	ug/l	
50-32-8	Benzo(a)pyrene	0.015 ^b	0.0099	0.0050	ug/l	
198-55-0	Perylene	ND	0.0099	0.0050	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.0097 ^b	0.0099	0.0050	ug/l	J
53-70-3	Dibenzo(a,h)anthracene	0.019	0.0099	0.0050	ug/l	B
191-24-2	Benzo(g,h,i)perylene	0.034	0.0099	0.0050	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	57%		40-120%
1517-22-2	Phenanthrene-d10	60%		40-120%
	Perylene-d12	99%		40-120%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SW-005_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-2	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846-8015B SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06174.D	1	06/26/12	AV	06/15/12	OP6072	GFI449
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	1.13	0.20	0.13	mg/l	
	TPH-ORO (> C28-C40)	1.45	0.30	0.20	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	63%		25-146%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SW-005_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-2	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	36549247.00000		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	6870	100	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Antimony	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Arsenic	< 25	25	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Barium	430	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Beryllium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cadmium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Calcium	59100	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Chromium	10.3	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cobalt	6.0	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Copper	13.8	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Iron	16600	70	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Lead	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Magnesium	15800	200	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Manganese	1210	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.10	0.10	ug/l	1	06/18/12	06/18/12 JB	SW846 7470A ²	SW846 7470A ⁴
Nickel	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Potassium	2670	1000	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Selenium	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Silver	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Sodium	16000	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Thallium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Vanadium	29.1	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Zinc	122	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2520

(3) Prep QC Batch: MP7673

(4) Prep QC Batch: MP7684

RL = Reporting Limit

Report of Analysis

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Client Sample ID: LP-SW-005_061312
Lab Sample ID: D35496-2F
Matrix: AQ - Water Filtered
Project: 36549247.00000

Date Sampled: 06/13/12
Date Received: 06/14/12
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Antimony	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Arsenic	< 25	25	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Barium	245	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Beryllium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cadmium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Calcium	51000	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Chromium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cobalt	< 5.0	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Copper	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Iron	216	70	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Lead	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Magnesium	12600	200	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Manganese	1190	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Mercury	< 0.10	0.10	ug/l	1	07/03/12	07/03/12 JB	SW846 7470A ²	SW846 7470A ³
Nickel	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Potassium	1270	1000	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Selenium	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Silver	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Sodium	15000	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Thallium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Vanadium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Zinc	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴

(1) Instrument QC Batch: MA2568

(2) Instrument QC Batch: MA2569

(3) Prep QC Batch: MP7803

(4) Prep QC Batch: MP7805

RL = Reporting Limit

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Client Sample ID:	LP-SW-006_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-3	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2571.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127
Run #2 ^a	W2571A.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127

	Initial Volume	Final Volume
Run #1	960 ml	1.0 ml
Run #2	960 ml	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	0.010	0.0052	ug/l	
	C1-Naphthalenes	0.010	0.010	0.0052	ug/l	
	C2-Naphthalenes	0.0084	0.010	0.0052	ug/l	J
	C3-Naphthalenes	0.0080	0.010	0.0052	ug/l	J
	C4-Naphthalenes	0.0090	0.010	0.0052	ug/l	J
208-96-8	Acenaphthylene	ND	0.010	0.0052	ug/l	
83-32-9	Acenaphthene	ND	0.010	0.0052	ug/l	
86-73-7	Fluorene	0.0076	0.010	0.0052	ug/l	J
	C1-Fluorenes	0.0061	0.010	0.0052	ug/l	J
	C2-Fluorenes	ND	0.010	0.0052	ug/l	
	C3-Fluorenes	ND	0.010	0.0052	ug/l	
132-65-0	Dibenzothiophene	ND	0.010	0.0052	ug/l	
	C1-Dibenzothiophenes	ND	0.010	0.0052	ug/l	
	C2-Dibenzothiophenes	ND	0.010	0.0052	ug/l	
	C3-Dibenzothiophenes	ND	0.010	0.0052	ug/l	
	C4-Dibenzothiophenes	ND	0.010	0.0052	ug/l	
85-01-8	Phenanthrene	0.0093	0.010	0.0052	ug/l	JB
120-12-7	Anthracene	ND	0.010	0.0052	ug/l	
	C1-Phenanthrenes/Anthracene	0.0057	0.010	0.0052	ug/l	J
	C2-Phenanthrenes/Anthracene	0.0080	0.010	0.0052	ug/l	J
	C3-Phenanthrenes/Anthracene	0.0053	0.010	0.0052	ug/l	J
	C4-Phenanthrenes/Anthracene	ND	0.010	0.0052	ug/l	
206-44-0	Fluoranthene	ND	0.010	0.0052	ug/l	
129-00-0	Pyrene	ND	0.010	0.0052	ug/l	
	C1-Fluoranthenes/Pyrenes	ND	0.010	0.0052	ug/l	
	C2-Fluoranthenes/Pyrenes	ND	0.010	0.0052	ug/l	
	C3-Fluoranthenes/Pyrenes	ND	0.010	0.0052	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.010	0.0052	ug/l	
218-01-9	Chrysene	ND	0.010	0.0052	ug/l	
	C1-Benzo(a)anthracenes/Chrys	ND	0.010	0.0052	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.010	0.0052	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.010	0.0052	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SW-006_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-3	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	0.010	0.0052	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.010	0.0052	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.010	0.0052	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.010	0.0052	ug/l	
50-32-8	Benzo(a)pyrene	ND ^b	0.010	0.0052	ug/l	
198-55-0	Perylene	ND	0.010	0.0052	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	0.010	0.0052	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.010	0.0052	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.010	0.0052	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	46%		40-120%
1517-22-2	Phenanthrene-d10	52%		40-120%
	Perylene-d12	65%		40-120%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SW-006_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-3	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846-8015B SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06168.D	1	06/26/12	AV	06/15/12	OP6072	GFI449
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.13	mg/l	
	TPH-ORO (> C28-C40)	ND	0.30	0.20	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	75%		25-146%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SW-006_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-3	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	36549247.00000		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Antimony	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Arsenic	< 25	25	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Barium	54.5	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Beryllium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cadmium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Calcium	64600	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Chromium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cobalt	< 5.0	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Copper	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Iron	458	70	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Lead	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Magnesium	19400	200	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Manganese	77.4	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.10	0.10	ug/l	1	06/18/12	06/18/12 JB	SW846 7470A ²	SW846 7470A ⁴
Nickel	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Potassium	< 1000	1000	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Selenium	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Silver	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Sodium	8010	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Thallium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Vanadium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Zinc	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2520

(3) Prep QC Batch: MP7673

(4) Prep QC Batch: MP7684

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	LP-SW-006_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-3F	Date Received:	06/14/12
Matrix:	AQ - Water Filtered	Percent Solids:	n/a
Project:	36549247.00000		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Antimony	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Arsenic	< 25	25	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Barium	50.8	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Beryllium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cadmium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Calcium	64500	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Chromium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cobalt	< 5.0	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Copper	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Iron	105	70	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Lead	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Magnesium	19200	200	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Manganese	51.2	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Mercury	< 0.10	0.10	ug/l	1	07/03/12	07/03/12 JB	SW846 7470A ²	SW846 7470A ³
Nickel	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Potassium	< 1000	1000	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Selenium	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Silver	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Sodium	7800	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Thallium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Vanadium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Zinc	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴

(1) Instrument QC Batch: MA2568

(2) Instrument QC Batch: MA2569

(3) Prep QC Batch: MP7803

(4) Prep QC Batch: MP7805

RL = Reporting Limit

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Client Sample ID:	LP-SW-007_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-4	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2572.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127
Run #2 ^a	W2572A.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127

	Initial Volume	Final Volume
Run #1	1010 ml	1.0 ml
Run #2	1010 ml	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.0058	0.0099	0.0050	ug/l	J
	C1-Naphthalenes	0.012	0.0099	0.0050	ug/l	
	C2-Naphthalenes	0.0098	0.0099	0.0050	ug/l	J
	C3-Naphthalenes	0.011	0.0099	0.0050	ug/l	
	C4-Naphthalenes	0.016	0.0099	0.0050	ug/l	
208-96-8	Acenaphthylene	ND	0.0099	0.0050	ug/l	
83-32-9	Acenaphthene	ND	0.0099	0.0050	ug/l	
86-73-7	Fluorene	0.0082	0.0099	0.0050	ug/l	J
	C1-Fluorenes	ND	0.0099	0.0050	ug/l	
	C2-Fluorenes	0.015	0.0099	0.0050	ug/l	
	C3-Fluorenes	ND	0.0099	0.0050	ug/l	
132-65-0	Dibenzothiophene	ND	0.0099	0.0050	ug/l	
	C1-Dibenzothiophenes	ND	0.0099	0.0050	ug/l	
	C2-Dibenzothiophenes	0.0074	0.0099	0.0050	ug/l	J
	C3-Dibenzothiophenes	0.013	0.0099	0.0050	ug/l	
	C4-Dibenzothiophenes	0.010	0.0099	0.0050	ug/l	
85-01-8	Phenanthrene	0.0096	0.0099	0.0050	ug/l	JB
120-12-7	Anthracene	ND	0.0099	0.0050	ug/l	
	C1-Phenanthrenes/Anthracene	0.0067	0.0099	0.0050	ug/l	J
	C2-Phenanthrenes/Anthracene	0.020	0.0099	0.0050	ug/l	
	C3-Phenanthrenes/Anthracene	0.037	0.0099	0.0050	ug/l	
	C4-Phenanthrenes/Anthracene	0.024	0.0099	0.0050	ug/l	
206-44-0	Fluoranthene	ND	0.0099	0.0050	ug/l	
129-00-0	Pyrene	0.010	0.0099	0.0050	ug/l	
	C1-Fluoranthenes/Pyrenes	0.025	0.0099	0.0050	ug/l	
	C2-Fluoranthenes/Pyrenes	0.034	0.0099	0.0050	ug/l	
	C3-Fluoranthenes/Pyrenes	0.030	0.0099	0.0050	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.0099	0.0050	ug/l	
218-01-9	Chrysene	0.012	0.0099	0.0050	ug/l	
	C1-Benzo(a)anthracenes/Chrys	0.018	0.0099	0.0050	ug/l	
	C2-Benzo(a)anthracenes/Chrys	0.026	0.0099	0.0050	ug/l	
	C3-Benzo(a)anthracenes/Chrys	0.026	0.0099	0.0050	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	LP-SW-007_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-4	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	0.0099	0.0050	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.0099	0.0050	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.0099	0.0050	ug/l	
192-97-2	Benzo(e)pyrene	0.0076	0.0099	0.0050	ug/l	J
50-32-8	Benzo(a)pyrene	ND ^b	0.0099	0.0050	ug/l	
198-55-0	Perylene	ND	0.0099	0.0050	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	0.0099	0.0050	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0099	0.0050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.0099	0.0050	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	71%		40-120%
1517-22-2	Phenanthrene-d10	73%		40-120%
	Perylene-d12	88%		40-120%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SW-007_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-4	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846-8015B SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06169.D	1	06/26/12	AV	06/15/12	OP6072	GFI449
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.13	mg/l	
	TPH-ORO (> C28-C40)	ND	0.30	0.20	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	71%		25-146%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SW-007_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-4	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	36549247.00000		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	264	100	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Antimony	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Arsenic	< 25	25	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Barium	195	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Beryllium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cadmium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Calcium	29500	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Chromium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cobalt	< 5.0	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Copper	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Iron	796	70	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Lead	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Magnesium	6080	200	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Manganese	98.1	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.10	0.10	ug/l	1	06/18/12	06/18/12 JB	SW846 7470A ²	SW846 7470A ⁴
Nickel	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Potassium	1360	1000	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Selenium	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Silver	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Sodium	24700	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Thallium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Vanadium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Zinc	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2520

(3) Prep QC Batch: MP7673

(4) Prep QC Batch: MP7684

RL = Reporting Limit

Report of Analysis

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Client Sample ID: LP-SW-007_061212
Lab Sample ID: D35496-4F
Matrix: AQ - Water Filtered
Project: 36549247.00000

Date Sampled: 06/12/12
Date Received: 06/14/12
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Antimony	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Arsenic	< 25	25	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Barium	177	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Beryllium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cadmium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Calcium	29500	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Chromium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cobalt	< 5.0	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Copper	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Iron	218	70	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Lead	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Magnesium	5980	200	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Manganese	71.6	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Mercury	< 0.10	0.10	ug/l	1	07/03/12	07/03/12 JB	SW846 7470A ²	SW846 7470A ³
Nickel	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Potassium	1190	1000	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Selenium	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Silver	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Sodium	24300	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Thallium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Vanadium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Zinc	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴

(1) Instrument QC Batch: MA2568

(2) Instrument QC Batch: MA2569

(3) Prep QC Batch: MP7803

(4) Prep QC Batch: MP7805

RL = Reporting Limit

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Client Sample ID:	LP-SW-008_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-5	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2573.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127
Run #2 ^a	W2573A.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127

	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2	1020 ml	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	0.0098	0.0049	ug/l	
	C1-Naphthalenes	0.0063	0.0098	0.0049	ug/l	J
	C2-Naphthalenes	ND	0.0098	0.0049	ug/l	
	C3-Naphthalenes	0.0084	0.0098	0.0049	ug/l	J
	C4-Naphthalenes	ND	0.0098	0.0049	ug/l	
208-96-8	Acenaphthylene	ND	0.0098	0.0049	ug/l	
83-32-9	Acenaphthene	ND	0.0098	0.0049	ug/l	
86-73-7	Fluorene	0.0051	0.0098	0.0049	ug/l	J
	C1-Fluorenes	0.0056	0.0098	0.0049	ug/l	J
	C2-Fluorenes	ND	0.0098	0.0049	ug/l	
	C3-Fluorenes	ND	0.0098	0.0049	ug/l	
132-65-0	Dibenzothiophene	ND	0.0098	0.0049	ug/l	
	C1-Dibenzothiophenes	ND	0.0098	0.0049	ug/l	
	C2-Dibenzothiophenes	ND	0.0098	0.0049	ug/l	
	C3-Dibenzothiophenes	ND	0.0098	0.0049	ug/l	
	C4-Dibenzothiophenes	ND	0.0098	0.0049	ug/l	
85-01-8	Phenanthrene	0.0085	0.0098	0.0049	ug/l	JB
120-12-7	Anthracene	ND	0.0098	0.0049	ug/l	
	C1-Phenanthrenes/Anthracene	0.0052	0.0098	0.0049	ug/l	J
	C2-Phenanthrenes/Anthracene	0.0052	0.0098	0.0049	ug/l	J
	C3-Phenanthrenes/Anthracene	ND	0.0098	0.0049	ug/l	
	C4-Phenanthrenes/Anthracene	ND	0.0098	0.0049	ug/l	
206-44-0	Fluoranthene	ND	0.0098	0.0049	ug/l	
129-00-0	Pyrene	ND	0.0098	0.0049	ug/l	
	C1-Fluoranthenes/Pyrenes	ND	0.0098	0.0049	ug/l	
	C2-Fluoranthenes/Pyrenes	ND	0.0098	0.0049	ug/l	
	C3-Fluoranthenes/Pyrenes	ND	0.0098	0.0049	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.0098	0.0049	ug/l	
218-01-9	Chrysene	ND	0.0098	0.0049	ug/l	
	C1-Benzo(a)anthracenes/Chrys	ND	0.0098	0.0049	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.0098	0.0049	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.0098	0.0049	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SW-008_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-5	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	0.0098	0.0049	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.0098	0.0049	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.0098	0.0049	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.0098	0.0049	ug/l	
50-32-8	Benzo(a)pyrene	ND ^b	0.0098	0.0049	ug/l	
198-55-0	Perylene	ND	0.0098	0.0049	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	0.0098	0.0049	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.0052	0.0098	0.0049	ug/l	JB
191-24-2	Benzo(g,h,i)perylene	ND	0.0098	0.0049	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	79%		40-120%
1517-22-2	Phenanthrene-d10	83%		40-120%
	Perylene-d12	83%		40-120%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SW-008_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-5	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846-8015B SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06170.D	1	06/26/12	AV	06/15/12	OP6072	GFI449
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.13	mg/l	
	TPH-ORO (> C28-C40)	ND	0.30	0.20	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	79%		25-146%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SW-008_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-5	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	36549247.00000		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Antimony	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Arsenic	< 25	25	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Barium	65.6	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Beryllium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cadmium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Calcium	46700	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Chromium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cobalt	< 5.0	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Copper	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Iron	492	70	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Lead	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Magnesium	17800	200	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Manganese	131	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.10	0.10	ug/l	1	06/18/12	06/18/12 JB	SW846 7470A ²	SW846 7470A ⁴
Nickel	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Potassium	< 1000	1000	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Selenium	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Silver	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Sodium	5500	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Thallium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Vanadium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Zinc	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2520

(3) Prep QC Batch: MP7673

(4) Prep QC Batch: MP7684

RL = Reporting Limit

Report of Analysis

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Client Sample ID:	LP-SW-008_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-5F	Date Received:	06/14/12
Matrix:	AQ - Water Filtered	Percent Solids:	n/a
Project:	36549247.00000		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Antimony	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Arsenic	< 25	25	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Barium	60.2	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Beryllium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cadmium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Calcium	46300	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Chromium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cobalt	< 5.0	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Copper	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Iron	< 70	70	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Lead	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Magnesium	17500	200	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Manganese	96.1	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Mercury	< 0.10	0.10	ug/l	1	07/03/12	07/03/12 JB	SW846 7470A ²	SW846 7470A ³
Nickel	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Potassium	< 1000	1000	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Selenium	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Silver	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Sodium	5340	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Thallium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Vanadium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Zinc	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴

(1) Instrument QC Batch: MA2568

(2) Instrument QC Batch: MA2569

(3) Prep QC Batch: MP7803

(4) Prep QC Batch: MP7805

RL = Reporting Limit

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Report of Analysis

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Client Sample ID:	LP-SW-009_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-6	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2576.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127
Run #2 ^a	W2576A.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2	1040 ml	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	0.0096	0.0048	ug/l	
	C1-Naphthalenes	ND	0.0096	0.0048	ug/l	
	C2-Naphthalenes	ND	0.0096	0.0048	ug/l	
	C3-Naphthalenes	0.038	0.0096	0.0048	ug/l	
	C4-Naphthalenes	0.16	0.0096	0.0048	ug/l	
208-96-8	Acenaphthylene	ND	0.0096	0.0048	ug/l	
83-32-9	Acenaphthene	ND	0.0096	0.0048	ug/l	
86-73-7	Fluorene	ND	0.0096	0.0048	ug/l	
	C1-Fluorenes	0.011	0.0096	0.0048	ug/l	
	C2-Fluorenes	ND	0.0096	0.0048	ug/l	
	C3-Fluorenes	0.19	0.0096	0.0048	ug/l	
132-65-0	Dibenzothiophene	0.0053	0.0096	0.0048	ug/l	J
	C1-Dibenzothiophenes	0.15	0.0096	0.0048	ug/l	
	C2-Dibenzothiophenes	0.074	0.0096	0.0048	ug/l	
	C3-Dibenzothiophenes	ND	0.0096	0.0048	ug/l	
	C4-Dibenzothiophenes	ND	0.0096	0.0048	ug/l	
85-01-8	Phenanthrene	0.0058	0.0096	0.0048	ug/l	JB
120-12-7	Anthracene	ND	0.0096	0.0048	ug/l	
	C1-Phenanthrenes/Anthracene	0.023	0.0096	0.0048	ug/l	
	C2-Phenanthrenes/Anthracene	0.060	0.0096	0.0048	ug/l	
	C3-Phenanthrenes/Anthracene	0.16	0.0096	0.0048	ug/l	
	C4-Phenanthrenes/Anthracene	0.073	0.0096	0.0048	ug/l	
206-44-0	Fluoranthene	ND	0.0096	0.0048	ug/l	
129-00-0	Pyrene	0.031	0.0096	0.0048	ug/l	
	C1-Fluoranthenes/Pyrenes	0.064	0.0096	0.0048	ug/l	
	C2-Fluoranthenes/Pyrenes	0.15	0.0096	0.0048	ug/l	
	C3-Fluoranthenes/Pyrenes	0.14	0.0096	0.0048	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.0096	0.0048	ug/l	
218-01-9	Chrysene	0.045	0.0096	0.0048	ug/l	
	C1-Benzo(a)anthracenes/Chrys	0.062	0.0096	0.0048	ug/l	
	C2-Benzo(a)anthracenes/Chrys	0.072	0.0096	0.0048	ug/l	
	C3-Benzo(a)anthracenes/Chrys	0.057	0.0096	0.0048	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SW-009_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-6	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	0.0096	0.0048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.0085	0.0096	0.0048	ug/l	J
207-08-9	Benzo(k)fluoranthene	ND	0.0096	0.0048	ug/l	
192-97-2	Benzo(e)pyrene	0.022	0.0096	0.0048	ug/l	
50-32-8	Benzo(a)pyrene	ND ^b	0.0096	0.0048	ug/l	
198-55-0	Perylene	ND	0.0096	0.0048	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.0060 ^b	0.0096	0.0048	ug/l	J
53-70-3	Dibenzo(a,h)anthracene	0.013	0.0096	0.0048	ug/l	B
191-24-2	Benzo(g,h,i)perylene	0.0082	0.0096	0.0048	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	40%		40-120%
1517-22-2	Phenanthrene-d10	47%		40-120%
	Perylene-d12	92%		40-120%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SW-009_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-6	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846-8015B SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06171.D	1	06/26/12	AV	06/15/12	OP6072	GFI449
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	0.377	0.19	0.12	mg/l	
	TPH-ORO (> C28-C40)	ND	0.29	0.19	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	75%		25-146%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SW-009_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-6	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	36549247.00000		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Antimony	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Arsenic	< 25	25	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Barium	4450	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Beryllium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cadmium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Calcium	26300	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Chromium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cobalt	< 5.0	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Copper	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Iron	566	70	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Lead	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Magnesium	10500	200	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Manganese	134	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.10	0.10	ug/l	1	06/18/12	06/18/12 JB	SW846 7470A ²	SW846 7470A ⁴
Nickel	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Potassium	13100	1000	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Selenium	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Silver	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Sodium	401000	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Thallium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Vanadium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Zinc	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2520

(3) Prep QC Batch: MP7673

(4) Prep QC Batch: MP7684

RL = Reporting Limit

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Client Sample ID:	LP-SW-009_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-6F	Date Received:	06/14/12
Matrix:	AQ - Water Filtered	Percent Solids:	n/a
Project:	36549247.00000		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Antimony	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Arsenic	< 25	25	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Barium	4250	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Beryllium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cadmium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Calcium	25100	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Chromium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cobalt	< 5.0	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Copper	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Iron	< 70	70	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Lead	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Magnesium	10600	200	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Manganese	23.4	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Mercury	< 0.10	0.10	ug/l	1	07/03/12	07/03/12 JB	SW846 7470A ²	SW846 7470A ³
Nickel	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Potassium	12900	1000	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Selenium	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Silver	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Sodium	401000	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Thallium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Vanadium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Zinc	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴

(1) Instrument QC Batch: MA2568

(2) Instrument QC Batch: MA2569

(3) Prep QC Batch: MP7803

(4) Prep QC Batch: MP7805

RL = Reporting Limit

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Client Sample ID:	LP-SW-011_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-7	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2577.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127
Run #2 ^a	W2577A.D	1	07/04/12	AMA	06/19/12	M:OP29323	M:MSW127

	Initial Volume	Final Volume
Run #1	1010 ml	1.0 ml
Run #2	1010 ml	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.011	0.0099	0.0050	ug/l	
	C1-Naphthalenes	0.0073	0.0099	0.0050	ug/l	J
	C2-Naphthalenes	0.0070	0.0099	0.0050	ug/l	J
	C3-Naphthalenes	0.0058	0.0099	0.0050	ug/l	J
	C4-Naphthalenes	ND	0.0099	0.0050	ug/l	
208-96-8	Acenaphthylene	ND	0.0099	0.0050	ug/l	
83-32-9	Acenaphthene	ND	0.0099	0.0050	ug/l	
86-73-7	Fluorene	ND	0.0099	0.0050	ug/l	
	C1-Fluorenes	ND	0.0099	0.0050	ug/l	
	C2-Fluorenes	ND	0.0099	0.0050	ug/l	
	C3-Fluorenes	ND	0.0099	0.0050	ug/l	
132-65-0	Dibenzothiophene	ND	0.0099	0.0050	ug/l	
	C1-Dibenzothiophenes	ND	0.0099	0.0050	ug/l	
	C2-Dibenzothiophenes	ND	0.0099	0.0050	ug/l	
	C3-Dibenzothiophenes	ND	0.0099	0.0050	ug/l	
	C4-Dibenzothiophenes	ND	0.0099	0.0050	ug/l	
85-01-8	Phenanthrene	ND	0.0099	0.0050	ug/l	
120-12-7	Anthracene	ND	0.0099	0.0050	ug/l	
	C1-Phenanthrenes/Anthracene	0.0058	0.0099	0.0050	ug/l	J
	C2-Phenanthrenes/Anthracene	0.0061	0.0099	0.0050	ug/l	J
	C3-Phenanthrenes/Anthracene	ND	0.0099	0.0050	ug/l	
	C4-Phenanthrenes/Anthracene	ND	0.0099	0.0050	ug/l	
206-44-0	Fluoranthene	ND	0.0099	0.0050	ug/l	
129-00-0	Pyrene	ND	0.0099	0.0050	ug/l	
	C1-Fluoranthenes/Pyrenes	ND	0.0099	0.0050	ug/l	
	C2-Fluoranthenes/Pyrenes	ND	0.0099	0.0050	ug/l	
	C3-Fluoranthenes/Pyrenes	ND	0.0099	0.0050	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.0099	0.0050	ug/l	
218-01-9	Chrysene	ND	0.0099	0.0050	ug/l	
	C1-Benzo(a)anthracenes/Chrys	ND	0.0099	0.0050	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.0099	0.0050	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.0099	0.0050	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SW-011_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-7	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	D5739-06/8270C SIM SW846 3510C		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	0.0099	0.0050	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.0099	0.0050	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.0099	0.0050	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.0099	0.0050	ug/l	
50-32-8	Benzo(a)pyrene	ND ^b	0.0099	0.0050	ug/l	
198-55-0	Perylene	ND	0.0099	0.0050	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	0.0099	0.0050	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0099	0.0050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.0099	0.0050	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	73%		40-120%
1517-22-2	Phenanthrene-d10	76%		40-120%
	Perylene-d12	74%		40-120%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SW-011_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-7	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846-8015B SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06172.D	1	06/26/12	AV	06/15/12	OP6072	GFI449
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.13	mg/l	
	TPH-ORO (> C28-C40)	ND	0.30	0.20	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	92%		25-146%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SW-011_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-7	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	36549247.00000		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	130	100	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Antimony	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Arsenic	< 25	25	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Barium	38.5	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Beryllium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cadmium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Calcium	18100	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Chromium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Cobalt	< 5.0	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Copper	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Iron	637	70	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Lead	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Magnesium	3820	200	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Manganese	91.4	5.0	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.10	0.10	ug/l	1	06/18/12	06/18/12 JB	SW846 7470A ²	SW846 7470A ⁴
Nickel	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Potassium	< 1000	1000	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Selenium	< 50	50	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Silver	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Sodium	3220	400	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Thallium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Vanadium	< 10	10	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³
Zinc	< 30	30	ug/l	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3010A ³

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2520

(3) Prep QC Batch: MP7673

(4) Prep QC Batch: MP7684

RL = Reporting Limit

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Client Sample ID: LP-SW-011_061212
Lab Sample ID: D35496-7F
Matrix: AQ - Water Filtered
Project: 36549247.00000

Date Sampled: 06/12/12
Date Received: 06/14/12
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Antimony	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Arsenic	< 25	25	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Barium	35.1	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Beryllium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cadmium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Calcium	18700	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Chromium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Cobalt	< 5.0	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Copper	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Iron	193	70	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Lead	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Magnesium	3910	200	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Manganese	67.7	5.0	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Mercury	< 0.10	0.10	ug/l	1	07/03/12	07/03/12 JB	SW846 7470A ²	SW846 7470A ³
Nickel	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Potassium	< 1000	1000	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Selenium	< 50	50	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Silver	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Sodium	3240	400	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Thallium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Vanadium	< 10	10	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴
Zinc	< 30	30	ug/l	1	07/03/12	07/03/12 JB	SW846 6010C ¹	SW846 3010A ⁴

(1) Instrument QC Batch: MA2568

(2) Instrument QC Batch: MA2569

(3) Prep QC Batch: MP7803

(4) Prep QC Batch: MP7805

RL = Reporting Limit

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Client Sample ID:	LP-SS-029_061112	Date Sampled:	06/11/12
Lab Sample ID:	D35496-8	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	83.5
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06154.D	1	06/25/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	17.6	16	10	mg/kg	
	TPH-ORO (> C28-C40)	33.0	24	16	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	86%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-025_061112	Date Sampled:	06/11/12
Lab Sample ID:	D35496-9	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	77.4
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06155.D	1	06/25/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	17.5	17	11	mg/kg	
	TPH-ORO (> C28-C40)	24.9	26	17	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	87%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-026_061112	Date Sampled:	06/11/12
Lab Sample ID:	D35496-10	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	62.5
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06156.D	1	06/25/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	35.1	21	14	mg/kg	
	TPH-ORO (> C28-C40)	60.1	32	21	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	77%		43-136%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-027_061112	Date Sampled:	06/11/12
Lab Sample ID:	D35496-11	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	46.2
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06194A.D	1	06/28/12	AV	06/20/12	OP6096	GFI453
Run #2							

	Initial Weight	Final Volume
Run #1	5.3 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	127	160	110	mg/kg	J
	TPH-ORO (> C28-C40)	253	250	160	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	84%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-028_061112	Date Sampled:	06/11/12
Lab Sample ID:	D35496-12	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	82.4
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06177.D	1	06/26/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.3 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	92	60	mg/kg	
	TPH-ORO (> C28-C40)	ND	140	92	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-030_061112	Date Sampled:	06/11/12
Lab Sample ID:	D35496-13	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	73.0
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06196A.D	1	06/28/12	AV	06/20/12	OP6096	GFI453
Run #2							

	Initial Weight	Final Volume
Run #1	5.3 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	99.6	100	67	mg/kg	J
	TPH-ORO (> C28-C40)	199	160	100	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	93%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-031_061112	Date Sampled:	06/11/12
Lab Sample ID:	D35496-14	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	68.4
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06129.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	167	120	75	mg/kg	
	TPH-ORO (> C28-C40)	334	170	120	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	82%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-032_061112	Date Sampled:	06/11/12
Lab Sample ID:	D35496-15	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	66.7
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06130.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	110	120	76	mg/kg	J
	TPH-ORO (> C28-C40)	256	180	120	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-033_061112	Date Sampled:	06/11/12
Lab Sample ID:	D35496-16	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	63.0
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06131.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.4 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	120	77	mg/kg	
	TPH-ORO (> C28-C40)	239	180	120	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-034_061112	Date Sampled:	06/11/12
Lab Sample ID:	D35496-17	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	55.2
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06132.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	192	140	93	mg/kg	
	TPH-ORO (> C28-C40)	376	220	140	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	84%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-035_061112	Date Sampled:	06/11/12
Lab Sample ID:	D35496-18	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	75.1
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06133.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	100	68	mg/kg	
	TPH-ORO (> C28-C40)	104	160	100	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-036_061112	Date Sampled:	06/11/12
Lab Sample ID:	D35496-19	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	56.5
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06134.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.3 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	130	88	mg/kg	
	TPH-ORO (> C28-C40)	213	200	130	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-037_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-20	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	60.2
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2595.D	1	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2595A.D	1	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2	30.2 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.81	0.55	0.28	ug/kg	B
	C1-Naphthalenes	1.0	0.55	0.28	ug/kg	
	C2-Naphthalenes	7.6	0.55	0.28	ug/kg	
	C3-Naphthalenes	22.3	0.55	0.28	ug/kg	
	C4-Naphthalenes	68.2	0.55	0.28	ug/kg	
208-96-8	Acenaphthylene	1.1	0.55	0.28	ug/kg	
83-32-9	Acenaphthene	ND	0.55	0.28	ug/kg	
86-73-7	Fluorene	ND	0.55	0.28	ug/kg	
	C1-Fluorenes	10.7	0.55	0.28	ug/kg	
	C2-Fluorenes	36.2	0.55	0.28	ug/kg	
	C3-Fluorenes	79.0	0.55	0.28	ug/kg	
132-65-0	Dibenzothiophene	ND	0.55	0.28	ug/kg	
	C1-Dibenzothiophenes	11.5	0.55	0.28	ug/kg	
	C2-Dibenzothiophenes	26.2	0.55	0.28	ug/kg	
	C3-Dibenzothiophenes	45.0	0.55	0.28	ug/kg	
	C4-Dibenzothiophenes	31.2	0.55	0.28	ug/kg	
85-01-8	Phenanthrene	ND	0.55	0.28	ug/kg	
120-12-7	Anthracene	ND	0.55	0.28	ug/kg	
	C1-Phenanthrenes/Anthracene	24.4	0.55	0.28	ug/kg	
	C2-Phenanthrenes/Anthracene	106	0.55	0.28	ug/kg	
	C3-Phenanthrenes/Anthracene	168	0.55	0.28	ug/kg	
	C4-Phenanthrenes/Anthracene	97.7	0.55	0.28	ug/kg	
206-44-0	Fluoranthene	2.0	0.55	0.28	ug/kg	
129-00-0	Pyrene	14.5	0.55	0.28	ug/kg	
	C1-Fluoranthenes/Pyrenes	56.1	0.55	0.28	ug/kg	
	C2-Fluoranthenes/Pyrenes	108	0.55	0.28	ug/kg	
	C3-Fluoranthenes/Pyrenes	119	0.55	0.28	ug/kg	
56-55-3	Benzo(a)anthracene	4.8	0.55	0.28	ug/kg	
218-01-9	Chrysene	29.5	0.55	0.28	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	68.0	0.55	0.28	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	102	0.55	0.28	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	106	0.55	0.28	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-037_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-20	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	60.2
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	92.6	0.55	0.28	ug/kg	
205-99-2	Benzo(b)fluoranthene	8.4	0.55	0.28	ug/kg	
207-08-9	Benzo(k)fluoranthene	1.8	0.55	0.28	ug/kg	
192-97-2	Benzo(e)pyrene	24.1	0.55	0.28	ug/kg	
50-32-8	Benzo(a)pyrene	3.1 ^b	0.55	0.28	ug/kg	
198-55-0	Perylene	2.4	0.55	0.28	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1.8 ^b	0.55	0.28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	3.0	0.55	0.28	ug/kg	
191-24-2	Benzo(g,h,i)perylene	7.9	0.55	0.28	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	66%		40-140%
1517-22-2	Phenanthrene-d10	78%		40-140%
	Perylene-d12	88%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-037_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-20	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	60.2
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06196.D	1	06/26/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	296	130	85	mg/kg	
	TPH-ORO (> C28-C40)	553	200	130	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	89%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-040_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-21	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	64.5
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2596.D	10	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2596A.D	10	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2	30.2 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	5.1	2.6	ug/kg	
	C1-Naphthalenes	4.2	5.1	2.6	ug/kg	J
	C2-Naphthalenes	10.2	5.1	2.6	ug/kg	
	C3-Naphthalenes	15.5	5.1	2.6	ug/kg	
	C4-Naphthalenes	42.2	5.1	2.6	ug/kg	
208-96-8	Acenaphthylene	ND	5.1	2.6	ug/kg	
83-32-9	Acenaphthene	ND	5.1	2.6	ug/kg	
86-73-7	Fluorene	3.4	5.1	2.6	ug/kg	J
	C1-Fluorenes	ND	5.1	2.6	ug/kg	
	C2-Fluorenes	33.6	5.1	2.6	ug/kg	
	C3-Fluorenes	59.6	5.1	2.6	ug/kg	
132-65-0	Dibenzothiophene	ND	5.1	2.6	ug/kg	
	C1-Dibenzothiophenes	9.5	5.1	2.6	ug/kg	
	C2-Dibenzothiophenes	19.9	5.1	2.6	ug/kg	
	C3-Dibenzothiophenes	37.3	5.1	2.6	ug/kg	
	C4-Dibenzothiophenes	27.2	5.1	2.6	ug/kg	
85-01-8	Phenanthrene	5.5	5.1	2.6	ug/kg	
120-12-7	Anthracene	ND	5.1	2.6	ug/kg	
	C1-Phenanthrenes/Anthracene	15.5	5.1	2.6	ug/kg	
	C2-Phenanthrenes/Anthracene	66.0	5.1	2.6	ug/kg	
	C3-Phenanthrenes/Anthracene	129	5.1	2.6	ug/kg	
	C4-Phenanthrenes/Anthracene	74.3	5.1	2.6	ug/kg	
206-44-0	Fluoranthene	2.7	5.1	2.6	ug/kg	J
129-00-0	Pyrene	11.6	5.1	2.6	ug/kg	
	C1-Fluoranthenes/Pyrenes	44.0	5.1	2.6	ug/kg	
	C2-Fluoranthenes/Pyrenes	83.6	5.1	2.6	ug/kg	
	C3-Fluoranthenes/Pyrenes	93.0	5.1	2.6	ug/kg	
56-55-3	Benzo(a)anthracene	4.3	5.1	2.6	ug/kg	J
218-01-9	Chrysene	21.3	5.1	2.6	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	47.7	5.1	2.6	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	77.6	5.1	2.6	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	86.4	5.1	2.6	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-040_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-21	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	64.5
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	5.1	2.6	ug/kg	
205-99-2	Benzo(b)fluoranthene	6.8	5.1	2.6	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	5.1	2.6	ug/kg	
192-97-2	Benzo(e)pyrene	17.2	5.1	2.6	ug/kg	
50-32-8	Benzo(a)pyrene	3.3 ^b	5.1	2.6	ug/kg	J
198-55-0	Perylene	ND	5.1	2.6	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	3.1 ^b	5.1	2.6	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	5.2	5.1	2.6	ug/kg	
191-24-2	Benzo(g,h,i)perylene	7.0	5.1	2.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	73%		40-140%
1517-22-2	Phenanthrene-d10	88%		40-140%
	Perylene-d12	96%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-040_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-21	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	64.5
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06136.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	254	120	78	mg/kg	
	TPH-ORO (> C28-C40)	368	180	120	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: LP-SS-040_061212
Lab Sample ID: D35496-21
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 06/12/12
Date Received: 06/14/12
Percent Solids: 64.5

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	3360	15	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Antimony	< 4.4	4.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Arsenic	4.3	3.7	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Barium	176	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Beryllium	< 1.5	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Cadmium	< 1.5	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Calcium	15100	59	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Chromium	6.1	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Cobalt	4.1	0.74	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Copper	6.0	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Iron	10200	10	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Lead	< 7.4	7.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Magnesium	1780	30	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Manganese	431	0.74	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Mercury	< 0.15	0.15	mg/kg	1	06/18/12	06/19/12 JM	SW846 7471B ²	SW846 7471B ⁴
Nickel	8.4	4.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Potassium	825	300	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Selenium	< 7.4	7.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Silver	< 4.4	4.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Sodium	94.4	59	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Thallium	< 1.5	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Vanadium	13.5	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Zinc	38.0	4.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2526

(3) Prep QC Batch: MP7677

(4) Prep QC Batch: MP7695

RL = Reporting Limit

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Client Sample ID:	LP-SS-041_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-22	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	64.3
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2597.D	10	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2597A.D	10	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2	30.1 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	5.2	2.6	ug/kg	
	C1-Naphthalenes	3.7	5.2	2.6	ug/kg	J
	C2-Naphthalenes	8.2	5.2	2.6	ug/kg	
	C3-Naphthalenes	12.2	5.2	2.6	ug/kg	
	C4-Naphthalenes	32.8	5.2	2.6	ug/kg	
208-96-8	Acenaphthylene	ND	5.2	2.6	ug/kg	
83-32-9	Acenaphthene	ND	5.2	2.6	ug/kg	
86-73-7	Fluorene	2.8	5.2	2.6	ug/kg	J
	C1-Fluorenes	ND	5.2	2.6	ug/kg	
	C2-Fluorenes	21.7	5.2	2.6	ug/kg	
	C3-Fluorenes	50.5	5.2	2.6	ug/kg	
132-65-0	Dibenzothiophene	ND	5.2	2.6	ug/kg	
	C1-Dibenzothiophenes	9.5	5.2	2.6	ug/kg	
	C2-Dibenzothiophenes	17.4	5.2	2.6	ug/kg	
	C3-Dibenzothiophenes	31.4	5.2	2.6	ug/kg	
	C4-Dibenzothiophenes	22.3	5.2	2.6	ug/kg	
85-01-8	Phenanthrene	4.8	5.2	2.6	ug/kg	J
120-12-7	Anthracene	ND	5.2	2.6	ug/kg	
	C1-Phenanthrenes/Anthracene	13.1	5.2	2.6	ug/kg	
	C2-Phenanthrenes/Anthracene	61.4	5.2	2.6	ug/kg	
	C3-Phenanthrenes/Anthracene	116	5.2	2.6	ug/kg	
	C4-Phenanthrenes/Anthracene	60.1	5.2	2.6	ug/kg	
206-44-0	Fluoranthene	ND	5.2	2.6	ug/kg	
129-00-0	Pyrene	9.9	5.2	2.6	ug/kg	
	C1-Fluoranthenes/Pyrenes	41.7	5.2	2.6	ug/kg	
	C2-Fluoranthenes/Pyrenes	72.1	5.2	2.6	ug/kg	
	C3-Fluoranthenes/Pyrenes	79.6	5.2	2.6	ug/kg	
56-55-3	Benzo(a)anthracene	3.8	5.2	2.6	ug/kg	J
218-01-9	Chrysene	18.1	5.2	2.6	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	41.7	5.2	2.6	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	66.0	5.2	2.6	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	77.1	5.2	2.6	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-041_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-22	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	64.3
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	5.2	2.6	ug/kg	
205-99-2	Benzo(b)fluoranthene	5.5	5.2	2.6	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	5.2	2.6	ug/kg	
192-97-2	Benzo(e)pyrene	14.3	5.2	2.6	ug/kg	
50-32-8	Benzo(a)pyrene	ND ^b	5.2	2.6	ug/kg	
198-55-0	Perylene	ND	5.2	2.6	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	5.2	2.6	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	3.3	5.2	2.6	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	5.6	5.2	2.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	65%		40-140%
1517-22-2	Phenanthrene-d10	79%		40-140%
	Perylene-d12	82%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-041_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-22	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	64.3
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06137.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	319	120	79	mg/kg	
	TPH-ORO (> C28-C40)	424	180	120	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	82%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: LP-SS-041_061212
Lab Sample ID: D35496-22
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 06/12/12
Date Received: 06/14/12
Percent Solids: 64.3

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	3920	15	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Antimony	< 4.5	4.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Arsenic	5.1	3.7	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Barium	219	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Beryllium	< 1.5	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Cadmium	< 1.5	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Calcium	15200	60	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Chromium	6.9	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Cobalt	4.6	0.75	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Copper	8.4	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Iron	11800	10	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Lead	< 7.5	7.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Magnesium	1940	30	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Manganese	524	0.75	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Mercury	< 0.16	0.16	mg/kg	1	06/18/12	06/19/12 JM	SW846 7471B ²	SW846 7471B ⁴
Nickel	10.3	4.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Potassium	985	300	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Selenium	< 7.5	7.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Silver	< 4.5	4.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Sodium	89.2	60	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Thallium	< 1.5	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Vanadium	16.7	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Zinc	52.1	4.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2526

(3) Prep QC Batch: MP7677

(4) Prep QC Batch: MP7695

RL = Reporting Limit

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Client Sample ID:	LP-SS-042_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-23	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	34.7
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2600.D	10	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2600A.D	10	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2	30.2 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	9.5	4.8	ug/kg	J
	C1-Naphthalenes	5.6	9.5	4.8	ug/kg	
	C2-Naphthalenes	11.3	9.5	4.8	ug/kg	
	C3-Naphthalenes	15.3	9.5	4.8	ug/kg	
	C4-Naphthalenes	49.1	9.5	4.8	ug/kg	
208-96-8	Acenaphthylene	ND	9.5	4.8	ug/kg	J
83-32-9	Acenaphthene	ND	9.5	4.8	ug/kg	
86-73-7	Fluorene	5.0	9.5	4.8	ug/kg	
	C1-Fluorenes	ND	9.5	4.8	ug/kg	
	C2-Fluorenes	29.6	9.5	4.8	ug/kg	
132-65-0	C3-Fluorenes	75.1	9.5	4.8	ug/kg	J
	Dibenzothiophene	ND	9.5	4.8	ug/kg	
	C1-Dibenzothiophenes	15.0	9.5	4.8	ug/kg	
	C2-Dibenzothiophenes	23.2	9.5	4.8	ug/kg	
	C3-Dibenzothiophenes	50.3	9.5	4.8	ug/kg	
85-01-8	C4-Dibenzothiophenes	34.1	9.5	4.8	ug/kg	J
	Phenanthrene	7.8	9.5	4.8	ug/kg	
120-12-7	Anthracene	ND	9.5	4.8	ug/kg	
	C1-Phenanthrenes/Anthracene	18.9	9.5	4.8	ug/kg	
	C2-Phenanthrenes/Anthracene	86.2	9.5	4.8	ug/kg	
206-44-0	C3-Phenanthrenes/Anthracene	163	9.5	4.8	ug/kg	J
	C4-Phenanthrenes/Anthracene	92.4	9.5	4.8	ug/kg	
	Fluoranthene	ND	9.5	4.8	ug/kg	
129-00-0	Pyrene	13.7	9.5	4.8	ug/kg	
	C1-Fluoranthenes/Pyrenes	53.3	9.5	4.8	ug/kg	
56-55-3	C2-Fluoranthenes/Pyrenes	97.8	9.5	4.8	ug/kg	J
	C3-Fluoranthenes/Pyrenes	116	9.5	4.8	ug/kg	
	Benzo(a)anthracene	6.5	9.5	4.8	ug/kg	
218-01-9	Chrysene	25.1	9.5	4.8	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	57.1	9.5	4.8	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	99.6	9.5	4.8	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	111	9.5	4.8	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-042_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-23	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	34.7
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	9.5	4.8	ug/kg	
205-99-2	Benzo(b)fluoranthene	9.2	9.5	4.8	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	9.5	4.8	ug/kg	
192-97-2	Benzo(e)pyrene	21.2	9.5	4.8	ug/kg	
50-32-8	Benzo(a)pyrene	5.3 ^b	9.5	4.8	ug/kg	J
198-55-0	Perylene	ND	9.5	4.8	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	6.4 ^b	9.5	4.8	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	13.3	9.5	4.8	ug/kg	
191-24-2	Benzo(g,h,i)perylene	10.7	9.5	4.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	65%		40-140%
1517-22-2	Phenanthrene-d10	78%		40-140%
	Perylene-d12	71%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-042_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-23	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	34.7
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06138.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	612	230	150	mg/kg	
	TPH-ORO (> C28-C40)	899	350	230	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	80%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-043_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-24	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	75.4
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2601.D	1	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2601A.D	1	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2	30.7 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.39	0.43	0.22	ug/kg	J
	C1-Naphthalenes	0.45	0.43	0.22	ug/kg	B
	C2-Naphthalenes	0.81	0.43	0.22	ug/kg	
	C3-Naphthalenes	0.83	0.43	0.22	ug/kg	B
	C4-Naphthalenes	1.2	0.43	0.22	ug/kg	
208-96-8	Acenaphthylene	ND	0.43	0.22	ug/kg	
83-32-9	Acenaphthene	ND	0.43	0.22	ug/kg	
86-73-7	Fluorene	0.29	0.43	0.22	ug/kg	J
	C1-Fluorenes	0.55	0.43	0.22	ug/kg	
	C2-Fluorenes	0.84	0.43	0.22	ug/kg	
	C3-Fluorenes	ND	0.43	0.22	ug/kg	
132-65-0	Dibenzothiophene	ND	0.43	0.22	ug/kg	
	C1-Dibenzothiophenes	ND	0.43	0.22	ug/kg	
	C2-Dibenzothiophenes	0.65	0.43	0.22	ug/kg	
	C3-Dibenzothiophenes	0.92	0.43	0.22	ug/kg	
	C4-Dibenzothiophenes	0.75	0.43	0.22	ug/kg	
85-01-8	Phenanthrene	0.59	0.43	0.22	ug/kg	
120-12-7	Anthracene	ND	0.43	0.22	ug/kg	
	C1-Phenanthrenes/Anthracene	1.0	0.43	0.22	ug/kg	
	C2-Phenanthrenes/Anthracene	2.0	0.43	0.22	ug/kg	
	C3-Phenanthrenes/Anthracene	2.7	0.43	0.22	ug/kg	
	C4-Phenanthrenes/Anthracene	1.8	0.43	0.22	ug/kg	
206-44-0	Fluoranthene	0.39	0.43	0.22	ug/kg	J
129-00-0	Pyrene	1.0	0.43	0.22	ug/kg	
	C1-Fluoranthenes/Pyrenes	2.7	0.43	0.22	ug/kg	
	C2-Fluoranthenes/Pyrenes	3.5	0.43	0.22	ug/kg	
	C3-Fluoranthenes/Pyrenes	3.3	0.43	0.22	ug/kg	
56-55-3	Benzo(a)anthracene	0.34	0.43	0.22	ug/kg	J
218-01-9	Chrysene	1.5	0.43	0.22	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	1.9	0.43	0.22	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	2.6	0.43	0.22	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	2.9	0.43	0.22	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-043_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-24	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	75.4
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	0.43	0.22	ug/kg	
205-99-2	Benzo(b)fluoranthene	0.53	0.43	0.22	ug/kg	
207-08-9	Benzo(k)fluoranthene	0.29	0.43	0.22	ug/kg	J
192-97-2	Benzo(e)pyrene	1.1	0.43	0.22	ug/kg	
50-32-8	Benzo(a)pyrene	0.28 ^b	0.43	0.22	ug/kg	J
198-55-0	Perylene	0.24	0.43	0.22	ug/kg	J
193-39-5	Indeno(1,2,3-cd)pyrene	0.29 ^b	0.43	0.22	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	0.37	0.43	0.22	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	0.53	0.43	0.22	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	73%		40-140%
1517-22-2	Phenanthrene-d10	79%		40-140%
	Perylene-d12	76%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-043_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-24	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	75.4
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06140.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	100	67	mg/kg	
	TPH-ORO (> C28-C40)	140	150	100	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	74%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-044_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-25	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	65.1
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2602.D	1	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2602A.D	1	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2	30.9 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.48	0.50	0.25	ug/kg	J
	C1-Naphthalenes	0.79	0.50	0.25	ug/kg	B
	C2-Naphthalenes	4.5	0.50	0.25	ug/kg	
	C3-Naphthalenes	6.3	0.50	0.25	ug/kg	
	C4-Naphthalenes	33.7	0.50	0.25	ug/kg	
208-96-8	Acenaphthylene	1.0	0.50	0.25	ug/kg	
83-32-9	Acenaphthene	ND	0.50	0.25	ug/kg	
86-73-7	Fluorene	ND	0.50	0.25	ug/kg	
	C1-Fluorenes	ND	0.50	0.25	ug/kg	
	C2-Fluorenes	21.7	0.50	0.25	ug/kg	
	C3-Fluorenes	51.8	0.50	0.25	ug/kg	
132-65-0	Dibenzothiophene	ND	0.50	0.25	ug/kg	
	C1-Dibenzothiophenes	7.8	0.50	0.25	ug/kg	
	C2-Dibenzothiophenes	17.5	0.50	0.25	ug/kg	
	C3-Dibenzothiophenes	29.9	0.50	0.25	ug/kg	
	C4-Dibenzothiophenes	19.4	0.50	0.25	ug/kg	
85-01-8	Phenanthrene	ND	0.50	0.25	ug/kg	
120-12-7	Anthracene	ND	0.50	0.25	ug/kg	
	C1-Phenanthrenes/Anthracene	11.2	0.50	0.25	ug/kg	
	C2-Phenanthrenes/Anthracene	71.1	0.50	0.25	ug/kg	
	C3-Phenanthrenes/Anthracene	112	0.50	0.25	ug/kg	
	C4-Phenanthrenes/Anthracene	60.8	0.50	0.25	ug/kg	
206-44-0	Fluoranthene	1.7	0.50	0.25	ug/kg	
129-00-0	Pyrene	9.7	0.50	0.25	ug/kg	
	C1-Fluoranthenes/Pyrenes	37.1	0.50	0.25	ug/kg	
	C2-Fluoranthenes/Pyrenes	67.5	0.50	0.25	ug/kg	
	C3-Fluoranthenes/Pyrenes	75.8	0.50	0.25	ug/kg	
56-55-3	Benzo(a)anthracene	3.4	0.50	0.25	ug/kg	
218-01-9	Chrysene	18.4	0.50	0.25	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	40.6	0.50	0.25	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	59.1	0.50	0.25	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	66.2	0.50	0.25	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-044_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-25	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	65.1
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	55.0	0.50	0.25	ug/kg	
205-99-2	Benzo(b)fluoranthene	5.0	0.50	0.25	ug/kg	
207-08-9	Benzo(k)fluoranthene	0.98	0.50	0.25	ug/kg	
192-97-2	Benzo(e)pyrene	13.0	0.50	0.25	ug/kg	
50-32-8	Benzo(a)pyrene	1.9 ^b	0.50	0.25	ug/kg	
198-55-0	Perylene	ND	0.50	0.25	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.97 ^b	0.50	0.25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1.3	0.50	0.25	ug/kg	
191-24-2	Benzo(g,h,i)perylene	4.0	0.50	0.25	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	65%		40-140%
1517-22-2	Phenanthrene-d10	79%		40-140%
	Perylene-d12	86%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-044_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-25	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	65.1
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06141.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	425	120	78	mg/kg	
	TPH-ORO (> C28-C40)	546	180	120	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-045_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-26	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	60.7
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2603.D	1	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2603A.D	1	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.36	0.54	0.27	ug/kg	J
	C1-Naphthalenes	0.50	0.54	0.27	ug/kg	JB
	C2-Naphthalenes	1.0	0.54	0.27	ug/kg	
	C3-Naphthalenes	0.91	0.54	0.27	ug/kg	B
	C4-Naphthalenes	ND	0.54	0.27	ug/kg	
208-96-8	Acenaphthylene	ND	0.54	0.27	ug/kg	
83-32-9	Acenaphthene	ND	0.54	0.27	ug/kg	
86-73-7	Fluorene	0.29	0.54	0.27	ug/kg	J
	C1-Fluorenes	0.49	0.54	0.27	ug/kg	J
	C2-Fluorenes	0.63	0.54	0.27	ug/kg	
	C3-Fluorenes	ND	0.54	0.27	ug/kg	
132-65-0	Dibenzothiophene	ND	0.54	0.27	ug/kg	
	C1-Dibenzothiophenes	ND	0.54	0.27	ug/kg	
	C2-Dibenzothiophenes	0.46	0.54	0.27	ug/kg	J
	C3-Dibenzothiophenes	ND	0.54	0.27	ug/kg	
	C4-Dibenzothiophenes	ND	0.54	0.27	ug/kg	
85-01-8	Phenanthrene	0.59	0.54	0.27	ug/kg	
120-12-7	Anthracene	ND	0.54	0.27	ug/kg	
	C1-Phenanthrenes/Anthracene	1.0	0.54	0.27	ug/kg	
	C2-Phenanthrenes/Anthracene	1.0	0.54	0.27	ug/kg	
	C3-Phenanthrenes/Anthracene	0.83	0.54	0.27	ug/kg	
	C4-Phenanthrenes/Anthracene	ND	0.54	0.27	ug/kg	
206-44-0	Fluoranthene	0.47	0.54	0.27	ug/kg	J
129-00-0	Pyrene	0.53	0.54	0.27	ug/kg	J
	C1-Fluoranthenes/Pyrenes	0.93	0.54	0.27	ug/kg	
	C2-Fluoranthenes/Pyrenes	1.1	0.54	0.27	ug/kg	
	C3-Fluoranthenes/Pyrenes	1.2	0.54	0.27	ug/kg	
56-55-3	Benzo(a)anthracene	0.36	0.54	0.27	ug/kg	J
218-01-9	Chrysene	0.94	0.54	0.27	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	0.82	0.54	0.27	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	1.0	0.54	0.27	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	ND	0.54	0.27	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-045_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-26	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	60.7
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	0.54	0.27	ug/kg	
205-99-2	Benzo(b)fluoranthene	0.43	0.54	0.27	ug/kg	J
207-08-9	Benzo(k)fluoranthene	0.31	0.54	0.27	ug/kg	J
192-97-2	Benzo(e)pyrene	0.57	0.54	0.27	ug/kg	
50-32-8	Benzo(a)pyrene	ND ^b	0.54	0.27	ug/kg	
198-55-0	Perylene	ND	0.54	0.27	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.28 ^b	0.54	0.27	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	0.54	0.27	ug/kg	
191-24-2	Benzo(g,h,i)perylene	0.40	0.54	0.27	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	67%		40-140%
1517-22-2	Phenanthrene-d10	73%		40-140%
	Perylene-d12	75%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-045_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-26	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	60.7
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06143.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	97.4	130	83	mg/kg	J
	TPH-ORO (> C28-C40)	185	190	130	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	74%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-046_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-27	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	70.2
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2604.D	1	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2604A.D	1	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.49	0.47	0.23	ug/kg	
	C1-Naphthalenes	0.50	0.47	0.23	ug/kg	B
	C2-Naphthalenes	0.78	0.47	0.23	ug/kg	
	C3-Naphthalenes	0.70	0.47	0.23	ug/kg	B
	C4-Naphthalenes	0.81	0.47	0.23	ug/kg	
208-96-8	Acenaphthylene	ND	0.47	0.23	ug/kg	
83-32-9	Acenaphthene	ND	0.47	0.23	ug/kg	
86-73-7	Fluorene	0.35	0.47	0.23	ug/kg	J
	C1-Fluorenes	0.47	0.47	0.23	ug/kg	
	C2-Fluorenes	ND	0.47	0.23	ug/kg	
	C3-Fluorenes	ND	0.47	0.23	ug/kg	
132-65-0	Dibenzothiophene	ND	0.47	0.23	ug/kg	
	C1-Dibenzothiophenes	ND	0.47	0.23	ug/kg	
	C2-Dibenzothiophenes	0.24	0.47	0.23	ug/kg	J
	C3-Dibenzothiophenes	ND	0.47	0.23	ug/kg	
	C4-Dibenzothiophenes	ND	0.47	0.23	ug/kg	
85-01-8	Phenanthrene	0.64	0.47	0.23	ug/kg	
120-12-7	Anthracene	ND	0.47	0.23	ug/kg	
	C1-Phenanthrenes/Anthracene	0.69	0.47	0.23	ug/kg	
	C2-Phenanthrenes/Anthracene	0.87	0.47	0.23	ug/kg	
	C3-Phenanthrenes/Anthracene	0.70	0.47	0.23	ug/kg	
	C4-Phenanthrenes/Anthracene	ND	0.47	0.23	ug/kg	
206-44-0	Fluoranthene	0.47	0.47	0.23	ug/kg	
129-00-0	Pyrene	0.45	0.47	0.23	ug/kg	J
	C1-Fluoranthenes/Pyrenes	0.57	0.47	0.23	ug/kg	
	C2-Fluoranthenes/Pyrenes	0.73	0.47	0.23	ug/kg	
	C3-Fluoranthenes/Pyrenes	ND	0.47	0.23	ug/kg	
56-55-3	Benzo(a)anthracene	0.33	0.47	0.23	ug/kg	J
218-01-9	Chrysene	0.59	0.47	0.23	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	0.40	0.47	0.23	ug/kg	J
	C2-Benzo(a)anthracenes/Chrys	0.63	0.47	0.23	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	ND	0.47	0.23	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-046_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-27	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	70.2
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	0.47	0.23	ug/kg	
205-99-2	Benzo(b)fluoranthene	0.38	0.47	0.23	ug/kg	J
207-08-9	Benzo(k)fluoranthene	0.33	0.47	0.23	ug/kg	J
192-97-2	Benzo(e)pyrene	0.26	0.47	0.23	ug/kg	J
50-32-8	Benzo(a)pyrene	0.24 ^b	0.47	0.23	ug/kg	J
198-55-0	Perylene	1.2	0.47	0.23	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.27 ^b	0.47	0.23	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	0.47	0.23	ug/kg	
191-24-2	Benzo(g,h,i)perylene	0.32	0.47	0.23	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	76%		40-140%
1517-22-2	Phenanthrene-d10	80%		40-140%
	Perylene-d12	77%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-046_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-27	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	70.2
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06144.D	1	06/23/12	AV	06/20/12	OP6096	GFI449
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	12.1	19	12	mg/kg	J
	TPH-ORO (> C28-C40)	20.1	28	19	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	52%		43-136%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-047_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-28	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	78.5
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2605.D	1	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2605A.D	1	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2	30.2 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.22	0.42	0.21	ug/kg	J
	C1-Naphthalenes	0.42	0.42	0.21	ug/kg	B
	C2-Naphthalenes	0.52	0.42	0.21	ug/kg	
	C3-Naphthalenes	0.48	0.42	0.21	ug/kg	B
	C4-Naphthalenes	ND	0.42	0.21	ug/kg	
208-96-8	Acenaphthylene	ND	0.42	0.21	ug/kg	
83-32-9	Acenaphthene	ND	0.42	0.21	ug/kg	
86-73-7	Fluorene	ND	0.42	0.21	ug/kg	
	C1-Fluorenes	0.27	0.42	0.21	ug/kg	J
	C2-Fluorenes	ND	0.42	0.21	ug/kg	
	C3-Fluorenes	ND	0.42	0.21	ug/kg	
132-65-0	Dibenzothiophene	ND	0.42	0.21	ug/kg	
	C1-Dibenzothiophenes	ND	0.42	0.21	ug/kg	
	C2-Dibenzothiophenes	ND	0.42	0.21	ug/kg	
	C3-Dibenzothiophenes	ND	0.42	0.21	ug/kg	
	C4-Dibenzothiophenes	ND	0.42	0.21	ug/kg	
85-01-8	Phenanthrene	0.32	0.42	0.21	ug/kg	J
120-12-7	Anthracene	ND	0.42	0.21	ug/kg	
	C1-Phenanthrenes/Anthracene	0.38	0.42	0.21	ug/kg	J
	C2-Phenanthrenes/Anthracene	0.42	0.42	0.21	ug/kg	
	C3-Phenanthrenes/Anthracene	0.26	0.42	0.21	ug/kg	J
	C4-Phenanthrenes/Anthracene	ND	0.42	0.21	ug/kg	
206-44-0	Fluoranthene	ND	0.42	0.21	ug/kg	
129-00-0	Pyrene	ND	0.42	0.21	ug/kg	
	C1-Fluoranthenes/Pyrenes	0.26	0.42	0.21	ug/kg	J
	C2-Fluoranthenes/Pyrenes	ND	0.42	0.21	ug/kg	
	C3-Fluoranthenes/Pyrenes	ND	0.42	0.21	ug/kg	
56-55-3	Benzo(a)anthracene	ND	0.42	0.21	ug/kg	
218-01-9	Chrysene	ND	0.42	0.21	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	ND	0.42	0.21	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	ND	0.42	0.21	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	ND	0.42	0.21	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-047_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-28	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	78.5
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	0.42	0.21	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.42	0.21	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.42	0.21	ug/kg	
192-97-2	Benzo(e)pyrene	ND	0.42	0.21	ug/kg	
50-32-8	Benzo(a)pyrene	ND ^b	0.42	0.21	ug/kg	
198-55-0	Perylene	ND	0.42	0.21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	0.42	0.21	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.42	0.21	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.42	0.21	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	74%		40-140%
1517-22-2	Phenanthrene-d10	79%		40-140%
	Perylene-d12	67%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-047_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-28	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	78.5
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06198.D	1	06/26/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	100	66	mg/kg	
	TPH-ORO (> C28-C40)	ND	150	100	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	73%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-048_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-29	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	69.8
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2606.D	5	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2606A.D	5	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2	30.3 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	2.4	1.2	ug/kg	JB
	C1-Naphthalenes	1.6	2.4	1.2	ug/kg	
	C2-Naphthalenes	3.3	2.4	1.2	ug/kg	
	C3-Naphthalenes	4.8	2.4	1.2	ug/kg	
	C4-Naphthalenes	11.1	2.4	1.2	ug/kg	
208-96-8	Acenaphthylene	ND	2.4	1.2	ug/kg	J
83-32-9	Acenaphthene	ND	2.4	1.2	ug/kg	
86-73-7	Fluorene	ND	2.4	1.2	ug/kg	
	C1-Fluorenes	ND	2.4	1.2	ug/kg	
	C2-Fluorenes	7.8	2.4	1.2	ug/kg	
	C3-Fluorenes	17.4	2.4	1.2	ug/kg	
132-65-0	Dibenzothiophene	ND	2.4	1.2	ug/kg	
	C1-Dibenzothiophenes	ND	2.4	1.2	ug/kg	
	C2-Dibenzothiophenes	5.6	2.4	1.2	ug/kg	
	C3-Dibenzothiophenes	9.5	2.4	1.2	ug/kg	
85-01-8	Phenanthrene	2.0	2.4	1.2	ug/kg	
120-12-7	Anthracene	ND	2.4	1.2	ug/kg	J
	C1-Phenanthrenes/Anthracene	5.2	2.4	1.2	ug/kg	
	C2-Phenanthrenes/Anthracene	19.4	2.4	1.2	ug/kg	
	C3-Phenanthrenes/Anthracene	36.7	2.4	1.2	ug/kg	
	C4-Phenanthrenes/Anthracene	22.0	2.4	1.2	ug/kg	
206-44-0	Fluoranthene	ND	2.4	1.2	ug/kg	
129-00-0	Pyrene	4.0	2.4	1.2	ug/kg	
	C1-Fluoranthenes/Pyrenes	12.8	2.4	1.2	ug/kg	
	C2-Fluoranthenes/Pyrenes	24.2	2.4	1.2	ug/kg	
	C3-Fluoranthenes/Pyrenes	26.6	2.4	1.2	ug/kg	
56-55-3	Benzo(a)anthracene	ND	2.4	1.2	ug/kg	J
218-01-9	Chrysene	6.3	2.4	1.2	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	13.6	2.4	1.2	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	21.4	2.4	1.2	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	25.4	2.4	1.2	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-048_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-29	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	69.8
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	2.4	1.2	ug/kg	
205-99-2	Benzo(b)fluoranthene	1.8	2.4	1.2	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	2.4	1.2	ug/kg	
192-97-2	Benzo(e)pyrene	4.9	2.4	1.2	ug/kg	
50-32-8	Benzo(a)pyrene	ND ^b	2.4	1.2	ug/kg	
198-55-0	Perylene	ND	2.4	1.2	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	2.4	1.2	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	2.4	1.2	ug/kg	
191-24-2	Benzo(g,h,i)perylene	1.8	2.4	1.2	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	66%		40-140%
1517-22-2	Phenanthrene-d10	79%		40-140%
	Perylene-d12	72%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-048_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-29	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	69.8
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F106200.D	1	06/26/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	159	110	74	mg/kg	
	TPH-ORO (> C28-C40)	232	170	110	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	86%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-049_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-30	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	75.8
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2607.D	10	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2607A.D	10	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2	30.3 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	4.4	2.2	ug/kg	J
	C1-Naphthalenes	2.7	4.4	2.2	ug/kg	
	C2-Naphthalenes	4.7	4.4	2.2	ug/kg	
	C3-Naphthalenes	5.6	4.4	2.2	ug/kg	
	C4-Naphthalenes	16.9	4.4	2.2	ug/kg	
208-96-8	Acenaphthylene	ND	4.4	2.2	ug/kg	J
83-32-9	Acenaphthene	ND	4.4	2.2	ug/kg	
86-73-7	Fluorene	2.2	4.4	2.2	ug/kg	
	C1-Fluorenes	ND	4.4	2.2	ug/kg	
	C2-Fluorenes	13.9	4.4	2.2	ug/kg	
132-65-0	C3-Fluorenes	36.4	4.4	2.2	ug/kg	J
	Dibenzothiophene	ND	4.4	2.2	ug/kg	
	C1-Dibenzothiophenes	ND	4.4	2.2	ug/kg	
	C2-Dibenzothiophenes	9.2	4.4	2.2	ug/kg	
	C3-Dibenzothiophenes	17.7	4.4	2.2	ug/kg	
85-01-8	C4-Dibenzothiophenes	12.9	4.4	2.2	ug/kg	J
120-12-7	Phenanthrene	3.2	4.4	2.2	ug/kg	
	Anthracene	ND	4.4	2.2	ug/kg	
	C1-Phenanthrenes/Anthracene	5.9	4.4	2.2	ug/kg	
	C2-Phenanthrenes/Anthracene	29.8	4.4	2.2	ug/kg	
	C3-Phenanthrenes/Anthracene	66.1	4.4	2.2	ug/kg	
206-44-0	C4-Phenanthrenes/Anthracene	32.3	4.4	2.2	ug/kg	J
129-00-0	Fluoranthene	ND	4.4	2.2	ug/kg	
	Pyrene	4.8	4.4	2.2	ug/kg	
	C1-Fluoranthenes/Pyrenes	18.2	4.4	2.2	ug/kg	
	C2-Fluoranthenes/Pyrenes	35.7	4.4	2.2	ug/kg	
56-55-3	C3-Fluoranthenes/Pyrenes	40.3	4.4	2.2	ug/kg	J
218-01-9	Benzo(a)anthracene	2.7	4.4	2.2	ug/kg	
	Chrysene	8.0	4.4	2.2	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	20.7	4.4	2.2	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	34.3	4.4	2.2	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	37.0	4.4	2.2	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-049_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-30	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	75.8
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	4.4	2.2	ug/kg	
205-99-2	Benzo(b)fluoranthene	2.5	4.4	2.2	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	4.4	2.2	ug/kg	
192-97-2	Benzo(e)pyrene	6.8	4.4	2.2	ug/kg	
50-32-8	Benzo(a)pyrene	ND ^b	4.4	2.2	ug/kg	
198-55-0	Perylene	ND	4.4	2.2	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	4.4	2.2	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	4.4	2.2	ug/kg	
191-24-2	Benzo(g,h,i)perylene	2.5	4.4	2.2	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	71%		40-140%
1517-22-2	Phenanthrene-d10	88%		40-140%
	Perylene-d12	76%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-049_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-30	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	75.8
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06202.D	1	06/26/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	121	100	68	mg/kg	
	TPH-ORO (> C28-C40)	222	160	100	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	66%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-050_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-31	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	69.9
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2608.D	10	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2608A.D	10	07/06/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	4.7	2.4	ug/kg	
	C1-Naphthalenes	3.1	4.7	2.4	ug/kg	J
	C2-Naphthalenes	8.7	4.7	2.4	ug/kg	
	C3-Naphthalenes	16.7	4.7	2.4	ug/kg	
	C4-Naphthalenes	37.4	4.7	2.4	ug/kg	
208-96-8	Acenaphthylene	ND	4.7	2.4	ug/kg	
83-32-9	Acenaphthene	ND	4.7	2.4	ug/kg	
86-73-7	Fluorene	2.8	4.7	2.4	ug/kg	J
	C1-Fluorenes	10	4.7	2.4	ug/kg	
	C2-Fluorenes	25.1	4.7	2.4	ug/kg	
	C3-Fluorenes	52.1	4.7	2.4	ug/kg	
132-65-0	Dibenzothiophene	ND	4.7	2.4	ug/kg	
	C1-Dibenzothiophenes	8.4	4.7	2.4	ug/kg	
	C2-Dibenzothiophenes	18.4	4.7	2.4	ug/kg	
	C3-Dibenzothiophenes	30.9	4.7	2.4	ug/kg	
	C4-Dibenzothiophenes	21.3	4.7	2.4	ug/kg	
85-01-8	Phenanthrene	4.4	4.7	2.4	ug/kg	J
120-12-7	Anthracene	ND	4.7	2.4	ug/kg	
	C1-Phenanthrenes/Anthracene	16.2	4.7	2.4	ug/kg	
	C2-Phenanthrenes/Anthracene	70.2	4.7	2.4	ug/kg	
	C3-Phenanthrenes/Anthracene	118	4.7	2.4	ug/kg	
	C4-Phenanthrenes/Anthracene	56.4	4.7	2.4	ug/kg	
206-44-0	Fluoranthene	ND	4.7	2.4	ug/kg	
129-00-0	Pyrene	9.2	4.7	2.4	ug/kg	
	C1-Fluoranthenes/Pyrenes	36.1	4.7	2.4	ug/kg	
	C2-Fluoranthenes/Pyrenes	64.3	4.7	2.4	ug/kg	
	C3-Fluoranthenes/Pyrenes	65.9	4.7	2.4	ug/kg	
56-55-3	Benzo(a)anthracene	4.2	4.7	2.4	ug/kg	J
218-01-9	Chrysene	15.5	4.7	2.4	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	36.4	4.7	2.4	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	51.8	4.7	2.4	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	56.3	4.7	2.4	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-050_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-31	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	69.9
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	4.7	2.4	ug/kg	
205-99-2	Benzo(b)fluoranthene	4.2	4.7	2.4	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	4.7	2.4	ug/kg	
192-97-2	Benzo(e)pyrene	11.1	4.7	2.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND ^b	4.7	2.4	ug/kg	
198-55-0	Perylene	ND	4.7	2.4	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	4.7	2.4	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	4.7	2.4	ug/kg	
191-24-2	Benzo(g,h,i)perylene	3.6	4.7	2.4	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	66%		40-140%
1517-22-2	Phenanthrene-d10	80%		40-140%
	Perylene-d12	70%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
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J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-050_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-31	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	69.9
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06204.D	1	06/26/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	264	110	73	mg/kg	
	TPH-ORO (> C28-C40)	393	170	110	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	77%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-051_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-32	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	65.4
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2613.D	1	07/09/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2613A.D	1	07/09/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2	30.2 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.26	0.51	0.25	ug/kg	J
	C1-Naphthalenes	0.56	0.51	0.25	ug/kg	B
	C2-Naphthalenes	0.57	0.51	0.25	ug/kg	
	C3-Naphthalenes	0.89	0.51	0.25	ug/kg	B
	C4-Naphthalenes	0.46	0.51	0.25	ug/kg	J
208-96-8	Acenaphthylene	ND	0.51	0.25	ug/kg	
83-32-9	Acenaphthene	ND	0.51	0.25	ug/kg	
86-73-7	Fluorene	ND	0.51	0.25	ug/kg	
	C1-Fluorenes	ND	0.51	0.25	ug/kg	
	C2-Fluorenes	ND	0.51	0.25	ug/kg	
	C3-Fluorenes	ND	0.51	0.25	ug/kg	
132-65-0	Dibenzothiophene	ND	0.51	0.25	ug/kg	
	C1-Dibenzothiophenes	ND	0.51	0.25	ug/kg	
	C2-Dibenzothiophenes	0.32	0.51	0.25	ug/kg	J
	C3-Dibenzothiophenes	0.32	0.51	0.25	ug/kg	J
	C4-Dibenzothiophenes	ND	0.51	0.25	ug/kg	
85-01-8	Phenanthrene	0.45	0.51	0.25	ug/kg	J
120-12-7	Anthracene	ND	0.51	0.25	ug/kg	
	C1-Phenanthrenes/Anthracene	0.39	0.51	0.25	ug/kg	J
	C2-Phenanthrenes/Anthracene	0.40	0.51	0.25	ug/kg	J
	C3-Phenanthrenes/Anthracene	0.33	0.51	0.25	ug/kg	J
	C4-Phenanthrenes/Anthracene	ND	0.51	0.25	ug/kg	
206-44-0	Fluoranthene	0.40	0.51	0.25	ug/kg	J
129-00-0	Pyrene	0.44	0.51	0.25	ug/kg	J
	C1-Fluoranthenes/Pyrenes	0.56	0.51	0.25	ug/kg	
	C2-Fluoranthenes/Pyrenes	0.54	0.51	0.25	ug/kg	
	C3-Fluoranthenes/Pyrenes	0.47	0.51	0.25	ug/kg	J
56-55-3	Benzo(a)anthracene	0.39	0.51	0.25	ug/kg	J
218-01-9	Chrysene	0.63	0.51	0.25	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	0.42	0.51	0.25	ug/kg	J
	C2-Benzo(a)anthracenes/Chrys	0.53	0.51	0.25	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	ND	0.51	0.25	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-051_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-32	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	65.4
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	0.51	0.25	ug/kg	
205-99-2	Benzo(b)fluoranthene	0.40	0.51	0.25	ug/kg	J
207-08-9	Benzo(k)fluoranthene	0.35	0.51	0.25	ug/kg	J
192-97-2	Benzo(e)pyrene	0.40	0.51	0.25	ug/kg	J
50-32-8	Benzo(a)pyrene	0.33 ^b	0.51	0.25	ug/kg	J
198-55-0	Perylene	ND	0.51	0.25	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.30 ^b	0.51	0.25	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	0.51	0.25	ug/kg	
191-24-2	Benzo(g,h,i)perylene	0.36	0.51	0.25	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	70%		40-140%
1517-22-2	Phenanthrene-d10	77%		40-140%
	Perylene-d12	73%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-051_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-32	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	65.4
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06206.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	120	79	mg/kg	
	TPH-ORO (> C28-C40)	ND	180	120	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-052_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-33	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	52.3
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2614.D	1	07/09/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2614A.D	1	07/09/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2	31.0 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.67	0.62	0.31	ug/kg	B
	C1-Naphthalenes	1.7	0.62	0.31	ug/kg	
	C2-Naphthalenes	8.5	0.62	0.31	ug/kg	
	C3-Naphthalenes	18.2	0.62	0.31	ug/kg	
	C4-Naphthalenes	39.4	0.62	0.31	ug/kg	
208-96-8	Acenaphthylene	0.63	0.62	0.31	ug/kg	J
83-32-9	Acenaphthene	ND	0.62	0.31	ug/kg	
86-73-7	Fluorene	1.3	0.62	0.31	ug/kg	
	C1-Fluorenes	7.9	0.62	0.31	ug/kg	
	C2-Fluorenes	24.1	0.62	0.31	ug/kg	
132-65-0	C3-Fluorenes	48.0	0.62	0.31	ug/kg	
	Dibenzothiophene	0.93	0.62	0.31	ug/kg	
	C1-Dibenzothiophenes	9.5	0.62	0.31	ug/kg	
	C2-Dibenzothiophenes	18.0	0.62	0.31	ug/kg	
	C3-Dibenzothiophenes	27.0	0.62	0.31	ug/kg	
85-01-8	C4-Dibenzothiophenes	18.3	0.62	0.31	ug/kg	
	Phenanthrene	2.9	0.62	0.31	ug/kg	
120-12-7	Anthracene	0.54	0.62	0.31	ug/kg	
	C1-Phenanthrenes/Anthracene	16.2	0.62	0.31	ug/kg	
	C2-Phenanthrenes/Anthracene	61.3	0.62	0.31	ug/kg	
	C3-Phenanthrenes/Anthracene	97.3	0.62	0.31	ug/kg	
	C4-Phenanthrenes/Anthracene	49.0	0.62	0.31	ug/kg	
206-44-0	Fluoranthene	1.7	0.62	0.31	ug/kg	
129-00-0	Pyrene	10.5	0.62	0.31	ug/kg	
	C1-Fluoranthenes/Pyrenes	34.3	0.62	0.31	ug/kg	
	C2-Fluoranthenes/Pyrenes	59.3	0.62	0.31	ug/kg	
	C3-Fluoranthenes/Pyrenes	63.0	0.62	0.31	ug/kg	
56-55-3	Benzo(a)anthracene	2.4	0.62	0.31	ug/kg	
218-01-9	Chrysene	17.9	0.62	0.31	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	37.3	0.62	0.31	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	50.6	0.62	0.31	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	47.4	0.62	0.31	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-052_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-33	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	52.3
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	38.3	0.62	0.31	ug/kg	
205-99-2	Benzo(b)fluoranthene	4.5	0.62	0.31	ug/kg	
207-08-9	Benzo(k)fluoranthene	0.76	0.62	0.31	ug/kg	
192-97-2	Benzo(e)pyrene	13.7	0.62	0.31	ug/kg	
50-32-8	Benzo(a)pyrene	1.5 ^b	0.62	0.31	ug/kg	
198-55-0	Perylene	1.4	0.62	0.31	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.90 ^b	0.62	0.31	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1.0	0.62	0.31	ug/kg	
191-24-2	Benzo(g,h,i)perylene	4.0	0.62	0.31	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	69%		40-140%
1517-22-2	Phenanthrene-d10	79%		40-140%
	Perylene-d12	82%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-052_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-33	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	52.3
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06208.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.3 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	243	140	94	mg/kg	
	TPH-ORO (> C28-C40)	348	220	140	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	76%		43-136%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-053_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-34	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	78.5
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2615.D	1	07/10/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2615A.D	1	07/10/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2	30.1 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	0.42	0.21	ug/kg	JB
	C1-Naphthalenes	0.39	0.42	0.21	ug/kg	
	C2-Naphthalenes	1.3	0.42	0.21	ug/kg	
	C3-Naphthalenes	2.3	0.42	0.21	ug/kg	
	C4-Naphthalenes	6.1	0.42	0.21	ug/kg	
208-96-8	Acenaphthylene	ND	0.42	0.21	ug/kg	JB
83-32-9	Acenaphthene	ND	0.42	0.21	ug/kg	
86-73-7	Fluorene	ND	0.42	0.21	ug/kg	
	C1-Fluorenes	1.4	0.42	0.21	ug/kg	
	C2-Fluorenes	3.8	0.42	0.21	ug/kg	
	C3-Fluorenes	7.6	0.42	0.21	ug/kg	JB
132-65-0	Dibenzothiophene	ND	0.42	0.21	ug/kg	
	C1-Dibenzothiophenes	ND	0.42	0.21	ug/kg	
	C2-Dibenzothiophenes	3.1	0.42	0.21	ug/kg	
	C3-Dibenzothiophenes	4.7	0.42	0.21	ug/kg	
	C4-Dibenzothiophenes	3.4	0.42	0.21	ug/kg	JB
85-01-8	Phenanthrene	0.54	0.42	0.21	ug/kg	
120-12-7	Anthracene	ND	0.42	0.21	ug/kg	
	C1-Phenanthrenes/Anthracene	2.8	0.42	0.21	ug/kg	
	C2-Phenanthrenes/Anthracene	10.9	0.42	0.21	ug/kg	
	C3-Phenanthrenes/Anthracene	18.4	0.42	0.21	ug/kg	JB
	C4-Phenanthrenes/Anthracene	9.1	0.42	0.21	ug/kg	
206-44-0	Fluoranthene	0.33	0.42	0.21	ug/kg	
129-00-0	Pyrene	2.4	0.42	0.21	ug/kg	
	C1-Fluoranthenes/Pyrenes	7.1	0.42	0.21	ug/kg	
	C2-Fluoranthenes/Pyrenes	12.1	0.42	0.21	ug/kg	JB
	C3-Fluoranthenes/Pyrenes	13.1	0.42	0.21	ug/kg	
56-55-3	Benzo(a)anthracene	0.52	0.42	0.21	ug/kg	
218-01-9	Chrysene	3.4	0.42	0.21	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	7.3	0.42	0.21	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	11.1	0.42	0.21	ug/kg	JB
	C3-Benzo(a)anthracenes/Chrys	11.0	0.42	0.21	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	LP-SS-053_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-34	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	78.5
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	0.42	0.21	ug/kg	
205-99-2	Benzo(b)fluoranthene	1.0	0.42	0.21	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.42	0.21	ug/kg	
192-97-2	Benzo(e)pyrene	2.7	0.42	0.21	ug/kg	
50-32-8	Benzo(a)pyrene	0.36 ^b	0.42	0.21	ug/kg	J
198-55-0	Perylene	ND	0.42	0.21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	0.42	0.21	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	0.29	0.42	0.21	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	1.2	0.42	0.21	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	69%		40-140%
1517-22-2	Phenanthrene-d10	79%		40-140%
	Perylene-d12	86%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
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Client Sample ID:	LP-SS-053_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-34	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	78.5
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F106210.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	65.7	99	64	mg/kg	J
	TPH-ORO (> C28-C40)	126	150	99	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		43-136%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: LP-SS-053_061212
Lab Sample ID: D35496-34
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 06/12/12
Date Received: 06/14/12
Percent Solids: 78.5

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	3380	13	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Antimony	< 3.9	3.9	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Arsenic	4.2	3.2	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Barium	142	1.3	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Beryllium	< 1.3	1.3	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Cadmium	< 1.3	1.3	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Calcium	10600	51	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Chromium	6.0	1.3	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Cobalt	3.7	0.64	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Copper	7.1	1.3	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Iron	10000	9.0	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Lead	< 6.4	6.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Magnesium	1570	26	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Manganese	329	0.64	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Mercury	< 0.13	0.13	mg/kg	1	06/18/12	06/19/12 JM	SW846 7471B ²	SW846 7471B ⁴
Nickel	7.9	3.9	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Potassium	879	260	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Selenium	< 6.4	6.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Silver	< 3.9	3.9	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Sodium	99.3	51	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Thallium	< 1.3	1.3	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Vanadium	14.0	1.3	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³
Zinc	32.7	3.9	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ³

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2526

(3) Prep QC Batch: MP7677

(4) Prep QC Batch: MP7695

RL = Reporting Limit

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Client Sample ID:	LP-SS-054_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-35	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	54.4
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2616.D	50	07/10/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2616A.D	50	07/10/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	30	15	ug/kg	
	C1-Naphthalenes	ND	30	15	ug/kg	
	C2-Naphthalenes	35.2	30	15	ug/kg	
	C3-Naphthalenes	138	30	15	ug/kg	
	C4-Naphthalenes	432	30	15	ug/kg	
208-96-8	Acenaphthylene	ND	30	15	ug/kg	
83-32-9	Acenaphthene	ND	30	15	ug/kg	
86-73-7	Fluorene	ND	30	15	ug/kg	
	C1-Fluorenes	59.6	30	15	ug/kg	
	C2-Fluorenes	256	30	15	ug/kg	
	C3-Fluorenes	492	30	15	ug/kg	
132-65-0	Dibenzothiophene	ND	30	15	ug/kg	
	C1-Dibenzothiophenes	69.4	30	15	ug/kg	
	C2-Dibenzothiophenes	172	30	15	ug/kg	
	C3-Dibenzothiophenes	296	30	15	ug/kg	
	C4-Dibenzothiophenes	164	30	15	ug/kg	
85-01-8	Phenanthrene	18.6	30	15	ug/kg	J
120-12-7	Anthracene	ND	30	15	ug/kg	
	C1-Phenanthrenes/Anthracene	126	30	15	ug/kg	
	C2-Phenanthrenes/Anthracene	652	30	15	ug/kg	
	C3-Phenanthrenes/Anthracene	1100	30	15	ug/kg	
	C4-Phenanthrenes/Anthracene	456	30	15	ug/kg	
206-44-0	Fluoranthene	ND	30	15	ug/kg	
129-00-0	Pyrene	76.7	30	15	ug/kg	
	C1-Fluoranthenes/Pyrenes	306	30	15	ug/kg	
	C2-Fluoranthenes/Pyrenes	548	30	15	ug/kg	
	C3-Fluoranthenes/Pyrenes	547	30	15	ug/kg	
56-55-3	Benzo(a)anthracene	20.9	30	15	ug/kg	J
218-01-9	Chrysene	143	30	15	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	330	30	15	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	468	30	15	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	455	30	15	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-054_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-35	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	54.4
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	30	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	41.0	30	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	30	15	ug/kg	
192-97-2	Benzo(e)pyrene	113	30	15	ug/kg	
50-32-8	Benzo(a)pyrene	105 ^b	30	15	ug/kg	
198-55-0	Perylene	ND	30	15	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	30	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	30	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	34.4	30	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	67%		40-140%
1517-22-2	Phenanthrene-d10	95%		40-140%
	Perylene-d12	137%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-054_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-35	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	54.4
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06212.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	1230	140	92	mg/kg	
	TPH-ORO (> C28-C40)	1490	210	140	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	86%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-055_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-36	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	52.0
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2617.D	50	07/10/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2617A.D	50	07/10/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2	30.3 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	32	16	ug/kg	J
	C1-Naphthalenes	ND	32	16	ug/kg	
	C2-Naphthalenes	30.7	32	16	ug/kg	
	C3-Naphthalenes	166	32	16	ug/kg	
	C4-Naphthalenes	522	32	16	ug/kg	
208-96-8	Acenaphthylene	ND	32	16	ug/kg	J
83-32-9	Acenaphthene	ND	32	16	ug/kg	
86-73-7	Fluorene	ND	32	16	ug/kg	
	C1-Fluorenes	83.9	32	16	ug/kg	
	C2-Fluorenes	352	32	16	ug/kg	
132-65-0	C3-Fluorenes	664	32	16	ug/kg	J
	Dibenzothiophene	ND	32	16	ug/kg	
	C1-Dibenzothiophenes	ND	32	16	ug/kg	
	C2-Dibenzothiophenes	222	32	16	ug/kg	
	C3-Dibenzothiophenes	368	32	16	ug/kg	
85-01-8	C4-Dibenzothiophenes	222	32	16	ug/kg	J
120-12-7	Phenanthrene	19.3	32	16	ug/kg	
	Anthracene	ND	32	16	ug/kg	
	C1-Phenanthrenes/Anthracene	174	32	16	ug/kg	
	C2-Phenanthrenes/Anthracene	798	32	16	ug/kg	
	C3-Phenanthrenes/Anthracene	1290	32	16	ug/kg	
206-44-0	C4-Phenanthrenes/Anthracene	671	32	16	ug/kg	J
129-00-0	Fluoranthene	16.9	32	16	ug/kg	
	Pyrene	107	32	16	ug/kg	
	C1-Fluoranthenes/Pyrenes	425	32	16	ug/kg	
	C2-Fluoranthenes/Pyrenes	778	32	16	ug/kg	
56-55-3	C3-Fluoranthenes/Pyrenes	835	32	16	ug/kg	J
218-01-9	Benzo(a)anthracene	28.4	32	16	ug/kg	
	Chrysene	198	32	16	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	472	32	16	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	674	32	16	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	675	32	16	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-055_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-36	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	52.0
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	32	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	56.4	32	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	32	16	ug/kg	
192-97-2	Benzo(e)pyrene	159	32	16	ug/kg	
50-32-8	Benzo(a)pyrene	18.5 ^b	32	16	ug/kg	J
198-55-0	Perylene	ND	32	16	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	32	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	32	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	51.0	32	16	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	68%		40-140%
1517-22-2	Phenanthrene-d10	100%		40-140%
	Perylene-d12	141% ^c		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

(c) Outside control limits due to dilution.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-055_061212	Date Sampled:	06/12/12
Lab Sample ID:	D35496-36	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	52.0
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06214.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	2340	150	99	mg/kg	
	TPH-ORO (> C28-C40)	2900	230	150	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	80%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-056_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-37	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	47.1
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2618.D	50	07/10/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2618A.D	50	07/10/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2	30.8 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	34	17	ug/kg	
	C1-Naphthalenes	ND	34	17	ug/kg	
	C2-Naphthalenes	40.0	34	17	ug/kg	
	C3-Naphthalenes	258	34	17	ug/kg	
	C4-Naphthalenes	732	34	17	ug/kg	
208-96-8	Acenaphthylene	ND	34	17	ug/kg	
83-32-9	Acenaphthene	ND	34	17	ug/kg	
86-73-7	Fluorene	ND	34	17	ug/kg	
	C1-Fluorenes	117	34	17	ug/kg	
	C2-Fluorenes	482	34	17	ug/kg	
	C3-Fluorenes	784	34	17	ug/kg	
132-65-0	Dibenzothiophene	ND	34	17	ug/kg	
	C1-Dibenzothiophenes	108	34	17	ug/kg	
	C2-Dibenzothiophenes	285	34	17	ug/kg	
	C3-Dibenzothiophenes	381	34	17	ug/kg	
	C4-Dibenzothiophenes	241	34	17	ug/kg	
85-01-8	Phenanthrene	25.4	34	17	ug/kg	J
120-12-7	Anthracene	19.7	34	17	ug/kg	J
	C1-Phenanthrenes/Anthracene	253	34	17	ug/kg	
	C2-Phenanthrenes/Anthracene	990	34	17	ug/kg	
	C3-Phenanthrenes/Anthracene	1560	34	17	ug/kg	
	C4-Phenanthrenes/Anthracene	729	34	17	ug/kg	
206-44-0	Fluoranthene	18.3	34	17	ug/kg	J
129-00-0	Pyrene	112	34	17	ug/kg	
	C1-Fluoranthenes/Pyrenes	468	34	17	ug/kg	
	C2-Fluoranthenes/Pyrenes	838	34	17	ug/kg	
	C3-Fluoranthenes/Pyrenes	885	34	17	ug/kg	
56-55-3	Benzo(a)anthracene	32.5	34	17	ug/kg	J
218-01-9	Chrysene	212	34	17	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	505	34	17	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	760	34	17	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	762	34	17	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	LP-SS-056_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-37	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	47.1
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	34	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	60.8	34	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	34	17	ug/kg	
192-97-2	Benzo(e)pyrene	164	34	17	ug/kg	
50-32-8	Benzo(a)pyrene	21.4 ^b	34	17	ug/kg	J
198-55-0	Perylene	ND	34	17	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	34	17	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	34	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	53.7	34	17	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	66%		40-140%
1517-22-2	Phenanthrene-d10	94%		40-140%
	Perylene-d12	113%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-056_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-37	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	47.1
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F106218.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	2950	160	110	mg/kg	
	TPH-ORO (> C28-C40)	3460	250	160	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	76%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-057_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-38	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	79.9
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2619.D	50	07/10/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2619A.D	50	07/10/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2	30.2 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	13.4	21	10	ug/kg	J
	C1-Naphthalenes	230	21	10	ug/kg	
	C2-Naphthalenes	2100	21	10	ug/kg	
	C3-Naphthalenes	3020	21	10	ug/kg	
	C4-Naphthalenes	1960	21	10	ug/kg	
208-96-8	Acenaphthylene	17.3	21	10	ug/kg	J
83-32-9	Acenaphthene	12.1	21	10	ug/kg	J
86-73-7	Fluorene	155	21	10	ug/kg	
	C1-Fluorenes	640	21	10	ug/kg	
	C2-Fluorenes	988	21	10	ug/kg	
	C3-Fluorenes	947	21	10	ug/kg	
132-65-0	Dibenzothiophene	68.7	21	10	ug/kg	
	C1-Dibenzothiophenes	304	21	10	ug/kg	
	C2-Dibenzothiophenes	456	21	10	ug/kg	
	C3-Dibenzothiophenes	343	21	10	ug/kg	
	C4-Dibenzothiophenes	170	21	10	ug/kg	
85-01-8	Phenanthrene	400	21	10	ug/kg	
120-12-7	Anthracene	30.3	21	10	ug/kg	
	C1-Phenanthrenes/Anthracene	1480	21	10	ug/kg	
	C2-Phenanthrenes/Anthracene	1820	21	10	ug/kg	
	C3-Phenanthrenes/Anthracene	1240	21	10	ug/kg	
	C4-Phenanthrenes/Anthracene	482	21	10	ug/kg	
206-44-0	Fluoranthene	24.7	21	10	ug/kg	
129-00-0	Pyrene	94.6	21	10	ug/kg	
	C1-Fluoranthenes/Pyrenes	438	21	10	ug/kg	
	C2-Fluoranthenes/Pyrenes	623	21	10	ug/kg	
	C3-Fluoranthenes/Pyrenes	576	21	10	ug/kg	
56-55-3	Benzo(a)anthracene	25.5	21	10	ug/kg	
218-01-9	Chrysene	173	21	10	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	329	21	10	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	423	21	10	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	388	21	10	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-057_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-38	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	79.9
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	347	21	10	ug/kg	
205-99-2	Benzo(b)fluoranthene	33.8	21	10	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	21	10	ug/kg	
192-97-2	Benzo(e)pyrene	93.6	21	10	ug/kg	
50-32-8	Benzo(a)pyrene	90.9 ^b	21	10	ug/kg	
198-55-0	Perylene	ND	21	10	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	21	10	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	21	10	ug/kg	
191-24-2	Benzo(g,h,i)perylene	26.4	21	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	73%		40-140%
1517-22-2	Phenanthrene-d10	104%		40-140%
	Perylene-d12	148% ^c		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

(c) Outside control limits due to dilution.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Report of Analysis

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Client Sample ID:	LP-SS-057_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-38	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	79.9
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F106220.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	1060	98	64	mg/kg	
	TPH-ORO (> C28-C40)	1020	150	98	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	90%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Page 1 of 2

Client Sample ID:	LP-SS-058_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-39	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	62.8
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2620.D	50	07/10/12	AMA	06/22/12	M:OP29354	M:MSW127
Run #2 ^a	W2620A.D	50	07/10/12	AMA	06/22/12	M:OP29354	M:MSW127

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2	30.9 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	26	13	ug/kg	
	C1-Naphthalenes	ND	26	13	ug/kg	
	C2-Naphthalenes	22.7	26	13	ug/kg	J
	C3-Naphthalenes	157	26	13	ug/kg	
	C4-Naphthalenes	494	26	13	ug/kg	
208-96-8	Acenaphthylene	ND	26	13	ug/kg	
83-32-9	Acenaphthene	ND	26	13	ug/kg	
86-73-7	Fluorene	ND	26	13	ug/kg	
	C1-Fluorenes	68.6	26	13	ug/kg	
	C2-Fluorenes	255	26	13	ug/kg	
	C3-Fluorenes	443	26	13	ug/kg	
132-65-0	Dibenzothiophene	ND	26	13	ug/kg	
	C1-Dibenzothiophenes	61.0	26	13	ug/kg	
	C2-Dibenzothiophenes	147	26	13	ug/kg	
	C3-Dibenzothiophenes	217	26	13	ug/kg	
	C4-Dibenzothiophenes	140	26	13	ug/kg	
85-01-8	Phenanthrene	16.6	26	13	ug/kg	J
120-12-7	Anthracene	ND	26	13	ug/kg	
	C1-Phenanthrenes/Anthracene	135	26	13	ug/kg	
	C2-Phenanthrenes/Anthracene	534	26	13	ug/kg	
	C3-Phenanthrenes/Anthracene	847	26	13	ug/kg	
	C4-Phenanthrenes/Anthracene	377	26	13	ug/kg	
206-44-0	Fluoranthene	ND	26	13	ug/kg	
129-00-0	Pyrene	68.0	26	13	ug/kg	
	C1-Fluoranthenes/Pyrenes	268	26	13	ug/kg	
	C2-Fluoranthenes/Pyrenes	436	26	13	ug/kg	
	C3-Fluoranthenes/Pyrenes	464	26	13	ug/kg	
56-55-3	Benzo(a)anthracene	16.8	26	13	ug/kg	J
218-01-9	Chrysene	117	26	13	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	279	26	13	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	380	26	13	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	370	26	13	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-058_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-39	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	62.8
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	26	13	ug/kg	
205-99-2	Benzo(b)fluoranthene	31.0	26	13	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	26	13	ug/kg	
192-97-2	Benzo(e)pyrene	91.2	26	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND ^b	26	13	ug/kg	
198-55-0	Perylene	ND	26	13	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND ^b	26	13	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	26	13	ug/kg	
191-24-2	Benzo(g,h,i)perylene	27.7	26	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	66%		40-140%
1517-22-2	Phenanthrene-d10	98%		40-140%
	Perylene-d12	117%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-058_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-39	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	62.8
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F106222.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	1600	130	82	mg/kg	
	TPH-ORO (> C28-C40)	1790	190	130	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	90%		43-136%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: LP-SS-058_061312
Lab Sample ID: D35496-39
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 06/13/12
Date Received: 06/14/12
Percent Solids: 62.8

4.46
4

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	5730	15	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Antimony	< 4.6	4.6	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Arsenic	6.0	3.8	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Barium	433	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Beryllium	< 1.5	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	1.7	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Calcium	25300	61	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Chromium	9.2	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Cobalt	6.2	0.77	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Copper	14.3	1.5	mg/kg	1	06/15/12	06/18/12 JM	SW846 6010C ²	SW846 3050B ⁴
Iron	16200	11	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Lead	9.3	7.7	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Magnesium	2660	31	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Manganese	710	0.77	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.16	0.16	mg/kg	1	06/18/12	06/19/12 JM	SW846 7471B ³	SW846 7471B ⁵
Nickel	14.7	4.6	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Potassium	1430	310	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 7.7	7.7	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 4.6	4.6	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Sodium	88.8	61	mg/kg	1	06/15/12	06/18/12 JM	SW846 6010C ²	SW846 3050B ⁴
Thallium	< 1.5	1.5	mg/kg	1	06/15/12	06/18/12 JM	SW846 6010C ²	SW846 3050B ⁴
Vanadium	24.8	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Zinc	90.0	4.6	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴

- (1) Instrument QC Batch: MA2518
(2) Instrument QC Batch: MA2523
(3) Instrument QC Batch: MA2526
(4) Prep QC Batch: MP7677
(5) Prep QC Batch: MP7695

RL = Reporting Limit

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Client Sample ID:	LP-SS-065_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-40	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	62.4
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06224.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	238	120	81	mg/kg	
	TPH-ORO (> C28-C40)	539	190	120	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	86%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-059_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-41	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	58.5
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2583.D	1	07/05/12	AMA	06/22/12	M:OP29355	M:MSW127
Run #2 ^a	W2583A.D	1	07/05/12	AMA	06/22/12	M:OP29355	M:MSW127

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.92	0.56	0.28	ug/kg	B
	C1-Naphthalenes	1.7	0.56	0.28	ug/kg	
	C2-Naphthalenes	7.6	0.56	0.28	ug/kg	
	C3-Naphthalenes	15.5	0.56	0.28	ug/kg	
	C4-Naphthalenes	15.5	0.56	0.28	ug/kg	
208-96-8	Acenaphthylene	0.48	0.56	0.28	ug/kg	J
83-32-9	Acenaphthene	ND	0.56	0.28	ug/kg	
86-73-7	Fluorene	1.1	0.56	0.28	ug/kg	
	C1-Fluorenes	4.1	0.56	0.28	ug/kg	
	C2-Fluorenes	6.5	0.56	0.28	ug/kg	
	C3-Fluorenes	11.1	0.56	0.28	ug/kg	
132-65-0	Dibenzothiophene	0.89	0.56	0.28	ug/kg	
	C1-Dibenzothiophenes	6.2	0.56	0.28	ug/kg	
	C2-Dibenzothiophenes	5.9	0.56	0.28	ug/kg	
	C3-Dibenzothiophenes	6.4	0.56	0.28	ug/kg	
	C4-Dibenzothiophenes	4.0	0.56	0.28	ug/kg	
85-01-8	Phenanthrene	3.5	0.56	0.28	ug/kg	
120-12-7	Anthracene	0.41	0.56	0.28	ug/kg	J
	C1-Phenanthrenes/Anthracene	16.3	0.56	0.28	ug/kg	
	C2-Phenanthrenes/Anthracene	20.4	0.56	0.28	ug/kg	
	C3-Phenanthrenes/Anthracene	20.3	0.56	0.28	ug/kg	
	C4-Phenanthrenes/Anthracene	13.0	0.56	0.28	ug/kg	
206-44-0	Fluoranthene	1.3	0.56	0.28	ug/kg	
129-00-0	Pyrene	2.7	0.56	0.28	ug/kg	
	C1-Fluoranthenes/Pyrenes	7.8	0.56	0.28	ug/kg	
	C2-Fluoranthenes/Pyrenes	15.5	0.56	0.28	ug/kg	
	C3-Fluoranthenes/Pyrenes	16.9	0.56	0.28	ug/kg	
56-55-3	Benzo(a)anthracene	1.3	0.56	0.28	ug/kg	
218-01-9	Chrysene	4.5	0.56	0.28	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	9.0	0.56	0.28	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	17.6	0.56	0.28	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	20.4	0.56	0.28	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-059_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-41	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	58.5
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	16.4	0.56	0.28	ug/kg	
205-99-2	Benzo(b)fluoranthene	2.1	0.56	0.28	ug/kg	
207-08-9	Benzo(k)fluoranthene	0.68	0.56	0.28	ug/kg	
192-97-2	Benzo(e)pyrene	5.1	0.56	0.28	ug/kg	
50-32-8	Benzo(a)pyrene	0.76 ^b	0.56	0.28	ug/kg	
198-55-0	Perylene	0.67	0.56	0.28	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.67 ^b	0.56	0.28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	0.68	0.56	0.28	ug/kg	
191-24-2	Benzo(g,h,i)perylene	2.1	0.56	0.28	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	61%		40-140%
1517-22-2	Phenanthrene-d10	73%		40-140%
	Perylene-d12	83%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-059_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-41	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	58.5
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06226.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	262	130	86	mg/kg	
	TPH-ORO (> C28-C40)	541	200	130	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	87%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-060_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-42	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	41.9
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2582.D	100	07/05/12	AMA	06/22/12	M:OP29355	M:MSW127
Run #2 ^a	W2582A.D	100	07/05/12	AMA	06/22/12	M:OP29355	M:MSW127

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2	30.5 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	78	39	ug/kg	
	C1-Naphthalenes	73.7	78	39	ug/kg	J
	C2-Naphthalenes	938	78	39	ug/kg	
	C3-Naphthalenes	7120	78	39	ug/kg	
	C4-Naphthalenes	12300	78	39	ug/kg	
208-96-8	Acenaphthylene	72.7	78	39	ug/kg	J
83-32-9	Acenaphthene	ND	78	39	ug/kg	
86-73-7	Fluorene	88.2	78	39	ug/kg	
	C1-Fluorenes	2670	78	39	ug/kg	
	C2-Fluorenes	7890	78	39	ug/kg	
	C3-Fluorenes	9340	78	39	ug/kg	
132-65-0	Dibenzothiophene	117	78	39	ug/kg	
	C1-Dibenzothiophenes	1630	78	39	ug/kg	
	C2-Dibenzothiophenes	3710	78	39	ug/kg	
	C3-Dibenzothiophenes	3810	78	39	ug/kg	
	C4-Dibenzothiophenes	1980	78	39	ug/kg	
85-01-8	Phenanthrene	381	78	39	ug/kg	
120-12-7	Anthracene	266	78	39	ug/kg	
	C1-Phenanthrenes/Anthracene	6350	78	39	ug/kg	
	C2-Phenanthrenes/Anthracene	15200	78	39	ug/kg	
	C3-Phenanthrenes/Anthracene	15400	78	39	ug/kg	
	C4-Phenanthrenes/Anthracene	6430	78	39	ug/kg	
206-44-0	Fluoranthene	212	78	39	ug/kg	
129-00-0	Pyrene	1210	78	39	ug/kg	
	C1-Fluoranthenes/Pyrenes	5110	78	39	ug/kg	
	C2-Fluoranthenes/Pyrenes	7830	78	39	ug/kg	
	C3-Fluoranthenes/Pyrenes	7620	78	39	ug/kg	
56-55-3	Benzo(a)anthracene	320	78	39	ug/kg	
218-01-9	Chrysene	2280	78	39	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	4560	78	39	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	5900	78	39	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	5340	78	39	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-060_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-42	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	41.9
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	4310	78	39	ug/kg	
205-99-2	Benzo(b)fluoranthene	471	78	39	ug/kg	
207-08-9	Benzo(k)fluoranthene	84.8	78	39	ug/kg	
192-97-2	Benzo(e)pyrene	1370	78	39	ug/kg	
50-32-8	Benzo(a)pyrene	179 ^b	78	39	ug/kg	
198-55-0	Perylene	ND	78	39	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	55.3 ^b	78	39	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	118	78	39	ug/kg	
191-24-2	Benzo(g,h,i)perylene	363	78	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	52%		40-140%
1517-22-2	Phenanthrene-d10	112%		40-140%
	Perylene-d12	93%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-060_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-42	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	41.9
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06200A.D	10	06/28/12	AV	06/22/12	OP6111	GFI453
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	10600	930	600	mg/kg	
	TPH-ORO (> C28-C40)	9230	1400	930	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	43%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID: LP-SS-060_061312
Lab Sample ID: D35496-42
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 06/13/12
Date Received: 06/14/12
Percent Solids: 41.9

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	4890	24	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Antimony	< 7.2	7.2	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Arsenic	6.3	6.0	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Barium	573	2.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Beryllium	< 2.4	2.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 2.4	2.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Calcium	9150	95	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Chromium	7.8	2.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Cobalt	5.6	1.2	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Copper	10	2.4	mg/kg	1	06/15/12	06/18/12 JM	SW846 6010C ²	SW846 3050B ⁴
Iron	18300	17	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Lead	< 12	12	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Magnesium	1910	48	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Manganese	838	1.2	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.23	0.23	mg/kg	1	06/18/12	06/19/12 JM	SW846 7471B ³	SW846 7471B ⁵
Nickel	11.2	7.2	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Potassium	1010	480	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 12	12	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 7.2	7.2	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Sodium	< 95	95	mg/kg	1	06/15/12	06/18/12 JM	SW846 6010C ²	SW846 3050B ⁴
Thallium	< 2.4	2.4	mg/kg	1	06/15/12	06/18/12 JM	SW846 6010C ²	SW846 3050B ⁴
Vanadium	21.1	2.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Zinc	255	7.2	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2523

(3) Instrument QC Batch: MA2526

(4) Prep QC Batch: MP7677

(5) Prep QC Batch: MP7695

RL = Reporting Limit

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Client Sample ID:	LP-SS-061_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-43	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	49.0
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F106230.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.3 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	579	160	100	mg/kg	
	TPH-ORO (> C28-C40)	1580	230	160	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	84%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-062_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-44	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	74.5
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2584.D	1	07/05/12	AMA	06/22/12	M:OP29355	M:MSW127
Run #2 ^a	W2584A.D	1	07/05/12	AMA	06/22/12	M:OP29355	M:MSW127

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	1.2	0.44	0.22	ug/kg	B
	C1-Naphthalenes	1.7	0.44	0.22	ug/kg	
	C2-Naphthalenes	7.9	0.44	0.22	ug/kg	
	C3-Naphthalenes	8.4	0.44	0.22	ug/kg	
	C4-Naphthalenes	5.8	0.44	0.22	ug/kg	
208-96-8	Acenaphthylene	0.32	0.44	0.22	ug/kg	J
83-32-9	Acenaphthene	0.39	0.44	0.22	ug/kg	J
86-73-7	Fluorene	1.2	0.44	0.22	ug/kg	
	C1-Fluorenes	1.4	0.44	0.22	ug/kg	
	C2-Fluorenes	3.0	0.44	0.22	ug/kg	
	C3-Fluorenes	3.4	0.44	0.22	ug/kg	
132-65-0	Dibenzothiophene	0.80	0.44	0.22	ug/kg	
	C1-Dibenzothiophenes	5.0	0.44	0.22	ug/kg	
	C2-Dibenzothiophenes	3.0	0.44	0.22	ug/kg	
	C3-Dibenzothiophenes	5.6	0.44	0.22	ug/kg	
	C4-Dibenzothiophenes	2.1	0.44	0.22	ug/kg	
85-01-8	Phenanthrene	3.0	0.44	0.22	ug/kg	B
120-12-7	Anthracene	0.37	0.44	0.22	ug/kg	J
	C1-Phenanthrenes/Anthracene	4.5	0.44	0.22	ug/kg	
	C2-Phenanthrenes/Anthracene	4.1	0.44	0.22	ug/kg	
	C3-Phenanthrenes/Anthracene	2.9	0.44	0.22	ug/kg	
	C4-Phenanthrenes/Anthracene	ND	0.44	0.22	ug/kg	
206-44-0	Fluoranthene	1.9	0.44	0.22	ug/kg	
129-00-0	Pyrene	3.9	0.44	0.22	ug/kg	
	C1-Fluoranthenes/Pyrenes	4.2	0.44	0.22	ug/kg	
	C2-Fluoranthenes/Pyrenes	3.7	0.44	0.22	ug/kg	
	C3-Fluoranthenes/Pyrenes	2.6	0.44	0.22	ug/kg	
56-55-3	Benzo(a)anthracene	1.2	0.44	0.22	ug/kg	
218-01-9	Chrysene	1.7	0.44	0.22	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	1.8	0.44	0.22	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	1.6	0.44	0.22	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	1.5	0.44	0.22	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-062_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-44	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	74.5
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	ND	0.44	0.22	ug/kg	
205-99-2	Benzo(b)fluoranthene	1.3	0.44	0.22	ug/kg	
207-08-9	Benzo(k)fluoranthene	0.95	0.44	0.22	ug/kg	
192-97-2	Benzo(e)pyrene	1.3	0.44	0.22	ug/kg	
50-32-8	Benzo(a)pyrene	0.95 ^b	0.44	0.22	ug/kg	
198-55-0	Perylene	7.1	0.44	0.22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.86 ^b	0.44	0.22	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	0.49	0.44	0.22	ug/kg	
191-24-2	Benzo(g,h,i)perylene	3.0	0.44	0.22	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	61%		40-140%
1517-22-2	Phenanthrene-d10	81%		40-140%
	Perylene-d12	93%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-062_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-44	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	74.5
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06232.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.3 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	107	100	65	mg/kg	
	TPH-ORO (> C28-C40)	259	150	100	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-063_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-45	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	65.3
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2585.D	5	07/05/12	AMA	06/22/12	M:OP29355	M:MSW127
Run #2 ^a	W2585A.D	5	07/05/12	AMA	06/22/12	M:OP29355	M:MSW127

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2	30.9 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	2.5	1.2	ug/kg	
	C1-Naphthalenes	2.3	2.5	1.2	ug/kg	J
	C2-Naphthalenes	15.9	2.5	1.2	ug/kg	
	C3-Naphthalenes	105	2.5	1.2	ug/kg	
	C4-Naphthalenes	192	2.5	1.2	ug/kg	
208-96-8	Acenaphthylene	1.5	2.5	1.2	ug/kg	J
83-32-9	Acenaphthene	ND	2.5	1.2	ug/kg	
86-73-7	Fluorene	1.8	2.5	1.2	ug/kg	J
	C1-Fluorenes	35.3	2.5	1.2	ug/kg	
	C2-Fluorenes	116	2.5	1.2	ug/kg	
	C3-Fluorenes	163	2.5	1.2	ug/kg	
132-65-0	Dibenzothiophene	2.1	2.5	1.2	ug/kg	J
	C1-Dibenzothiophenes	24.1	2.5	1.2	ug/kg	
	C2-Dibenzothiophenes	52.5	2.5	1.2	ug/kg	
	C3-Dibenzothiophenes	69.2	2.5	1.2	ug/kg	
	C4-Dibenzothiophenes	43.3	2.5	1.2	ug/kg	
85-01-8	Phenanthrene	5.9	2.5	1.2	ug/kg	
120-12-7	Anthracene	3.8	2.5	1.2	ug/kg	
	C1-Phenanthrenes/Anthracene	74.5	2.5	1.2	ug/kg	
	C2-Phenanthrenes/Anthracene	221	2.5	1.2	ug/kg	
	C3-Phenanthrenes/Anthracene	246	2.5	1.2	ug/kg	
	C4-Phenanthrenes/Anthracene	122	2.5	1.2	ug/kg	
206-44-0	Fluoranthene	3.6	2.5	1.2	ug/kg	
129-00-0	Pyrene	17.2	2.5	1.2	ug/kg	
	C1-Fluoranthenes/Pyrenes	72.7	2.5	1.2	ug/kg	
	C2-Fluoranthenes/Pyrenes	133	2.5	1.2	ug/kg	
	C3-Fluoranthenes/Pyrenes	148	2.5	1.2	ug/kg	
56-55-3	Benzo(a)anthracene	5.8	2.5	1.2	ug/kg	
218-01-9	Chrysene	33.6	2.5	1.2	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	80.6	2.5	1.2	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	123	2.5	1.2	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	130	2.5	1.2	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	LP-SS-063_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-45	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	65.3
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	110	2.5	1.2	ug/kg	
205-99-2	Benzo(b)fluoranthene	9.7	2.5	1.2	ug/kg	
207-08-9	Benzo(k)fluoranthene	1.9	2.5	1.2	ug/kg	J
192-97-2	Benzo(e)pyrene	27.2	2.5	1.2	ug/kg	
50-32-8	Benzo(a)pyrene	3.1 ^b	2.5	1.2	ug/kg	
198-55-0	Perylene	ND	2.5	1.2	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1.6 ^b	2.5	1.2	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	2.8	2.5	1.2	ug/kg	
191-24-2	Benzo(g,h,i)perylene	8.8	2.5	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	72%		40-140%
1517-22-2	Phenanthrene-d10	92%		40-140%
	Perylene-d12	103%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
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 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-063_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-45	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	65.3
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06234.D	1	06/27/12	AV	06/22/12	OP6111	GFI451
Run #2							

	Initial Weight	Final Volume
Run #1	5.4 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	514	110	74	mg/kg	
	TPH-ORO (> C28-C40)	658	170	110	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: LP-SS-063_061312
Lab Sample ID: D35496-45
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 06/13/12
Date Received: 06/14/12
Percent Solids: 65.3

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	6120	15	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Antimony	< 4.6	4.6	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Arsenic	7.0	3.9	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Barium	296	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Beryllium	< 1.5	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	1.5	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Calcium	6770	62	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Chromium	9.7	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Cobalt	6.8	0.77	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Copper	12.6	1.5	mg/kg	1	06/15/12	06/18/12 JM	SW846 6010C ²	SW846 3050B ⁴
Iron	15700	11	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Lead	9.7	7.7	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Magnesium	2300	31	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Manganese	573	0.77	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.16	0.16	mg/kg	1	06/18/12	06/19/12 JM	SW846 7471B ³	SW846 7471B ⁵
Nickel	14.4	4.6	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Potassium	1150	310	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 7.7	7.7	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 4.6	4.6	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Sodium	80.8	62	mg/kg	1	06/15/12	06/18/12 JM	SW846 6010C ²	SW846 3050B ⁴
Thallium	< 1.5	1.5	mg/kg	1	06/15/12	06/18/12 JM	SW846 6010C ²	SW846 3050B ⁴
Vanadium	26.1	1.5	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Zinc	70.4	4.6	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴

- (1) Instrument QC Batch: MA2518
 (2) Instrument QC Batch: MA2523
 (3) Instrument QC Batch: MA2526
 (4) Prep QC Batch: MP7677
 (5) Prep QC Batch: MP7695

RL = Reporting Limit

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Client Sample ID:	LP-SS-064_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-46	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	47.9
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2589.D	100	07/05/12	AMA	06/22/12	M:OP29355	M:MSW127
Run #2 ^a	W2589A.D	100	07/05/12	AMA	06/22/12	M:OP29355	M:MSW127

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2	30.8 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	68	34	ug/kg	
	C1-Naphthalenes	58.5	68	34	ug/kg	J
	C2-Naphthalenes	768	68	34	ug/kg	
	C3-Naphthalenes	5940	68	34	ug/kg	
	C4-Naphthalenes	10300	68	34	ug/kg	
208-96-8	Acenaphthylene	61.0	68	34	ug/kg	J
83-32-9	Acenaphthene	ND	68	34	ug/kg	
86-73-7	Fluorene	74.7	68	34	ug/kg	
	C1-Fluorenes	2020	68	34	ug/kg	
	C2-Fluorenes	6670	68	34	ug/kg	
	C3-Fluorenes	7390	68	34	ug/kg	
132-65-0	Dibenzothiophene	96.5	68	34	ug/kg	
	C1-Dibenzothiophenes	1330	68	34	ug/kg	
	C2-Dibenzothiophenes	3300	68	34	ug/kg	
	C3-Dibenzothiophenes	3270	68	34	ug/kg	
	C4-Dibenzothiophenes	1640	68	34	ug/kg	
85-01-8	Phenanthrene	314	68	34	ug/kg	
120-12-7	Anthracene	ND	68	34	ug/kg	
	C1-Phenanthrenes/Anthracene	5000	68	34	ug/kg	
	C2-Phenanthrenes/Anthracene	12200	68	34	ug/kg	
	C3-Phenanthrenes/Anthracene	12800	68	34	ug/kg	
	C4-Phenanthrenes/Anthracene	5250	68	34	ug/kg	
206-44-0	Fluoranthene	166	68	34	ug/kg	
129-00-0	Pyrene	1010	68	34	ug/kg	
	C1-Fluoranthenes/Pyrenes	4120	68	34	ug/kg	
	C2-Fluoranthenes/Pyrenes	6540	68	34	ug/kg	
	C3-Fluoranthenes/Pyrenes	6080	68	34	ug/kg	
56-55-3	Benzo(a)anthracene	260	68	34	ug/kg	
218-01-9	Chrysene	1880	68	34	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	3880	68	34	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	4600	68	34	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	4160	68	34	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	LP-SS-064_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-46	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	47.9
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	3400	68	34	ug/kg	
205-99-2	Benzo(b)fluoranthene	385	68	34	ug/kg	
207-08-9	Benzo(k)fluoranthene	68.8	68	34	ug/kg	
192-97-2	Benzo(e)pyrene	1100	68	34	ug/kg	
50-32-8	Benzo(a)pyrene	147 ^b	68	34	ug/kg	
198-55-0	Perylene	ND	68	34	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	70.4 ^b	68	34	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	156	68	34	ug/kg	
191-24-2	Benzo(g,h,i)perylene	282	68	34	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	52%		40-140%
1517-22-2	Phenanthrene-d10	109%		40-140%
	Perylene-d12	92%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Client Sample ID:	LP-SS-064_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-46	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	47.9
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06189A.D	10	06/28/12	AV	06/25/12	OP6126	GFI452
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	12900	280	180	mg/kg	
	TPH-ORO (> C28-C40)	12600	420	280	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		43-136%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: LP-SS-064_061312
Lab Sample ID: D35496-46
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 06/13/12
Date Received: 06/14/12
Percent Solids: 47.9

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	5630	21	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Antimony	< 6.3	6.3	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Arsenic	10	5.2	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Barium	566	2.1	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Beryllium	< 2.1	2.1	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 2.1	2.1	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Calcium	8990	84	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Chromium	8.7	2.1	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Cobalt	6.4	1.0	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Copper	11.2	2.1	mg/kg	1	06/15/12	06/18/12 JM	SW846 6010C ²	SW846 3050B ⁴
Iron	21700	15	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Lead	< 10	10	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Magnesium	2110	42	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Manganese	915	1.0	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.21	0.21	mg/kg	1	06/18/12	06/19/12 JM	SW846 7471B ³	SW846 7471B ⁵
Nickel	12.8	6.3	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Potassium	1140	420	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 10	10	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 6.3	6.3	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Sodium	< 84	84	mg/kg	1	06/15/12	06/18/12 JM	SW846 6010C ²	SW846 3050B ⁴
Thallium	< 2.1	2.1	mg/kg	1	06/15/12	06/18/12 JM	SW846 6010C ²	SW846 3050B ⁴
Vanadium	24.1	2.1	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Zinc	287	6.3	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C ¹	SW846 3050B ⁴

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2523

(3) Instrument QC Batch: MA2526

(4) Prep QC Batch: MP7677

(5) Prep QC Batch: MP7695

RL = Reporting Limit

Accutest LabLink@9713 10:04 22-Jan-2013

Report of Analysis

Page 1 of 2

Client Sample ID:	LP-SS-066_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-47	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	52.1
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	W2590.D	100	07/05/12	AMA	06/22/12	M:OP29355	M:MSW127
Run #2 ^a	W2590A.D	100	07/05/12	AMA	06/22/12	M:OP29355	M:MSW127

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	63	32	ug/kg	
	C1-Naphthalenes	44.7	63	32	ug/kg	J
	C2-Naphthalenes	231	63	32	ug/kg	
	C3-Naphthalenes	2100	63	32	ug/kg	
	C4-Naphthalenes	5080	63	32	ug/kg	
208-96-8	Acenaphthylene	ND	63	32	ug/kg	
83-32-9	Acenaphthene	ND	63	32	ug/kg	
86-73-7	Fluorene	ND	63	32	ug/kg	
	C1-Fluorenes	816	63	32	ug/kg	
	C2-Fluorenes	3180	63	32	ug/kg	
	C3-Fluorenes	4300	63	32	ug/kg	
132-65-0	Dibenzothiophene	46.2	63	32	ug/kg	J
	C1-Dibenzothiophenes	595	63	32	ug/kg	
	C2-Dibenzothiophenes	1560	63	32	ug/kg	
	C3-Dibenzothiophenes	1910	63	32	ug/kg	
	C4-Dibenzothiophenes	1070	63	32	ug/kg	
85-01-8	Phenanthrene	58.0	63	32	ug/kg	J
120-12-7	Anthracene	106	63	32	ug/kg	
	C1-Phenanthrenes/Anthracene	1790	63	32	ug/kg	
	C2-Phenanthrenes/Anthracene	6060	63	32	ug/kg	
	C3-Phenanthrenes/Anthracene	7610	63	32	ug/kg	
	C4-Phenanthrenes/Anthracene	3050	63	32	ug/kg	
206-44-0	Fluoranthene	91.5	63	32	ug/kg	
129-00-0	Pyrene	604	63	32	ug/kg	
	C1-Fluoranthenes/Pyrenes	2440	63	32	ug/kg	
	C2-Fluoranthenes/Pyrenes	4100	63	32	ug/kg	
	C3-Fluoranthenes/Pyrenes	4020	63	32	ug/kg	
56-55-3	Benzo(a)anthracene	152	63	32	ug/kg	
218-01-9	Chrysene	1120	63	32	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	2330	63	32	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	3000	63	32	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	2930	63	32	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	LP-SS-066_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-47	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	52.1
Method:	D5739-06/8270C SIM SW846 3546		
Project:	36549247.00000		

Expanded PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C4-Benzo(a)anthracenes/Chrys	2260	63	32	ug/kg	
205-99-2	Benzo(b)fluoranthene	241	63	32	ug/kg	
207-08-9	Benzo(k)fluoranthene	47.2	63	32	ug/kg	J
192-97-2	Benzo(e)pyrene	703	63	32	ug/kg	
50-32-8	Benzo(a)pyrene	92.4 ^b	63	32	ug/kg	
198-55-0	Perylene	ND	63	32	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	43.3 ^b	63	32	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	75.5	63	32	ug/kg	
191-24-2	Benzo(g,h,i)perylene	186	63	32	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1146-65-2	Naphthalene-d8	46%		40-140%
1517-22-2	Phenanthrene-d10	88%		40-140%
	Perylene-d12	83%		40-140%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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Report of Analysis

Page 1 of 1

Client Sample ID:	LP-SS-066_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-47	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	52.1
Method:	SW846-8015B SW846 3546		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06191A.D	10	06/28/12	AV	06/25/12	OP6126	GFI452
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	8240	260	170	mg/kg	
	TPH-ORO (> C28-C40)	8430	380	260	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	97%		43-136%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Page 1 of 1

Client Sample ID:	LP-SW-012_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-48	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846-8015B SW846 3510C		
Project:	36549247.00000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI06198A.D	1	06/28/12	AV	06/15/12	OP6072	GFI453
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.13	mg/l	
	TPH-ORO (> C28-C40)	ND	0.30	0.20	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	39%		25-146%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	LP-SW-012_061312	Date Sampled:	06/13/12
Lab Sample ID:	D35496-48	Date Received:	06/14/12
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	36549247.00000		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Antimony	< 30	30	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Arsenic	< 25	25	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Barium	< 10	10	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Beryllium	< 10	10	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Cadmium	< 10	10	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Calcium	< 400	400	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Chromium	< 10	10	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Cobalt	< 5.0	5.0	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Copper	< 10	10	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Iron	< 70	70	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Lead	< 50	50	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Magnesium	< 200	200	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Manganese	< 5.0	5.0	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Mercury	< 0.10	0.10	ug/l	1	06/18/12	06/18/12 JB	SW846 7470A ²	SW846 7470A ⁵
Nickel	< 30	30	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Potassium	< 1000	1000	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Selenium	< 50	50	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Silver	< 30	30	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Sodium	< 400	400	ug/l	1	06/15/12	06/18/12 JM	SW846 6010C ³	SW846 3010A ⁴
Thallium	< 10	10	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Vanadium	< 10	10	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴
Zinc	< 30	30	ug/l	1	06/15/12	06/16/12 JM	SW846 6010C ¹	SW846 3010A ⁴

(1) Instrument QC Batch: MA2518

(2) Instrument QC Batch: MA2520

(3) Instrument QC Batch: MA2523

(4) Prep QC Batch: MP7673

(5) Prep QC Batch: MP7684

RL = Reporting Limit



Misc. Forms

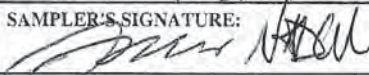
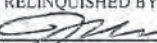
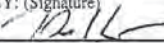
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Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

D354 D35496 P9 1/4

UOS URS Operating Services, Inc. 1099 18 th Street, STE 710 Denver, CO 80202 303-291-8200		SHIP TO: hand deliver: Accutest Laboratories		CHAIN OF CUSTODY RECORD							
PROJECT NUMBER / PURCHASE ORDER NUMBER: 36549247 / KBM3/2012-65		SITE MANAGER / PHONE NUMBER: Jeff Miller/720.810.0770		Number of Containers	8270 SIM	8015 B	Metals				TURNAROUND REQUESTED: standard
SAMPLER'S SIGNATURE: 											TAG NUMBERS
SAMPLE ID	DATE	TIME	COMP/ GRAB	REMARKS							
1) LP-SW-804-061312	06/13/12	10:32	grab	water	6	X	X	X			01
2) LP-SW-805-061312	06/13/12	09:28	grab		6	X	X	X			02
3) LP-SW-806-061212	06/12/12	16:30	grab		6	X	X	X			03
4) LP-SW-807-061212	06/12/12	16:50	grab		6	X	X	X			04
5) LP-SW-808-061212	06/12/12	15:50	grab		6	X	X	X			05
6) LP-SW-809-061212	06/12/12	14:30	grab		6	X	X	X			06
7) LP-SW-811-061212	06/12/12	15:15	grab	✓	6	X	X	X			07
8) LP-SS-029-061112	06/11/12	1545	grab	Soil	1		X				08
9) LP-SS-025-061112	06/11/12	1350			1		X				09
10) LP-SS-026-061112	06/11/12	1400			1		X				10
11) LP-SS-027-061112	06/11/12	1425			1		X				11
12) LP-SS-028-061112	06/11/12	1610			1		X				12
13) LP-SS-030-061112	06/11/12	1525			1		X				13
14) LP-SS-031-061112	06/11/12	1500			1		X				14
15) LP-SS-032-061112	06/11/12	1655	✓	✓	1		X				15
RELINQUISHED BY: (Signature) 		DATE 6-14-12	TIME 1510	RECEIVED BY: (Signature) 	OTHER INFORMATION: 4e-HD						
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)							
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)	DATE	TIME	AIRBILL NUMBER:				
							LAB REMARKS:				

White - Original to Accompany Samples

Yellow - UOS Chemist

Pink - UOS Project Manager

DN 7320

D35496: Chain of Custody

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D35496 P 2/4

UOS URS Operating Services, Inc. 1099 18 th Street, STE 710 Denver, CO 80202 303-291-8200		-SHIP-TO- hand deliver : Accutest Laboratories		CHAIN OF CUSTODY RECORD									
PROJECT NUMBER / PURCHASE ORDER NUMBER: 3654 9247 / KBM3/2012-65				SITE MANAGER / PHONE NUMBER: Jeff Miller / 720.810.0790				TURNAROUND REQUESTED: Standard					
SAMPLER'S SIGNATURE: <i>[Signature]</i>													
SAMPLE ID	DATE	TIME	COMP/GRAB	REMARKS	Number of Containers	8270 SIM	8015 B	Metals	TAG NUMBERS				
¹¹ LP-SS-033-061112	06/11/12	1720	grab	Soil	1		X		16				
² LP-SS-034-061112	06/11/12	1745	grab		1		X		17				
³ LP-SS-035-061112	06/11/12	1800	grab		1		X		18				
⁴ LP-SS-036-061112	06/11/12	1825	grab		1		X		19				
⁵ LP-SS-037-061212	06/12/12	0835	grab	MS/MSD	3	X	X		20 MS/MSD				
⁶ LP-SS-040-061212	06/12/12	0925	grab		3	X	X	X	21				
⁷ LP-SS-041-061212	06/12/12	0935	grab		3	X	X	X	22				
⁸ LP-SS-042-061212	06/12/12	0935	grab		2	X	X		23				
⁹ LP-SS-043-061212	06/12/12	10:20	grab		2	X	X		24				
¹⁰ LP-SS-044-061212	06/12/12	10:50	grab		2	X	X		25				
¹¹ LP-SS-045-061212	06/12/12	11:45	grab		2	X	X		26				
¹² LP-SS-046-061212	06/12/12	11:35	grab		2	X	X		27				
¹³ LP-SS-047-061212	06/12/12	11:20	grab		2	X	X		28				
¹⁴ LP-SS-048-061212	06/12/12	12:00	grab		2	X	X		29				
¹⁵ LP-SS-049-061212	06/12/12	1455	grab	↓	2	X	X		30				
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RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)									
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)		DATE	TIME	AIRBILL NUMBER: LAB REMARKS:					

White - Original to Accompany Samples

Yellow - UOS Chemist

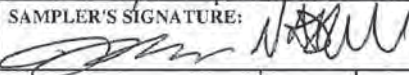
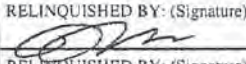

Pink - UOS Project Manager

DN 7321

D35496: Chain of Custody

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D35496 P3/4

UOS URS Operating Services, Inc. 1099 18 th Street, STE 710 Denver, CO 80202 303-291-8200		SHIP TO: hand deliver: Accutest Laboratories		CHAIN OF CUSTODY RECORD							
PROJECT NUMBER / PURCHASE ORDER NUMBER: 36549247/KBM3/2012-65				SITE MANAGER / PHONE NUMBER: Jeff Miller / 720 810 0790				TURNAROUND REQUESTED: Standard			
SAMPLER'S SIGNATURE: 				Number of Containers 8070 SIM 8015 B Metals							
SAMPLE ID	DATE	TIME	COMP/ GRAB	REMARKS							TAG NUMBERS
¹ LP-SS-050-061212	06/12/12	1515	grab	Soil	2	X	X				31
² LP-SS-051-061212	06/12/12	1525			2	X	X				32
³ LP-SS-052-061212	06/12/12	1545			2	X	X				33
⁴ LP-SS-053-061212	06/12/12	1640			3	X	X	X			34
⁵ LP-SS-054-061212	06/12/12	1715			2	X	X				35
⁶ LP-SS-055-061212	06/12/12	1740			2	X	X				36
⁷ LP-SS-056-061312	06/13/12	0930			2	X	X				37
⁸ LP-SS-057-061312	06/13/12	11:00			2	X	X				38
⁹ LP-SS-058-061312	06/13/12	10:30			3	X	X	X			39
¹⁰ LP-SS-065-061312	06/13/12	10:00	✓	✓	1		X				40
¹¹ LP-SS-059-061312	06/13/12	12:00			2	X	X				41
¹² LP-SS-060-061312	06/13/12	13:00			3	X	X	X			42
¹³ LP-SS-061-061312	06/13/12	1715			1		X				43
¹⁴ LP-SS-062-061312	06/13/12	14:45			2	X	X				44
¹⁵ LP-SS-063-061312	06/13/12	1550	✓	✓	3	X	X	X			45
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RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)							
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)		DATE	TIME	AIRBILL NUMBER:			
								LAB REMARKS:			

White - Original to Accompany Samples

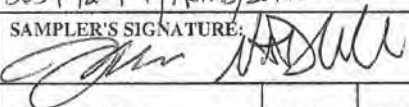


Yellow - UOS Chemist

Pink - UOS Project Manager

DN 7322

D35496: Chain of Custody

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UOS URS Operating Services, Inc. 1099 18 th Street, STE 710 Denver, CO 80202 303-291-8200		SHIP TO: hand deliver: Accutest Laboratories		CHAIN OF CUSTODY RECORD													
PROJECT NUMBER / PURCHASE ORDER NUMBER: 30549247/KBM3/2012-65				SITE MANAGER / PHONE NUMBER: Jeff Miller / 320.810.0790				Number of Containers		8270 SIM		8015B		Metals		TURNAROUND REQUESTED: standard	
SAMPLER'S SIGNATURE: 																TAG NUMBERS	
SAMPLE ID	DATE	TIME	COMP/GRAB	REMARKS													
1) LP-SS-064-001312	06/13/12	1300	grab	soil	3	X	X	X								46	
2) LP-SS-0106-001312	06/13/12	1510	↓	↓	2	X	X	X								47	
3) LP-SN-012-001312	06/13/12	1900	grab	water	3		X	X								48	
4)																	
5)																	
6)																	
7)																	
8)																	
9)																	
10)																	
11)																	
12)																	
13)																	
14)																	
15)																	
RELINQUISHED BY: (Signature) 		DATE 6-14-12	TIME 1510	RECEIVED BY: (Signature) 		OTHER INFORMATION: 4c-HD											
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)													
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)		DATE	TIME	AIRBILL NUMBER: LAB REMARKS:									

White - Original to Accompany Samples

Yellow - UOS Chemist

Pink - UOS Project Manager

DN 7323

D35496: Chain of Custody

Page 4 of 5

August Sampling Event



09/12/12

Technical Report for

URS Operating Services, Inc.

36549247.00000

Accutest Job Number: D38213

Sampling Date: 08/29/12

Report to:

URS Operating Services, Inc.
999 18th Street STE 900
Denver, CO 80202
jeff.miller@URSCorp.com; amy.k.gray@urs.com

ATTN: Jeff Miller

Total number of pages in report: **51**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read 'Brad Madadian'.

Brad Madadian
Laboratory Director

Client Service contact: Ann Doerr 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP CO00049), TX (T104704511-12-1)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

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Sample Summary

URS Operating Services, Inc.

Job No: D38213

36549247.00000

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D38213-2	08/29/12	11:10 NDW	08/30/12	SO	Soil	LPSS068-082912
D38213-3	08/29/12	11:40 NDW	08/30/12	SO	Soil	LPSS069-082912
D38213-4	08/29/12	12:20 NDW	08/30/12	SO	Soil	LPSS070-082912
D38213-5	08/29/12	12:45 NDW	08/30/12	SO	Soil	LPSS071-082912
D38213-6	08/29/12	13:30 NDW	08/30/12	SO	Soil	LPSS072-082912
D38213-7	08/29/12	14:50 NDW	08/30/12	SO	Soil	LPSS073-082912
D38213-8	08/29/12	15:15 NDW	08/30/12	SO	Soil	LPSS074-082912
D38213-9	08/29/12	16:00 NDW	08/30/12	SO	Soil	LPSS075-082912
D38213-10	08/29/12	16:20 NDW	08/30/12	SO	Soil	LPSS076-082912

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: URS Operating Services, Inc.

Job No D38213

Site: 36549247

Report Date 9/12/2012 11:28:54 AM

On 08/30/2012, 9 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.3 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D38213 was assigned to the project. The lab sample IDs, client sample IDs, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Wet Chemistry By Method SM21 2540 B MOD.

Matrix SO

Batch ID: M:GN40031

- The data for SM21 2540 B MOD. meets quality control requirements.
- All samples for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method SW 846 9060M

Matrix SO

Batch ID: M:GP14970

- The data for SW 846 9060M meets quality control requirements.
- All samples for Total Organic Carbon: Analysis performed at Accutest Laboratories, Marlborough, MA.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest Mountain States

Job No D38213

Site: URSCOD: 36549247.00000

Report Date 9/6/2012 3:14:10 PM

9 Sample(s) were collected on 08/29/2012 and were received at Accutest on 08/30/2012 properly preserved, at 3.1 Deg. C and intact. These Samples received an Accutest job number of D38213. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Wet Chemistry By Method SM21 2540 B MOD.

Matrix SO

Batch ID: GN40031

- Sample(s) D38213-6DUP were used as the QC samples for Solids, Percent.

Wet Chemistry By Method SW 846 9060M

Matrix SO

Batch ID: GP14970

- All samples were distilled within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38213-6MS, D38213-6MSD were used as the QC samples for Total Organic Carbon.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D38213).

Summary of Hits

Page 1 of 1

Job Number: D38213
Account: URS Operating Services, Inc.
Project: 36549247.00000
Collected: 08/29/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D38213-2	LPSS068-082912					
Total Organic Carbon ^a		53100	1900		mg/kg	SW 846 9060M
D38213-3	LPSS069-082912					
Total Organic Carbon ^a		77900	2700		mg/kg	SW 846 9060M
D38213-4	LPSS070-082912					
Total Organic Carbon ^a		72600	4000		mg/kg	SW 846 9060M
D38213-5	LPSS071-082912					
Total Organic Carbon ^a		50600	2300		mg/kg	SW 846 9060M
D38213-6	LPSS072-082912					
Total Organic Carbon ^a		6540	1200		mg/kg	SW 846 9060M
D38213-7	LPSS073-082912					
Total Organic Carbon ^a		20600	2800		mg/kg	SW 846 9060M
D38213-8	LPSS074-082912					
Total Organic Carbon ^a		30300	3300		mg/kg	SW 846 9060M
D38213-9	LPSS075-082912					
Total Organic Carbon ^a		40800	3500		mg/kg	SW 846 9060M
D38213-10	LPSS076-082912					
Total Organic Carbon ^a		13500	1600		mg/kg	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.



Sample Results

Report of Analysis

Report of Analysis

Page 1 of 1

Client Sample ID: LPSS068-082912
Lab Sample ID: D38213-2
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 08/29/12
Date Received: 08/30/12
Percent Solids: 51.1

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent ^a	51.1		%	1	09/04/12	AMA	SM21 2540 B MOD.
Total Organic Carbon ^a	53100	1900	mg/kg	1	09/04/12 16:44	AMA	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit

Report of Analysis

Client Sample ID: LPSS069-082912
Lab Sample ID: D38213-3
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 08/29/12
Date Received: 08/30/12
Percent Solids: 60.0

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent ^a	60		%	1	09/04/12	AMA	SM21 2540 B MOD.
Total Organic Carbon ^a	77900	2700	mg/kg	1	09/04/12 16:56	AMA	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit

Report of Analysis

Client Sample ID: LPSS070-082912
Lab Sample ID: D38213-4
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 08/29/12
Date Received: 08/30/12
Percent Solids: 34.2

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent ^a	34.2		%	1	09/04/12	AMA	SM21 2540 B MOD.
Total Organic Carbon ^a	72600	4000	mg/kg	1	09/04/12 17:28	AMA	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit

Report of Analysis

Client Sample ID: LPSS071-082912
Lab Sample ID: D38213-5
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 08/29/12
Date Received: 08/30/12
Percent Solids: 37.7

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent ^a	37.7		%	1	09/04/12	AMA	SM21 2540 B MOD.
Total Organic Carbon ^a	50600	2300	mg/kg	1	09/04/12 17:43	AMA	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit

Report of Analysis

Client Sample ID: LPSS072-082912
Lab Sample ID: D38213-6
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 08/29/12
Date Received: 08/30/12
Percent Solids: 75.8

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent ^a	75.8		%	1	09/04/12	AMA	SM21 2540 B MOD.
Total Organic Carbon ^a	6540	1200	mg/kg	1	09/04/12 15:48	AMA	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	LPSS073-082912	Date Sampled:	08/29/12
Lab Sample ID:	D38213-7	Date Received:	08/30/12
Matrix:	SO - Soil	Percent Solids:	53.7
Project:	36549247.00000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent ^a	53.7		%	1	09/04/12	AMA	SM21 2540 B MOD.
Total Organic Carbon ^a	20600	2800	mg/kg	1	09/04/12 17:55	AMA	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	LPSS074-082912	Date Sampled:	08/29/12
Lab Sample ID:	D38213-8	Date Received:	08/30/12
Matrix:	SO - Soil	Percent Solids:	45.1
Project:	36549247.00000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent ^a	45.1		%	1	09/04/12	AMA	SM21 2540 B MOD.
Total Organic Carbon ^a	30300	3300	mg/kg	1	09/04/12 18:07	AMA	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit

Report of Analysis

Client Sample ID: LPSS075-082912
Lab Sample ID: D38213-9
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 08/29/12
Date Received: 08/30/12
Percent Solids: 45.0

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent ^a	45		%	1	09/04/12	AMA	SM21 2540 B MOD.
Total Organic Carbon ^a	40800	3500	mg/kg	1	09/04/12 18:19	AMA	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit

Report of Analysis

Client Sample ID: LPSS076-082912
Lab Sample ID: D38213-10
Matrix: SO - Soil
Project: 36549247.00000

Date Sampled: 08/29/12
Date Received: 08/30/12
Percent Solids: 57.9

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent ^a	57.9		%	1	09/04/12	AMA	SM21 2540 B MOD.
Total Organic Carbon ^a	13500	1600	mg/kg	1	09/04/12 18:29	AMA	SW 846 9060M

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit



Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

D38213

UOS URS Operating Services, Inc. 1099 18th Street, Suite 710, Denver, CO 80202				SHIP TO: Jeff Miller UOS				CHAIN OF CUSTODY RECORD			
PROJECT NO/NAME: 36549247.00000				SITE MANAGER: Jeff Miller 720 810 0790				Number of Containers <div style="font-size: 2em; transform: rotate(-90deg); display: inline-block;">Toc</div>			
SAMPLERS SIGNATURE: Nathan D Williams <i>NAD</i> 303 868 8954											
STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	REMARKS					
LPSS067	1040	8/29		X	LPSS067-082912	1	X	Cancel per client 01			
LPSS068	1110	8/29		X	LPSS068-082912	1	X	An 8/30/12 02			
LPSS069	8/29/12	1140		X	LPSS069-082912	1	X	03			
LPSS070		1220		X	LPSS070-082912	1	X	04			
LPSS071		1245		X	LPSS071-082912	1	X	05			
LPSS072		1330		X	LPSS072-082912	1	X	06			
LPSS073		1450		X	LPSS073-082912	1	X	07			
LPSS074		1515		X	LPSS074-082912	1	X	08			
LPSS075		1600		X	LPSS075-082912	1	X	09			
LPSS076	✓	1620		X	LPSS076-082912	1	X	10			
								<div style="border: 1px solid black; border-radius: 50%; padding: 5px; display: inline-block;">DR 8/30</div>			
								Sample 1 is not in color 70			
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)		RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)	
<i>NAD</i>		8/30	1030	<i>D. Miller</i>							
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)		RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)	
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)		DATE		TIME	REMARKS: AIRBILL NUMBER:		

71-50906.00

RSTART\Forms\Custody\Fm.bas

White - Original to Accompany Samples

Yellow - UOS Main Office

Pink - UOS Field Office

DN

3027 HP - 2.30

D38213: Chain of Custody

Page 1 of 2



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D38213

Client: URS OPERATING SERVICES

Immediate Client Services Action Required: No

Date / Time Received: 8/30/2012 10:50:00 AM

No. Coolers: 1

Client Service Action Required at Login: No

Project:

Airbill #'s: hd

Cooler Security

Y or N

Y or N

1. Custody Seals Present: ☒ ☐

3. COC Present:

☒ ☐

2. Custody Seals Intact: ☒ ☐

4. Smpl Dates/Time OK

☒ ☐

Cooler Temperature

Y or N

1. Temp criteria achieved: ☒ ☐

2. Cooler temp verification:

Infrared gun

3. Cooler media:

Ice (bag)

Quality Control Preservation

Y or N

N/A

1. Trip Blank present / cooler: ☐ ☐

2. Trip Blank listed on COC: ☐ ☐

3. Samples preserved properly: ☒ ☐

4. VOCs headspace free: ☐ ☐

☒

Sample Integrity - Documentation

Y or N

1. Sample labels present on bottles: ☒ ☐

2. Container labeling complete: ☒ ☐

3. Sample container label / COC agree: ☒ ☐

Sample Integrity - Condition

Y or N

1. Sample recvd within HT: ☒ ☐

2. All containers accounted for: ☒ ☐

3. Condition of sample:

Intact

Sample Integrity - Instructions

Y or N N/A

1. Analysis requested is clear: ☒ ☐

2. Bottles received for unspecified tests: ☐ ☒

3. Sufficient volume rec'd for analysis: ☒ ☐

4. Compositing instructions clear: ☐ ☐

☒

5. Filtering instructions clear: ☐ ☐

☒

Comments

Accutest Laboratories
V:(303) 425-6021

4036 Youngfield Street
F: (303) 425-6854

Wheat Ridge, CO
www.accutest.com

D38213: Chain of Custody
Page 2 of 2



Misc. Forms

Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Chain of Custody



CHAIN OF CUSTODY

4036 Youngfield St., Wheat Ridge, CO 80033
303-425-6021 FAX: 303-425-6854

Accutest Job #:	D38213
Accutest Quote #:	0
AMS P.O. #:	
Project No.:	

Client Information			Subcontract Laboratory Information										Analytical Information				
Name Accutest Mountain States (AMS)			Name Accutest - New England										TOC, & soil				
Address 4036 Youngfield St.			Address 495 Technology Center West, BLDG C														
City Wheat Ridge,	State CO	Zip 80033	City Marlborough	State MA	Zip 01752												
Send Report to: Andrew Fluegel			Contact: Sample Management														
Any questions contact: Shea Greiner																	
Phone/Fax #: (303) 425-6021; (303) 425-6854			Phone: (508) 481-6200														
Field ID / Point of Collection			Collection			Preservation				Comments							
Date	Time	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	None									
D38213 -2	8/29/12	Soil	1							X							
-3		Soil	1							X							
-4		Soil	1							X							
-5		Soil	1							X							
-6		Soil	1							X							
-7		Soil	1							X							
-8		Soil	1							X							
-9		Soil	1							X			2F				
-10		Soil	1							X							
Turnaround Information			Data Deliverable Information										Comments / Remarks				
<input checked="" type="checkbox"/> 10 Business Day Standard <input type="checkbox"/> Other _____ (Days)			Approved By: _____ <input type="checkbox"/> Commercial "A" <input type="checkbox"/> PDF <input type="checkbox"/> Commercial "B" <input type="checkbox"/> Compact Disk Deliverable <input type="checkbox"/> Commercial "BN" <input type="checkbox"/> Electronic Delivery: <input type="checkbox"/> Reduced Tier 1 <input type="checkbox"/> State Forms <input type="checkbox"/> Full Tier 1 <input type="checkbox"/> Other (Specify) _____										Please use Colorado regulations and RLs.				
10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.																	
Sample Custody must be documented below each time samples change possession, including courier delivery.																	
Relinquished by: 1 <i>TM</i>			Date & Time: 8/31/12			Received By: 1 <i>FX</i>			Date & Time: 1			Seal #: _____					
Relinquished by: 2 <i>FX</i>			Date & Time: 9/30/12			Received By: 2 <i>Burndt</i>			Date & Time: 2			Headspace: Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>					
Relinquished by: 3			Date & Time: _____			Received By: 3			Date & Time: 3			Preserved where applicable: <input type="checkbox"/>					
Temperature °C 3.1												On Ice <input checked="" type="checkbox"/>					

D38213: Chain of Custody

Page 1 of 2

Accutest Labs of New England, Inc.



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D38213

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 8/31/2012

Delivery Method:

Client Service Action Required at Login: No

Project: SUB

No. Coolers: 1

Airbill #'s:

Cooler Security

Y or N

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | Infrared gun | |
| 3. Cooler media: | Ice (bag) | |

Quality Control Preservation

Y or N

N/A

- | | | | |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. VOCs headspace free: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions

Y or N

N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

Accutest Laboratories
V:508.481.6200

495 Technology Center West, Bldg One
F: 508.481.7753

Marlborough, MA
www.accutest.com

D38213: Chain of Custody

Page 2 of 2



General Chemistry

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries
- Instrument Runlogs/QC
- Percent Solids Raw Data Summary

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D38213
Account: ALMS - Accutest Mountain States
Project: URSCOD: 36549247.00000

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Total Organic Carbon	GP14970/GN40032	1000	56.5	mg/kg	20000	21800	109.0	80-120%

Associated Samples:
Batch GP14970: D38213-10, D38213-2, D38213-3, D38213-4, D38213-5, D38213-6, D38213-7, D38213-8, D38213-9
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D38213
Account: ALMS - Accutest Mountain States
Project: URSCOD: 36549247.00000

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Solids, Percent	GN40031	D38213-6	%	75.8	72.7	4.2	0-20%

Associated Samples:

Batch GN40031: D38213-10, D38213-2, D38213-3, D38213-4, D38213-5, D38213-6, D38213-7, D38213-8, D38213-9

(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D38213
Account: ALMS - Accutest Mountain States
Project: URSCOD: 36549247.00000

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Total Organic Carbon	GP14970/GN40032	D38213-6	mg/kg	6540	25700	36800	117.9	75-125%

Associated Samples:

Batch GP14970: D38213-10, D38213-2, D38213-3, D38213-4, D38213-5, D38213-6, D38213-7, D38213-8, D38213-9

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D38213
Account: ALMS - Accutest Mountain States
Project: URSCOD: 36549247.00000

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Total Organic Carbon	GP14970/GN40032	D38213-6	mg/kg	6540	25000	36900	0.3	

Associated Samples:

Batch GP14970: D38213-10, D38213-2, D38213-3, D38213-4, D38213-5, D38213-6, D38213-7, D38213-8, D38213-9

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: D38213
Account: ALMS - Accutest Mountain States
Project: URSCOD: 36549247.00000

File ID: TOC090412S2.TXT Date Analyzed: 09/04/12 Methods: SW 846 9060M
Analyst: CF Run ID: GN40032
Parameters: Total Organic Carbon

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:34	ZZZZZZ	1		Check standard #1.
10:57	ZZZZZZ	1		Check standard #2.
13:16	GN40032-CCV1	1		
14:36	GN40032-ICV1	1		
15:03	GP14970-MB1	1		
15:12	GP14970-B1	1		
15:23	GP14970-S1	1		
15:37	GP14970-S2	1		
15:48	D38213-6	1		
16:06	ZZZZZZ	1		
16:21	GN40032-CCV2	1		
16:33	ZZZZZZ	1		
16:44	D38213-2	1		
16:56	D38213-3	1		
17:28	D38213-4	1		
17:43	D38213-5	1		
17:55	D38213-7	1		
18:07	D38213-8	1		Raw data typo, D34213-8 changed to D38213-8.
18:19	D38213-9	1		
18:29	D38213-10	1		
18:43	GN40032-CCV3	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: D38213
Account: ALMS - Accutest Mountain States
Project: URSCOD: 36549247.00000

File ID: TOC090412S2.TXT

Date Analyzed: 09/04/12
Run ID: GN40032

Methods: SW 846 9060M
Units: mg/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN40032-CCV1	Total Organic Carbon	26800	1000	47	25000	107.2	90-110
GN40032-ICV1	Total Organic Carbon	21200	1000	47	20000	106.0	90-110
GN40032-CCV2	Total Organic Carbon	24700	1000	47	25000	98.8	90-110
GN40032-CCV3	Total Organic Carbon	25400	1000	47	25000	101.6	90-110

(!) Outside of QC limits

Percent Solids Raw Data Summary

Page 1 of 2

Job Number: D38213
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247.00000

Sample: D38213-2 **Analyzed:** 04-SEP-12 by MC **Method:** SM21 2540 B MOD.
ClientID: LPSS068-082912

Wet Weight (Total)	13.726	g
Tare Weight	1.338	g
Dry Weight (Total)	7.665	g
Solids, Percent	51.1	%

Sample: D38213-3 **Analyzed:** 04-SEP-12 by MC **Method:** SM21 2540 B MOD.
ClientID: LPSS069-082912

Wet Weight (Total)	21.05	g
Tare Weight	1.292	g
Dry Weight (Total)	13.152	g
Solids, Percent	60	%

Sample: D38213-4 **Analyzed:** 04-SEP-12 by MC **Method:** SM21 2540 B MOD.
ClientID: LPSS070-082912

Wet Weight (Total)	17.864	g
Tare Weight	1.298	g
Dry Weight (Total)	6.966	g
Solids, Percent	34.2	%

Sample: D38213-5 **Analyzed:** 04-SEP-12 by MC **Method:** SM21 2540 B MOD.
ClientID: LPSS071-082912

Wet Weight (Total)	12.623	g
Tare Weight	1.319	g
Dry Weight (Total)	5.577	g
Solids, Percent	37.7	%

Sample: D38213-6 **Analyzed:** 04-SEP-12 by MC **Method:** SM21 2540 B MOD.
ClientID: LPSS072-082912

Wet Weight (Total)	14.506	g
Tare Weight	1.313	g
Dry Weight (Total)	11.311	g
Solids, Percent	75.8	%

Sample: D38213-7 **Analyzed:** 04-SEP-12 by MC **Method:** SM21 2540 B MOD.
ClientID: LPSS073-082912

Wet Weight (Total)	13.196	g
Tare Weight	1.313	g
Dry Weight (Total)	7.699	g
Solids, Percent	53.7	%

7.6
7

Percent Solids Raw Data Summary

Page 2 of 2

Job Number: D38213
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247.00000

Sample: D38213-8 **Analyzed:** 04-SEP-12 by MC **Method:** SM21 2540 B MOD.
ClientID: LPSS074-082912

Wet Weight (Total)	19.991	g
Tare Weight	1.315	g
Dry Weight (Total)	9.734	g
Solids, Percent	45.1	%

Sample: D38213-9 **Analyzed:** 04-SEP-12 by MC **Method:** SM21 2540 B MOD.
ClientID: LPSS075-082912

Wet Weight (Total)	11.543	g
Tare Weight	1.333	g
Dry Weight (Total)	5.928	g
Solids, Percent	45	%

Sample: D38213-10 **Analyzed:** 04-SEP-12 by MC **Method:** SM21 2540 B MOD.
ClientID: LPSS076-082912

Wet Weight (Total)	18.903	g
Tare Weight	1.335	g
Dry Weight (Total)	11.509	g
Solids, Percent	57.9	%

7.6

7



General Chemistry

QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Page 1 of 2

Job Number: D38213
Account: URSCOD URS Operating Services, Inc.
Project: 36549247.00000

Sample: D38213-2 **Analyzed:** 04-SEP-12 by AMA **Method:** SM21 2540 B MOD.
ClientID: LPSS068-082912

Wet Weight (Total)	13.726	g
Tare Weight	1.338	g
Dry Weight (Total)	7.665	g
Solids, Percent	51.1	%

Sample: D38213-3 **Analyzed:** 04-SEP-12 by AMA **Method:** SM21 2540 B MOD.
ClientID: LPSS069-082912

Wet Weight (Total)	21.05	g
Tare Weight	1.292	g
Dry Weight (Total)	13.152	g
Solids, Percent	60	%

Sample: D38213-4 **Analyzed:** 04-SEP-12 by AMA **Method:** SM21 2540 B MOD.
ClientID: LPSS070-082912

Wet Weight (Total)	17.864	g
Tare Weight	1.298	g
Dry Weight (Total)	6.966	g
Solids, Percent	34.2	%

Sample: D38213-5 **Analyzed:** 04-SEP-12 by AMA **Method:** SM21 2540 B MOD.
ClientID: LPSS071-082912

Wet Weight (Total)	12.623	g
Tare Weight	1.319	g
Dry Weight (Total)	5.577	g
Solids, Percent	37.7	%

Sample: D38213-6 **Analyzed:** 04-SEP-12 by AMA **Method:** SM21 2540 B MOD.
ClientID: LPSS072-082912

Wet Weight (Total)	14.506	g
Tare Weight	1.313	g
Dry Weight (Total)	11.311	g
Solids, Percent	75.8	%

Sample: D38213-7 **Analyzed:** 04-SEP-12 by AMA **Method:** SM21 2540 B MOD.
ClientID: LPSS073-082912

Wet Weight (Total)	13.196	g
Tare Weight	1.313	g
Dry Weight (Total)	7.699	g
Solids, Percent	53.7	%

9.1
9

Percent Solids Raw Data Summary

Page 2 of 2

Job Number: D38213
Account: URSCOD URS Operating Services, Inc.
Project: 36549247.00000

Sample: D38213-8 **Analyzed:** 04-SEP-12 by AMA **Method:** SM21 2540 B MOD.
ClientID: LPSS074-082912

Wet Weight (Total)	19.991	g
Tare Weight	1.315	g
Dry Weight (Total)	9.734	g
Solids, Percent	45.1	%

Sample: D38213-9 **Analyzed:** 04-SEP-12 by AMA **Method:** SM21 2540 B MOD.
ClientID: LPSS075-082912

Wet Weight (Total)	11.543	g
Tare Weight	1.333	g
Dry Weight (Total)	5.928	g
Solids, Percent	45	%

Sample: D38213-10 **Analyzed:** 04-SEP-12 by AMA **Method:** SM21 2540 B MOD.
ClientID: LPSS076-082912

Wet Weight (Total)	18.903	g
Tare Weight	1.335	g
Dry Weight (Total)	11.509	g
Solids, Percent	57.9	%

9.1
6

Data Validation Package for PAH Samples

**REGION VIII
DATA VALIDATION REPORT
ORGANICS**

TDD No.	Site Name		Operable Unit
1204-09	Lone Pine Inc. Oil Spill		
RPM/OSC Name			
Kerry Guy			
Contractor Laboratory	Contract No.	Order No.	Laboratory DPO/Region
AccuTest Laboratories	Not Indicated	D35496	

Review Assigned Date: January 23, 2013Data Validator: Bill FearReview Completion Date: January 28, 2013Report Reviewer: Lisa Tyson

Sample ID	Matrix	Analysis
LP-SW-004_061312	Water	PAH by SW-846 Method 8270C SIM
LP-SW-005_061312		
LP-SW-006_061212		
LP-SW-007_061212		
LP-SW-008_061212		
LP-SW-009_061212		
LP-SW-011_061212		
LP-SS-037_061212	Soil	
LP-SS-040_061212		
LP-SS-041_061212		
LP-SS-042_061212		
LP-SS-043_061212		
LP-SS-044_061212		
LP-SS-045_061212		
LP-SS-046_061212		
LP-SS-047_061212		

Sample ID	Matrix	Analysis
LP-SS-048_061212	Soil	PAH by SW-846 Method 8270C SIM
LP-SS-049_061212		
LP-SS-050_061212		
LP-SS-051_061212		
LP-SS-052_061212		
LP-SS-053_061212		
LP-SS-054_061212		
LP-SS-055_061212		
LP-SS-056_061312		
LP-SS-057_061312		
LP-SS-058_061312		
LP-SS-059_061312		
LP-SS-060_061312		
LP-SS-062_061312		
LP-SS-063_061312		
LP-SS-064_061312		
LP-SS-066_061312		

DATA QUALITY STATEMENT

- () Data are ACCEPTABLE according to EPA Functional Guidelines with no qualifiers (flags) added by the reviewer.
- () Data are UNACCEPTABLE according to EPA Functional Guidelines.
- (X) Data are acceptable with QUALIFICATIONS noted in review.

PO Attention Required? Yes _____ No X If yes, list the items that require attention:

ORGANIC DATA VALIDATION REPORT**REVIEW NARRATIVE SUMMARY**

This data package was reviewed according to the EPA document "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," modified for the method used.

Raw data were reviewed for completeness and transcription accuracy onto the summary forms. Approximately 10-20% of the results reported in each of the samples, calibrations, and QC analyses were recalculated and verified. If problems were identified during the recalculation of results, a more thorough calculation check was performed.

The data package, AccuTest Laboratories Job No. D35496, consisted of seven water samples and 26 soil samples for semivolatiles (PAH) analyses by SW-846 Method 8270C SIM.

The following tables list data qualifiers added to the data. (Please see Data Qualifier Definitions, attached to the end of this report.)

Sample Number	Semivolatile Compound	Qualifier	Reason For Qualification	Review Section
LP-SS-037_061212 LP-SS-040_061212 LP-SS-041_061212 LP-SS-042_061212 LP-SS-043_061212 LP-SS-044_061212 LP-SS-045_061212 LP-SS-046_061212 LP-SS-047_061212 LP-SS-048_061212 LP-SS-049_061212 LP-SS-050_061212 LP-SS-064_061312 LP-SS-066_061312	Dibenzo(a,h)anthracene Benzo(g,h,i)perylene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene	J/UJ	Continuing calibration %Ds exceeded 20%	4
LP-SW-004_061312 LP-SW-006_061212 LP-SW-007_061212 LP-SW-008_061212 LP-SW-009_061212 LP-SS-063_061312 LP-SS-066_061312	Phenanthrene	U	Method blank contamination	8
LP-SW-005_061312 LP-SW-008_061212 LP-SW-009_061212	Dibenzo(a,h)anthracene			

Sample Number	Semivolatile Compound	Qualifier	Reason For Qualification	Review Section
LP-SS-037_061212 LP-SS-040_061212 LP-SS-041_061212 LP-SS-042_061212 LP-SS-043_061212 LP-SS-044_061212 LP-SS-045_061212 LP-SS-046_061212 LP-SS-047_061212 LP-SS-048_061212 LP-SS-049_061212 LP-SS-050_061212 LP-SS-051_061212 LP-SS-052_061212 LP-SS-053_061212	C1-Naphthalenes	U	Method blank contamination	8
LP-SS-041_061212 LP-SS-042_061212 LP-SS-043_061212 LP-SS-045_061212 LP-SS-046_061212 LP-SS-047_061212 LP-SS-048_061212 LP-SS-049_061212 LP-SS-051_061212	C3-Naphthalenes			
LP-SS-059_061312 LP-SS-062_061312	Naphthalene			

1. DELIVERABLES

All deliverables were present.

SVOC: Yes X No

Comments: None.

2. HOLDING TIMES AND PRESERVATION CRITERIA

All holding times and preservation criteria were met.

SVOC: Yes X No

Comments: The water samples were extracted within seven days of collection and the soil samples were extracted within 14 days of collection. All extracts were analyzed within 40 days of extraction.

The samples were received within the recommended temperature range of 4 ± 2 °C, or just below 2 °C, but not frozen. No shipping or receiving problems were noted. Chain-of-custody and summary forms were evaluated.

3. DFTPP PERFORMANCE RESULTS

The decafluorotriphenylphosphine (DFTPP) performance results were within the specified control limits. All appropriate DFTPP results were included. [Mass assignments maybe verified by the injections of perfluorotributylamine (PFTB) for the SIM analyses.]

SVOC: Yes No NA X

Comments: Instrument performance or tune data were not provided and are not a required deliverable for SIM analysis.

4. INSTRUMENT CALIBRATIONS: INITIAL AND CONTINUING STANDARDS

Initial instrument calibrations were performed according to method requirements and met the specified control limits.

SVOC: Yes X No

Comments: The average relative response factors (RRFs) were greater than or equal to 0.05. The percent relative standard deviations (%RSDs) of the RRFs were less than or equal to 20% compounds or the correlation coefficient was greater than 0.990 for all PAH analytes. Summary forms and raw data were evaluated.

Continuing instrument calibrations were performed according to method requirements and met specified control limits.

SVOC: Yes _____ No X

Comments: The RRFs for all target compounds were greater than or equal to 0.05. The percent differences (%Ds) or percent drifts were less than or equal to 20% with the exceptions noted below. Summary forms and raw data were evaluated.

The following table lists the %Ds or drifts that exceeded 20% and the qualifiers added to the data:

Compound	%D	Qualified Samples	Qualifiers
Dibenzo(a,h)anthracene	26.9% 23.3%	LP-SS-037_061212 LP-SS-040_061212	J/UJ
Benzo(g,h,i)perylene	24.4% 21.6%	LP-SS-041_061212 LP-SS-042_061212 LP-SS-043_061212	
Benzo(a)pyrene	22.7% 20.1%	LP-SS-044_061212 LP-SS-045_061212	
Indeno(1,2,3-cd)pyrene	28.8% 26.2%	LP-SS-046_061212 LP-SS-047_061212 LP-SS-048_061212 LP-SS-049_061212 LP-SS-050_061212 LP-SS-064_061312 LP-SS-066_061312	

5. SURROGATE COMPOUND RECOVERY

Surrogate compound recovery analysis was performed according to method requirements and results met project specified control limits.

SVOC: Yes X No _____

Comments: Surrogate spikes were added to all samples and blanks. All recoveries were within laboratory QC limits or the surrogate compound was considered diluted below the calibration range or is impacted by dilution. Summary forms and raw data were evaluated.

Note: The recoveries for the surrogate compound perylene-d12 were greater than the laboratory QC limits for samples LP-SS-055_061212 and LP-SS-057_061212 because of the 50 times dilution performed on the samples. No qualifiers were added to the data.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE/LABORATORY CONTROL SAMPLE

Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses were performed according to method requirements and results met recommended recovery and precision limits. A laboratory control sample was analyzed according to method requirements and results met recommended recovery limits.

SVOC: Yes_____ No X

Comments: MS/MSD analyses were performed on the soil samples LP-SS-037_061212 and LP-SS-060_061312 and on a water sample from another data delivery group. The laboratory also performed a laboratory control sample (LCS) for each QC batch. All LCS recoveries were within QC limits and the percent recoveries and relative percent differences (RPDs) were within laboratory QC limits for the water sample and sample LP-SS-037_061212.

The following table shows the MS recoveries outside QC limits and qualifiers added to the data:

Sample	Compound	Percent Recovery		Control Limits	Qualified Samples	Qualifier
		MS	MSD	% R		
LP-SS-060_061312 MS/MSD	Naphthalene	--	49%	50-150	None	None
	Phenanthrene	--	39%			
	Anthracene	22%	12%			
	Fluoranthene	--	45%			
	Benzo(b)fluoranthene	--	37%			
	Benzo(g,h,i)perylene	--	49%			

No action was taken using the MS/MSD results because organic results are not typically qualified using just the MS/MSD data and all LCS recoveries were within QC limits. It should also be noted that the recoveries for pyrene, chrysene, and benzo(e)pyrene were not applicable since the analyte concentrations in the samples were disproportionate to the spike level.

7. INTERNAL STANDARD AREA

Internal standard area analysis was performed according to method requirements and results met specified control limits.

SVOC: Yes X No_____

Comments: Internal standard area counts did not vary by more than a factor of two from the associated 12-hour calibration standard. The internal standard retention times

did not vary more than ± 30 seconds from the retention time of the associated 12-hour calibration standards. Summary forms and raw data were evaluated.

8. LABORATORY BLANK ANALYSIS RESULTS

The laboratory blank analysis was performed according to method requirements and results met specified control limits.

SVOC: Yes _____ No X

Comments: Method blanks were reported per matrix, per concentration level, and for each extraction batch.

The following table shows blank contamination that resulted in sample qualification and all qualified samples having concentrations less than five times the associated method blank value. Quantitation limits in the associated samples were raised in accordance with the rules set forth in the "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review".

Blank Target Compounds

Blank ID	Contaminant	Concentration Found in Blank	Associated Samples	Concentration Found in Sample	Qualifier/Adjustment
OP29323-MB	Phenanthrene	0.0055 ug/L	LP-SW-004_061312 LP-SW-006_061212 LP-SW-007_061212 LP-SW-008_061212 LP-SW-009_061212	0.0085 ug/L 0.0093 ug/L 0.0096 ug/L 0.0085 ug/L 0.0058 ug/L	0.0097 U 0.010 U 0.0099 U 0.0098 U 0.0096 U
	Dibenzo(a,h)anthracene	0.0092 ug/L	LP-SW-005_061312 LP-SW-008_061212 LP-SW-009_061212	0.019 ug/L 0.0052 ug/L 0.013 ug/L	U 0.0098 U U
OP29354-MB	C1-Naphthalenes	0.22 ug/Kg	LP-SS-037_061212 LP-SS-040_061212 LP-SS-041_061212 LP-SS-042_061212 LP-SS-043_061212 LP-SS-044_061212 LP-SS-045_061212 LP-SS-046_061212 LP-SS-047_061212 LP-SS-048_061212 LP-SS-049_061212 LP-SS-050_061212 LP-SS-051_061212 LP-SS-052_061212 LP-SS-053_061212	1 ug/Kg 4.2 ug/Kg 3.7 ug/Kg 5.6 ug/Kg 0.45 ug/Kg 0.79 ug/Kg 0.5 ug/Kg 0.5 ug/Kg 0.42 ug/Kg 1.6 ug/Kg 2.7 ug/Kg 3.1 ug/Kg 0.56 ug/Kg 1.7 ug/Kg 0.39 ug/Kg	U 5.1 U 5.2 U 9.5 U U U 0.54 U U U 2.4 U 4.4 U 4.7 U U U 0.42 U

Blank ID	Contaminant	Concentration Found in Blank	Associated Samples	Concentration Found in Sample	Qualifier/Adjustment
OP29354-MB	C3-Naphthalenes	0.17 ug/Kg	LP-SS-041_061212	12.2 ug/Kg	U
			LP-SS-042_061212	15.3 ug/Kg	U
			LP-SS-043_061212	0.83 ug/Kg	0.43 U
			LP-SS-045_061212	6.3 ug/Kg	U
			LP-SS-046_061212	0.91 ug/Kg	U
			LP-SS-047_061212	0.7 ug/Kg	U
			LP-SS-048_061212	0.48 ug/Kg	U
			LP-SS-049_061212	5.6 ug/Kg	U
			LP-SS-051_061212	0.89 ug/Kg	U
OP29355-MB	Naphthalene	0.21 ug/Kg	LP-SS-059_061312	0.92 ug/Kg	U
			LP-SS-062_061312	1.2 ug/Kg	U
	Phenanthrene	0.32 ug/Kg	LP-SS-063_061312	5.9 ug/Kg	U
			LP-SS-066_061312	58 ug/Kg	63 U

9. SAMPLE RESULTS

The sample results were reviewed and all compound identifications were acceptable and met contract requirements.

SVOC: Yes X No

Comments: No problems with compound quantitation or identification were noted for this SIMs analysis. The non-detected results were reported to the reporting limit (RL). The reporting limit was at the concentration based on the lowest calibration standard. Detected results were reported down to the method detection limit which was one/half the RL.

The sample results and reporting limits were correctly adjusted for the initial and final sample size, analytical dilutions, and percent moisture content if applicable.

The results for benzo(a)pyrene and indeno(1,2,3-cd)pyrene were recalculated by the laboratory and reported from an updated calibration curve that was corrected to pass through the origin. The initial results were reported from a curve fit that did not pass through the origin. This curve fit resulted in a high bias for results detected near the MDL. No qualifiers were added to the data.

10. Additional Comments or Problems/Resolutions Not Addressed Above

SVOC: Yes No X

Comments: None.

ORGANIC DATA QUALITY ASSURANCE REVIEW**Region VIII****DATA QUALIFIER DEFINITIONS**

For the purpose of Data Validation, the following code letters and associated definitions are provided for use by the data validator to summarize the data quality.

GENERAL QUALIFIERS for use with both INORGANIC and ORGANIC DATA

- R - Reported value is “rejected.” Resampling or reanalysis may be necessary to verify the presence or absence of the compound.
- J - The associated numerical value is an estimated quantity because the Quality Control criteria were not met.
- U J - The reported quantitation limit is estimated because Quality Control criteria were not met. Element or compound was not detected.
- N J - Estimated value of a tentatively identified compound. (Identified with a CAS number.) ORGANICS analysis only.
- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

GC/MS WORKSHEETS

LAD ID
D35496Method #: PAH - 8220 SIM
Client & Batch #: URS

HOLDING TIMES

Validator/Date:

Reviewer/Date:

TLI Solutions

R-K Fear

L. Tz

Include samples, dilutions & reanalyses

#	SAMPLE NUMBER (per COC)	(If Applicable)		TEMP. 4°C (±2°C) Y/N	CONC. LEVEL/ MATRIX	DATE COLLECTED	Extractables	DATE ANALYZED	Extractables		ANAL. DATE - COLL. DATE	Action Taken			COMMENTS (ANY PROBLEMS ESP. WITH SHIPPING, RECEIPT & SAMPLING CONDITION)
		COC # = Form I Y/N	SAMPLE PRE- SERVED Y/N				DATE EXTRACTED		EXT. DATE - COLL. DATE	ANAL. DATE - EXT. DATE		ANAL. DATE - COLL. DATE	If pH>2 or pea size HS J/UJ	> HT J/UJ	
1	1		N/A	OK	A20	6/13	6/19	7/4	6	15					w/in 7/40
2	2					6/13			6						
3	3					6/12			7						
4	4														
5	5														
6	6														
7	7														
8	20				Sw-1	6/12	6/22	7/6	10	240					
9	21														
10	22														
11	23														
12	27														
13	28														
14	26														
15	27														
16	28														
17	29														
18	30														
19	31														
20	32							7/19							
21	33														
22	34							7/20							

For all worksheets: (1) If a particular category is "Not Applicable," denote with N/A (2) Calculation checks performed by validators.

VOCs: Aqueous unpreserved analyzed > 7 or preserved analyzed > 14 J/UJ; Soils analyzed > 14 days J/UJ.

J/R for grossly exceeded (> 28 days or > 14 days for vinyl chloride, styrene, or 2CVE if they are specified as analytes of interest by project.)

SVOCs: Aqueous extracted > 7 or extract analyzed > 40 J/UJ; Soils extracted > 14 or extract analyzed > 40 J/R for grossly exceeded (> 28 days to extract all matrices)

Use professional judgment to qualify data if temperature requirements are not met or if headspace or air bubbles present. Bubbles ≤ pea size are acceptable.

GC/MS WORKSHEETS

HOLDING TIMES

TLI Solutions

Method #: _____

Validator/Date: _____

Client & Batch #: _____

Reviewer/Date: _____

Include samples, dilutions & reanalyses

#	SAMPLE NUMBER (per COC)	(If Applicable)		TEMP. 4°C (±2°C) Y/N	CONC. LEVEL/ MATRIX	DATE COLLECTED	Extractables	DATE ANALYZED	Extractables		ANAL. DATE - COLL. DATE	Action Taken			COMMENTS (ANY PROBLEMS ESP. WITH SHIPPING, RECEIPT & SAMPLING CONDITION)
		COC # = Form I Y/N	SAMPLE PRE- SERVED Y/N				DATE EXTRACTED		EXT. DATE - COLL. DATE	ANAL. DATE - EXT. DATE		If pH>2 or pea size HS J/UJ	> HT J/UJ	Gross J/R	
1	35				Soils	6/12	6/22	7/12	10	240					
2	36														
3	37					6/13			9						
4	38														
5	39														
6	41						6/22	7/5							
7	42														
8	44														
9	45														
10	46														
11	47														
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															

For all worksheets: (1) If a particular category is "Not Applicable," denote with N/A (2) Calculation checks performed by validators.

VOCs: Aqueous unpreserved analyzed > 7 or preserved analyzed > 14 J/UJ; Soils analyzed > 14 days J/UJ.

J/R for grossly exceeded (> 28 days or > 14 days for vinyl chloride, styrene, or 2CVE if they are specified as analytes of interest by project.)

SVOCs: Aqueous extracted > 7 or extract analyzed > 40 J/UJ; Soils extracted > 14 or extract analyzed > 40 J/R for grossly exceeded (> 28 days to extract all matrices)

Use professional judgment to qualify data if temperature requirements are not met or if headspace or air bubbles present. Bubbles ≤ pea size are acceptable.

TUNING

Include samples, dilutions, reanalyses, calibrations & cal checks

TUNING COMPOUND	DATE & TIME TUNED	INSTRUMENT ID	ABUND. CRIT. MET Y/N	SAMPLE WITHIN _____ HR. TIME FRAME Y/N	FORM 5 #S EQUAL RAW DATA Y/N	CALC. OK	HEADER INFO OK Y/N	ACTION/COMMENTS
TUNE 1:	DATE: _____ TIME: _____							<p><i>NO Data from 2011</i></p> <p><i>12 hr. Penz ok from ccr</i></p>
Associated samples:								
TUNE 2:	DATE: _____ TIME: _____							
Associated samples:								
TUNE 3:	DATE: _____ TIME: _____							
Associated samples:								
TUNE 4:	DATE: _____ TIME: _____							
Associated samples:								
TUNE 5:	DATE: _____ TIME: _____							
Associated samples:								

Actions:

If instrument not tuned properly or not tuned at correct frequency use professional judgment --data maybe qualified as R. (12 hour frequency for 8269/8270)

If mass assignment is in error (incorrect base peak) qualify all data as R.

If ion abundance criteria are not met, professional judgment should be used to determine to what extent the data may be utilized or qualified.

Note, in the Data Validation Report, decisions to use analytical data associated with BFB instrument performance checks not meeting contract requirements

GC/MS WORKSHEETS

NFG-20%

8000 is 20%

TLI Solutions

let us try 20%

INITIAL CALIBRATION

8000 - 20%

Include samples, dilutions, reanalyses, spikes & blanks

INITIAL CALIBRATION	DATE CALIBRATED	INSTRUMENT ID	AVG RRF \geq 0.05 Y/N	20% RSD \leq 15% Y/N	1ST ORD.	2ND ORD.	CALCULATIONS CHECKS			COMMENTS & COMPOUNDS FAILING CRITERIA (Note if compounds are SPCC or CCC)
					CORR. COEF. r or $r^2 \geq 0.99$ Y/N	VALUES TRACE-ABLE Y/N	1 RRF PER I-CAL STND.	MIN 1 AVG. RRF & %RSD	MIN. 1 CORR. COEF. FICIENT	
I-CAL 1:	7/3-2/4	W	1) OK	2)	3) OK	4) -	✓	✓		OK
Associated samples: < 20 or if > 20% (or) use 2 R2										
I-CAL 2:			5)	6)	7)	8)				
Associated samples: I-CAL w/ All Samples										
I-CAL 3:			9)	10)	11)	12)				
Associated samples:										
I-CAL 4:			13)	14)	15)	16)				
Associated samples:										
I-CAL 5:			17)	18)	19)	20)				
Associated samples:										

Actions:

If RRF criteria not met qualify data as J/R

If RSD criteria not met or $r < 0.99$, qualify data as J/UJ

Comment and use professional judgment if standards not correct or not correct number of stds analyzed.

See next page for RRF and RSD criteria. (Depending on project, qualifiers may be applied using method criteria or NFG Validation criteria or combination of both.)

EPA 524.2 RSD 20% criteria

0.01 - 20

10 - 20

If 1000
mg/L

— 20% Method —
CONTINUING CALIBRATION

Include samples, dilutions, reanalyses, spikes & blanks

CONTINUING CALIBRATION	DATE & TIME CALIBRATED	ASSOC. I-CAL DATE	DAILY RRF \geq 0.05 Y/N	%D \leq 20% Y/N	CALCULATIONS CHECKS		COMPOUNDS FAILING CRITERIA (Note if compounds are SPCC or CCC)
					MIN. 1 DAILY RRF	MIN. 1 %D	
C-CAL 1:	7/4 9:02P	7/4 W	1) <input checked="" type="checkbox"/>	2) <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>OK but ICR just after his outliers.</p> <p>4 outliers 7/4</p> <p>7/5 1:48 w/ 46, 47 20-22</p> <p>4 out in ICR 7/4</p> <p>Outliers</p> <div style="border: 1px solid black; border-radius: 50%; padding: 5px; display: inline-block;"> benzo(b) indeno dibenz(a,h) Benzo g h-i </div> <p>20-31 46, 47</p>
Associated samples: 6, 7 41, 42, 44, 45							
C-CAL 2:	7/5 1231	W	3) <input checked="" type="checkbox"/>	4) <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Associated samples: 20, 21, 22, 46, 47							
C-CAL 3:	7/4 5:37P	W	5) <input checked="" type="checkbox"/>	6) <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Associated samples: 23-31							
C-CAL 4:	ICV	W	7) <input checked="" type="checkbox"/>	8) <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Associated samples:							
C-CAL 5:	7/9 655	W	9) <input checked="" type="checkbox"/>	10) <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Associated samples: 32-39							

Verify that the CCALs are compared to the correct ICAL RRFs

If RRF criteria not met qualify data as J/R

If %D criteria not met qualify data as J/UJ

See previous page for RRF and RSD criteria. (Depending on project qualifiers may be applied using method criteria or NFG Validation criteria or combination of both.)

EPA 524.2 %D 30% criteria

Missing run
for rework for benzo(b)
indeno

1-5 w/ ICAL

Continuing Calibration Summary

Page 1 of 2

Job Number: D35496
 Account: ALMS Accutest Mountain States
 Project: URSCOD: 36549247

Sample: MSW127-CC127
 Lab FileID: W2575.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W120703\w2575.D
 Acq On : 4 Jul 2012 9:02 pm
 Sample : cc127-1
 Misc : op29323,msw127,,,1,1
 MS Integration Params: rteint.p

Vial: 23
 Operator: JAMESR1
 Inst : MSW
 Multiplr: 1.00

Method : C:\msdchem\2\METHODS\W120703APAH.M (RTE Integrator)
 Title : PAHs & Alkylated PAHs by GC/MS/SIM
 Last Update : Thu Jul 05 11:48:59 2012
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev (min)	R.T.
1 I	Acenaphthene-d10	1.000	1.000	0.0	108	-0.01	23.12
2 S	Naphthalene-d8	2.168	2.118	2.3	107	0.00	17.72
3 S	Phenanthrene-d10	1.910	1.855	2.9	109	0.00	28.54
----- Amount Calc. %Drift -----							
4 S	Perylene-d12	1000.000	863.132	13.7	110	0.00	46.47
----- AvgRF CCRF %Dev -----							
5 J1	Naphthalene	2.833	2.657	6.2	106	0.00	17.78
6	2-Methylnaphthalene	1.797	1.670	7.1	108	-0.01	19.80
7	1-Methylnaphthalene	1.716	1.599	6.8	107	-0.01	20.12
8 J2	C1-Naphthalenes			-----NA-----			
9 J2	C2-Naphthalenes			-----NA-----			
10 J2	C3-Naphthalenes			-----NA-----			
11 J2	C4-Naphthalenes			-----NA-----			
12	Acenaphthylene	2.259	2.211	2.1	110	0.00	22.62
13	Acenaphthene	1.457	1.406	3.5	108	-0.01	23.22
14	Dibenzofuran	2.243	2.134	4.9	107	-0.01	23.77
15 J1	Fluorene	1.863	1.716	7.9	108	0.00	24.98
16 J2	C1-Fluorenes			-----NA-----			
17 J2	C2-Fluorenes			-----NA-----			
18 J2	C3-Fluorenes			-----NA-----			
19 J1	Dibenzothiophene	2.620	2.461	6.1	107	-0.01	28.13
20 J2	C1-Dibenzothiophenes			-----NA-----			
21 J2	C2-Dibenzothiophenes			-----NA-----			
22 J2	C3-Dibenzothiophenes			-----NA-----			
23 J2	C4-Dibenzothiophenes			-----NA-----			
24 J1	Phenanthrene	2.884	2.695	6.6	107	-0.01	28.62
25	Anthracene	2.567	2.511	2.2	108	0.00	28.81
26 J2	C1-Phenanthrenes/anthrace			-----NA-----			
27 J2	C2-Phenanthrenes/anthrace			-----NA-----			
28 J2	C3-Phenanthrenes/anthrace			-----NA-----			
29 J2	C4-Phenanthrenes/anthrace			-----NA-----			
30	Fluoranthene	3.006	2.900	3.5	107	-0.01	33.70
31 J1	Pyrene	3.055	2.975	2.6	107	0.00	34.69
32 J2	C1-Fluoranthenes/pyrenes			-----NA-----			
33 J2	Benzo(c) fluorene			-----NA-----			
34 J2	Benzo(b) fluorene			-----NA-----			
35 J2	2-Methylpyrene			-----NA-----			
36 J2	4-Methylpyrene			-----NA-----			
37 J2	1-Methylpyrene			-----NA-----			
38 J2	C2-Fluoranthenes/pyrenes			-----NA-----			

20%

12.62 12

Continuing Calibration Summary

Page 2 of 2

Job Number: D35496
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Sample: MSW127-CC127
Lab FileID: W2575.D

39	J2	C3-Fluoranthenes/pyrenes		-----NA-----				
40		Benz(a)anthracene	2.541	2.475	2.6	108	-0.01	40.19
41	J1	Chrysene	2.488	2.399	3.6	107	-0.01	40.37
42	J2	C1-Benz(a)anthracenes/chr		-----NA-----				
43	J2	C2-Benz(a)anthracenes/chr		-----NA-----				
44	J2	C3-Benz(a)anthracenes/chr		-----NA-----				
45	J2	C4-Benz(a)anthracenes/chr		-----NA-----				
46		Benzo(b)fluoranthene	2.620	2.531	3.4	107	0.00	44.94
47		Benzo(k)fluoranthene	2.507	2.463	1.8	109	0.00	45.04
48		Benzo(e)pyrene	2.395	2.251	6.0	105	-0.01	46.04

			Amount	Calc.	%Drift			
49		Benzo(a)pyrene	1000.000	896.970	10.3	111	0.00	46.23

			AvgRF	CCRF	%Dev			
50		Perylene	2.314	2.266	2.1	109	0.00	46.57

			Amount	Calc.	%Drift			
51		Indeno(1,2,3-cd)pyrene	1000.000	877.911	12.2	114	0.00	50.38
52		Dibenz(a,h)anthracene	1000.000	836.719	16.3	119	0.00	50.44

			AvgRF	CCRF	%Dev			
53		Benzo(g,h,i)perylene	2.232	2.040	8.6	104	0.00	51.24

(#) = Out of Range
w2559.D W120703APAH.M

SPCC's out = 0 CCC's out = 0
Tue Jul 10 14:37:00 2012

12.62
12

Continuing Calibration Summary

Page 1 of 1

Job Number: D35496
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Sample: MSW127-CC127
Lab FileID: W2575A.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W120703\w2575A.D Vial: 23
Acq On : 4 Jul 2012 9:03 pm Operator: JAMESR1
Sample : cc127-1 Inst : MSW
Misc : op29323,msw127,,,,1,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\2\MET...\W120703APAH-1.M (RTE Integrator)
Title : PAHs & Alkylated PAHs by GC/MS/SIM
Last Update : Wed Dec 19 11:08:30 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Acenaphthene-d10	1.000	1.000	0.0	108	-0.01	23.12
----- Amount Calc. %Drift -----							
2	Benzo(a)pyrene	1000.000	853.616 ✓	14.6	111	0.00	46.23
3	Indeno(1,2,3-cd)pyrene	1000.000	822.631 ✓	17.7	114	0.00	50.38

(#) = Out of Range
w2559.D W120703APAH-1.M

SPCC's out = 0 CCC's out = 0
Thu Dec 20 14:17:33 2012

12.6.3

12

Continuing Calibration Summary

Page 1 of 2

Job Number: D35496
 Account: ALMS Accutest Mountain States
 Project: URSCOD: 36549247

Sample: MSW127-CC127
 Lab FileID: W2587.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W120703\w2587.D Vial: 35
 Acq On : 5 Jul 2012 12:31 pm Operator: JAMESR1
 Sample : cc127-1.0 Inst : MSW
 Misc : op29355,msw127,,,,1,1 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : C:\msdchem\2\METHODS\W120703APAH.M (RTE Integrator)
 Title : PAHs & Alkylated PAHs by GC/MS/SIM
 Last Update : Thu Jul 05 11:48:59 2012
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev (min)	R.T.
1 I	Acenaphthene-d10	1.000	1.000	0.0	112	-0.01	23.12
2 S	Naphthalene-d8	2.168	2.060	5.0	107	0.00	17.72
3 S	Phenanthrene-d10	1.910	1.852	3.0	112	-0.01	28.53
----- Amount Calc. %Drift -----							
4 S	Perylene-d12	1000.000	897.354	10.3	118	0.00	46.47
----- AvgRF CCRF %Dev -----							
5 J1	Naphthalene	2.833	2.579	9.0	107	-0.01	17.77
6	2-Methylnaphthalene	1.797	1.621	9.8	109	-0.01	19.80
7	1-Methylnaphthalene	1.716	1.553	9.5	107	-0.02	20.12
8 J2	C1-Naphthalenes			-----NA-----			
9 J2	C2-Naphthalenes			-----NA-----			
10 J2	C3-Naphthalenes			-----NA-----			
11 J2	C4-Naphthalenes			-----NA-----			
12	Acenaphthylene	2.259	2.231	1.2	115	0.00	22.62
13	Acenaphthene	1.457	1.389	4.7	110	-0.01	23.22
14	Dibenzofuran	2.243	2.118	5.6	110	-0.01	23.77
15 J1	Fluorene	1.863	1.702	8.6	111	0.00	24.98
16 J2	C1-Fluorenes			-----NA-----			
17 J2	C2-Fluorenes			-----NA-----			
18 J2	C3-Fluorenes			-----NA-----			
19 J1	Dibenzothiophene	2.620	2.444	6.7	110	-0.01	28.13
20 J2	C1-Dibenzothiophenes			-----NA-----			
21 J2	C2-Dibenzothiophenes			-----NA-----			
22 J2	C3-Dibenzothiophenes			-----NA-----			
23 J2	C4-Dibenzothiophenes			-----NA-----			
24 J1	Phenanthrene	2.884	2.666	7.6	110	-0.01	28.62
25	Anthracene	2.567	2.471	3.7	110	-0.01	28.80
26 J2	C1-Phenanthrenes/anthrace			-----NA-----			
27 J2	C2-Phenanthrenes/anthrace			-----NA-----			
28 J2	C3-Phenanthrenes/anthrace			-----NA-----			
29 J2	C4-Phenanthrenes/anthrace			-----NA-----			
30	Fluoranthene	3.006	2.938	2.3	112	-0.01	33.70
31 J1	Pyrene	3.055	2.982	2.4	111	0.00	34.69
32 J2	C1-Fluoranthenes/pyrenes			-----NA-----			
33 J2	Benzo (c) fluorene			-----NA-----			
34 J2	Benzo (b) fluorene			-----NA-----			
35 J2	2-Methylpyrene			-----NA-----			
36 J2	4-Methylpyrene			-----NA-----			
37 J2	1-Methylpyrene			-----NA-----			
38 J2	C2-Fluoranthenes/pyrenes			-----NA-----			

12.64 12

Continuing Calibration Summary

Job Number: D35496
 Account: ALMS Accutest Mountain States
 Project: URSCOD: 36549247

Sample: MSW127-CC127
 Lab FileID: W2587.D

Page 2 of 2

39	J2	C3-Fluoranthenes/pyrenes			-----NA-----				
40		Benz(a)anthracene	2.541	2.581	-1.6	117	-0.01	40.19	
41	J1	Chrysene	2.488	2.445	1.7	112	-0.01	40.37	
42	J2	C1-Benz(a)anthracenes/chr			-----NA-----				
43	J2	C2-Benz(a)anthracenes/chr			-----NA-----				
44	J2	C3-Benz(a)anthracenes/chr			-----NA-----				
45	J2	C4-Benz(a)anthracenes/chr			-----NA-----				
46		Benzo(b)fluoranthene	2.620	2.606	0.5	114	0.00	44.94	
47		Benzo(k)fluoranthene	2.507	2.501	0.2	115	-0.02	45.03	
48		Benzo(e)pyrene	2.395	2.278	4.9	110	-0.01	46.04	

			Amount	Calc.	%Drift				
49		Benzo(a)pyrene	1000.000	928.843	7.1	119	0.00	46.23	

			AvgRF	CCRF	%Dev				
50		Perylene	2.314	2.300	0.6	115	0.00	46.57	

			Amount	Calc.	%Drift				
51		Indeno(1,2,3-cd)pyrene	1000.000	924.968	7.5	125	0.00	50.38	
52		Dibenz(a,h)anthracene	1000.000	887.253	11.3	130	-0.02	50.44	

			AvgRF	CCRF	%Dev				
53		Benzo(g,h,i)perylene	2.232	2.030	9.1	107	0.00	51.24	

(#) = Out of Range
 w2559.D W120703APAH.M

SPCC's out = 0 CCC's out = 0
 Tue Jul 10 17:14:56 2012

12.64

12

Handwritten:
 MSW
 6-6-10
 5-12-09

Continuing Calibration Summary

Page 1 of 1

Job Number: D35496
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Sample: MSW127-CC127
Lab FileID: W2587A.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W120703\w2587A.D Vial: 35
Acq On : 5 Jul 2012 12:32 pm Operator: JAMESR1
Sample : cc127-1.0 Inst : MSW
Misc : op29355,msw127,,,,1,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\2\MET...\W120703APAH-1.M (RTE Integrator)
Title : PAHs & Alkylated PAHs by GC/MS/SIM
Last Update : Wed Dec 19 11:08:30 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev (min)	R.T.
1 I Acenaphthene-d10	1.000	1.000	0.0	112	-0.01	23.12
----- Amount Calc. %Drift -----						
2 Benzo(a)pyrene	1000.000	886.071 ✓	11.4	119	0.00	46.23
3 Indeno(1,2,3-cd)pyrene	1000.000	828.765 ✓	17.1	118	0.00	50.38

(#) = Out of Range
w2559.D W120703APAH-1.M

SPCC's out = 0 CCC's out = 0
Thu Dec 20 14:19:46 2012

12.6.5
12

20-22
416.47

Initial Calibration Verification

Job Number: D35496
 Account: ALMS Accutest Mountain States
 Project: URSCOD: 36549247

Sample: MSW127-ICV127
 Lab FileID: W2588.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W120703\w2588.D Vial: 36
 Acq On : 5 Jul 2012 1:49 pm Operator: JAMESR1
 Sample : icv127-1.0 Inst : MSW
 Misc : op29323,msw127,1000,,,1,1 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : C:\msdchem\2\METHODS\W120703APAH.M (RTE Integrator)
 Title : PAHs & Alkylated PAHs by GC/MS/SIM
 Last Update : Thu Jul 05 11:48:59 2012
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Acenaphthene-d10	1.000	1.000	0.0	103	-0.01	23.12
2 S	Naphthalene-d8	2.168	2.017	7.0	97	0.00	17.72
3 S	Phenanthrene-d10	1.910	1.799	5.8	101	-0.01	28.53
----- Amount Calc. %Drift -----							
4 S	Perylene-d12	1000.000	785.216	21.5#	95	0.00	46.47
----- AvgRF CCRF %Dev -----							
5 J1	Naphthalene	2.833	2.466	13.0	94	-0.01	17.77
6	2-Methylnaphthalene	1.797	1.523	15.2	94	-0.01	19.80
7	1-Methylnaphthalene			-----NA-----			
8 J2	C1-Naphthalenes			-----NA-----			
9 J2	C2-Naphthalenes			-----NA-----			
10 J2	C3-Naphthalenes			-----NA-----			
11 J2	C4-Naphthalenes			-----NA-----			
12	Acenaphthylene	2.259	2.129	5.8	101	0.00	22.62
13	Acenaphthene	1.457	1.321	9.3	97	-0.01	23.22
14	Dibenzofuran			-----NA-----			
15 J1	Fluorene	1.863	1.607	13.7	96	0.00	24.98
16 J2	C1-Fluorenes			-----NA-----			
17 J2	C2-Fluorenes			-----NA-----			
18 J2	C3-Fluorenes			-----NA-----			
19 J1	Dibenzothiophene			-----NA-----			
20 J2	C1-Dibenzothiophenes			-----NA-----			
21 J2	C2-Dibenzothiophenes			-----NA-----			
22 J2	C3-Dibenzothiophenes			-----NA-----			
23 J2	C4-Dibenzothiophenes			-----NA-----			
24 J1	Phenanthrene	2.884	2.535	12.1	96	-0.01	28.62
25	Anthracene	2.567	2.376	7.4	98	-0.01	28.80
26 J2	C1-Phenanthrenes/anthrace			-----NA-----			
27 J2	C2-Phenanthrenes/anthrace			-----NA-----			
28 J2	C3-Phenanthrenes/anthrace			-----NA-----			
29 J2	C4-Phenanthrenes/anthrace			-----NA-----			
30	Fluoranthene	3.006	2.760	8.2	97	-0.01	33.70
31 J1	Pyrene	3.055	2.824	7.6	97	0.00	34.69
32 J2	C1-Fluoranthenes/pyrenes			-----NA-----			
33 J2	Benzo(c)fluorene			-----NA-----			
34 J2	Benzo(b)fluorene			-----NA-----			
35 J2	2-Methylpyrene			-----NA-----			
36 J2	4-Methylpyrene			-----NA-----			
37 J2	1-Methylpyrene			-----NA-----			
38 J2	C2-Fluoranthenes/pyrenes			-----NA-----			

12.6.6
12

Initial Calibration Verification

Job Number: D35496
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Sample: MSW127-ICV127
Lab FileID: W2588.D

Page 2 of 2

39	J2	C3-Fluoranthenes/pyrenes		-----NA-----				
40		Benz (a) anthracene	2.541	2.344	7.8	98	-0.01	40.19
41	J1	Chrysene	2.488	2.336	6.1	99	-0.01	40.37
42	J2	C1-Benz (a) anthracenes/chr		-----NA-----				
43	J2	C2-Benz (a) anthracenes/chr		-----NA-----				
44	J2	C3-Benz (a) anthracenes/chr		-----NA-----				
45	J2	C4-Benz (a) anthracenes/chr		-----NA-----				
46		Benzo (b) fluoranthene	2.620	2.244	14.4	91	-0.02	44.93
47		Benzo (k) fluoranthene	2.507	2.246	10.4	95	-0.02	45.03
48		Benzo (e) pyrene		-----NA-----				

		----- Amount	Calc.	%Drift	-----			
49		Benzo (a) pyrene	1000.000	817.997	18.2	96	0.00	46.23

		----- AvgRF	CCRF	%Dev	-----			
50		Perylene		-----NA-----				

		----- Amount	Calc.	%Drift	-----			
51		Indeno (1,2,3-cd) pyrene	1000.000	804.575	19.5	98	0.00	50.38
52		Dibenz (a,h) anthracene	1000.000	730.785	26.9#	99	-0.02	50.44

		----- AvgRF	CCRF	%Dev	-----			
53		Benzo (g,h,i) perylene	2.232	1.688	24.4#	82	0.00	51.24

(#) = Out of Range

w2559.D W120703APAH.M

SPCC's out = 0 CCC's out = 0
Tue Jul 10 15:06:06 2012

12.6.6
12

Initial Calibration Verification

Page 1 of 1

Job Number: D35496
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Sample: MSW127-ICV127
Lab FileID: W2588A.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W120703\w2588A.D Vial: 36
Acq On : 5 Jul 2012 1:50 pm Operator: JAMESR1
Sample : icv127-1.0 Inst : MSW
Misc : op29323,msw127,1000,,,1,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\2\MET...\W120703APAH-1.M (RTE Integrator)
Title : PAHs & Alkylated PAHs by GC/MS/SIM
Last Update : Wed Dec 19 11:08:30 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev (min)	R.T.
1 I Acenaphthene-d10	1.000	1.000	0.0	103	-0.01	23.12
	Amount	Calc.	%Drift			
2 Benzo(a)pyrene	1000.000	773.189	22.7#	96	0.00	46.23
3 Indeno(1,2,3-cd)pyrene	1000.000	711.817	28.8#	94	0.00	50.38

(#) = Out of Range
w2559.D W120703APAH-1.M

SPCC's out = 0 CCC's out = 0
Thu Dec 20 14:19:49 2012

12.6.7
12

23-31

Continuing Calibration Summary

Page 1 of 2

Job Number: D35496
 Account: ALMS Accutest Mountain States
 Project: URSCOD: 36549247

Sample: MSW127-CC127
 Lab FileID: W2599.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W120703\w2599.D Vial: 47
 Acq On : 6 Jul 2012 5:37 am Operator: JAMESR1
 Sample : cc127-1.0 Inst : MSW
 Misc : op29354,msw127,,,,1,1 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : C:\msdchem\2\METHODS\W120703APAH.M (RTE Integrator)
 Title : PAHs & Alkylated PAHs by GC/MS/SIM
 Last Update : Thu Jul 05 11:48:59 2012
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Acenaphthene-d10	1.000	1.000	0.0	113	-0.01	23.12
2 S	Naphthalene-d8	2.168	2.011	7.2	106	0.00	17.72
3 S	Phenanthrene-d10	1.910	1.872	2.0	114	-0.01	28.53
----- Amount Calc. %Drift -----							
4 S	Perylene-d12	1000.000	823.277	17.7	109	-0.02	46.46
----- AvgRF CCRF %Dev -----							
5 J1	Naphthalene	2.833	2.499	11.8	104	-0.01	17.77
6	2-Methylnaphthalene	1.797	1.600	11.0	108	-0.01	19.80
7	1-Methylnaphthalene	1.716	1.530	10.8	106	-0.02	20.12
8 J2	C1-Naphthalenes			-----NA-----			
9 J2	C2-Naphthalenes			-----NA-----			
10 J2	C3-Naphthalenes			-----NA-----			
11 J2	C4-Naphthalenes			-----NA-----			
12	Acenaphthylene	2.259	2.261	-0.1	118	0.00	22.62
13	Acenaphthene	1.457	1.382	5.1	111	-0.01	23.22
14	Dibenzofuran	2.243	2.101	6.3	110	-0.01	23.77
15 J1	Fluorene	1.863	1.700	8.7	111	0.00	24.98
16 J2	C1-Fluorenes			-----NA-----			
17 J2	C2-Fluorenes			-----NA-----			
18 J2	C3-Fluorenes			-----NA-----			
19 J1	Dibenzothiophene	2.620	2.449	6.5	111	-0.01	28.13
20 J2	C1-Dibenzothiophenes			-----NA-----			
21 J2	C2-Dibenzothiophenes			-----NA-----			
22 J2	C3-Dibenzothiophenes			-----NA-----			
23 J2	C4-Dibenzothiophenes			-----NA-----			
24 J1	Phenanthrene	2.884	2.666	7.6	111	-0.01	28.62
25	Anthracene	2.567	2.521	1.8	114	-0.01	28.80
26 J2	C1-Phenanthrenes/anthrace			-----NA-----			
27 J2	C2-Phenanthrenes/anthrace			-----NA-----			
28 J2	C3-Phenanthrenes/anthrace			-----NA-----			
29 J2	C4-Phenanthrenes/anthrace			-----NA-----			
30	Fluoranthene	3.006	2.948	1.9	113	-0.01	33.70
31 J1	Pyrene	3.055	2.980	2.5	112	-0.01	34.68
32 J2	C1-Fluoranthenes/pyrenes			-----NA-----			
33 J2	Benzo(c)fluorene			-----NA-----			
34 J2	Benzo(b)fluorene			-----NA-----			
35 J2	2-Methylpyrene			-----NA-----			
36 J2	4-Methylpyrene			-----NA-----			
37 J2	1-Methylpyrene			-----NA-----			
38 J2	C2-Fluoranthenes/pyrenes			-----NA-----			

12.68 12

Continuing Calibration Summary

Job Number: D35496
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Sample: MSW127-CC127
Lab FileID: W2599.D

Page 2 of 2

39	J2	C3-Fluoranthenes/pyrenes		-----NA-----				
40		Benz(a)anthracene	2.541	2.498	1.7	114	-0.02	40.17
41	J1	Chrysene	2.488	2.353	5.4	109	-0.02	40.36
42	J2	C1-Benz(a)anthracenes/chr		-----NA-----				
43	J2	C2-Benz(a)anthracenes/chr		-----NA-----				
44	J2	C3-Benz(a)anthracenes/chr		-----NA-----				
45	J2	C4-Benz(a)anthracenes/chr		-----NA-----				
46		Benzo(b)fluoranthene	2.620	2.385	9.0	106	-0.02	44.93
47		Benzo(k)fluoranthene	2.507	2.325	7.3	108	-0.02	45.03
48		Benzo(e)pyrene	2.395	2.106	12.1	103	-0.01	46.04

			Amount	Calc.	%Drift			
NA	49	Benzo(a)pyrene	1000.000	843.508	15.6	108	-0.02	46.22

			AvgRF	CCRF	%Dev			
	50	Perylene	2.314	2.086	9.9	105	-0.02	46.56

			Amount	Calc.	%Drift			
NA	51	Indeno(1,2,3-cd)pyrene	1000.000	795.452	20.5#	106	-0.02	50.37
	52	Dibenz(a,h)anthracene	1000.000	766.697	23.3#	113	-0.03	50.43

			AvgRF	CCRF	%Dev			
	53	Benzo(g,h,i)perylene	2.232	1.751	21.6#	93	-0.02	51.24

(#) = Out of Range
w2559.D W120703APAH.M

SPCC's out = 0 CCC's out = 0
Wed Jul 11 10:17:32 2012

12.6.8 12

Continuing Calibration Summary

Job Number: D35496
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Sample: MSW127-CC127
Lab FileID: W2599A.D

Page 1 of 1

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W120703\w2599A.D Vial: 47
Acq On : 6 Jul 2012 5:38 am Operator: JAMESR1
Sample : cc127-1.0 Inst : MSW
Misc : op29354,msw127,,,,1,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\2\MET...\W120703APAH-1.M (RTE Integrator)
Title : PAHs & Alkylated PAHs by GC/MS/SIM
Last Update : Wed Dec 19 11:08:30 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev (min)	R.T.
1 I Acenaphthene-d10	1.000	1.000	0.0	113	-0.01	23.12
----- Amount Calc. %Drift -----						
2 Benzo(a)pyrene	1000.000	799.171	20.1#	108	-0.02	46.22
3 Indeno(1,2,3-cd)pyrene	1000.000	738.196	26.2#	106	-0.02	50.37

(#) = Out of Range
w2559.D W120703APAH-1.M

SPCC's out = 0 CCC's out = 0
Thu Dec 20 14:19:52 2012

12.6.9
12

Continuing Calibration Summary

Page 1 of 2

Job Number: D35496
 Account: ALMS Accutest Mountain States
 Project: URSCOD: 36549247

Sample: MSW127-CC127
 Lab FileID: W2611.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W120709\w2611.D

Vial: 2

Acq On : 9 Jul 2012 6:55 pm

Operator: JAMESR1

Sample : ccl27-1.0

Inst : MSW

Misc : op29354,msw127,,,,1,1

Multiplr: 1.00

MS Integration Params: rteint.p

Method : C:\msdchem\2\METHODS\W120703APAH.M (RTE Integrator)

Title : PAHs & Alkylated PAHs by GC/MS/SIM

Last Update : Thu Jul 05 11:48:59 2012

Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min

Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Acenaphthene-d10	1.000	1.000	0.0	151	-0.05	23.08
2 S	Naphthalene-d8	2.168	2.017	7.0	141	-0.04	17.68
3 S	Phenanthrene-d10	1.910	1.806	5.4	147	-0.06	28.49
----- Amount Calc. %Drift -----							
4 S	Perylene-d12	1000.000	826.408	17.4	146	-0.06	46.42
----- AvgRF CCRF %Dev -----							
5 J1	Naphthalene	2.833	2.472	12.7	137	-0.04	17.74
6	2-Methylnaphthalene	1.797	1.576	12.3	142	-0.06	19.76
7	1-Methylnaphthalene	1.716	1.529	10.9	142	-0.06	20.08
8 J2	C1-Naphthalenes			-----NA-----			
9 J2	C2-Naphthalenes			-----NA-----			
10 J2	C3-Naphthalenes			-----NA-----			
11 J2	C4-Naphthalenes			-----NA-----			
12	Acenaphthylene	2.259	2.152	4.7	150	-0.04	22.58
13	Acenaphthene	1.457	1.377	5.5	147	-0.05	23.19
14	Dibenzofuran	2.243	2.098	6.5	146	-0.05	23.73
15 J1	Fluorene	1.863	1.667	10.5	146	-0.04	24.94
16 J2	C1-Fluorenes			-----NA-----			
17 J2	C2-Fluorenes			-----NA-----			
18 J2	C3-Fluorenes			-----NA-----			
19 J1	Dibenzothiophene	2.620	2.326	11.2	141	-0.06	28.08
20 J2	C1-Dibenzothiophenes			-----NA-----			
21 J2	C2-Dibenzothiophenes			-----NA-----			
22 J2	C3-Dibenzothiophenes			-----NA-----			
23 J2	C4-Dibenzothiophenes			-----NA-----			
24 J1	Phenanthrene	2.884	2.553	11.5	141	-0.06	28.58
25	Anthracene	2.567	2.340	8.8	141	-0.06	28.76
26 J2	C1-Phenanthrenes/anthrace			-----NA-----			
27 J2	C2-Phenanthrenes/anthrace			-----NA-----			
28 J2	C3-Phenanthrenes/anthrace			-----NA-----			
29 J2	C4-Phenanthrenes/anthrace			-----NA-----			
30	Fluoranthene	3.006	2.682	10.8	138	-0.06	33.65
31 J1	Pyrene	3.055	2.763	9.6	139	-0.05	34.64
32 J2	C1-Fluoranthenes/pyrenes			-----NA-----			
33 J2	Benzo(c)fluorene			-----NA-----			
34 J2	Benzo(b)fluorene			-----NA-----			
35 J2	2-Methylpyrene			-----NA-----			
36 J2	4-Methylpyrene			-----NA-----			
37 J2	1-Methylpyrene			-----NA-----			
38 J2	C2-Fluoranthenes/pyrenes			-----NA-----			

12.6.10 12

Continuing Calibration Summary

Page 2 of 2

Job Number: D35496
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Sample: MSW127-CC127
Lab FileID: W2611.D

39	J2	C3-Fluoranthenes/pyrenes		-----NA-----				
40		Benz(a)anthracene	2.541	2.414	5.0	147	-0.06	40.14
41	J1	Chrysene	2.488	2.268	8.8	140	-0.06	40.33
42	J2	C1-Benz(a)anthracenes/chr		-----NA-----				
43	J2	C2-Benz(a)anthracenes/chr		-----NA-----				
44	J2	C3-Benz(a)anthracenes/chr		-----NA-----				
45	J2	C4-Benz(a)anthracenes/chr		-----NA-----				
46		Benzo(b)fluoranthene	2.620	2.424	7.5	143	-0.06	44.89
47		Benzo(k)fluoranthene	2.507	2.429	3.1	150	-0.06	44.99
48		Benzo(e)pyrene	2.395	2.171	9.4	141	-0.05	46.00

			Amount	Calc.	%Drift			
49		Benzo(a)pyrene	1000.000	922.603	7.7	159	-0.06	46.18

			AvgRF	CCRF	%Dev			
50		Perylene	2.314	2.271	1.9	153	-0.06	46.52

			Amount	Calc.	%Drift			
51		Indeno(1,2,3-cd)pyrene	1000.000	1010.188	-1.0	185	-0.06	50.33
52		Dibenz(a,h)anthracene	1000.000	1033.198	-3.3	205	-0.07	50.39

			AvgRF	CCRF	%Dev			
53		Benzo(g,h,i)perylene	2.232	2.316	-3.8	164	-0.06	51.20

(#) = Out of Range

w2559.D W120703APAH.M

SPCC's out = 0 CCC's out = 0
Thu Dec 20 15:45:23 2012

12.6.10
12

Continuing Calibration Summary

Page 1 of 1

Job Number: D35496
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Sample: MSW127-CC127
Lab FileID: W2611A.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W120709\w2611a.D Vial: 2
Acq On : 9 Jul 2012 6:57 pm Operator: JAMESR1
Sample : cc127-1.0 Inst : MSW
Misc : op29354,msw127,,,,1,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\2\MET...\W120703APAH-1.M (RTE Integrator)
Title : PAHs & Alkylated PAHs by GC/MS/SIM
Last Update : Wed Dec 19 11:08:30 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev (min)	R.T.
1 I Acenaphthene-d10	1.000	1.000	0.0	151	-0.05	23.08

	Amount	Calc.	%Drift			
2 Benzo(a)pyrene	1000.000	879.717	12.0	159	-0.06	46.18
3 Indeno(1,2,3-cd)pyrene	1000.000	1008.941	-0.9	195	-0.06	50.33

(#) = Out of Range
w2559.D W120703APAH-1.M

SPCC's out = 0 CCC's out = 0
Thu Dec 20 14:22:59 2012

12.6.11 12

Raw
not provided

Dist &
have
Raw for this

BLANKS

Include method, trip, equipment & field blanks

BLANK NUMBER & TYPE (Method, Trip, Equipment, Field)	EXTRACTABLES	DATE ANALYZED	CORRECT MATRIX & LEVEL Y/N	FREQ- UENCY MET Y/N	ENTER BLANK CONTAMINANTS FOLLOWED BY CONCENTRATION	COMMENTS
	DATE EXTRACTED					
BLK #/TYPE OP29323-MB	6/19	7/14	—	—	phen. - 0.0055 /ml Dibenzo - 0.0092	U, phen 1, 2, 3, 4, 5 6 Dibenzo 2, 5, 6
Associated samples: 1-7 H ₂ O						
BLK #/TYPE OP29355-MB	7/12	8/15			Naph - 0.21 C3 Naph - 0.17 Phen - 0.32	Naph - 41, 44 Phen - 45, 47
Associated samples: 41, 42, 44-47						
BLK #/TYPE					C1 phen / An 0.27	
Associated samples:						
BLK #/TYPE OP29354-MB	6/22	7/15			C1 Naph 0.22 C3 Naph 0.17	C1 20-30, 31, 32, 33, 74 C3 22, 23, 24, 26-30, 32
Associated samples: 20-39						
BLK #/TYPE						
Associated samples:						

Note: When more than one blank may apply use the blank with the highest concentration. However, prior to using storage or field blanks the potential source should be considered. If also in MB, the MB should be used.

1. Detected sample results < RL or CRQL and less than 5 or 10* times the blank value are raised to the CRQL and qualified non-detected (U).
 2. Detected sample results > RL or CRQL and less than 5 or 10* times the blank value are qualified non-detected (U) at the detected value.
- * use 10X for MECL, MEK, cyclohexane, and acetone, and bis(2-ethylhexyl)phthalate and other common phthalates
3. For gross contamination results should be rejected

note Samples e
10 / 5X / 50X
low

Method Blank Summary

Job Number: D35496
 Account: ALMS Accutest Mountain States
 Project: URSCOD: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP29323-MB	W2564.D	1	07/04/12	JR	06/19/12	OP29323	MSW127

The QC reported here applies to the following samples:

Method: D5739-06/8270C SIM

D35496-1, D35496-2, D35496-3, D35496-4, D35496-5, D35496-6, D35496-7

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	0.010	0.0050	ug/l	
	C1-Naphthalenes	ND	0.010	0.0050	ug/l	
	C2-Naphthalenes	ND	0.010	0.0050	ug/l	
	C3-Naphthalenes	ND	0.010	0.0050	ug/l	
	C4-Naphthalenes	ND	0.010	0.0050	ug/l	
208-96-8	Acenaphthylene	ND	0.010	0.0050	ug/l	
83-32-9	Acenaphthene	ND	0.010	0.0050	ug/l	
86-73-7	Fluorene	ND	0.010	0.0050	ug/l	
	C1-Fluorenes	ND	0.010	0.0050	ug/l	
	C2-Fluorenes	ND	0.010	0.0050	ug/l	
	C3-Fluorenes	ND	0.010	0.0050	ug/l	
132-65-0	Dibenzothiophene	ND	0.010	0.0050	ug/l	
	C1-Dibenzothiophenes	ND	0.010	0.0050	ug/l	
	C2-Dibenzothiophenes	ND	0.010	0.0050	ug/l	
	C3-Dibenzothiophenes	ND	0.010	0.0050	ug/l	
	C4-Dibenzothiophenes	ND	0.010	0.0050	ug/l	
85-01-8	Phenanthrene	0.0055	0.010	0.0050	ug/l	J
120-12-7	Anthracene	ND	0.010	0.0050	ug/l	
	C1-Phenanthrenes/Anthracene	ND	0.010	0.0050	ug/l	
	C2-Phenanthrenes/Anthracene	ND	0.010	0.0050	ug/l	
	C3-Phenanthrenes/Anthracene	ND	0.010	0.0050	ug/l	
	C4-Phenanthrenes/Anthracene	ND	0.010	0.0050	ug/l	
206-44-0	Fluoranthene	ND	0.010	0.0050	ug/l	
129-00-0	Pyrene	ND	0.010	0.0050	ug/l	
	C1-Fluoranthenes/Pyrenes	ND	0.010	0.0050	ug/l	
	C2-Fluoranthenes/Pyrenes	ND	0.010	0.0050	ug/l	
	C3-Fluoranthenes/Pyrenes	ND	0.010	0.0050	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.010	0.0050	ug/l	
218-01-9	Chrysene	ND	0.010	0.0050	ug/l	
	C1-Benzo(a)anthracenes/Chrys	ND	0.010	0.0050	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.010	0.0050	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.010	0.0050	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.010	0.0050	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.010	0.0050	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.010	0.0050	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.010	0.0050	ug/l	

Method Blank Summary

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Job Number: D35496

Account: ALMS Accutest Mountain States

Project: URSCOD: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP29323-MB	W2564.D	1	07/04/12	JR	06/19/12	OP29323	MSW127

The QC reported here applies to the following samples:

Method: D5739-06/8270C SIM

D35496-1, D35496-2, D35496-3, D35496-4, D35496-5, D35496-6, D35496-7

CAS No.	Compound	Result	RL	MDL	Units	Q
198-55-0	Perylene	ND	0.010	0.0050	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.0092	0.010	0.0050	ug/l	J
191-24-2	Benzo(g,h,i)perylene	ND	0.010	0.0050	ug/l	

CAS No.	Surrogate Recoveries	Limits
1146-65-2	Naphthalene-d8	74% 40-120%
1517-22-2	Phenanthrene-d10	76% 40-120%
	Perylene-d12	46% 40-120%

12.1.1
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Method Blank Summary

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Job Number: D35496

Account: ALMS Accutest Mountain States

Project: URSCOD: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP29355-MB	W2578.D	1	07/05/12	JR	06/22/12	OP29355	MSW127

The QC reported here applies to the following samples:

Method: D5739-06/8270C SIM

D35496-41, D35496-42, D35496-44, D35496-45, D35496-46, D35496-47

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.21	0.33	0.16	ug/kg	J
	C1-Naphthalenes	ND	0.33	0.16	ug/kg	
	C2-Naphthalenes	ND	0.33	0.16	ug/kg	
	C3-Naphthalenes	0.17	0.33	0.16	ug/kg	J
	C4-Naphthalenes	ND	0.33	0.16	ug/kg	
208-96-8	Acenaphthylene	ND	0.33	0.16	ug/kg	
83-32-9	Acenaphthene	ND	0.33	0.16	ug/kg	
86-73-7	Fluorene	ND	0.33	0.16	ug/kg	
	C1-Fluorenes	ND	0.33	0.16	ug/kg	
	C2-Fluorenes	ND	0.33	0.16	ug/kg	
	C3-Fluorenes	ND	0.33	0.16	ug/kg	
132-65-0	Dibenzothiophene	ND	0.33	0.16	ug/kg	
	C1-Dibenzothiophenes	ND	0.33	0.16	ug/kg	
	C2-Dibenzothiophenes	ND	0.33	0.16	ug/kg	
	C3-Dibenzothiophenes	ND	0.33	0.16	ug/kg	
	C4-Dibenzothiophenes	ND	0.33	0.16	ug/kg	
85-01-8	Phenanthrene	0.32	0.33	0.16	ug/kg	J
120-12-7	Anthracene	ND	0.33	0.16	ug/kg	
	C1-Phenanthrenes/Anthracene	0.23	0.33	0.16	ug/kg	J
	C2-Phenanthrenes/Anthracene	ND	0.33	0.16	ug/kg	
	C3-Phenanthrenes/Anthracene	ND	0.33	0.16	ug/kg	
	C4-Phenanthrenes/Anthracene	ND	0.33	0.16	ug/kg	
206-44-0	Fluoranthene	ND	0.33	0.16	ug/kg	
129-00-0	Pyrene	ND	0.33	0.16	ug/kg	
	C1-Fluoranthenes/Pyrenes	ND	0.33	0.16	ug/kg	
	C2-Fluoranthenes/Pyrenes	ND	0.33	0.16	ug/kg	
	C3-Fluoranthenes/Pyrenes	ND	0.33	0.16	ug/kg	
56-55-3	Benzo(a)anthracene	ND	0.33	0.16	ug/kg	
218-01-9	Chrysene	ND	0.33	0.16	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	ND	0.33	0.16	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	ND	0.33	0.16	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	ND	0.33	0.16	ug/kg	
	C4-Benzo(a)anthracenes/Chrys	ND	0.33	0.16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.33	0.16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.33	0.16	ug/kg	
192-97-2	Benzo(e)pyrene	ND	0.33	0.16	ug/kg	

12.1.3
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Method Blank Summary

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Job Number: D35496
 Account: ALMS Accutest Mountain States
 Project: URSCOD: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP29354-MB	W2591.D	1	07/05/12	JR	06/22/12	OP29354	MSW127

The QC reported here applies to the following samples:

Method: D5739-06/8270C SIM

D35496-20, D35496-21, D35496-22, D35496-23, D35496-24, D35496-25, D35496-26, D35496-27, D35496-28, D35496-29, D35496-30, D35496-31, D35496-32, D35496-33, D35496-34, D35496-35, D35496-36, D35496-37, D35496-38, D35496-39

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	0.33	0.16	ug/kg	
	C1-Naphthalenes	0.22	0.33	0.16	ug/kg	J
	C2-Naphthalenes	ND	0.33	0.16	ug/kg	
	C3-Naphthalenes	0.17	0.33	0.16	ug/kg	J
	C4-Naphthalenes	ND	0.33	0.16	ug/kg	
208-96-8	Acenaphthylene	ND	0.33	0.16	ug/kg	
83-32-9	Acenaphthene	ND	0.33	0.16	ug/kg	
86-73-7	Fluorene	ND	0.33	0.16	ug/kg	
	C1-Fluorenes	ND	0.33	0.16	ug/kg	
	C2-Fluorenes	ND	0.33	0.16	ug/kg	
	C3-Fluorenes	ND	0.33	0.16	ug/kg	
132-65-0	Dibenzothiophene	ND	0.33	0.16	ug/kg	
	C1-Dibenzothiophenes	ND	0.33	0.16	ug/kg	
	C2-Dibenzothiophenes	ND	0.33	0.16	ug/kg	
	C3-Dibenzothiophenes	ND	0.33	0.16	ug/kg	
	C4-Dibenzothiophenes	ND	0.33	0.16	ug/kg	
85-01-8	Phenanthrene	ND	0.33	0.16	ug/kg	
120-12-7	Anthracene	ND	0.33	0.16	ug/kg	
	C1-Phenanthrenes/Anthracene	ND	0.33	0.16	ug/kg	
	C2-Phenanthrenes/Anthracene	ND	0.33	0.16	ug/kg	
	C3-Phenanthrenes/Anthracene	ND	0.33	0.16	ug/kg	
	C4-Phenanthrenes/Anthracene	ND	0.33	0.16	ug/kg	
206-44-0	Fluoranthene	ND	0.33	0.16	ug/kg	
129-00-0	Pyrene	ND	0.33	0.16	ug/kg	
	C1-Fluoranthenes/Pyrenes	ND	0.33	0.16	ug/kg	
	C2-Fluoranthenes/Pyrenes	ND	0.33	0.16	ug/kg	
	C3-Fluoranthenes/Pyrenes	ND	0.33	0.16	ug/kg	
56-55-3	Benzo(a)anthracene	ND	0.33	0.16	ug/kg	
218-01-9	Chrysene	ND	0.33	0.16	ug/kg	
	C1-Benzo(a)anthracenes/Chrys	ND	0.33	0.16	ug/kg	
	C2-Benzo(a)anthracenes/Chrys	ND	0.33	0.16	ug/kg	
	C3-Benzo(a)anthracenes/Chrys	ND	0.33	0.16	ug/kg	
	C4-Benzo(a)anthracenes/Chrys	ND	0.33	0.16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.33	0.16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.33	0.16	ug/kg	
192-97-2	Benzo(e)pyrene	ND	0.33	0.16	ug/kg	

12.1.5
12

SURROGATES & INTERNAL STANDARDS

Include samples, dilutions, reanalyses, spikes & blanks which do not meet criteria.

#	SAMPLE NUMBER (Include sample number if limits not met)	SURROGATES			INTERNAL STDS		SURR & IS CALC. OK	SURROGATES OUTSIDE QC LIMITS*	INTERNAL STANDARDS OUTSIDE QC LIMITS*	ACTIONS/COMMENTS
		RECOVERIES WITHIN LIMITS FORM II Y/N	IF NOT, RE-EXT./ RE-ANAL Y/N	RE-EXT/ RE-ANAL WITHIN LIMITS Y/N	AREAS WITHIN LIMITS MET Y/N	R.T.S. WITHIN LIMITS Y/N				
1	36	50%						531	IS 1	OK All below Range No qual's
2	38	50%						531		
3										
4								40-140		
5										
6										
7										
8	36	50%			OK	dilution	affected			
9										
10	38	50%			OK	dilution				
11										
12										
13										
14										
15										
16										
17										
18										
19										

*Indicate whether surrogate %R (or IS area) was above or below QC limits. Use for extremely low surrogate recoveries (<10%) or internal standard areas (<2x the lower limit)

Surrogate: (If one VOC %R out qualifiers are added to all affected compounds; for SVOCs two %Rs in a fraction must be out unless than 10%.)

If %R > Upper Acceptance Limit, qualify data as J for detects

If %R < Lower Acceptance Limit but $\geq 20\%$, qualify data as J/UJ

If %R < 10%, qualify data as J/R (Use <10% for SVOC, unless lower limit is < 10% then reject when less than limit). Note: If qualifiers are based on more recent guidelines, < 20% rather than < 10% may be used to reject data.

Note: When more than one analysis is provided use professional judgment to determine the better analysis (consider: HT, surrogate %Rs, IS area counts, and analyte detections)

IS: (Qualifiers are added to associated compounds, use calibration raw data to determine)

If IS area count > QC Limit, qualify data as J for detects

If IS area count < QC Limit, qualify data as J/UJ

If IS area count < 1/2 the lower QC Limit (considered extremely low), qualify data as J/R. [Note: The newer guidelines have J/R if less than lower limit for VOCs.]

If IS RT outside QC limits qualify data as R but examine the chromatographic profile for that sample to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Detects should not be qualified as unusable "R" if the mass spectral criteria are met.

Semivolatile Surrogate Recovery Summary

Page 1 of 2

Job Number: D35496

Account: ALMS Accutest Mountain States

Project: URSCOD: 36549247

Method: D5739-06/8270C SIM

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
D35496-20	W2595A.D			
D35496-20	W2595.D	66.0	78.0	88.0
D35496-21	W2596A.D			
D35496-21	W2596.D	73.0	88.0	96.0
D35496-22	W2597A.D			
D35496-22	W2597.D	65.0	79.0	82.0
D35496-23	W2600A.D			
D35496-23	W2600.D	65.0	78.0	71.0
D35496-24	W2601A.D			
D35496-24	W2601.D	73.0	79.0	76.0
D35496-25	W2602A.D			
D35496-25	W2602.D	65.0	79.0	86.0
D35496-26	W2603A.D			
D35496-26	W2603.D	67.0	73.0	75.0
D35496-27	W2604A.D			
D35496-27	W2604.D	76.0	80.0	77.0
D35496-28	W2605A.D			
D35496-28	W2605.D	74.0	79.0	67.0
D35496-29	W2606A.D			
D35496-29	W2606.D	66.0	79.0	72.0
D35496-30	W2607A.D			
D35496-30	W2607.D	71.0	88.0	76.0
D35496-31	W2608A.D			
D35496-31	W2608.D	66.0	80.0	70.0
D35496-32	W2613A.D			
D35496-32	W2613.D	70.0	77.0	73.0
D35496-33	W2614A.D			
D35496-33	W2614.D	69.0	79.0	82.0
D35496-34	W2615A.D			
D35496-34	W2615.D	69.0	79.0	86.0
D35496-35	W2616A.D			
D35496-35	W2616.D	67.0	95.0	137.0
D35496-36	W2617A.D			
D35496-36	W2617.D	68.0	100.0	141.0* a
D35496-37	W2618A.D			
D35496-37	W2618.D	66.0	94.0	113.0
D35496-38	W2619A.D			
D35496-38	W2619.D	73.0	104.0	148.0* a
D35496-39	W2620A.D			
D35496-39	W2620.D	66.0	98.0	117.0

12.5.2
12

50x

50x

Dilution

Semivolatile Surrogate Recovery Summary

Page 2 of 2

Job Number: D35496
Account: ALMS Accutest Mountain States
Project: URSCOD: 36549247

Method: D5739-06/8270C SIM	Matrix: SO
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
D35496-41	W2583A.D			
D35496-41	W2583.D	61.0	73.0	83.0
D35496-42	W2582A.D			
D35496-42	W2582.D	52.0	112.0	93.0
D35496-44	W2584A.D			
D35496-44	W2584.D	61.0	81.0	93.0
D35496-45	W2585A.D			
D35496-45	W2585.D	72.0	92.0	103.0
D35496-46	W2589A.D			
D35496-46	W2589.D	52.0	109.0	92.0
D35496-47	W2590A.D			
D35496-47	W2590.D	46.0	88.0	83.0
OP29354-BS	W2592A.D			
OP29354-BS	W2592.D	70.0	72.0	72.0
OP29354-MB	W2591A.D			
OP29354-MB	W2591.D	70.0	72.0	60.0
OP29354-MS	W2593A.D			
OP29354-MS	W2593.D	66.0	75.0	83.0
OP29354-MSD	W2594A.D			
OP29354-MSD	W2594.D	70.0	79.0	89.0
OP29355-BS	W2579A.D			
OP29355-BS	W2579.D	61.0	74.0	81.0
OP29355-MB	W2578A.D			
OP29355-MB	W2578.D	74.0	78.0	63.0
OP29355-MS	W2580A.D			
OP29355-MS	W2580.D	47.0	93.0	100.0
OP29355-MSD	W2581A.D			
OP29355-MSD	W2581.D	44.0	97.0	116.0

Surrogate Compounds	Recovery Limits
S1 = Naphthalene-d8	40-140%
S2 = Phenanthrene-d10	40-140%
S3 = Perylene-d12	40-140%

(a) Outside control limits due to dilution. —

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SPIKES, LFBs, & LCSs

Include matrix spikes & laboratory fortified blanks which do not met spiking criteria

TYPE OF SPIKE (Circle One) & ID NUMBER	DATE & TIME ANALYZED	FREQUENCY CRITERIA MET Y/N	SPIKED AT CORRECT LEVEL Y/N	CALC. & TRANS. OK Y/N	LIST SPIKING COMPOUNDS OUTSIDE PERCENT RECOVERY CRITERIA (Followed by percent recovery)	LIST MS/MSD SPIKING COMPOUNDS OUTSIDE RPD CRITERIA (Followed by RPD)	ACTIONS/COMMENTS
LFB / MS / MSD / <u>LCS #</u>	7/4	/	/	/	All within 50-150% 1 as lost		
Associated samples:	1-7						
LFB / MS / MSD / <u>LCS #</u>	7/5	/	/	/	none out		
Associated samples:	41, 42, 44-47						
LFB / MS / MSD / <u>LCS #</u>	7/5	/	/	/	none out		
Associated samples:	20-39						
LFB / MS / MSD / <u>LCS #</u>	7/4				none out		
Associated samples:	1-7						
LFB / MS / MSD / <u>LCS #</u> #42					all others ↓ others > 4%		
Associated samples:							

No qualification of the data is necessary on MS and MSD data alone. However, using informed professional judgment, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. Suggestions are listed below. [Note: Qualification generally applied to non-spiked parent sample only unless it can be determined that lab is having systematic problem with one or more analytes that affects all associated samples.]

If MS or MSD %R > Upper QC Limit, qualify data as J for detects; IF RPD > QC limit J/UJ
If MS or MSD %R < Lower QC Limit, qualify data as J/UJ. If %R < 10% use professional judgment with NDs. NDs should be rejected when the spiked compound is not recovered.

MS/MSD %Rs should be considered not applicable when the un-spiked parent sample concentration is greater than 4 times the spike value.

For LCS analyses qualifiers are applied to all associated samples, matrix and batch considerations.

If LCS %R > Upper QC Limit, qualify data as J for detects

If LCS %R < Lower QC Limit, qualify data as J/UJ. Using professional judgment, NDs should be rejected when the spiked compound is not recovered or if the %R < 10% or 20%, depending on project requirements.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: D35496

Account: ALMS Accutest Mountain States

Project: URSCOD: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP29355-MS	W2580.D	100	07/05/12	JR	06/22/12	OP29355	MSW127
OP29355-MSD	W2581.D	100	07/05/12	JR	06/22/12	OP29355	MSW127
D35496-42	W2582.D	100	07/05/12	JR	06/22/12	OP29355	MSW127

The QC reported here applies to the following samples:

Method: D5739-06/8270C SIM

D35496-41, D35496-42, D35496-44, D35496-45, D35496-46, D35496-47

CAS No.	Compound	D35496-42 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
91-20-3	Naphthalene	ND		393	209	53	193	49* a	8	50-150/30
	C1-Naphthalenes	73.7	J		ND		ND		nc	50-150/30 ^b
	C2-Naphthalenes	938			ND		ND		nc	50-150/30 ^b
	C3-Naphthalenes	7120			ND		ND		nc	50-150/30 ^b
	C4-Naphthalenes	12300			ND		ND		nc	50-150/30 ^b
208-96-8	Acenaphthylene	72.7	J	393	294	56	295	57	0	50-150/30
83-32-9	Acenaphthene	ND		393	282	72	259	66	9	50-150/30
86-73-7	Fluorene	88.2		393	327	61	294	53	11	50-150/30
	C1-Fluorenes	2670			ND		ND		nc	50-150/30 ^b
	C2-Fluorenes	7890			ND		ND		nc	50-150/30 ^b
	C3-Fluorenes	9340			ND		ND		nc	50-150/30 ^b
132-65-0	Dibenzothiophene	117		393	358	61	318	51	12	50-150/30 ^b
	C1-Dibenzothiophenes	1630			ND		ND		nc	50-150/30 ^b
	C2-Dibenzothiophenes	3710			ND		ND		nc	50-150/30 ^b
	C3-Dibenzothiophenes	3810			ND		ND		nc	50-150/30 ^b
	C4-Dibenzothiophenes	1980			ND		ND		nc	50-150/30 ^b
85-01-8	Phenanthrene	381		393	608	58	535	39* a	13	50-150/30
120-12-7	Anthracene	266		393	353	22* a	311	12* a	13	50-150/30
	C1-Phenanthrenes/Anthracene	6350			ND		ND		nc	50-150/30 ^b
	C2-Phenanthrenes/Anthracene	15200			ND		ND		nc	50-150/30 ^b
	C3-Phenanthrenes/Anthracene	15400			ND		ND		nc	50-150/30 ^b
	C4-Phenanthrenes/Anthracene	6430			ND		ND		nc	50-150/30 ^b
206-44-0	Fluoranthene	212		393	454	62	389	45* a	15	50-150/30
129-00-0	Pyrene	1210		393	1470	66	1240	8* c	17	50-150/30
	C1-Fluoranthenes/Pyrenes	5110			ND		ND		nc	50-150/30 ^b
	C2-Fluoranthenes/Pyrenes	7830			ND		ND		nc	50-150/30 ^b
	C3-Fluoranthenes/Pyrenes	7620			ND		ND		nc	50-150/30 ^b
56-55-3	Benzo(a)anthracene	320		393	608	73	522	52	15	50-150/30
218-01-9	Chrysene	2280		393	2530	64	2110	-43* c	18	50-150/30
	C1-Benzo(a)anthracenes/Chrys	4560			ND		ND		nc	50-150/30 ^b
	C2-Benzo(a)anthracenes/Chrys	5900			ND		ND		nc	50-150/30 ^b
	C3-Benzo(a)anthracenes/Chrys	5340			ND		ND		nc	50-150/30 ^b
	C4-Benzo(a)anthracenes/Chrys	4310			ND		ND		nc	50-150/30 ^b
205-99-2	Benzo(b)fluoranthene	471		393	742	69	615	37* a	19	50-150/30
207-08-9	Benzo(k)fluoranthene	84.8		393	387	77	348	67	11	50-150/30
192-97-2	Benzo(e)pyrene	1370		393	1620	64	1370	0* c	17	50-150/30 ^b

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 2

Job Number: D35496

Account: ALMS Accutest Mountain States

Project: URSCOD: 36549247

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP29355-MS	W2580.D	100	07/05/12	JR	06/22/12	OP29355	MSW127
OP29355-MSD	W2581.D	100	07/05/12	JR	06/22/12	OP29355	MSW127
D35496-42	W2582.D	100	07/05/12	JR	06/22/12	OP29355	MSW127

The QC reported here applies to the following samples:

Method: D5739-06/8270C SIM

D35496-41, D35496-42, D35496-44, D35496-45, D35496-46, D35496-47

CAS No.	Compound	D35496-42 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
198-55-0	Perylene	ND	393	345	88	303	77	13	50-150/30 ^b
53-70-3	Dibenzo(a,h)anthracene	118	393	528	104	404	73	27	50-150/30
191-24-2	Benzo(g,h,i)perylene	363	393	641	71	556	49* ^a	14	50-150/30

CAS No.	Surrogate Recoveries	MS	MSD	D35496-42	Limits
1146-65-2	Naphthalene-d8	47%	44%	52%	40-140%
1517-22-2	Phenanthrene-d10	93%	97%	112%	40-140%
	Perylene-d12	100%	116%	93%	40-140%

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

(b) Advisory control limits.

(c) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

SPIKES, LFBs, & LCSs

Include matrix spikes & laboratory fortified blanks which do not met spiking criteria

TYPE OF SPIKE (Circle One) & ID NUMBER	DATE & TIME ANALYZED	FREQUENCY CRITERIA MET Y/N	SPIKED AT CORRECT LEVEL Y/N	CALC. & TRANS. OK Y/N	LIST SPIKING COMPOUNDS OUTSIDE PERCENT RECOVERY CRITERIA (Followed by percent recovery)	LIST MS/MSD SPIKING COMPOUNDS OUTSIDE RPD CRITERIA (Followed by RPD)	ACTIONS/COMMENTS
LFB / MS / MSD / LCS # 20	7/15	/	/	/	none out →		
Associated samples: 20-39							
LFB / MS / MSD / LCS #							
Associated samples:							
LFB / MS / MSD / LCS #							
Associated samples:							
LFB / MS / MSD / LCS #							
Associated samples:							
LFB / MS / MSD / LCS #							
Associated samples:							

No qualification of the data is necessary on MS and MSD data alone. However, using informed professional judgment, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. Suggestions are listed below. [Note: Qualification generally applied to non-spiked parent sample only unless it can be determined that lab is having systematic problem with one or more analytes that affects all associated samples.]

If MS or MSD %R > Upper QC Limit, qualify data as J for detects; IF RPD > QC limit J/UJ
If MS or MSD %R < Lower QC Limit, qualify data as J/UJ. If %R < 10% use professional judgment with NDs. NDs should be rejected when the spiked compound is not recovered.

MS/MSD %Rs should be considered not applicable when the un-spiked parent sample concentration is greater than 4 times the spike value.

For LCS analyses qualifiers are applied to all associated samples, matrix and batch considerations.

If LCS %R > Upper QC Limit, qualify data as J for detects

If LCS %R < Lower QC Limit, qualify data as J/UJ. Using professional judgment, NDs should be rejected when the spiked compound is not recovered or if the %R < 10% or 20%, depending on project requirements.

COMPOUND IDENTIFICATION, QUANTITATION LIMITS

Include samples, dilutions, reanalyses & blanks

#	SAMPLE NUMBER (Include if problems exist)	ID CRITERIA		COMMENTS & COMPOUNDS FAILING ID CRITERIA	SPECTRA PRESENT Y/N	CALC. CHECKS*		TRANS- SCRIPTION ERRORS Y/N	ACTIONS/COMMENTS
		RRT (0.06) MET Y/N	MASS SPECTRAL MET Y/N			RLs CORRECT Y/N	CHECK 1-3 HIT(S) PER SAMPLE		
1	1-7 H2O	/	/	Poor qual MS SIM ✓ better from MS re-run		/	/		OK
2									
3									
4	20-39 S-1	/	/			/	/		
5									
6									
7	u1	✓	/			/	/		
8	u2	✓	/			/	/		
9	u4-u7	✓	/			/	/		
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

* Verify that the correct internal standard, quantitation ion, and RRF were used to quantitate the compound and that quantitation was consistent throughout, in both the calibration as well as the sample quantitation process. Also verify that CRQLs and results have been adjusted to reflect all sample dilutions, prep factors, and dry weight factors (for non-aqueous samples) and that the RL or method quantitation limit is determined from lowest calibration std.

Actions:

The application of qualitative criteria for GC/MS analysis of target compounds requires professional judgment. It is up to the reviewer's discretion to obtain additional information from the laboratory. If it is determined that incorrect identifications were made, qualify all such data as not detected "U" or unusable "R". See below

False positive results below the CRQLs should be raised to CRQL and qualified as U.

False non-detects results should be rejected (R).

Include samples for which problems exist.

[illegible]

Include all missing data and if was requested and / or received.

Field Duplicates		
ADDITIONAL, QC		
FIELD DUPLICATE SAMPLE NUMBERS	LIST COMPOUNDS WITH RPDs OUTSIDE RPD CRITERIA (followed by RPD)	ACTION/COMMENTS

If field duplicate RPD > project specified QC limit, qualify data as J or UJ for that compound in the associated field duplicate pair.

Qualifiers should only be added to detects greater than the CRQLs or RLs. Qualifiers should not be added when one result is not detected and the other result is detected below the RL or if both results are less than the RL.

Run Date: 7/2/12-7/3/12, 7/9/12

Analyst Signature: KR, JR

Standard Data

[illegible]

Column Information: Front ZB-5MSi. 60m

Rear N/A

Sequence File: ~~W071212~~ ^{VR} W120702, W120703

Quantitation Methods: W120703APAH.M

Instrument Run Batches: MSW127

Inj. Vol:

Data Acquisition Methods: SAPAH SIM 1.0

Inj. Vol: 1-2

ICAL verified:

Sequence verified: 7/10/12 KR

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	W2545-6	TEST RUN	N/A		N/A	N/A	N/A	
1	W2547	NAPHTHENIC CRUDE OIL						
2	8	MSS1427-1.0						
1	9	NAPHTHENIC CRUDE OIL						
2	W2550	MSS1427-1.0	MSS1427					
2	1							
2	2							
1	3	NAPHTHENIC CRUDE OIL	N/A					
2	4	Blank						
3	X	5	MSS1427-.005	MSS1427				
4	X	6	-0.01					(IC127)
5	X	7	-0.05					
6	X	8	-0.25					
7	X	9	-1.0					
8	X	W2560	-5.0					
9	X	1	-20					
10	X	2	ICV127-1.0	MSS				
11		3	Blank	N/A				
12	X	4	OP29323-MB	OP29323				
13	X	5	-BS					
14	X	6	-MS					
15	X	7	-MSD					
16	X	8	MC11583-6					
17	X	9	D35496-1					
18	X	W2570	-2					
19	X	1	-3					
20	X	2	-4					
21	X	3	-5					
22		4	Blank	N/A				
23	X	5	CC127-1.0	MSS1427				
24	X	6	D35496-6	OP29323				
25	X	7	-7					

MS002-04

Date: 8/29/06 Dilution Solvent: B+J DCM

Lot: DG415

Review:

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1 of 3

Run Date: 7/2/12-7/3/12, 7/9/12

Analyst Signature: KR, JR

Standard Data

Lot #	Description	Conc

see
page
21

Column Information: Front

Rear

Sequence File:

Quantitation Methods:

Instrument Run Batches:

Data Acquisition Methods:

Inj. Vol:

Inj. Vol:

Sequence verified: 7/10/12 KR

ICAL verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
26 X	W2578	OP29355-MB	OP29355		SOIL	N/A	N/A	
27 X	↓ 9	-BS				↓		
28 X	W2580	-MS				100X		
29 X	1	↓ -MSD						
30 X	2	D35496-42				↓		
31 X	3	-41				N/A		
32 X	4	-44				↓		
33 X	5	↓ -45	↓		↓	5X		
34 X	6	Blank	N/A		N/A	N/A		
35 X	7	CC127-1.0	MS31427					← 7/6/12 12:31 PM
36 X	8	ICV127-1.0	MSS		↓	↓		2/5 1:49 PM
37 X	↓ 9	D35496-46	OP29355		SOIL	100X		
38 X	W2590	↓ -47	↓			↓		
39 X	1	OP29354-MB	OP29354			N/A		
40 X	2	-BS						
41 X	3	-MS						
42 X	4	↓ -MSD						
43 X	5	D35496-20				↓		
44 X	6	-21				10X		
45 X	7	↓ -22	↓		↓	↓		
46 X	8	Blank	N/A		N/A	N/A		
47 X	↓ 9	CC127-1.0	MS31427		↓	↓		7/6 5:57 AM
48 X	W2600	D35496-23	OP29354		SOIL	10X		
49 X	1	-24				N/A		
50 X	2	-25						
51 X	3	-26						
52 X	4	-27						
53 X	5	-28				↓		
54 X	6	-29				5X		
55 X	7	-30				10X		
56 X	8	↓ -31	↓		↓	↓		
57 X	↓ 9	N/A	N/A		N/A	N/A	↓	No data collected.

MS002-04

Date: 8/29/06 Dilution Solvent: B+T DCM

Lot: DG415

Review:

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2 of 3

Run Date: 7/2/12-7/3/12, 7/9/12

Analyst Signature: KR, JR

Standard Data

[illegible]

Column Information: Front
Rear

Sequence File:

Quantitation Methods:

Instrument Run Batches:

Data Acquisition Methods:

Ini. Volt:

Inj. Vol:

ICAL verified:

Sequence verified: 7/10/12 KR

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	X W26010	See Comments	N/A		N/A	N/A	N/A	Aromatic intermediate crude.
2		CC127-1.0	MSS1427					7/9 18:55
2	X 1A	↓	↓		↓			
3	X 2	Blank	N/A		↓			
57	X 3	D35496-32	OP29354		SOIL			
60	X 4	-33						
61	X 5	-34						
62	X 6	-35				↓	50X	
63	X 7	-36						
64	X 8	-37						
65	X ↓ 9	-38						
66	✓ W26020	↓ -39	↓		↓	↓		
67	X 1	Blank	N/A		N/A	N/A		
2	X ↓ 2	CC127-1.0	MSS1427					

7/11/2012 KR

MS002-04

Date: 8/29/06 Dilution Solvent: BtJ DCM

Lot: DG415

Review:

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3 of 3



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest Mountain States

Job No D35496

Site: URSCOD: 36549247

Report Date 1/9/2013 12:17:43 PM

33 Sample(s) were collected on between 06/12/2012 and 06/13/2012 and were received at Accutest on 06/14/2012 properly preserved, at 0.6 Deg. C and intact. These Samples received an Accutest job number of D35496. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method D5739-06/8270C SIM

Matrix	AQ	Batch ID:	OP29323
--------	----	-----------	---------

- ☒ All samples were extracted within the recommended method holding time.
- ☒ All samples were analyzed within the recommended method holding time.
- ☒ Sample(s) MC11583-6MS, MC11583-6MSD were used as the QC samples indicated.
- ☒ Sample(s) D35496-1, D35496-2, D35496-3, D35496-4, D35496-5, D35496-6 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.
- ☒ Initial calibration verification standard MSW127-ICV127 for Perylene-d12, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene exceeds 20% difference.

Matrix	SO	Batch ID:	OP29354
--------	----	-----------	---------

- ☒ All samples were extracted within the recommended method holding time.
- ☒ All samples were analyzed within the recommended method holding time.
- ☒ Sample(s) D35496-20MS, D35496-20MSD were used as the QC samples indicated.
- ☒ Sample(s) D35496-20, D35496-24, D35496-25, D35496-26, D35496-27, D35496-28, D35496-29, D35496-32, D35496-33, D35496-34 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.
- ☒ D35496-36,38 for Perylene-d12: Outside control limits due to dilution.

Matrix	SO	Batch ID:	OP29355
--------	----	-----------	---------

- ☒ All samples were extracted within the recommended method holding time.
- ☒ All samples were analyzed within the recommended method holding time.
- ☒ Sample(s) D35496-42MS, D35496-42MSD were used as the QC samples indicated.
- ☒ Sample(s) D35496-41, D35496-44 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.
- ☒ Matrix Spike Recovery(s) for Anthracene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- ☒ Matrix Spike Duplicate Recovery(s) for Anthracene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Fluoranthene, Naphthalene, Phenanthrene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- ☒ Calibration check standard MSW127-CC127 for Dibenz(a,h)anthracene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene exceeds 20% difference.
- ☒ Matrix Spike Duplicate Recovery(s) for Pyrene, Chrysene, Benzo(e)pyrene are outside control limits. Outside control limits due to high level in sample relative to spike amount.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D35496).

The following corrections were made that reflect changes in the reported results.

1. The previously reported results were censored using the incorrect sample specific reporting limits (RLs). The RL was adjusted to the correct value based on the lowest calibration point.
2. The previously reported results did not utilize a method detection limit (MDL) for limiting secondary "J" qualifiers for estimated values. An MDL field was added that represents a value of $\frac{1}{2}$ the RL for secondary "J" qualifying. This value is equal to the RL in the previously reported results.
3. The previously reported results did not utilize a "B" qualifier for sample results that were detected at a level less than 10 times the level detected in the associated method blank. The "B" qualifier was added where appropriate.
4. The previously reported results for benzo(a)pyrene and indeno(1,2,3-cd)pyrene utilized a curve fit that did not pass through the origin. This curve fit resulted in a high bias for results detected near the MDL. The curve fit was corrected to pass through the origin and the results were recalculated and reported.
5. Several previously reported soil samples included incorrect "ND" results for the alkylated PAH ranges C1-dibenzothiophenes and C2-phenanthrenes/anthracenes. The incorrect "ND" result was reported due to a LIMS subtraction calculation that should not have been applied to these ranges. The following samples received corrections...
 - a. C1-dibenzothiophenes: D35496-21, D35496-22, D35496-23, D35496-25, D35496-31, D35496-33, D35496-35, D35496-37, D35496-38, D35496-39, D35496-42, D35496-45, D35496-46, D35496-47.
 - b. C2-phenanthrenes/anthracenes: D35496-21, D35496-22, D35496-23, D35496-24, D35496-25, D35496-26, D35496-27, D35496-28, D35496-29, D35496-30, D35496-31, D35496-32, D35496-33, D35496-34, D35496-35, D35496-36, D35496-37, D35496-38, D35496-39, D35496-42, D35496-45, D35496-46, D35496-47.
6. The method detection limit (MDL) referenced on the summary reports reflect a value of $\frac{1}{2}$ the reporting limit (RL). Results reported between the RL and MDL are flagged with a "J" qualifier and reported as estimated value.



CHAIN OF CUSTODY

4036 Youngfield St., Wheat Ridge, CO 80033
303-425-6021 FAX: 303-425-6854

Accutest Job #:	D35496
Accutest Quote #:	0
AMS P.O. #:	
Project No.:	

Client Information			Subcontract Laboratory Information										Analytical Information					Comments
Name Accutest Mountain States (AMS)			Name Accutest - New England															
Address 4036 Youngfield St.			Address 495 Technology Center West, BLDG C															
City State Zip Wheat Ridge, CO 80033			City State Zip Marlborough MA 01752															
Send Report to: Any questions contact: Phone/Fax #: (303) 425-6021; (303) 425-6854			Contact: Sample Management Phone: (508) 481-6200															
Field ID / Point of Collection			Collection		Matrix	# of bottles	Preservation					B8270SIMPAP34						
			Date	Time			HCL	NaOH	HNO3	H2SO4	None							
D35496 -1			6/13/12		AQ	2							X					
-2			6/13/12		AQ	2							X					
-3			6/12/12		AQ	2							X					
-4					AQ	2							X					
-5					AQ	2							X					
-6					AQ	2							X					
-7					AQ	2							X				17C, 9C	
-20 MS/MSD					Soil	1							X					
-21					Soil	1							X					
-22					Soil	1							X					
Turnaround Information			Data Deliverable Information										Comments / Remarks					
<input checked="" type="checkbox"/> 10 Business Day Standard <input type="checkbox"/> Other _____ (Days)			Approved By: _____			<input type="checkbox"/> Commercial "A" <input type="checkbox"/> PDF <input type="checkbox"/> Commercial "B" <input type="checkbox"/> Compact Disk Deliverable <input type="checkbox"/> Commercial "BN" <input type="checkbox"/> Electronic Delivery: _____ <input type="checkbox"/> Reduced Tier 1 <input type="checkbox"/> State Forms <input type="checkbox"/> Full Tier 1 <input type="checkbox"/> Other (Specify) _____					Please use Colorado regulations and RLs.							
10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.																		
Sample Custody must be documented below each time samples change possession, including courier delivery.																		
Relinquished by: _____			Date & Time: 6/15/12			Received By: <i>Rea</i>			Date & Time: 16			Seal #: _____			Headspace: Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>			
Relinquished by: <i>Rea</i>			Date & Time: _____			Received By: <i>2/16/12 dnd</i>			Date & Time: 20/16/12 10:20			Preserved where applicable: <input type="checkbox"/>						
Relinquished by: _____			Date & Time: _____			Received By: _____			Date & Time: _____			Temperature °C 0.6°			On Ice <input checked="" type="checkbox"/>			

D35496: Chain of Custody

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Accutest Labs of New England, Inc.



4036 Youngfield St., Wheat Ridge, CO 80033
303-425-6021 FAX: 303-425-6854

Client Information			Subcontract Laboratory Information					Analytical Information					Comments				
Name Accutest Mountain States (AMS)			Name Accutest - New England					B8270SIMP34									
Address 4036 Youngfield St.			Address 495 Technology Center West, BLDG C														
City Wheat Ridge,	State CO	Zip 80033	City Marlborough	State MA	Zip 01752												
Send Report to: Andrew Fluegel			Contact: Sample Management														
Any questions contact: Ann Dorr			Phone: (508) 481-6200														
Phone/Fax #: (303) 425-6021; (303) 425-6854																	
Collection			Preservation														
Field ID / Point of Collection	Date	Time	Matrix	# of bottles	HCL	NaOH	HN03	H2SO4	None								
D35496 -23	6/12/12		Soil	1						X							
-24			Soil	1						X							
-25			Soil	1						X							
-26			Soil	1						X							
-27			Soil	1						X							
-28			Soil	1						X							
-29			Soil	1						X							
-30			Soil	1						X							
-31			Soil	1						X							
-32			Soil	1						X							
Turnaround Information			Data Deliverable Information							Comments / Remarks							
<input checked="" type="checkbox"/> 10 Business Day Standard <input type="checkbox"/> Other _____ (Days)			<input type="checkbox"/> Commercial "A" <input type="checkbox"/> PDF <input type="checkbox"/> Commercial "B" <input type="checkbox"/> Compact Disk Deliverable <input type="checkbox"/> Commercial "BN" <input type="checkbox"/> Electronic Delivery: <input type="checkbox"/> Reduced Tier 1 <input type="checkbox"/> State Forms <input type="checkbox"/> Full Tier 1 <input type="checkbox"/> Other (Specify)							Please use Colorado regulations and RLs.							
10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.																	
Sample Custody must be documented below each time samples change possession, including courier delivery.										For Subcontract Laboratory Use Only							
Relinquished by:	Date & Time:	Received By:	Date & Time:	Seal #:		Headspace:											
1	6/15/12	1	1	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>													
Relinquished by:	Date & Time:	Received By:	Date & Time:	Preserved where applicable:													
2		2	2	<input type="checkbox"/>													
Relinquished by:	Date & Time:	Received By:	Date & Time:	Temperature °C		On Ice <input type="checkbox"/>											
3		3	3														

11.1 77

D35496: Chain of Custody
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CHAIN OF CUSTODY

4036 Youngfield St., Wheat Ridge, CO 80033
303-425-6021 FAX: 303-425-6854Accutest Job #: D35496
Accutest Quote #: 0
AMS P.O. #:
Project No.:

Client Information			Subcontract Laboratory Information						Analytical Information							
Name Accutest Mountain States (AMS)			Name Accutest - New England						BB270SIMP4H34							
Address 4036 Youngfield St.			Address 495 Technology Center West, BLDG C													
City Wheat Ridge,	State CO	Zip 80033	City Marlborough		State MA		Zip 01752									
Send Report to: Andrew Fluegel			Contact: Sample Management													
Any questions contact: Ann Dorr			Phone: (508) 481-6200													
Phone/Fax #: (303) 425-6021; (303) 425-6854																
Field ID / Point of Collection			Collection		Matrix	# of bottles	Preservation		Comments							
			Date	Time			HCL	NaOH					HNO3	H2SO4	None	
D35496 -33			6/12/12		Soil	1										X
-34					Soil	1										X
-35					Soil	1										X
-36					Soil	1										X
-37			6/13/12		Soil	1										X
-38					Soil	1										X
-39					Soil	1										X
-41					Soil	1										X
-42					Soil	1						X				
-44					Soil	1						X				
Turnaround Information			Data Deliverable Information						Comments / Remarks							
<input checked="" type="checkbox"/> 10 Business Day Standard <input type="checkbox"/> Other _____ (Days)			Approved By: _____			<input type="checkbox"/> Commercial "A" <input type="checkbox"/> PDF <input type="checkbox"/> Commercial "B" <input type="checkbox"/> Compact Disk Deliverable <input type="checkbox"/> Commercial "BN" <input type="checkbox"/> Electronic Delivery: _____ <input type="checkbox"/> Reduced Tier 1 <input type="checkbox"/> State Forms <input type="checkbox"/> Full Tier 1 <input type="checkbox"/> Other (Specify) _____			Please use Colorado regulations and RLs.							
10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.																
Sample Custody must be documented below each time samples change possession, including courier delivery.										For Subcontract Laboratory Use Only						
Relinquished by:		Date & Time:		Received By:		Date & Time:		Seal #:		Headspace:						
1		6/11/12		1		1				Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>						
Relinquished by:		Date & Time:		Received By:		Date & Time:		Preserved where applicable:								
2				2		2		<input type="checkbox"/>								
Relinquished by:		Date & Time:		Received By:		Date & Time:		Temperature °C		On Ice <input type="checkbox"/>						
3				3		3										

D35496: Chain of Custody

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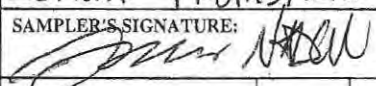
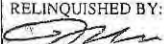
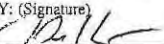


4036 Youngfield St., Wheat Ridge, CO 80033
303-425-6021 FAX: 303-425-6854

Client Information			Subcontract Laboratory Information			Analytical Information					Comments	
Name Accutest Mountain States (AMS)			Name Accutest - New England			B8270SIMP4H34						
Address 4036 Youngfield St.			Address 495 Technology Center West, BLDG C									
City Wheat Ridge,	State CO	Zip 80033	City Marlborough	State MA	Zip 01752							
Send Report to: Andrew Fluegel			Contact: Sample Management									
Any questions contact: Ann Dorr												
Phone/Fax #: (303) 425-6021; (303) 425-6854			Phone: (508) 481-6200									
Field ID / Point of Collection		Collection		Matrix	# of bottles	Preservation					Comments	
	Date	Time				HCL	NaOH	HN03	H2SO4	None		
D35496 -45	6/13/12			Soil	1						X	
-46				Soil	1						X	
-47				Soil	1						X	
Turnaround Information			Data Deliverable Information			Comments / Remarks						
<input checked="" type="checkbox"/> 10 Business Day Standard <input type="checkbox"/> Other _____ (Days)			Approved By: _____ _____ _____ 10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.			<input type="checkbox"/> Commercial "A" <input type="checkbox"/> Commercial "B" <input type="checkbox"/> Commercial "BN" <input type="checkbox"/> Reduced Tier 1 <input type="checkbox"/> Full Tier 1			<input type="checkbox"/> PDF <input type="checkbox"/> Compact Disk Deliverable <input type="checkbox"/> Electronic Delivery: _____ <input type="checkbox"/> State Forms <input type="checkbox"/> Other (Specify) _____			Please use Colorado regulations and RLs.
Sample Custody must be documented below each time samples change possession, including courier delivery.									For Subcontract Laboratory Use Only			
Relinquished by:		Date & Time:		Received By:		Date & Time:		Seal #:		Headspace:		
1				1		1				Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>		
Relinquished by:		Date & Time:		Received By:		Date & Time:		Preserved where applicable:				
2				2		2		<input type="checkbox"/>				
Relinquished by:		Date & Time:		Received By:		Date & Time:		Temperature °C _____		On Ice <input type="checkbox"/>		
3				3		3						

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D35496 Pg 1/4

UOS URS Operating Services, Inc. 1099 15th Street, STE 710 Denver, CO 80202 303.291.8200		SHIP TO: hand deliver: Accutest Laboratories		CHAIN OF CUSTODY RECORD			
PROJECT NUMBER / PURCHASE ORDER NUMBER: 36549247 / KBM3/2012-65		SITE MANAGER / PHONE NUMBER: Jeff Miller / 720.810.0790		TURNAROUND REQUESTED: standard			
SAMPLER'S SIGNATURE: 				Number of Containers 8270 SIM 8015 B Metals			
SAMPLE ID	DATE	TIME	COMP/ GRAB	REMARKS		TAG NUMBERS	
1) LP-SW-004-061312	06/13/12	10:32	grab	water	6	X	01
2) LP-SW-005-061312	06/13/12	09:28	grab		6	X	02
3) LP-SW-006-061212	06/12/12	16:30	grab		6	X	03
4) LP-SW-007-061212	06/12/12	16:50	grab		6	X	04
5) LP-SW-008-061212	06/12/12	15:50	grab		6	X	05
6) LP-SW-009-061212	06/12/12	14:30	grab		6	X	06
7) LP-SW-011-061212	06/12/12	15:15	grab	↓	6	X	07
8) LP-SS-029-061112	06/11/12	1545	grab	Soil	1	X	08
9) LP-SS-025-061112	06/11/12	1350			1	X	09
10) LP-SS-026-061112	06/11/12	1400			1	X	10
11) LP-SS-027-061112	06/11/12	1425			1	X	11
12) LP-SS-028-061112	06/11/12	1610			1	X	12
13) LP-SS-030-061112	06/11/12	1525			1	X	13
14) LP-SS-031-061112	06/11/12	1500			1	X	14
15) LP-SS-032-061112	06/11/12	1655		↓	1	X	15
RELINQUISHED BY: (Signature) 		DATE TIME 6-14-12 1510		RECEIVED BY: (Signature) 		OTHER INFORMATION: 4e-HD	
RELINQUISHED BY: (Signature) 		DATE TIME 		RECEIVED BY: (Signature) 			
RELINQUISHED BY: (Signature) 		DATE TIME 		RECEIVED FOR LABORATORY BY: (Signature) 		AIRBILL NUMBER: LAB REMARKS:	

White - Original to Accompany Samples

Yellow - UOS Chemist

Pink - UOS Project Manager

DN 7320

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UOS		URS Operating Services, Inc. 1099 18 th Street, STE 710 Denver, CO 80202 303-291-8200		SHIP TO: hand deliver: Accentest Laboratories		CHAIN OF CUSTODY RECORD					
PROJECT NUMBER / PURCHASE ORDER NUMBER: 36549247 / KBM3/2012-65				SITE MANAGER / PHONE NUMBER: Jeff Miller / 720.810.0790		Number of Containers 8270 SIM 8015 B Metals		TURNAROUND REQUESTED: Standard			
SAMPLER'S SIGNATURE: <i>[Signature]</i>											
SAMPLE ID	DATE	TIME	COMP/GRAB	REMARKS					TAG NUMBERS		
¹ LP-SS-033-061112	06/11/12	1720	grab	SOV1	1		X		16		
² LP-SS-034-061112	06/11/12	1745	grab		1		X		17		
³ LP-SS-035-061112	06/11/12	1800	grab		1		X		18		
⁴ LP-SS-036-061112	06/11/12	1825	grab		1		X		19		
⁵ LP-SS-037-061212	06/12/12	0835	grab	MS/MSD	3	X	X		20 MS/MSD		
⁶ LP-SS-040-061212	06/12/12	0925	grab		3	X	X	X	21		
⁷ LP-SS-041-061212	06/12/12	0925	grab		3	X	X	X	22		
⁸ LP-SS-042-061212	06/12/12	0935	grab		2	X	X		23		
⁹ LP-SS-043-061212	06/12/12	10:20	grab		2	X	X		24		
¹⁰ LP-SS-044-061212	06/12/12	10:50	grab		2	X	X		25		
¹¹ LP-SS-045-061212	06/12/12	11:45	grab		2	X	X		26		
¹² LP-SS-046-061212	06/12/12	11:35	grab		2	X	X		27		
¹³ LP-SS-047-061212	06/12/12	11:20	grab		2	X	X		28		
¹⁴ LP-SS-048-061212	06/12/12	12:00	grab		2	X	X		29		
¹⁵ LP-SS-049-061212	06/12/12	1455	grab	↓	2	X	X		30		
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)		OTHER INFORMATION: 42-112					
<i>[Signature]</i>		6-14-12	1510	<i>[Signature]</i>							
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)							
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)		DATE	TIME	AIRBILL NUMBER: LAB REMARKS:			

White - Original to Accompany Samples

Yellow - UOS Chemist

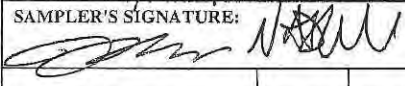
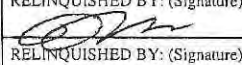
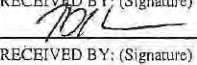
Pink - UOS Project Manager

DN 7321

D35496: Chain of Custody

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UOS		URS Operating Services, Inc. 1099 18 th Street, STE 710 Denver, CO 80202 303-291-8200		SHIP TO: hand deliver. Accutest Laboratories		CHAIN OF CUSTODY RECORD						
PROJECT NUMBER / PURCHASE ORDER NUMBER: 30549247/KPM3/2012-65				SITE MANAGER / PHONE NUMBER: Jeff Miller / 720 810 0790		Number of Containers		8270 SIM		8015 B		TURNAROUND REQUESTED: Standard
SAMPLER'S SIGNATURE: 								Metals				TAG NUMBERS
SAMPLE ID	DATE	TIME	COMP/ GRAB	REMARKS								
¹ LP-SS-050-061212	06/12/12	1515	grab	Soil	2	X	X					31
² LP-SS-051-061212	06/12/12	1525			2	X	X					32
³ LP-SS-052-061212	06/12/12	1545			2	X	X					33
⁴ LP-SS-053-061212	06/12/12	1640			3	X	X	X				34
⁵ LP-SS-054-061212	06/12/12	1715			2	X	X					35
⁶ LP-SS-055-061212	06/12/12	1740			2	X	X					36
⁷ LP-SS-056-061312	06/13/12	0930			2	X	X					37
⁸ LP-SS-057-061312	06/13/12	11:00			2	X	X					38
⁹ LP-SS-058-061312	06/13/12	10:30			3	X	X	X				39
¹⁰ LP-SS-065-061312	06/13/12	10:00	✓	✓	1		X					40
¹¹ LP-SS-059-061312	06/13/12	12:00			2	X	X					41
¹² LP-SS-060-061312	06/13/12	13:00			3	X	X	X				42
¹³ LP-SS-061-061312	06/13/12	1715			1		X					43
¹⁴ LP-SS-062-061312	06/13/12	14:45			2	X	X					44
¹⁵ LP-SS-063-061312	06/13/12	1550	✓	✓	3	X	X	X				45
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)		OTHER INFORMATION:						
		6-14-12	1510			40-110						
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)								
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)		DATE	TIME	AIRBILL NUMBER: LAB REMARKS:				

White - Original to Accompany Samples

Yellow - UOS Chemist

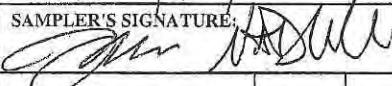


Pink - UOS Project Manager

DN 7322

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D35496 pg 4/4

UOS URS Operating Services, Inc. 1099 18 th Street, STE 710 Denver, CO 80202 303-291-8200		SHIP TO: hand deliver: Accutest Laboratories		CHAIN OF CUSTODY RECORD											
PROJECT NUMBER / PURCHASE ORDER NUMBER: 36549247 / KBMB/2012-05				SITE MANAGER / PHONE NUMBER: Jeff Miller / 320.810.0790				TURNAROUND REQUESTED: Standard							
SAMPLER'S SIGNATURE: 								Number of Containers		8270 SIM		8015 B		Metals	
SAMPLE ID	DATE	TIME	COMP/GRAB	REMARKS	Number of Containers	8270 SIM	8015 B	Metals	TAG NUMBERS						
1) LP-SS-064-001312	06/13/12	1300	grab	Soil	3	X	X	X	46						
2) LP-SS-0106-001312	06/13/12	1510	↓	↓	2	X	X		47						
3) LP-SW-012-001312	06/13/12	1900	grab	water	3		X	X	48						
4)															
5)															
6)															
7)															
8)															
9)															
10)															
11)															
12)															
13)															
14)															
15)															
RELINQUISHED BY: (Signature) 		DATE	TIME	RECEIVED BY: (Signature) 		OTHER INFORMATION: 4c-HD									
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)											
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)		DATE	TIME	AIRBILL NUMBER:							
								LAB REMARKS:							

White - Original to Accompany Samples. Yellow - UOS Chemist

Pink - UOS Project Manager

DN 7323

D35496: Chain of Custody

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APPENDIX E

Ecotoxicity Data – EPA Toxicologist Memo

and ESB Calculations



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8

1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>

March 5, 2013

MEMORANDUM

SUBJECT: Revised PAH Exposure to Cattle at Lone Pine Gas Oil Spill

FROM: Susan Griffin PhD DABT
Senior Toxicologist
Program Support Group

TO: Kerry Guy
On Scene Coordinator
Emergency Response Unit

At the Lone Pine Gas Oil Spill site in Colorado, a ranching family had concerns about their cattle ingesting water from the stream on their property contaminated by an upstream oil and gas recycling facility. Emergency Response collected surface water and sediment samples from the site and analyzed for polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons and inorganics. The family (the Timberrmans) expressed concerns for both the health of the cattle and for themselves from ingesting the beef. During our conference call October 18th with the family, I said that based on the results of the sampling data for the surface water they should not be concerned about ingesting the beef or the health of the cattle. My rationale is as follows:

1. The concentrations of PAHs are below levels of health concern for cattle

Toxicity to cattle can be evaluated by comparing the dose cattle receive from ingesting contaminated water to an adverse effect level in experimental animals. In the paper *Characterizing Risks to Livestock From Petroleum Hydrocarbons* (Pattanayek and DeShields 2003), toxicity reference values or "safe levels" for livestock in water were calculated for both a low molecular weight PAH (naphthalene) and a high molecular weight PAH (benzo[a]pyrene. The toxicity reference values for beef cattle in water were 4400 ug/l and 880 ug/l for naphthalene and benzo[a]pyrene, respectively. These reference values are 10,000 to 100,000 times higher than the highest concentrations detected on site (0.008 and 0.03 ug/l for naphthalene and benzo[a]pyrene, respectively).

2. Ingestion of the beef does not pose a health concern

Laboratory analysis of the beef tissue is the most accurate method for assessing the concentration of a contaminant in the meat. In the absence of this information, the amount of a contaminant in tissue can be modeled and the risk to a person ingesting that tissue can be estimated. This method typically results in overly conservative estimates, however, it is useful as an initial approach.

The surface water analytical results from the Timberman property (LPSW005) were used to estimate exposure to the cattle. Naphthalene was selected to represent a low molecular weight PAH and benzo[a]pyrene was selected to represent a high molecular weight PAH. Exposure assumptions and equations are shown in Attachment 1. Based on toxicokinetic studies in pigs and cows, a conservative estimate for the amount of PAH found in the adipose tissue following oral administration is 3% (ATSDR, 2005). This results in a tissue concentration of 4.2×10^{-8} and 2×10^{-7} mg/kg for naphthalene and benzo[a]pyrene, respectively. According to EPA's Exposure Factors Handbook (USEPA, 1997) the average beef ingestion rate is 2.1 g/kg-day and the 95th percentile is 5.2 g/kg-day. If we assume that all the beef ingested by the Timberman's comes from their cattle, the average non-cancer risk from naphthalene is 4.2×10^{-9} and the 95th percentile or high end risk is 1.0×10^{-8} . This is 8-9 orders of magnitude below EPA's acceptable non-cancer hazard index of 1.0. The average cancer risk from benzo[a]pyrene is 1.3×10^{-9} and the 95th percentile or high end risk is 3.1×10^{-9} . This is well below EPA's acceptable cancer risk range of 1×10^{-4} to 1×10^{-6} and represents a negligible risk.

References

ATSDR (1995). Agency for Toxic Substances and Disease Registry Toxicological Profile for Polycyclic Aromatic Hydrocarbons.

<http://www.atsdr.cdc.gov/ToxProfiles/tp.asp?id=122&tid=25#bookmark09>

ATSDR (2005). Agency for Toxic Substances and Disease Registry Toxicological Profile for Naphthalene, 1-Methylnaphthalene, and 2-Methylnaphthalene.

<http://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=240&tid=43>

USEPA 1997. Exposure Factors Handbook. EPA/600/P-95/002 Fb. Office of Research and Development Washington DC 20460

Pattanayek M. and DeShields B. (2003). Characterizing Risks to Livestock From Petroleum Hydrocarbons. 10th Annual Integrated Petroleum Environmental Consortium Conference, Houston, Texas November 11-14, 2003

http://ipec.utulsa.edu/Conf2003/Papers/pattanayek_deshields_29.pdf



Attachment A

Estimation of Risk from Ingestion of Beef Cattle

(1) Equation used to estimate beef tissue concentration

$$CF = (CW \times IR / BW) \times 0.03$$

CF (mg/kg) = contaminant concentration in beef tissue

CW (mg/l) = contaminant concentration in water

IR (liters/day) = water ingestion rate

BW (kg) = body weight beef cattle

(2) Equation used to estimate cancer risk from beef ingestion

$$\text{Intake (mg/kg-day)} = CF \times IR \times EF \times ED / BW \times AT$$

IR (kg/meal) = ingestion rate beef

EF (days/year) = exposure frequency

ED (years) = exposure duration

BW (kg) = body weight

AT (days) = averaging time

$$\text{Risk} = CSF \times \text{Intake}$$

$CSF \text{ (mg/kg-day)}^{-1}$ = cancer slope factor

Intake (mg/kg-day)

(3) Equation used to estimate non-cancer risk from beef ingestion

$$\text{Intake (mg/kg-day)} = CF \times IR \times EF \times ED / BW \times AT$$

IR (kg/meal) = ingestion rate beef

EF (days/year) = exposure frequency

ED (years) = exposure duration

BW (kg) = body weight

AT (days) = averaging time

$$\text{Risk} = \text{Intake} / \text{Reference Dose}$$

Reference Dose (mg/kg-day) = non-cancer toxicity value

Intake (mg/kg-day)

Attachment A (cont)

Parameter	Units	Input	Source
Water ingestion rate cattle	liters/day	86	[4]
Body weight cattle	kg	454	[4]
Napthalene water concentration	mg/l	8.0×10^{-6}	
Benzo[a]pyrene water concentration	mg/l	3.0×10^{-5}	
Ingestion rate beef	kg/day	0.147 (mean) 0.357 (95 th percentile)	[3]
Exposure frequency	days/year	350	[1]
Exposure Duration	years	30	[1]
Body weight	kg	70	[1]
Averaging Time (non-cancer)	days	10950	[1]
Averaging Time (cancer)	days	25550	[1]
Napthalene RfD	mg/kg-day	2×10^{-2}	[2]
Benzo[a]pyrene CSF	(mg/kg-day) ⁻¹	7.3	[2]

[1] USEPA 1989 . Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual Part A, EPA/540/1-89/002, Office of Emergency and Remedial Response, Washington DC

[2] Integrated Risk Information System (IRIS) <http://www.epa.gov/iris>

[3] USEPA 1997. Exposure Factors Handbook. EPA/600/P-95/002 Fb. Office of Research and Development Washington DC 20460

[4] Pattanayek M.and DeShields B. (2003). Characterizing Risks to Livestock From Petroleum Hydrocarbons. 10th Annual Integrated Petroleum Environmental Consortium Conference, Houston, Texas November 11-14, 2003

http://ipec.utulsa.edu/Conf2003/Papers/pattanayek_deshields_29.pdf

APPENDIX E
Summary of PAH Equilibrium Partitioning Sediment Benchmarks (ESBs) for Select Sediment Samples
Lone Pine Gas Inc. Oil Spill

Spring Gulch Creek through Lower Hell Creek

	UOS ID (Lab ID)									
	LP-SS-063 (D35496-45)	LP-SS-066 (D35496-47)	LP-SS-062 (D35496-44)	LP-SS-060 (D35496-42)	LP-SS-064 (Replicate of LP-SS-060)(D35496-46)	LP-SS-058 (D35496-39)	LP-SS-056 (D35496-37)	LP-SS-055 (D35496-36)	LP-SS-054 (D35496-35)	LP-SS-053 (D35496-34)
TOC (% dw) ^(a)	5.31	5.31	7.79	7.79	7.79	10.6	5.06	5.06	6.54	6.54
34PAH-ESB-TU ^(b)	0.0403	1.0762	0.0016	1.7649	1.4419	0.0566	0.1976	0.1692	1.0438	0.0198

	LP-SS-052 (D35496-33)	LP-SS-050 (D35496-31)	LP-SS-048 (D35496-29)	LP-SS-046 (D35496-27)	LP-SS-044 (D35496-25)	LP-SS-043 (D35496-24)	LP-SS-042 (D35496-23)	LP-SS-040 (D35496-21)	LP-SS-041 (Replicate of LP-SS-040) (D35496-22)	LP-SS-037 (D35496-20)
TOC (% dw) ^(a)	1.81	1.81	2.06	2.06	2.06	3.03	3.03	3.03	3.03	4.08
34PAH-ESB-TU ^(b)	0.0370	0.0429	0.0135	0.0014	0.0321	0.0014	0.0369	0.0288	0.0251	0.0269

Upper Hell Creek

	UOS ID (Lab ID)	
	LP-SS-059 (D35496-41)	LP-SS-057 (D35496-38)
TOC (% dw) ^(a)	7.26	7.26
34PAH-ESB-TU ^(b)	0.0032	0.2856

Hell Creek Ditch

	LP-SS-049 (D35496-30) LP-SS-045 (D35496-26)
TOC (% dw) ^(a)	1.81 2.06
34PAH-ESB-TU ^(b)	0.0235 0.0016

Sorenson Ditch

	LP-SS-051 (D35496-32) LP-SS-047 (D35496-28)
TOC (% dw) ^(a)	1.81 2.06
34PAH-ESB-TU ^(b)	0.0015 0.0012

Notes:
Samples are listed in order from upstream (left) to downstream (right).
(a) Total organic carbon (TOC) percent dry weight. TOC value used for sample ESB-TU calculation was taken from the closest TOC sample location to the PAH sample.
(b) The 34PAH-ESB-TU is the sum of the 34 individual PAHs compared to ecological risk thresholds. The sum must be below 1.0 to pass this eco-benchmark. Values above 1 shown in **bold**.

Spring Gulch Creek through Lower Hell Creek

Sample ID: LP-SS-063 D35496-45	Benchmark ^(a)				
	ug/gOC ^(b)	ug/g DW ^(c)	FOC	ug/gOC	ESBTU ^(d)
1-methylnapthalene	446	0.001	0.0531	0.019	4.22251E-05
2-methylnapthalene	447	0.001	0.0531	0.019	4.21306E-05
acenaphthene	491	0.003	0.0531	0.047	9.58879E-05
acenaphthylene	452	0.002	0.0531	0.028	6.24969E-05
anthracene	594	0.004	0.0531	0.072	0.000120477
benzo(a)anthracene	841	0.006	0.0531	0.109	0.000129879
benzo(a)pyrene	965	0.003	0.0531	0.058	6.04978E-05
benzo(b)flouranthene	979	0.010	0.0531	0.183	0.000186593
benzo(e)pyrene	967	0.027	0.0531	0.512	0.000529722
benzo(g,h,i)perylene	1095	0.009	0.0531	0.166	0.000151347
benzo(k)flouranthene	981	0.002	0.0531	0.036	3.64746E-05
C1 chrysenes	929	0.081	0.0531	1.518	0.001633897
C1 flouranthenes	770	0.073	0.0531	1.369	0.001778071
C1 flourenes	611	0.035	0.0531	0.665	0.001088025
C1 phenanthrenes	670	0.075	0.0531	1.403	0.00209405
C2 chrysenes	1008	0.001	0.0531	0.019	1.86829E-05
C2 flourenes	686	0.116	0.0531	2.185	0.003184486
C2 naphthalenes	510	0.016	0.0531	0.299	0.000587128
C2 phenanthrenes	746	0.221	0.0531	4.162	0.005579033
C3 chrysenes	1112	0.001	0.0531	0.019	1.69356E-05
C3 flourenes	769	0.163	0.0531	3.070	0.003991781
C3 naphthalenes	581	0.105	0.0531	1.977	0.003403444
C3 phenanthrenes	829	0.246	0.0531	4.633	0.005588382
C4 chrysenes	1214	0.001	0.0531	0.019	1.55127E-05
C4 naphthalenes	657	0.192	0.0531	3.616	0.00550353
C4 phenanthrenes	913	0.122	0.0531	2.298	0.002516486
chrysene	844	0.034	0.0531	0.633	0.000749726
dibenzo(a,h)anthracene	1123	0.003	0.0531	0.053	4.69552E-05
flouranthene	707	0.004	0.0531	0.068	9.58934E-05
flourene	538	0.002	0.0531	0.034	6.3008E-05
indeno(1,2,3-cd)pyrene	1115	0.002	0.0531	0.030	2.70241E-05
napthalene	385	0.003	0.0531	0.047	0.000122288
perylene	967	0.003	0.0531	0.047	4.86877E-05
phenanthrene	596	0.006	0.0531	0.111	0.000186428
pyrene	697	0.017	0.0531	0.324	0.00046473
SUM=				0.040261915	

LP-SS-064 (Rep of 060) D35496-46	Benchmark				
	ug/gOC	ug/g DW	FOC	ug/gOC	ESBTU
1-methylnapthalene	446	0.001	0.0779	0.013	2.87824E-05
2-methylnapthalene	447	0.001	0.0779	0.013	2.87181E-05
acenaphthene	491	0.068	0.0779	0.873	0.001777829
acenaphthylene	452	0.061	0.0779	0.783	0.001732423
anthracene	594	0.068	0.0779	0.873	0.001469552
benzo(a)anthracene	841	0.260	0.0779	3.338	0.003968623
benzo(a)pyrene	965	0.147	0.0779	1.887	0.001955476
benzo(b)flouranthene	979	0.385	0.0779	4.942	0.005048247
benzo(e)pyrene	967	1.100	0.0779	14.121	0.014602552
benzo(g,h,i)perylene	1095	0.282	0.0779	3.620	0.00330596
benzo(k)flouranthene	981	0.069	0.0779	0.883	0.000900289
C1 chrysenes	929	3.880	0.0779	49.807	0.053614042
C1 flouranthenes	770	4.120	0.0779	52.888	0.068686128
C1 flourenes	611	2.020	0.0779	25.931	0.042439739
C1 phenanthrenes	670	5.000	0.0779	64.185	0.095798287
C2 chrysenes	1008	0.001	0.0779	0.013	1.27351E-05
C2 flourenes	686	6.670	0.0779	85.623	0.124814276
C2 naphthalenes	510	0.768	0.0779	9.859	0.019330967
C2 phenanthrenes	746	12.200	0.0779	156.611	0.20993437
C3 chrysenes	1112	0.001	0.0779	0.013	1.1544E-05
C3 flourenes	769	7.390	0.0779	94.865	0.123361784
C3 naphthalenes	581	5.940	0.0779	76.252	0.131242005
C3 phenanthrenes	829	12.800	0.0779	164.313	0.198206541
C4 chrysenes	1214	0.001	0.0779	0.013	1.05741E-05
C4 naphthalenes	657	10.300	0.0779	132.221	0.201249309
C4 phenanthrenes	913	5.250	0.0779	67.394	0.073816095
chrysene	844	1.880	0.0779	24.134	0.0285942
dibenzo(a,h)anthracene	1123	0.156	0.0779	2.003	0.00178323
flouranthene	707	0.166	0.0779	2.131	0.003014055
flourene	538	0.075	0.0779	0.959	0.001782382
indeno(1,2,3-cd)pyrene	1115	0.070	0.0779	0.904	0.000810514
napthalene	385	0.068	0.0779	0.873	0.002267309
perylene	967	0.068	0.0779	0.873	0.000902703
phenanthrene	596	0.314	0.0779	4.031	0.006763102
pyrene	697	1.010	0.0779	12.965	0.018601636
SUM=				1.441865977	

Sample ID: LP-SS-066 D35496-47	Benchmark				
	ug/gOC	ug/g DW	FOC	ug/gOC	ESBTU
1-methylnapthalene	446	0.001	0.0531	0.019	4.22251E-05
2-methylnapthalene	447	0.001	0.0531	0.019	4.21306E-05
acenaphthene	491	0.063	0.0531	0.186	0.002416376
acenaphthylene	452	0.063	0.0531	0.186	0.002624869
anthracene	594	0.106	0.0531	1.996	0.003360662
benzo(a)anthracene	841	0.152	0.0531	2.863	0.003403714
benzo(a)pyrene	965	0.092	0.0531	1.740	0.001803226
benzo(b)flouranthene	979	0.241	0.0531	4.539	0.004635962
benzo(e)pyrene	967	0.703	0.0531	13.239	0.013690974
benzo(g,h,i)perylene	1095	0.186	0.0531	3.503	0.003198927
benzo(k)flouranthene	981	0.047	0.0531	0.889	0.000906105
C1 chrysenes	929	2.330	0.0531	43.879	0.0172733017
C1 flouranthenes	770	2.440	0.0531	45.951	0.05967667
C1 flourenes	611	0.816	0.0531	15.367	0.025150952
C1 phenanthrenes	670	1.790	0.0531	33.710	0.050313405
C2 chrysenes	1008	0.001	0.0531	0.019	1.86829E-05
C2 flourenes	686	3.180	0.0531	59.887	0.0087298842
C2 naphthalenes	510	0.231	0.0531	4.350	0.008529966
C2 phenanthrenes	746	6.060	0.0531	114.124	0.152981627
C3 chrysenes	1112	0.001	0.0531	0.019	1.69356E-05
C3 flourenes	769	4.300	0.0531	80.979	0.105304661
C3 naphthalenes	581	2.100	0.0531	39.548	0.068068886
C3 phenanthrenes	829	7.610	0.0531	143.315	0.172876358
C4 chrysenes	1214	0.001	0.0531	0.019	1.55127E-05
C4 naphthalenes	657	5.080	0.0531	95.669	0.145614231
C4 phenanthrenes	913	3.050	0.0531	57.439	0.062912152
chrysene	844	1.120	0.0531	21.092	0.024990852
dibenzo(a,h)anthracene	1123	0.076	0.0531	1.422	0.001266114
flouranthene	707	0.092	0.0531	1.723	0.00243729
flourene	538	0.063	0.0531	1.186	0.00220528
indeno(1,2,3-cd)pyrene	1115	0.043	0.0531	0.815	0.000731339
napthalene	385	0.063	0.0531	1.186	0.003081664
perylene	967	0.063	0.0531	1.186	0.001226929
phenanthrene	596	0.058	0.0531	1.092	0.001832682
pyrene	697	0.604	0.0531	11.375	0.016319605
SUM=				1.076228822	

LP-SS-058 D35496-39	Benchmark				
	ug/gOC	ug/g DW	FOC	ug/gOC	ESBTU
1-methylnapthalene	446	0.001	0.106	0.009	2.11524E-05
2-methylnapthalene	447	0.001	0.106	0.009	2.11051E-05
acenaphthene	491	0.026	0.106	0.245	0.000499558
acenaphthylene	452	0.026	0.106	0.245	0.000542662
anthracene	594	0.026	0.106	0.245	0.000412934
benzo(a)anthracene	841	0.017	0.106	0.158	0.000188455
benzo(a)pyrene	965	0.026	0.106	0.245	0.000254179
benzo(b)flouranthene	979	0.031	0.106	0.292	0.000298726
benzo(e)pyrene	967	0.091	0.106	0.860	0.000889739
benzo(g,h,i)perylene	1095	0.028	0.106	0.261	0.000238649
benzo(k)flouranthene	981	0.026	0.106	0.245	0.000250034
C1 chrysenes	929	0.279	0.106	2.632	0.002833235
C1 flouranthenes	770	0.268	0.106	2.528	0.003283509
C1 flourenes	611	0.069	0.106	0.647	0.001059198
C1 phenanthrenes	670	0.135	0.106	1.274	0.001900873
C2 chrysenes	1008	0.001	0.106	0.009	9.35909E-06
C2 flourenes	686	0.255	0.106	2.406	0.003506794
C2 naphthalenes	510	0.023	0.106	0.214	0.000419904
C2 phenanthrenes	746	0.534	0.106	5.038	0.006752997
C3 chrysenes	1112	0.001	0.106	0.009	8.48378E-06
C3 flourenes	769	0.443	0.106	4.179	0.005434649
C3 naphthalenes	581	0.157	0.106	1.481	0.002549281
C3 phenanthrenes	829	0.847	0.106	7.991	0.009638801
C4 chrysenes	1214	0.001	0.106	0.009	7.77097E-06
C4 naphthalenes	657	0.494	0.106	4.660	0.007093421
C4 phenanthrenes	913	0.377	0.106	3.557	0.003895513
chrysene	844	0.117	0.106	1.104	0.001307789
dibenzo(a,h)anthracene	1123	0.026	0.106	0.245	0.000218418
flouranthene	707	0.026	0.106	0.245	0.000346935
flourene	538	0.026	0.106	0.245	0.000455916
indeno(1,2,3-cd)pyrene	1115	0.026	0.106	0.245	0.000219985
napthalene	385	0.026	0.106	0.245	0.000637099
perylene	967	0.026	0.106	0.245	0.000253654
phenanthrene	596	0.017	0.106	0.157	0.000262758
pyrene	697	0.068	0.106	0.642	0.000920387
SUM=				0.056633921	

LP-SS-062 D35496-44	Benchmark				
	ug/gOC	ug/g DW	FOC	ug/gOC	ESBTU
1-methylnapthalene	446	0.001	0.0779	0.013	2.87824E-05
2-methylnapthalene	447	0.001	0.0779	0.013	2.87181E-05
acenaphthene	491	0.000	0.0779	0.005	1.01964E-05
acenaphthylene	452	0.000	0.0779	0.004	9.08812E-06
anthracene	594	0.000	0.0779	0.005	7.99609E-06
benzo(a)anthracene	841	0.001	0.0779	0.015	1.83167E-05
benzo(a)pyrene	965	0.001	0.0779	0.012	1.26374E-05
benzo(b)flouranthene	979	0.001	0.0779	0.017	1.7046E-05
benzo(e)pyrene	967	0.001	0.0779	0.017	1.72576E-05
benzo(g,h,i)perylene	1095	0.003	0.0779	0.039	3.51698E-05
benzo(k)flouranthene	981	0.001	0.0779	0.012	1.24313E-05
C1 chrysenes	929	0.002	0.0779	0.023	2.48725E-05
C1 flouranthenes	770	0.004	0.0779	0.054	7.00198E-05
C1 flourenes	611	0.001	0.0779	0.018	2.94137E-05
C1 phenanthrenes	670	0.005	0.0779	0.058	8.62185E-05
C2 chrysenes	1008	0.001	0.0779	0.013	1.27351E-05
C2 flourenes	686	0.003	0.0779	0.039	5.61384E-05
C2 napthalenes	510	0.008	0.0779	0.101	0.000198847
C2 phenanthrenes	746	0.004	0.0779	0.053	7.05517E-05
C3 chrysenes	1112	0.001	0.0779	0.013	1.1544E-05
C3 flourenes	769	0.003	0.0779	0.044	5.67564E-05
C3 napthalenes	581	0.008	0.0779	0.108	0.000185595
C3 phenanthrenes	829	0.003	0.0779	0.037	4.49062E-05
C4 chrysenes	1214	0.001	0.0779	0.013	1.05741E-05
C4 napthalenes	657	0.006	0.0779	0.074	0.000113325
C4 phenanthrenes	913	0.000	0.0779	0.006	6.18649E-06
chrysene	844	0.002	0.0779	0.022	2.58565E-05
dibenzo(a,h)anthracene	1123	0.000	0.0779	0.006	5.60117E-06
flouranthene	707	0.002	0.0779	0.024	3.44982E-05
flourene	538	0.001	0.0779	0.015	2.86326E-05
indeno(1,2,3-cd)pyrene	1115	0.001	0.0779	0.011	9.90116E-06
naphthalene	385	0.001	0.0779	0.015	4.00113E-05
perylene	967	0.007	0.0779	0.091	9.42528E-05
phenanthrene	596	0.003	0.0779	0.039	6.46156E-05
pyrene	697	0.004	0.0779	0.050	7.18281E-05
				SUM=	0.001550521

Spring Gulch Creek through Lower Hell Creek

LP-SS-054 D35496-35	Benchmark				
	ug/g OC	ug/g DW	FOC	ug/g OC	ESBTU
1-methylnapthalene	446	0.001	0.00654	0.153	0.000342837
2-methylnapthalene	447	0.001	0.00654	0.153	0.00034207
acenaphthene	491	0.030	0.00654	4.587	0.009342477
acenaphthylene	452	0.030	0.00654	4.587	0.010148575
anthracene	594	0.030	0.00654	4.587	0.007722485
benzo(a)anthracene	841	0.021	0.00654	3.196	0.003799903
benzo(a)pyrene	965	0.105	0.00654	16.055	0.016637353
benzo(b)flouranthene	979	0.041	0.00654	6.269	0.006403589
benzo(e)pyrene	967	0.113	0.00654	17.278	0.017867929
benzo(g,h,i)perylene	1095	0.034	0.00654	5.260	0.004803597
benzo(k)flouranthene	981	0.030	0.00654	4.587	0.004676
C1 chrysenes	929	0.330	0.00654	50.459	0.054315087
C1 flouranthenes	770	0.306	0.00654	46.789	0.00764923
C1 flourenes	611	0.060	0.00654	9.113	0.014915139
C1 phenanthrenes	670	0.126	0.00654	19.266	0.028755306
C2 chrysenes	1008	0.001	0.00654	0.153	0.000151692
C2 flourenes	686	0.256	0.00654	39.144	0.057060832
C2 naphthalenes	510	0.035	0.00654	5.382	0.010553457
C2 phenanthrenes	746	0.652	0.00654	99.694	0.133638324
C3 chrysenes	1112	0.001	0.00654	0.153	0.000137505
C3 flourenes	769	0.492	0.00654	75.229	0.097827513
C3 naphthalenes	581	0.138	0.00654	21.101	0.036318274
C3 phenanthrenes	829	1.100	0.00654	168.196	0.20288989
C4 chrysenes	1214	0.001	0.00654	0.153	0.000125952
C4 naphthalenes	657	0.432	0.00654	66.055	0.100540405
C4 phenanthrenes	913	0.456	0.00654	69.725	0.076368862
chrysene	844	0.143	0.00654	21.865	0.025906923
dibenzo(a,h)anthracene	1123	0.030	0.00654	4.587	0.004084734
flouranthene	707	0.030	0.00654	4.587	0.006488198
flourene	538	0.030	0.00654	4.587	0.008526312
indeno(1,2,3-cd)pyrene	1115	0.030	0.00654	4.587	0.004114041
naphthalene	385	0.030	0.00654	4.587	0.011914691
perylene	967	0.030	0.00654	4.587	0.004743698
phenanthrene	596	0.019	0.00654	2.844	0.004771874
pyrene	697	0.077	0.00654	11.728	0.016826153
SUM=					1.043826598

LP-SS-048 D35496-28	Benchmark				
	ug/g OC	ug/g DW	FOC	ug/g OC	ESBTU
1-methylnapthalene	446	0.001	0.0206	0.049	0.000108842
2-methylnapthalene	447	0.001	0.0206	0.049	0.000108599
acenaphthene	491	0.002	0.0206	0.117	0.000237281
acenaphthylene	452	0.002	0.0206	0.117	0.000257754
anthracene	594	0.002	0.0206	0.117	0.000196136
benzo(a)anthracene	841	0.002	0.0206	0.117	0.000138531
benzo(a)pyrene	965	0.002	0.0206	0.117	0.00012073
benzo(b)flouranthene	979	0.002	0.0206	0.087	8.9253E-05
benzo(e)pyrene	967	0.005	0.0206	0.238	0.000245981
benzo(g,h,i)perylene	1095	0.002	0.0206	0.087	7.97978E-05
benzo(k)flouranthene	981	0.002	0.0206	0.117	0.000118761
C1 chrysenes	929	0.014	0.0206	0.660	0.00071065
C1 flouranthenes	770	0.013	0.0206	0.621	0.00080696
C1 flourenes	611	0.002	0.0206	0.117	0.000190679
C1 phenanthrenes	670	0.005	0.0206	0.252	0.000376757
C2 chrysenes	1008	0.001	0.0206	0.049	4.81584E-05
C2 flourenes	686	0.008	0.0206	0.379	0.000551954
C2 naphthalenes	510	0.003	0.0206	0.160	0.000314106
C2 phenanthrenes	746	0.019	0.0206	0.942	0.001262396
C3 chrysenes	1112	0.001	0.0206	0.049	4.36544E-05
C3 flourenes	769	0.017	0.0206	0.845	0.001098388
C3 naphthalenes	581	0.005	0.0206	0.233	0.000401049
C3 phenanthrenes	829	0.037	0.0206	1.782	0.002149039
C4 chrysenes	1214	0.001	0.0206	0.049	3.99866E-05
C4 naphthalenes	657	0.011	0.0206	0.539	0.000820145
C4 phenanthrenes	913	0.022	0.0206	1.068	0.001169727
chrysene	844	0.006	0.0206	0.306	0.000362352
dibenzo(a,h)anthracene	1123	0.002	0.0206	0.117	0.000103744
flouranthene	707	0.002	0.0206	0.117	0.000164788
flourene	538	0.002	0.0206	0.117	0.000216552
indeno(1,2,3-cd)pyrene	1115	0.002	0.0206	0.117	0.000104489
naphthalene	385	0.002	0.0206	0.117	0.00030261
perylene	967	0.002	0.0206	0.117	0.000120481
phenanthrene	596	0.002	0.0206	0.097	0.000162898
pyrene	697	0.004	0.0206	0.194	0.000278586
SUM=					0.013501818

LP-SS-053 D35496-34	Benchmark				
	ug/g OC	ug/g DW	FOC	ug/g OC	ESBTU
1-methylnapthalene	446	0.001	0.00654	0.153	0.000342837
2-methylnapthalene	447	0.001	0.00654	0.153	0.00034207
acenaphthene	491	0.000	0.00654	0.064	0.000130795
acenaphthylene	452	0.000	0.00654	0.064	0.00014208
anthracene	594	0.000	0.00654	0.064	0.000108115
benzo(a)anthracene	841	0.001	0.00654	0.080	9.4543E-05
benzo(a)pyrene	965	0.000	0.00654	0.055	5.70424E-05
benzo(b)flouranthene	979	0.001	0.00654	0.153	0.000156185
benzo(e)pyrene	967	0.003	0.00654	0.413	0.000426933
benzo(g,h,i)perylene	1095	0.001	0.00654	0.183	0.000167567
benzo(k)flouranthene	981	0.000	0.00654	0.064	6.5464E-05
C1 chrysenes	929	0.007	0.00654	1.116	0.001201516
C1 flouranthenes	770	0.007	0.00654	1.086	0.001409905
C1 flourenes	611	0.001	0.00654	0.214	0.000350356
C1 phenanthrenes	670	0.003	0.00654	0.428	0.000639007
C2 chrysenes	1008	0.001	0.00654	0.153	0.000151692
C2 flourenes	686	0.004	0.00654	0.581	0.000846997
C2 naphthalenes	510	0.001	0.00654	0.199	0.000389758
C2 phenanthrenes	746	0.011	0.00654	1.667	0.002234138
C3 chrysenes	1112	0.001	0.00654	0.153	0.000137505
C3 flourenes	769	0.008	0.00654	1.162	0.001511157
C3 naphthalenes	581	0.002	0.00654	0.352	0.000605305
C3 phenanthrenes	829	0.018	0.00654	2.813	0.003393795
C4 chrysenes	1214	0.001	0.00654	0.153	0.000125952
C4 naphthalenes	657	0.006	0.00654	0.933	0.001419668
C4 phenanthrenes	913	0.009	0.00654	1.391	0.001524028
chrysene	844	0.003	0.00654	0.520	0.000615969
dibenzo(a,h)anthracene	1123	0.000	0.00654	0.044	3.94858E-05
flouranthene	707	0.000	0.00654	0.050	7.13702E-05
flourene	538	0.000	0.00654	0.064	0.000119368
indeno(1,2,3-cd)pyrene	1115	0.000	0.00654	0.064	5.75966E-05
naphthalene	385	0.000	0.00654	0.064	0.000166806
perylene	967	0.000	0.00654	0.064	6.64118E-05
phenanthrene	596	0.001	0.00654	0.083	0.000138538
pyrene	697	0.002	0.00654	0.367	0.000526503
SUM=					0.019776454

LP-SS-046 D35496-27	Benchmark				
	ug/g OC	ug/g DW	FOC	ug/g OC	ESBTU
1-methylnapthalene	446	0.001	0.0206	0.049	0.000108842
2-methylnapthalene	447	0.001	0.0206	0.049	0.000108599
acenaphthene	491	0.000	0.0206	0.023	4.64675E-05
acenaphthylene	452	0.000	0.0206	0.023	5.04768E-05
anthracene	594	0.000	0.0206	0.023	3.841E-05
benzo(a)anthracene	841	0.000	0.0206	0.016	1.90481E-05
benzo(a)pyrene	965	0.000	0.0206	0.012	1.2073E-05
benzo(b)flouranthene	979	0.000	0.0206	0.018	1.88423E-05
benzo(e)pyrene	967	0.000	0.0206	0.013	1.30521E-05
benzo(g,h,i)perylene	1095	0.000	0.0206	0.016	1.41863E-05
benzo(k)flouranthene	981	0.000	0.0206	0.016	1.63297E-05
C1 chrysenes	929	0.000	0.0206	0.019	2.09015E-05
C1 flouranthenes	770	0.001	0.0206	0.028	3.59349E-05
C1 flourenes	611	0.000	0.0206	0.023	3.73413E-05
C1 phenanthrenes	670	0.001	0.0206	0.049	7.24533E-05
C2 chrysenes	1008	0.000	0.0206	0.000	0
C2 flourenes	686	0.000	0.0206	0.023	3.32588E-05
C2 naphthalenes	510	0.001	0.0206	0.038	7.42433E-05
C2 phenanthrenes	746	0.001	0.0206	0.042	5.66126E-05
C3 chrysenes	1112	0.001	0.0206	0.049	4.36544E-05
C3 flourenes	769	0.000	0.0206	0.023	2.96691E-05
C3 naphthalenes	581	0.001	0.0206	0.034	5.84864E-05
C3 phenanthrenes	829	0.001	0.0206	0.034	4.09898E-05
C4 chrysenes	1214	0.001	0.0206	0.049	3.99866E-05
C4 naphthalenes	657	0.001	0.0206	0.039	5.98484E-05
C4 phenanthrenes	913	0.000	0.0206	0.023	2.49896E-05
chrysene	844	0.001	0.0206	0.029	3.39346E-05
dibenzo(a,h)anthracene	1123	0.000	0.0206	0.023	2.03166E-05
flouranthene	707	0.000	0.0206	0.023	3.22709E-05
flourene	538	0.000	0.0206	0.017	3.15805E-05
indeno(1,2,3-cd)pyrene	1115	0.000	0.0206	0.013	1.1755E-05
naphthalene	385	0.000	0.0206	0.024	6.17829E-05
perylene	967	0.001	0.0206	0.058	6.02404E-05
phenanthrene	596	0.001	0.0206	0.031	5.21275E-05
pyrene	697	0.000	0.0206	0.022	3.1341E-05
SUM=					0.001410046

LP-SS-052 D35496-33	Benchmark				
	ug/g OC	ug/g DW	FOC	ug/g OC	ESBTU
1-methylnapthalene	446	0.001	0.0181	0.055	0.000123876
2-methylnapthalene	447	0.001	0.0181	0.055	0.000123599
acenaphthene	491	0.001	0.0181	0.034	6.9764E-05
acenaphthylene	452	0.001	0.0181	0.035	7.70058E-05
anthracene	594	0.001	0.0181	0.030	5.0226E-05
benzo(a)anthracene	841	0.002	0.0181	0.133	0.000157665
benzo(a)pyrene	965	0.002	0.0181	0.083	8.58787E-05
benzo(b)flouranthene	979	0.005	0.0181	0.249	0.000253952
benzo(e)pyrene	967	0.014	0.0181	0.757	0.000782736
benzo(g,h,i)perylene	1095	0.004	0.0181	0.221	0.000201821
benzo(k)flouranthene	981	0.001	0.0181	0.042	4.28022E-05
C1 chrysenes	929	0.037	0.0181	2.061	0.002218271
C1 flouranthenes	770	0.034	0.0181	1.895	0.002461075
C1 flourenes	611	0.008	0.0181	0.436	0.000714344
C1 phenanthrenes	670	0.016	0.0181	0.895	0.001335862
C2 chrysenes	1008	0.001	0.0181	0.055	5.48101E-05
C2 flourenes	686	0.024	0.0181	1.331	0.00194095
C2 naphthalenes	510	0.009	0.0181	0.470	0.00092081
C2 phenanthrenes	746	0.061	0.0181	3.387	0.004539866
C3 chrysenes	1112	0.001	0.0181	0.055	4.9684E-05
C3 flourenes	769	0.048	0.0181	2.652	0.003448548

Spring Gulch Creek through Lower Hell Creek

LP-SS-042 D35496-23	Benchmark				
	ug/g OC	ug/g DW	FOC	ug/g OC	ESBTU
1-methylnapthalene	446	0.001	0.0303	0.033	7.39984E-05
2-methylnapthalene	447	0.001	0.0303	0.033	7.38329E-05
acenaphthene	491	0.010	0.0303	0.314	0.000638557
acenaphthylene	452	0.010	0.0303	0.314	0.000693653
anthracene	594	0.010	0.0303	0.314	0.000527831
benzo(a)anthracene	841	0.007	0.0303	0.215	0.000255079
benzo(a)pyrene	965	0.005	0.0303	0.175	0.000181262
benzo(b)flouranthene	979	0.009	0.0303	0.304	0.000310143
benzo(e)pyrene	967	0.021	0.0303	0.700	0.000723547
benzo(g,h,i)perylene	1095	0.011	0.0303	0.353	0.000322498
benzo(k)flouranthene	981	0.010	0.0303	0.314	0.000319604
C1 chrysenes	929	0.057	0.0303	1.884	0.002028513
C1 flouranthenes	770	0.053	0.0303	1.759	0.002284514
C1 flourenes	611	0.010	0.0303	0.314	0.000513145
C1 phenanthrenes	670	0.019	0.0303	0.624	0.000930989
C2 chrysenes	1008	0.001	0.0303	0.033	3.27414E-05
C2 flourenes	686	0.030	0.0303	0.977	0.001424049
C2 naphthalenes	510	0.011	0.0303	0.373	0.00073125
C2 phenanthrenes	746	0.086	0.0303	2.845	0.003813518
C3 chrysenes	1112	0.001	0.0303	0.033	2.96792E-05
C3 flourenes	769	0.075	0.0303	2.479	0.003223079
C3 naphthalenes	581	0.015	0.0303	0.505	0.000869106
C3 phenanthrenes	829	0.163	0.0303	5.380	0.006489189
C4 chrysenes	1214	0.001	0.0303	0.033	2.71856E-05
C4 naphthalenes	657	0.049	0.0303	1.620	0.002466457
C4 phenanthrenes	913	0.092	0.0303	3.050	0.003340093
chrysene	844	0.025	0.0303	0.828	0.000981496
dibenzo(a,h)anthracene	1123	0.013	0.0303	0.439	0.000390867
flouranthene	707	0.010	0.0303	0.314	0.000443467
flourene	538	0.005	0.0303	0.165	0.000306722
indeno(1,2,3-cd)pyrene	1115	0.006	0.0303	0.211	0.000189436
naphthalene	385	0.010	0.0303	0.314	0.000814367
perylene	967	0.010	0.0303	0.314	0.000324231
phenanthrene	596	0.008	0.0303	0.257	0.000431922
pyrene	697	0.014	0.0303	0.452	0.000648702
SUM=					0.036854723

LP-SS-040 D35496-21	Benchmark				
	ug/g OC	ug/g DW	FOC	ug/g OC	ESBTU
1-methylnapthalene	446	0.001	0.0303	0.033	7.39984E-05
2-methylnapthalene	447	0.001	0.0303	0.033	7.38329E-05
acenaphthene	491	0.005	0.0303	0.168	0.000342804
acenaphthylene	452	0.005	0.0303	0.168	0.000372382
anthracene	594	0.005	0.0303	0.168	0.000283362
benzo(a)anthracene	841	0.004	0.0303	0.142	0.000168745
benzo(a)pyrene	965	0.003	0.0303	0.109	0.000112861
benzo(b)flouranthene	979	0.007	0.0303	0.224	0.000229236
benzo(e)pyrene	967	0.017	0.0303	0.568	0.000587029
benzo(g,h,i)perylene	1095	0.007	0.0303	0.231	0.00021098
benzo(k)flouranthene	981	0.005	0.0303	0.168	0.000171577
C1 chrysenes	929	0.048	0.0303	1.574	0.001694572
C1 flouranthenes	770	0.044	0.0303	1.452	0.001885903
C1 flourenes	611	0.005	0.0303	0.168	0.000275478
C1 phenanthrenes	670	0.016	0.0303	0.512	0.000763509
C2 chrysenes	1008	0.001	0.0303	0.033	3.27414E-05
C2 flourenes	686	0.034	0.0303	1.109	0.001616488
C2 naphthalenes	510	0.010	0.0303	0.337	0.000660066
C2 phenanthrenes	746	0.066	0.0303	2.178	0.002919863
C3 chrysenes	1112	0.001	0.0303	0.033	2.96792E-05
C3 flourenes	769	0.060	0.0303	1.967	0.002557863
C3 naphthalenes	581	0.016	0.0303	0.512	0.000880467
C3 phenanthrenes	829	0.129	0.0303	4.257	0.005135616
C4 chrysenes	1214	0.001	0.0303	0.033	2.71856E-05
C4 naphthalenes	657	0.042	0.0303	1.393	0.002119847
C4 phenanthrenes	913	0.074	0.0303	2.452	0.002685811
chrysene	844	0.021	0.0303	0.703	0.000832903
dibenzo(a,h)anthracene	1123	0.005	0.0303	0.172	0.00015282
flouranthene	707	0.003	0.0303	0.089	0.000126038
flourene	538	0.003	0.0303	0.112	0.000208571
indeno(1,2,3-cd)pyrene	1115	0.003	0.0303	0.102	9.17581E-05
naphthalene	385	0.005	0.0303	0.168	0.000437187
perylene	967	0.005	0.0303	0.168	0.000174061
phenanthrene	596	0.006	0.0303	0.182	0.000304561
pyrene	697	0.012	0.0303	0.383	0.000549266
SUM=					0.02878906

LP-SS-041 D35496-22	Benchmark				
	ug/g OC	ug/g DW	FOC	ug/g OC	ESBTU
1-methylnapthalene	446	0.001	0.0303	0.033	7.39984E-05
2-methylnapthalene	447	0.001	0.0303	0.033	7.38329E-05
acenaphthene	491	0.005	0.0303	0.172	0.000349526
acenaphthylene	452	0.005	0.0303	0.172	0.000379684
anthracene	594	0.005	0.0303	0.172	0.000288918
benzo(a)anthracene	841	0.004	0.0303	0.125	0.000149123
benzo(a)pyrene	965	0.005	0.0303	0.172	0.000177842
benzo(b)flouranthene	979	0.006	0.0303	0.182	0.000185412
benzo(e)pyrene	967	0.014	0.0303	0.472	0.000488053
benzo(g,h,i)perylene	1095	0.006	0.0303	0.185	0.000168784
benzo(k)flouranthene	981	0.005	0.0303	0.172	0.000174941
C1 chrysenes	929	0.042	0.0303	1.376	0.001481418
C1 flouranthenes	770	0.042	0.0303	1.376	0.001787322
C1 flourenes	611	0.005	0.0303	0.172	0.000280879
C1 phenanthrenes	670	0.013	0.0303	0.432	0.000645288
C2 chrysenes	1008	0.001	0.0303	0.033	3.27414E-05
C2 flourenes	686	0.022	0.0303	0.716	0.001043982
C2 naphthalenes	510	0.008	0.0303	0.271	0.000530641
C2 phenanthrenes	746	0.061	0.0303	2.026	0.002716357
C3 chrysenes	1112	0.001	0.0303	0.033	2.96792E-05
C3 flourenes	769	0.051	0.0303	1.667	0.002167317
C3 naphthalenes	581	0.012	0.0303	0.403	0.000693013
C3 phenanthrenes	829	0.116	0.0303	3.828	0.004618073
C4 chrysenes	1214	0.001	0.0303	0.033	2.71856E-05
C4 naphthalenes	657	0.033	0.0303	1.083	0.001647653
C4 phenanthrenes	913	0.060	0.0303	1.983	0.002172506
chrysene	844	0.018	0.0303	0.597	0.000707772
dibenzo(a,h)anthracene	1123	0.003	0.0303	0.109	9.69821E-05
flouranthene	707	0.005	0.0303	0.172	0.00024274
flourene	538	0.003	0.0303	0.092	0.000171764
indeno(1,2,3-cd)pyrene	1115	0.005	0.0303	0.172	0.000153917
naphthalene	385	0.005	0.0303	0.172	0.000445759
perylene	967	0.005	0.0303	0.172	0.000177474
phenanthrene	596	0.005	0.0303	0.158	0.000265798
pyrene	697	0.010	0.0303	0.327	0.00046877
SUM=					0.025115147

LP-SS-037 D35496-20	Benchmark				
	ug/g OC	ug/g DW	FOC	ug/g OC	ESBTU
1-methylnapthalene	446	0.001	0.0408	0.025	5.49547E-05
2-methylnapthalene	447	0.001	0.0408	0.025	5.48318E-05
acenaphthene	491	0.001	0.0408	0.013	2.7455E-05
acenaphthylene	452	0.001	0.0408	0.027	5.96478E-05
anthracene	594	0.001	0.0408	0.013	2.26943E-05
benzo(a)anthracene	841	0.005	0.0408	0.118	0.000139889
benzo(a)pyrene	965	0.003	0.0408	0.076	7.87362E-05
benzo(b)flouranthene	979	0.008	0.0408	0.206	0.000210299
perylene	967	0.024	0.0408	0.591	0.000610844
benzo(g,h,i)perylene	1095	0.008	0.0408	0.194	0.000176829
benzo(k)flouranthene	981	0.002	0.0408	0.044	4.49721E-05
C1 chrysenes	929	0.068	0.0408	1.667	0.001794044
C1 flouranthenes	770	0.056	0.0408	1.375	0.001785714
C1 flourenes	611	0.011	0.0408	0.262	0.000429222
C1 phenanthrenes	670	0.024	0.0408	0.598	0.000892596
C2 chrysenes	1008	0.001	0.0408	0.025	2.43153E-05
C2 flourenes	686	0.036	0.0408	0.887	0.001293374
C2 naphthalenes	510	0.008	0.0408	0.186	0.000365244
C2 phenanthrenes	746	0.106	0.0408	2.598	0.003482626
C3 chrysenes	1112	0.001	0.0408	0.025	2.20412E-05
C3 flourenes	769	0.079	0.0408	1.936	0.002517912
C3 naphthalenes	581	0.022	0.0408	0.547	0.000940738
C3 phenanthrenes	829	0.168	0.0408	4.118	0.004967005
C4 chrysenes	1214	0.001	0.0408	0.025	2.01893E-05
C4 naphthalenes	657	0.068	0.0408	1.672	0.002544244
C4 phenanthrenes	913	0.098	0.0408	2.395	0.002622791
chrysene	844	0.030	0.0408	0.723	0.000856682
dibenzo(a,h)anthracene	1123	0.003	0.0408	0.074	6.54759E-05
flouranthene	707	0.002	0.0408	0.049	6.93347E-05
flourene	538	0.001	0.0408	0.013	2.50565E-05
indeno(1,2,3-cd)pyrene	1115	0.002	0.0408	0.044	3.95674E-05
naphthalene	385	0.001	0.0408	0.020	5.15661E-05
benzo(e)pyrene	967	0.002	0.0408	0.059	6.0831E-05
phenanthrene	596	0.001	0.0408	0.013	2.26181E-05
pyrene	697	0.015	0.0408	0.355	0.000509888
SUM=					0.026884229

Notes:

(a) Benchmark = Effect concentration of a PAH in sediment on an organic carbon basis.

(b) ug/g OC = micrograms per gram, organic carbon-normalized.

(c) DW = dry weight.

(d) ESBTU = Sum of Equilibrium Partitioning Sediment Benchmark Toxic Units.

(e) 1-methylnapthalene and 2-methylnapthalene are presented in ESBTU calculations to represent C1-napthalene.

1/2 of detection limit used for analytes reported as not-detected at specified detection limit

"J" qualified data will use the laboratory Method Report Limit (MRL) as a screen; if the ESBTU is exceeded than the "J" value reported by the lab will be used and the ESBTU recalculated

Upper Hell Creek

LP-SS-059 D35496-41	Benchmark				
	ug/gOC	ug/g DW	FOC	ug/gOC	ESBTU
naphthalene	385	0.001	0.0726	0.014	3.5777E-05
1-methylnapthalene	446	0.001	0.0726	0.014	3.0884E-05
2-methylnapthalene	447	0.001	0.0726	0.008	1.7256E-05
acenaphthylene	452	0.000	0.0726	0.007	1.4627E-05
acenaphthene	491	0.000	0.0726	0.006	1.1502E-05
C2 naphthalenes	510	0.001	0.0726	0.018	3.511E-05
flourene	538	0.001	0.0726	0.010	1.9458E-05
C3 napthalenes	581	0.002	0.0726	0.029	4.9786E-05
anthracene	594	0.005	0.0726	0.070	0.00011826
phenanthrene	596	0.002	0.0726	0.029	4.8533E-05
C1 flourenes	611	0.001	0.0726	0.009	1.533E-05
C4 naphthalenes	657	0.009	0.0726	0.124	0.00018869
C1 phenanthrenes	670	0.008	0.0726	0.107	0.00016036
C2 flourenes	686	0.004	0.0726	0.056	8.2323E-05
pyrene	697	0.016	0.0726	0.225	0.00032212
flouranthene	707	0.001	0.0726	0.014	1.9482E-05
C2 phenanthrenes	746	0.007	0.0726	0.090	0.00012002
C3 flourenes	769	0.008	0.0726	0.105	0.00013613
C1 flouranthenes	770	0.020	0.0726	0.281	0.00036492
C3 phenanthrenes	829	0.001	0.0726	0.014	1.6615E-05
benzo(a)anthracene	841	0.011	0.0726	0.153	0.0001818
chrysene	844	0.016	0.0726	0.213	0.00025296
C4 phenanthrenes	913	0.020	0.0726	0.280	0.00030626
C1 chrysenes	929	0.001	0.0726	0.014	1.4827E-05
benzo(a)pyrene	965	0.016	0.0726	0.213	0.00022124
benzo(e)pyrene	967	0.013	0.0726	0.179	0.00018517
perylene	967	0.005	0.0726	0.062	6.4099E-05
benzo(b)flouranthene	979	0.001	0.0726	0.009	9.5673E-06
benzo(k)flouranthene	981	0.001	0.0726	0.018	1.8253E-05
C2 chrysenes	1008	0.001	0.0726	0.015	1.5031E-05
benzo(g,h,i)perylene	1095	0.001	0.0726	0.009	8.428E-06
C3 chrysenes	1112	0.001	0.0726	0.013	1.1396E-05
indeno(1,2,3-cd)pyrene	1115	0.001	0.0726	0.009	8.2768E-06
dibenzo(a,h)anthracene	1123	0.004	0.0726	0.048	4.2929E-05
C4 chrysenes	1214	0.003	0.0726	0.037	3.0634E-05
SUM=					0.00317805

Sorenson Ditch

LP-SS-051 D35496-32	Benchmark				
	ug/gOC	ug/g DW	FOC	ug/gOC	ESBTU
naphthalene	385	0.001	0.0181	0.055	0.0001435
1-methylnapthalene	446	0.001	0.0181	0.055	0.00012388
2-methylnapthalene	447	0.001	0.0181	0.028	6.3035E-05
acenaphthylene	452	0.001	0.0181	0.028	6.2338E-05
acenaphthene	491	0.001	0.0181	0.028	5.7387E-05
C2 naphthalenes	510	0.000	0.0181	0.022	4.2249E-05
flourene	538	0.000	0.0181	0.018	3.3889E-05
C3 napthalenes	581	0.000	0.0181	0.022	3.8037E-05
anthracene	594	0.000	0.0181	0.022	3.7204E-05
phenanthrene	596	0.000	0.0181	0.020	3.3372E-05
C1 flourenes	611	0.000	0.0181	0.019	3.1648E-05
C4 napthalenes	657	0.000	0.0181	0.023	3.5319E-05
C1 phenanthrenes	670	0.001	0.0181	0.031	4.6178E-05
C2 flourenes	686	0.001	0.0181	0.028	4.1074E-05
pyrene	697	0.000	0.0181	0.022	3.0914E-05
flouranthene	707	0.001	0.0181	0.055	7.8145E-05
C2 phenanthrenes	746	0.001	0.0181	0.028	3.7771E-05
C3 flourenes	769	0.001	0.0181	0.031	4.0952E-05
C1 flouranthenes	770	0.000	0.0181	0.022	2.8701E-05
C3 phenanthrenes	829	0.001	0.0181	0.055	6.6645E-05
benzo(a)anthracene	841	0.001	0.0181	0.028	3.3504E-05
chrysene	844	0.001	0.0181	0.049	5.826E-05
C4 phenanthrenes	913	0.000	0.0181	0.018	1.9969E-05
C1 chrysenes	929	0.001	0.0181	0.055	5.9471E-05
benzo(a)pyrene	965	0.000	0.0181	0.025	2.6336E-05
benzo(e)pyrene	967	0.001	0.0181	0.028	2.9138E-05
perylene	967	0.001	0.0181	0.035	3.5994E-05
benzo(b)flouranthene	979	0.001	0.0181	0.028	2.8781E-05
benzo(k)flouranthene	981	0.000	0.0181	0.022	2.2527E-05
C2 chrysenes	1008	0.001	0.0181	0.028	2.7953E-05
benzo(g,h,i)perylene	1095	0.000	0.0181	0.017	1.5137E-05
C3 chrysenes	1112	0.000	0.0181	0.014	1.2918E-05
indeno(1,2,3-cd)pyrene	1115	0.001	0.0181	0.028	2.5271E-05
dibenzo(a,h)anthracene	1123	0.000	0.0181	0.025	2.2139E-05
C4 chrysenes	1214	0.000	0.0181	0.024	2.0024E-05
SUM=					0.00150966

Hell Creek Ditch

LP-SS-049 D35496-30	Benchmark				
	ug/gOC	ug/g DW	FOC	ug/gOC	ESBTU
naphthalene	385	0.001	0.0181	0.055	0.0001435
1-methylnapthalene	446	0.001	0.0181	0.055	0.0001239
2-methylnapthalene	447	0.004	0.0181	0.243	0.0005438
acenaphthylene	452	0.004	0.0181	0.243	0.0005378
acenaphthene	491	0.004	0.0181	0.243	0.0004951
C2 napthalenes	510	0.003	0.0181	0.149	0.0002925
flourene	538	0.004	0.0181	0.243	0.0004518
C3 napthalenes	581	0.003	0.0181	0.138	0.0002377
anthracene	594	0.007	0.0181	0.376	0.0006325
phenanthrene	596	0.003	0.0181	0.138	0.0002317
C1 flourenes	611	0.004	0.0181	0.243	0.0003979
C4 naphthalenes	657	0.021	0.0181	1.144	0.0017407
C1 phenanthrenes	670	0.018	0.0181	1.006	0.0015008
C2 flourenes	686	0.004	0.0181	0.243	0.0003544
pyrene	697	0.006	0.0181	0.326	0.0004677
flouranthene	707	0.001	0.0181	0.055	7.815E-05
C2 phenanthrenes	746	0.014	0.0181	0.768	0.0010294
C3 flourenes	769	0.005	0.0181	0.260	0.0003377
C1 flouranthenes	770	0.030	0.0181	1.646	0.0021382
C3 phenanthrenes	829	0.001	0.0181	0.055	6.664E-05
benzo(a)anthracene	841	0.036	0.0181	2.011	0.0023913
chrysene	844	0.006	0.0181	0.309	0.0003666
C4 phenanthrenes	913	0.066	0.0181	3.652	0.0039999
C1 chrysenes	929	0.001	0.0181	0.055	5.947E-05
benzo(a)pyrene	965	0.017	0.0181	0.934	0.0009676
benzo(e)pyrene	967	0.032	0.0181	1.785	0.0018454
perylene	967	0.008	0.0181	0.442	0.0004571
benzo(b)flouranthene	979	0.004	0.0181	0.243	0.0002483
benzo(k)flouranthene	981	0.004	0.0181	0.243	0.0002478
C2 chrysenes	1008	0.002	0.0181	0.122	0.0001206
benzo(g,h,i)perylene	1095	0.004	0.0181	0.243	0.000222
C3 chrysenes	1112	0.004	0.0181	0.243	0.0002186
indeno(1,2,3-cd)pyrene	1115	0.004	0.0181	0.243	0.000218
dibenzo(a,h)anthracene	1123	0.003	0.0181	0.177	0.0001574
C4 chrysenes	1214	0.005	0.0181	0.265	0.0002184
SUM=					0.0235404

LP-SS-045 D35496-26	Benchmark				
	ug/gOC	ug/g DW	FOC	ug/gOC	ESBTU
naphthalene	385	0.001	0.0206	0.049	0.00012609
1-methylnapthalene	446	0.001	0.0206	0.049	0.00010884
2-methylnapthalene	447	0.001	0.0206	0.026	5.8643E-05
acenaphthylene	452	0.001	0.0206	0.026	5.7995E-05
acenaphthene	491	0.001	0.0206	0.026	5.3388E-05
C2 napthalenes	510	0.000	0.0206	0.017	3.4266E-05
flourene	538	0.001	0.0206	0.026	4.8724E-05
C3 napthalenes	581	0.000	0.0206	0.021	3.5927E-05
anthracene	594	0.001	0.0206	0.028	4.6582E-05
phenanthrene	596	0.000	0.0206	0.019	3.258E-05
C1 flourenes	611	0.000	0.0206	0.015	2.4629E-05
C4 naphthalenes	657	0.001	0.0206	0.040	6.0587E-05
C1 phenanthrenes	670	0.001	0.0206	0.045	6.7382E-05
C2 flourenes	686	0.000	0.0206	0.024	3.4674E-05
pyrene	697	0.001	0.0206	0.049	6.9647E-05
flouranthene	707	0.001	0.0206	0.049	6.8662E-05
C2 phenanthrenes	746	0.001	0.0206	0.031	4.0995E-05
C3 flourenes	769	0.001	0.0206	0.049	6.3126E-05
C1 flouranthenes	770	0.001	0.0206	0.049	6.3044E-05
C3 phenanthrenes	829	0.001	0.0206	0.049	5.8557E-05
benzo(a)anthracene	841	0.001	0.0206	0.026	3.117E-05
chrysene	844	0.001	0.0206	0.044	5.234E-05
C4 phenanthrenes	913	0.001	0.0206	0.040	4.4131E-05
C1 chrysenes	929	0.001	0.0206	0.049	5.2254E-05
benzo(a)pyrene	965	0.001	0.0206	0.026	2.7164E-05
benzo(e)pyrene	967	0.001	0.0206	0.026	2.7108E-05
perylene	967	0.001	0.0206	0.046	4.7188E-05
benzo(b)flouranthene	979	0.001	0.0206	0.026	2.6776E-05
benzo(k)flouranthene	981	0.000	0.0206	0.023	2.3257E-05
C2 chrysenes	1008	0.000	0.0206	0.014	1.3966E-05
benzo(g,h,i)perylene	1095	0.000	0.0206	0.014	1.2413E-05
C3 chrysenes	1112	0.000	0.0206	0.017	1.5716E-05
indeno(1,2,3-cd)pyrene	1115	0.001	0.0206	0.026	2.351E-05
dibenzo(a,h)anthracene	1123	0.001	0.0206	0.029	2.5504E-05
C4 chrysenes	1214	0.001	0.0206	0.026	2.1193E-05
SUM=					0.00159803

APPENDIX F

COGCC Groundwater and Sediment Analytical Results

COGCC Sampling - Ground Water Results

LABID	CLIENTID	PROJECTID	DEPTNAME	COLLECTDATE	RECEIVEDATE	ANALYTE	MATRIX	METHOD	RESULT	Table 910-1	TEXTRES	QUAL	UNITS	MDL	PQL	ANALYZEDATE	ANALYST	CAS	LATITUDE	LONGITUDE
L94120-01	MW-1	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	Benzene	GW	M8021B/8015D GC/PID/			5	U	ug/L	0.2	1	4/27/2012	pml	71-43-2	40.71758 N	106.49858 W
L94120-01	MW-1	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	Bromofluorobenzene	GW	M8021B/8015D GC/PID/	107.4		107.4		%	70	130	4/27/2012	pml	460-00-4		
L94120-01	MW-1	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	Bromofluorobenzene (TVH)	GW	M8021B/8015D GC/PID/	110		110		%	70	130	4/27/2012	pml	460-00 4		
L94120-01	MW-1	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	Ethylbenzene	GW	M8021B/8015D GC/PID/			700	U	ug/L	0.2	1	4/27/2012	pml	100-41-4		
L94120-01	MW-1	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	m p Xylene	GW	M8021B/8015D GC/PID/				U	ug/L	0.4	2	4/27/2012	pml	1330-20-7		
L94120-01	MW-1	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	o Xylene	GW	M8021B/8015D GC/PID/				U	ug/L	0.2	1	4/27/2012	pml	95-47- 6		
						Total Xylenes			0	1400-10000										
L94120-01	MW-1	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	OTP	GW	M8015D GC/FID	79.4		79.4		%	70	130	4/27/2012	itk	84-15-1		
L94120-01	MW-1	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	Toluene	GW	M8021B/8015D GC/PID/			560-1000	U	ug/L	0.2	1	4/27/2012	pml	108-88-3		
L94120-01	MW-1	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	TPH C10 to C28	GW	M8015D GC/FID	4.3		4.3		mg/L	0.1	0.5	4/27/2012	itk			
L94120-01	MW-1	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	TVH C6 to C10	GW	M8021B/8015D GC/PID/				U	mg/L	0.05	0.05	4/27/2012	pml	TVH		
L94120-01	MW-1	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Calcium, dissolved	GW	M200.7 ICP	10.1		10.1		mg/L	0.2	1	4/24/2012	jjc	7440-70-2		
L94120-01	MW-1	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Iron, dissolved	GW	M200.7 ICP	0.05		0.05	B	mg/L	0.02	0.05	4/24/2012	jjc	7439-89-6		
L94120-01	MW-1	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Magnesium, dissolved	GW	M200.7 ICP	2.3		2.3		mg/L	0.2	1	4/24/2012	jjc	7439-95-4		
L94120-01	MW-1	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Manganese, dissolved	GW	M200.7 ICP	0.236		0.236		mg/L	0.005	0.03	4/24/2012	jjc	7439-96-5		
L94120-01	MW-1	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Potassium, dissolved	GW	M200.7 ICP	2.9		2.9		mg/L	0.3	2	4/24/2012	jjc	7440-09-7		
L94120-01	MW-1	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Selenium, dissolved	GW	M200.8 ICP-MS				U	mg/L	0.0001	0.0003	4/27/2012	pmc	7782-49-2		
L94120-01	MW-1	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Sodium, dissolved	GW	M200.7 ICP	121		121		mg/L	0.3	2	4/24/2012	jjc	7440-23-5		
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Bicarbonate as CaCO3	GW	SM2320B - Titration	249		249		mg/L	2	20	4/23/2012	las	10139		
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Bromide	GW	M300.0 - Ion Chromat	0.036		0.036	B	mg/L	0.01	0.05	4/25/2012	ccp			
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Carbonate as CaCO3	GW	SM2320B - Titration				U	mg/L	2	20	4/23/2012	las			
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Chloride	GW	M300.0 - Ion Chromat	9.41	<1.25 BACK	9.41		mg/L	0.5	2.5	4/25/2012	ccp	16887-00-6		
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Conductivity @25C	GW	SM2510B	537	<4000	537		umhos/cm	1	10	4/23/2012	las			
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Fluoride	GW	M300.0 - Ion Chromat	2.37		2.37		mg/L	0.1	0.5	4/25/2012	ccp	16984-48-8		
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Hydroxide as CaCO3	GW	SM2320B - Titration				U	mg/L	2	20	4/23/2012	las			
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Nitrate as N, dissolved	GW	Calculation: NO3NO2	0.06		0.06	BH	mg/L	0.02	0.1	5/3/2012	calc			
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Nitrate/Nitrite as N, dissolved	GW	M353.2 - Automated C	0.07		0.07	HB	mg/L	0.02	0.1	4/19/2012	pjb			
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Nitrite as N, dissolved	GW	M353.2 - Automated C	0.01		0.01	HB	mg/L	0.01	0.05	4/19/2012	pjb	NO2-N		
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	pH	GW	SM4500H+ B	8.2	6-9	8.2	H	units	0.1	0.1	4/23/2012	las			
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	pH measured at	GW	SM4500H+ B	20		20.0		C	0.1	0.1	4/23/2012	las			
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Phosphorus, ortho dissolved	GW	M365.1 - Automated A	0.03		0.03	HB	mg/L	0.01	0.05	4/19/2012	pjb	7723-14-0		
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Residue, Filterable (TDS) @180C	GW	SM2540C	360	<1.25 BACK	360		mg/L	10	20	4/20/2012	las			
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Sodium Absorption Ratio in Water	GW	USGS - I1738-78	9.04		12 9.04			0.03	0.15	5/3/2012	calc			
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Sulfate	GW	M300.0 - Ion Chromat	3.43	<1.25 BACK	3.43		mg/L	0.5	2.5	4/25/2012	ccp	14808-79-8		
L94120-01	MW-1	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Total Alkalinity	GW	SM2320B - Titration	249		249		mg/L	2	20	4/23/2012	las	10093		
L94120-02	MW-2	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	Benzene	GW	M8021B/8015D GC/PID/			5	U	ug/L	0.2	1	4/27/2012	pml	71-43-2	40.71700 N	106.49873 W
L94120-02	MW-2	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	Bromofluorobenzene	GW	M8021B/8015D GC/PID/	106.8		106.8		%	70	130	4/27/2012	pml	460-00-4		
L94120-02	MW-2	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	Bromofluorobenzene (TVH)	GW	M8021B/8015D GC/PID/	109.5		109.5		%	70	130	4/27/2012	pml	460-00 4		
L94120-02	MW-2	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	Ethylbenzene	GW	M8021B/8015D GC/PID/			700	U	ug/L	0.2	1	4/27/2012	pml	100-41-4		
L94120-02	MW-2	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	m p Xylene	GW	M8021B/8015D GC/PID/				U	ug/L	0.4	2	4/27/2012	pml	1330-20-7		
L94120-02	MW-2	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	o Xylene	GW	M8021B/8015D GC/PID/				U	ug/L	0.2	1	4/27/2012	pml	95-47- 6		
						Total Xylenes			0	1400-10000										
L94120-02	MW-2	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	OTP	GW	M8015D GC/FID	82.7		82.7		%	70	130	4/27/2012	itk	84-15-1		
L94120-02	MW-2	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	Toluene	GW	M8021B/8015D GC/PID/			560-1000	U	ug/L	0.2	1	4/27/2012	pml	108-88-3		
L94120-02	MW-2	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	TPH C10 to C28	GW	M8015D GC/FID	1.1		1.1		mg/L	0.1	0.5	4/27/2012	itk			
L94120-02	MW-2	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012	TVH C6 to C10	GW	M8021B/8015D GC/PID/				U	mg/L	0.05	0.05	4/27/2012	pml	TVH		
L94120-02	MW-2	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Calcium, dissolved	GW	M200.7 ICP	24.8		24.8		mg/L	0.2	1	4/24/2012	jjc	7440-70-2		
L94120-02	MW-2	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Iron, dissolved	GW	M200.7 ICP	0.1		0.10		mg/L	0.02	0.05	4/24/2012	jjc	7439-89-6		
L94120-02	MW-2	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Magnesium, dissolved	GW	M200.7 ICP	6.3		6.3		mg/L	0.2	1	4/24/2012	jjc	7439-95-4		
L94120-02	MW-2	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Manganese, dissolved	GW	M200.7 ICP	0.019		0.019	B	mg/L	0.005	0.03	4/24/2012	jjc	7439-96-5		
L94120-02	MW-2	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Potassium, dissolved	GW	M200.7 ICP	1.3		1.3	B	mg/L	0.3	2	4/24/2012	jjc	7440-09-7		
L94120-02	MW-2	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Selenium, dissolved	GW	M200.8 ICP-MS				U	mg/L	0.0001	0.0003	4/27/2012	pmc	7782-49-2		
L94120-02	MW-2	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012	Sodium, dissolved	GW	M200.7 ICP	2.9		2.9		mg/L	0.3	2	4/24/2012	jjc	7440-23-5		
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Bicarbonate as CaCO3	GW	SM2320B - Titration	83		83		mg/L	2	20	4/23/2012	las	10139		
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Bromide	GW	M300.0 - Ion Chromat				U	mg/L	0.01	0.05	4/25/2012	ccp			
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Carbonate as CaCO3	GW	SM2320B - Titration				U	mg/L	2	20	4/23/2012	las			
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Chloride	GW	M300.0 - Ion Chromat	1.71	<1.25 BACK	1.71	B	mg/L	0.5	2.5	4/25/2012	ccp	16887-00-6		
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Conductivity @25C	GW	SM2510B	178	<4000	178		umhos/cm	1	10	4/23/2012	las			
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Fluoride	GW	M300.0 - Ion Chromat	0.64		0.64		mg/L	0.1	0.5	4/25/2012	ccp	16984-48-8		
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Hydroxide as CaCO3	GW	SM2320B - Titration				U	mg/L	2	20	4/23/2012	las			
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Nitrate as N, dissolved	GW	Calculation: NO3NO2	0.19		0.19	H	mg/L	0.02	0.1	5/3/2012	calc			
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012	Nitrate/Nitrite as N, dissolved	GW	M353.2 - Automated C	0.19		0.19	H	mg/L	0.02	0.1	4/19/2012	pjb			

COGCC Sampling - Ground Water Results

L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Nitrite as N, dissolved	GW	M353.2 - Automated C			HU	mg/L	0.01	0.05	4/19/2012	pjb	NO2-N	
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 pH	GW	SM4500H+ B	8.1	6-9	8.1	H	units	0.1	0.1	4/23/2012	las	
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 pH measured at	GW	SM4500H+ B	20		20.0		C	0.1	0.1	4/23/2012	las	
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Phosphorus, ortho dissolved	GW	M365.1 - Automated A	0.02		0.02	HB	mg/L	0.01	0.05	4/19/2012	pjb	7723-14-0
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Residue, Filterable (TDS) @180C	GW	SM2540C	120	<1.25 BACK	120		mg/L	10	20	4/20/2012	las	
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Sodium Absorption Ratio in Water	GW	USGS - I1738-78	0.14		12 0.14	B		0.03	0.15	5/3/2012	calc	
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Sulfate	GW	M300.0 - Ion Chromat	4.48	<1.25 BACK	4.48		mg/L	0.5	2.5	4/25/2012	ccp	14808-79-8
L94120-02	MW-2	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Total Alkalinity	GW	SM2320B - Titration	83		83		mg/L	2	20	4/23/2012	las	10093
L94120-03	MW-3	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 Benzene	GW	M8021B/8015D GC/PID/			5	U	ug/L	0.2	1	4/27/2012	pml	71-43-2 40.71681 N 106.49777 W
L94120-03	MW-3	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 Bromofluorobenzene	GW	M8021B/8015D GC/PID/	105.4		105.4		%	70	130	4/27/2012	pml	460-00-4
L94120-03	MW-3	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 Bromofluorobenzene (TVH)	GW	M8021B/8015D GC/PID/	107.7		107.7		%	70	130	4/27/2012	pml	460-00 4
L94120-03	MW-3	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 Ethylbenzene	GW	M8021B/8015D GC/PID/			700	U	ug/L	0.2	1	4/27/2012	pml	100-41-4
L94120-03	MW-3	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 m p Xylene	GW	M8021B/8015D GC/PID/				U	ug/L	0.4	2	4/27/2012	pml	1330-20-7
L94120-03	MW-3	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 o Xylene	GW	M8021B/8015D GC/PID/				U	ug/L	0.2	1	4/27/2012	pml	95-47- 6
L94120-03	MW-3	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 OTP	GW	M8015D GC/FID	95.9		95.9		%	70	130	4/27/2012	itk	84-15-1
L94120-03	MW-3	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 Toluene	GW	M8021B/8015D GC/PID/			560-1000	U	ug/L	0.2	1	4/27/2012	pml	108-88-3
L94120-03	MW-3	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 TPH C10 to C28	GW	M8015D GC/FID	3.9		3.9		mg/L	0.1	0.5	4/27/2012	itk	
L94120-03	MW-3	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 TVH C6 to C10	GW	M8021B/8015D GC/PID/				U	mg/L	0.05	0.05	4/27/2012	pml	TVH
L94120-03	MW-3	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Calcium, dissolved	GW	M200.7 ICP	36.2		36.2		mg/L	0.2	1	4/24/2012	jjc	7440-70-2
L94120-03	MW-3	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Iron, dissolved	GW	M200.7 ICP				U	mg/L	0.02	0.05	4/24/2012	jjc	7439-89-6
L94120-03	MW-3	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Magnesium, dissolved	GW	M200.7 ICP	6.4		6.4		mg/L	0.2	1	4/24/2012	jjc	7439-95-4
L94120-03	MW-3	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Manganese, dissolved	GW	M200.7 ICP				U	mg/L	0.005	0.03	4/24/2012	jjc	7439-96-5
L94120-03	MW-3	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Potassium, dissolved	GW	M200.7 ICP	1.5		1.5	B	mg/L	0.3	2	4/24/2012	jjc	7440-09-7
L94120-03	MW-3	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Selenium, dissolved	GW	M200.8 ICP-MS	0.0002		0.0002	B	mg/L	0.0001	0.0003	4/27/2012	pmc	7782-49-2
L94120-03	MW-3	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Sodium, dissolved	GW	M200.7 ICP	3.8		3.8		mg/L	0.3	2	4/24/2012	jjc	7440-23-5
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Bicarbonate as CaCO3	GW	SM2320B - Titration	114		114		mg/L	2	20	4/23/2012	las	10139
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Bromide	GW	M300.0 - Ion Chromat	0.047		0.047	B	mg/L	0.01	0.05	4/25/2012	ccp	
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Carbonate as CaCO3	GW	SM2320B - Titration				U	mg/L	2	20	4/23/2012	las	
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Chloride	GW	M300.0 - Ion Chromat	6.8	<1.25 BACK	6.80		mg/L	0.5	2.5	4/25/2012	ccp	16887-00-6
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Conductivity @25C	GW	SM2510B	264	<4000	264		umhos/cm	1	10	4/23/2012	las	
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Fluoride	GW	M300.0 - Ion Chromat	0.51		0.51		mg/L	0.1	0.5	4/25/2012	ccp	16984-48-8
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Hydroxide as CaCO3	GW	SM2320B - Titration				U	mg/L	2	20	4/23/2012	las	
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Nitrate as N, dissolved	GW	Calculation: NO3NO2	0.67		0.67	H	mg/L	0.02	0.1	5/3/2012	calc	
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Nitrate/Nitrite as N, dissolved	GW	M353.2 - Automated C	0.67		0.67	H	mg/L	0.02	0.1	4/19/2012	pjb	
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Nitrite as N, dissolved	GW	M353.2 - Automated C				HU	mg/L	0.01	0.05	4/19/2012	pjb	NO2-N
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 pH	GW	SM4500H+ B	8.1	6-9	8.1	H	units	0.1	0.1	4/23/2012	las	
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 pH measured at	GW	SM4500H+ B	20		20.0		C	0.1	0.1	4/23/2012	las	
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Phosphorus, ortho dissolved	GW	M365.1 - Automated A	0.01		0.01	HB	mg/L	0.01	0.05	4/19/2012	pjb	7723-14-0
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Residue, Filterable (TDS) @180C	GW	SM2540C	160	<1.25 BACK	160		mg/L	10	20	4/20/2012	las	
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Sodium Absorption Ratio in Water	GW	USGS - I1738-78	0.16		12 0.16			0.03	0.15	5/3/2012	calc	
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Sulfate	GW	M300.0 - Ion Chromat	10.04	<1.25 BACK	10.04		mg/L	0.5	2.5	4/25/2012	ccp	14808-79-8
L94120-03	MW-3	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Total Alkalinity	GW	SM2320B - Titration	114		114		mg/L	2	20	4/23/2012	las	10093
L94120-04	MW-4	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 Benzene	GW	M8021B/8015D GC/PID/			5	U	ug/L	0.2	1	4/27/2012	pml	71-43-2 40.71732 N 106.49759 W
L94120-04	MW-4	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 Bromofluorobenzene	GW	M8021B/8015D GC/PID/	105.5		105.5		%	70	130	4/27/2012	pml	460-00-4
L94120-04	MW-4	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 Bromofluorobenzene (TVH)	GW	M8021B/8015D GC/PID/	107.5		107.5		%	70	130	4/27/2012	pml	460-00 4
L94120-04	MW-4	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 Ethylbenzene	GW	M8021B/8015D GC/PID/			700	U	ug/L	0.2	1	4/27/2012	pml	100-41-4
L94120-04	MW-4	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 m p Xylene	GW	M8021B/8015D GC/PID/				U	ug/L	0.4	2	4/27/2012	pml	1330-20-7
L94120-04	MW-4	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 o Xylene	GW	M8021B/8015D GC/PID/				U	ug/L	0.2	1	4/27/2012	pml	95-47- 6
L94120-04	MW-4	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 OTP	GW	M8015D GC/FID	71		71		%	70	130	4/27/2012	itk	84-15-1
L94120-04	MW-4	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 Toluene	GW	M8021B/8015D GC/PID/			560-1000	U	ug/L	0.2	1	4/27/2012	pml	108-88-3
L94120-04	MW-4	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 TPH C10 to C28	GW	M8015D GC/FID	1.2		1.2		mg/L	0.1	0.5	4/27/2012	itk	
L94120-04	MW-4	LONE PINE GAS	Gas Chromatography	4/17/2012	4/19/2012 TVH C6 to C10	GW	M8021B/8015D GC/PID/				U	mg/L	0.05	0.05	4/27/2012	pml	TVH
L94120-04	MW-4	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Calcium, dissolved	GW	M200.7 ICP	11.6		11.6		mg/L	0.2	1	4/24/2012	jjc	7440-70-2
L94120-04	MW-4	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Iron, dissolved	GW	M200.7 ICP	0.28		0.28		mg/L	0.02	0.05	4/24/2012	jjc	7439-89-6
L94120-04	MW-4	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Magnesium, dissolved	GW	M200.7 ICP	2.3		2.3		mg/L	0.2	1	4/24/2012	jjc	7439-95-4
L94120-04	MW-4	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Manganese, dissolved	GW	M200.7 ICP	0.005		0.005	B	mg/L	0.005	0.03	4/24/2012	jjc	7439-96-5
L94120-04	MW-4	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Potassium, dissolved	GW	M200.7 ICP	1.3		1.3	B	mg/L	0.3	2	4/24/2012	jjc	7440-09-7
L94120-04	MW-4	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Selenium, dissolved	GW	M200.8 ICP-MS	0.0001		0.0001	B	mg/L	0.0001	0.0003	4/27/2012	pmc	7782-49-2
L94120-04	MW-4	LONE PINE GAS	Metals Analysis	4/17/2012	4/19/2012 Sodium, dissolved	GW	M200.7 ICP	49.1		49.1		mg/L	0.3	2	4/24/2012	jjc	7440-23-5
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Bicarbonate as CaCO3	GW	SM2320B - Titration	128		128		mg/L	2	20	4/23/2012	las	10139

COGCC Sampling - Ground Water Results

L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Bromide	GW	M300.0 - Ion Chromat	0.023	0.023	B	mg/L	0.01	0.05	4/27/2012	ccp	
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Carbonate as CaCO3	GW	SM2320B - Titration			U	mg/L	2	20	4/23/2012	las	
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Chloride	GW	M300.0 - Ion Chromat	6.34	<1.25 BACK(6.34		mg/L	0.5	2.5	4/26/2012	ccp	16887-00-6
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Conductivity @25C	GW	SM2510B	273	<4000		umhos/cm	1	10	4/23/2012	las	
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Fluoride	GW	M300.0 - Ion Chromat	0.39	0.39	B	mg/L	0.1	0.5	4/26/2012	ccp	16984-48-8
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Hydroxide as CaCO3	GW	SM2320B - Titration			U	mg/L	2	20	4/23/2012	las	
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Nitrate as N, dissolved	GW	Calculation: NO3NO2	0.71	0.71	H	mg/L	0.02	0.1	5/3/2012	calc	
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Nitrate/Nitrite as N, dissolved	GW	M353.2 - Automated C	0.71	0.71	H	mg/L	0.02	0.1	4/19/2012	pjb	
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Nitrite as N, dissolved	GW	M353.2 - Automated C			HU	mg/L	0.01	0.05	4/19/2012	pjb	NO2-N
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 pH	GW	SM4500H+ B	8.1	6-9	H	units	0.1	0.1	4/23/2012	las	
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 pH measured at	GW	SM4500H+ B	20	20.0		C	0.1	0.1	4/23/2012	las	
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Phosphorus, ortho dissolved	GW	M365.1 - Automated A	0.01	0.01	HB	mg/L	0.01	0.05	4/19/2012	pjb	7723-14-0
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Residue, Filterable (TDS) @180C	GW	SM2540C	160	<1.25 BACK(160		mg/L	10	20	4/20/2012	las	
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Sodium Absorption Ratio in Water	GW	USGS - I1738-78	3.48	12 3.48			0.03	0.15	5/3/2012	calc	
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Sulfate	GW	M300.0 - Ion Chromat	4.47	<1.25 BACK(4.47		mg/L	0.5	2.5	4/26/2012	ccp	14808-79-8
L94120-04	MW-4	LONE PINE GAS	Wet Chemistry	4/17/2012	4/19/2012 Total Alkalinity	GW	SM2320B - Titration	128	128		mg/L	2	20	4/23/2012	las	10093

COGCC Sampling - Sediment Results

LABID	CLIENTID	PROJECTID	DEPTNAME	COLLECTDATE	RECEIVEDATE	ANALYTE	MATRIX	METHOD	RESULT	910-1 Limit	TEXTRESULT	QUAL	UNITS	MDL	PQL	ANALYZEDATE	ANALYST	CAS
L94087-01	TIMBERMAN	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	Benzene	SO	M8021B/8015D GC/PID/		170		U	ug/Kg	5	30	4/26/2012	pml	71-43-2
L94087-01	TIMBERMAN	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	Bromofluorobenzene	SO	M8021B/8015D GC/PID/	94.3		94.3		%	70	130	4/26/2012	pml	460-00-4
L94087-01	TIMBERMAN	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	Bromofluorobenzene (TVH)	SO	M8021B/8015D GC/PID/	94.2		94.2		%	70	130	4/26/2012	pml	460-00 4
L94087-01	TIMBERMAN	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	Ethylbenzene	SO	M8021B/8015D GC/PID/	19	100000	19	J	ug/Kg	5	30	4/26/2012	pml	100-41-4
L94087-01	TIMBERMAN	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	m p Xylene	SO	M8021B/8015D GC/PID/	20		20	J	ug/Kg	10	50	4/26/2012	pml	1330-20-7
L94087-01	TIMBERMAN	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	o Xylene	SO	M8021B/8015D GC/PID/				U	ug/Kg	5	30	4/26/2012	pml	95-47- 6
						Total Xylenes			20	175000								
L94087-01	TIMBERMAN	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	OTP	SO	M8015D GC/FID	109.6		109.6		%	70	130	4/25/2012	itk	84-15-1
L94087-01	TIMBERMAN	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	Toluene	SO	M8021B/8015D GC/PID/		85000		U	ug/Kg	5	30	4/26/2012	pml	108-88-3
L94087-01	TIMBERMAN	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	TPH C10 to C28	SO	M8015D GC/FID	4900		4900		mg/Kg	200	800	4/25/2012	itk	
L94087-01	TIMBERMAN	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	TVH C6 to C10	SO	M8021B/8015D GC/PID/	4		4		mg/Kg	1	1	4/26/2012	pml	TVH
						Total TPH			4904	500								
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	2-Fluorobiphenyl	SO	M8270C GC/MS	89.8		89.8		%	45	105	5/9/2012	itk	321-60-8
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	2-Methylnaphthalene	SO	M8270C GC/MS				UH	ug/Kg	4000	20000	5/9/2012	itk	91-57-6
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Acenaphthene	SO	M8270C GC/MS		1000000		UH	ug/Kg	4000	20000	5/9/2012	itk	83-32-9
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Acenaphthylene	SO	M8270C GC/MS				UH	ug/Kg	4000	20000	5/9/2012	itk	208-96-8
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Anthracene	SO	M8270C GC/MS		1000000		UH	ug/Kg	4000	20000	5/9/2012	itk	120-12-7
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Benzo(a)anthracene	SO	M8270C GC/MS		220		UH	ug/Kg	4000	20000	5/9/2012	itk	56-55-3
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Benzo(a)pyrene	SO	M8270C GC/MS		22		UH	ug/Kg	4000	20000	5/9/2012	itk	50-32-8
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Benzo(b)fluoranthene	SO	M8270C GC/MS		220		UH	ug/Kg	4000	20000	5/9/2012	itk	205-99-2
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Benzo(g,h,i)perylene	SO	M8270C GC/MS				UH	ug/Kg	4000	20000	5/9/2012	itk	191-24-2
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Benzo(k)fluoranthene	SO	M8270C GC/MS		2200		UH	ug/Kg	4000	20000	5/9/2012	itk	207-08-9
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Chrysene	SO	M8270C GC/MS		22000		UH	ug/Kg	4000	20000	5/9/2012	itk	218-01-9
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Dibenzo(a,h)anthracene	SO	M8270C GC/MS		22		UH	ug/Kg	4000	20000	5/9/2012	itk	53-70-3
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Fluoranthene	SO	M8270C GC/MS		1000000		UH	ug/Kg	4000	20000	5/9/2012	itk	206-44-0
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Fluorene	SO	M8270C GC/MS		1000000		UH	ug/Kg	4000	20000	5/9/2012	itk	86-73-7
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Indeno(1,2,3-cd)pyrene	SO	M8270C GC/MS		220		UH	ug/Kg	4000	20000	5/9/2012	itk	193-39-5
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Naphthalene	SO	M8270C GC/MS		23000		UH	ug/Kg	4000	20000	5/9/2012	itk	91-20-3
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Nitrobenzene-d5	SO	M8270C GC/MS	84.5		84.5		%	35	100	5/9/2012	itk	4165-60-0
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Phenanthrene	SO	M8270C GC/MS				UH	ug/Kg	4000	20000	5/9/2012	itk	85-01-8
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Pyrene	SO	M8270C GC/MS		1000000		UH	ug/Kg	4000	20000	5/9/2012	itk	129-00-0
L94087-01	TIMBERMAN	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012	Terphenyl-d14	SO	M8270C GC/MS	103.5		103.5		%	30	125	5/9/2012	itk	1718-51-0
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Arsenic, total (3050)	SO	M6020 ICP-MS	12.4	0.39	12.4		mg/Kg	0.3	1	4/30/2012	pmc	7440-38-2
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Barium, total (3050)	SO	M6010B ICP	480	15000	480		mg/Kg	0.3	2	4/30/2012	aeb	7440-39-3
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Boron, total (3050)	SO	M6010B ICP	6	2	6		mg/Kg	1	5	4/30/2012	aeb	7440-42-8
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Cadmium, total (3050)	SO	M6010B ICP	1.7	70	1.7	B	mg/Kg	0.5	2	4/30/2012	aeb	7440-43-9
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Calcium, soluble (Sat. Paste)	SO	M6010B ICP	2.41		2.41		meq/L	0.01	0.05	5/3/2012	aeb	7440-70-2
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Chromium, total (3050)	SO	M6010B ICP	12		12		mg/Kg	1	5	4/30/2012	aeb	7440-47-3
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Chromium, Trivalent	SO	Calculation (Total -	12	120000	12		mg/Kg	1	5	5/11/2012	calc	
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Copper, total (3050)	SO	M6010B ICP	12	3100	12		mg/Kg	1	5	4/30/2012	aeb	7440-50-8
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Lead, total (3050)	SO	M6010B ICP	14	400	14	B	mg/Kg	4	20	4/30/2012	aeb	7439-92-1
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Magnesium, soluble (Sat. Paste)	SO	M6010B ICP	0.79		0.79		meq/L	0.02	0.08	5/3/2012	aeb	7439-95-4
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Mercury by Direct Combustion AA	SO	M7473	18.8	23	18.8		ng/g	2.87	14.35	5/1/2012	erf	7439-97-6
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Nickel, total (3050)	SO	M6010B ICP	15	1600	15		mg/Kg	1	5	4/30/2012	aeb	7440-02-0
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Selenium, total (3050)	SO	M6010B ICP		390		U	mg/Kg	6	30	4/30/2012	aeb	7782-49-2
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Silver, total (3050)	SO	M6010B ICP	2	390	2	B	mg/Kg	1	3	4/30/2012	aeb	7440-22-4
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Sodium Absorption Ratio	SO	Calculation	0.89	12	0.89			0.03	0.15	5/11/2012	calc	
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Sodium, soluble (Sat. Paste)	SO	M6010B ICP	1.12		1.12		meq/L	0.01	0.09	5/3/2012	aeb	7440-23-5
L94087-01	TIMBERMAN	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012	Zinc, total (3050)	SO	M6010B ICP	94	23000	94		mg/Kg	1	5	4/30/2012	aeb	7440-66-6
L94087-01	TIMBERMAN	LONE PINE GAS	Soil Analysis	4/13/2012	4/17/2012	Conductivity @25C	SO	SM2510B	0.451	4	0.451		mmhos/cm	0.001	0.01	5/2/2012	nrc	
L94087-01	TIMBERMAN	LONE PINE GAS	Soil Analysis	4/13/2012	4/17/2012	pH, Saturated Paste	SO	USDA No. 60 (21A)	8	6-9	8.0		units	0.1	0.1	5/2/2012	nrc	
L94087-01	TIMBERMAN	LONE PINE GAS	Soil Analysis	4/13/2012	4/17/2012	Solids, Percent	SO	CLPSOW390, PART F, D	64.3		64.3		%	0.1	0.5	4/24/2012	bsu	
L94087-01	TIMBERMAN	LONE PINE GAS	Wet Chemistry	4/13/2012	4/17/2012	Chromium, Hexavalent (3060)	SO	M7196A		23		U	mg/Kg	1.55	6.2	5/4/2012	abm	7440-47-3
L94087-02	DUMLER 1	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	Benzene	SO	M8021B/8015D GC/PID/		170		U	ug/Kg	0.2	1	4/26/2012	pml	71-43-2
L94087-02	DUMLER 1	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	Bromofluorobenzene	SO	M8021B/8015D GC/PID/	87.1		87.1		%	70	130	4/26/2012	pml	460-00-4
L94087-02	DUMLER 1	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	Bromofluorobenzene (TVH)	SO	M8021B/8015D GC/PID/	85.7		85.7		%	70	130	4/26/2012	pml	460-00 4
L94087-02	DUMLER 1	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012	Ethylbenzene	SO	M8021B/8015D GC/PID/	0.7	100000	.7	J	ug/Kg	0.2	1	4/26/2012	pml	100-41-4

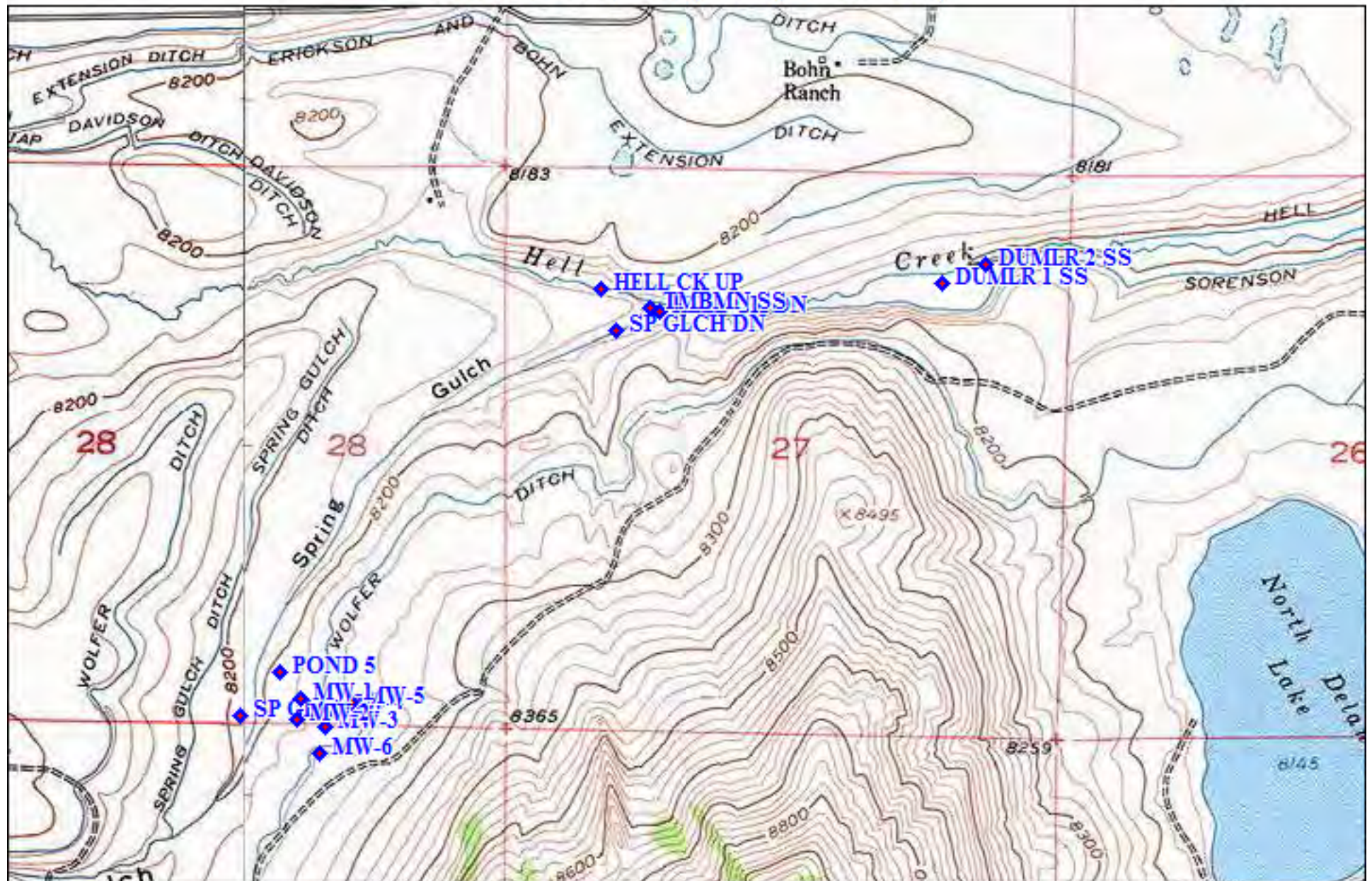
COGCC Sampling - Sediment Results

L94087-02	DUMLER 1	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 m p Xylene	SO	M8021B/8015D GC/PID/	0.7	.7	J	ug/Kg	0.4	2	4/26/2012 pml	1330-20-7
L94087-02	DUMLER 1	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 o Xylene	SO	M8021B/8015D GC/PID/			U	ug/Kg	0.2	1	4/26/2012 pml	95-47- 6
					Total Xylenes			0.7	175000						
L94087-02	DUMLER 1	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 OTP	SO	M8015D GC/FID	105.9	105.9		%	70	130	4/25/2012 itk	84-15-1
L94087-02	DUMLER 1	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 Toluene	SO	M8021B/8015D GC/PID/	0.6	85000 .6	J	ug/Kg	0.2	1	4/26/2012 pml	108-88-3
L94087-02	DUMLER 1	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 TPH C10 to C28	SO	M8015D GC/FID	1560	1560		mg/Kg	80	400	4/25/2012 itk	
L94087-02	DUMLER 1	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 TVH C6 to C10	SO	M8021B/8015D GC/PID/	0.18	.18		mg/Kg	0.05	0.05	4/26/2012 pml	TVH
					Total TPH			1560.18	500						
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 2-Fluorobiphenyl	SO	M8270C GC/MS	86.1	86.1		%	45	105	5/9/2012 itk	321-60-8
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 2-Methylnaphthalene	SO	M8270C GC/MS			UH	ug/Kg	1000	7000	5/9/2012 itk	91-57-6
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Acenaphthene	SO	M8270C GC/MS		1000000	UH	ug/Kg	1000	7000	5/9/2012 itk	83-32-9
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Acenaphthylene	SO	M8270C GC/MS			UH	ug/Kg	1000	7000	5/9/2012 itk	208-96-8
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Anthracene	SO	M8270C GC/MS		1000000	UH	ug/Kg	1000	7000	5/9/2012 itk	120-12-7
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Benzo(a)anthracene	SO	M8270C GC/MS		220	UH	ug/Kg	1000	7000	5/9/2012 itk	56-55-3
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Benzo(a)pyrene	SO	M8270C GC/MS		22	UH	ug/Kg	1000	7000	5/9/2012 itk	50-32-8
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Benzo(b)fluoranthene	SO	M8270C GC/MS		220	UH	ug/Kg	1000	7000	5/9/2012 itk	205-99-2
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Benzo(g,h,i)perylene	SO	M8270C GC/MS			UH	ug/Kg	1000	7000	5/9/2012 itk	191-24-2
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Benzo(k)fluoranthene	SO	M8270C GC/MS		2200	UH	ug/Kg	1000	7000	5/9/2012 itk	207-08-9
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Chrysene	SO	M8270C GC/MS		22000	UH	ug/Kg	1000	7000	5/9/2012 itk	218-01-9
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Dibenzo(a,h)anthracene	SO	M8270C GC/MS		22	UH	ug/Kg	1000	7000	5/9/2012 itk	53-70-3
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Fluoranthene	SO	M8270C GC/MS		1000000	UH	ug/Kg	1000	7000	5/9/2012 itk	206-44-0
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Fluorene	SO	M8270C GC/MS		1000000	UH	ug/Kg	1000	7000	5/9/2012 itk	86-73-7
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Indeno(1,2,3-cd)pyrene	SO	M8270C GC/MS		220	UH	ug/Kg	1000	7000	5/9/2012 itk	193-39-5
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Naphthalene	SO	M8270C GC/MS		23000	UH	ug/Kg	1000	7000	5/9/2012 itk	91-20-3
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Nitrobenzene-d5	SO	M8270C GC/MS	75.9	75.9		%	35	100	5/9/2012 itk	4165-60-0
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Phenanthrene	SO	M8270C GC/MS			UH	ug/Kg	1000	7000	5/9/2012 itk	85-01-8
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Pyrene	SO	M8270C GC/MS		1000000	UH	ug/Kg	1000	7000	5/9/2012 itk	129-00-0
L94087-02	DUMLER 1	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Terphenyl-d14	SO	M8270C GC/MS	101.2	101.2		%	30	125	5/9/2012 itk	1718-51-0
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Arsenic, total (3050)	SO	M6020 ICP-MS	8.4	0.39 8.4		mg/Kg	0.3	1	4/30/2012 pmc	7440-38-2
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Barium, total (3050)	SO	M6010B ICP	291	15000 291		mg/Kg	0.3	2	4/30/2012 aeb	7440-39-3
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Boron, total (3050)	SO	M6010B ICP	4	2 4	B	mg/Kg	1	5	4/30/2012 aeb	7440-42-8
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Cadmium, total (3050)	SO	M6010B ICP	0.8	70 0.8	B	mg/Kg	0.5	2	4/30/2012 aeb	7440-43-9
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Calcium, soluble (Sat. Paste)	SO	M6010B ICP	6.03	6.03		meq/L	0.01	0.05	5/3/2012 aeb	7440-70-2
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Chromium, total (3050)	SO	M6010B ICP	8	8		mg/Kg	1	5	4/30/2012 aeb	7440-47-3
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Chromium, Trivalent	SO	Calculation (Total -	8	120000 8		mg/Kg	1	5	5/11/2012 calc	
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Copper, total (3050)	SO	M6010B ICP	7	3100 7		mg/Kg	1	5	4/30/2012 aeb	7440-50-8
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Lead, total (3050)	SO	M6010B ICP	11	400 11	B	mg/Kg	4	20	4/30/2012 aeb	7439-92-1
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Magnesium, soluble (Sat. Paste)	SO	M6010B ICP	2.76	2.76		meq/L	0.02	0.08	5/3/2012 aeb	7439-95-4
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Mercury by Direct Combustion AA	SO	M7473	7.68	23 7.68	B	ng/g	2.3	11.5	5/1/2012 erf	7439-97-6
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Nickel, total (3050)	SO	M6010B ICP	8	1600 8		mg/Kg	1	5	4/30/2012 aeb	7440-02-0
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Selenium, total (3050)	SO	M6010B ICP		390	U	mg/Kg	6	30	4/30/2012 aeb	7782-49-2
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Silver, total (3050)	SO	M6010B ICP	1	390 1	B	mg/Kg	1	3	4/30/2012 aeb	7440-22-4
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Sodium Absorption Ratio	SO	Calculation	0.87	12 0.87			0.03	0.15	5/11/2012 calc	
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Sodium, soluble (Sat. Paste)	SO	M6010B ICP	1.83	1.83		meq/L	0.01	0.09	5/3/2012 aeb	7440-23-5
L94087-02	DUMLER 1	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Zinc, total (3050)	SO	M6010B ICP	53	23000 53		mg/Kg	1	5	4/30/2012 aeb	7440-66-6
L94087-02	DUMLER 1	LONE PINE GAS	Soil Analysis	4/13/2012	4/17/2012 Conductivity @25C	SO	SM2510B	1.05	4 1.050		mmhos/cm	0.001	0.01	5/2/2012 nrc	
L94087-02	DUMLER 1	LONE PINE GAS	Soil Analysis	4/13/2012	4/17/2012 pH, Saturated Paste	SO	USDA No. 60 (21A)	7.6 6-9	7.6		units	0.1	0.1	5/2/2012 nrc	
L94087-02	DUMLER 1	LONE PINE GAS	Soil Analysis	4/13/2012	4/17/2012 Solids, Percent	SO	CLPSOW390, PART F, D	73.4	73.4		%	0.1	0.5	4/24/2012 bsu	
L94087-02	DUMLER 1	LONE PINE GAS	Wet Chemistry	4/13/2012	4/17/2012 Chromium, Hexavalent (3060)	SO	M7196A		23	U	mg/Kg	1.35	5.4	5/4/2012 abm	7440-47-3
L94087-03	DUMLER 2	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 Benzene	SO	M8021B/8015D GC/PID/		170	U	ug/Kg	0.2	1	4/26/2012 pml	71-43-2
L94087-03	DUMLER 2	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 Bromofluorobenzene	SO	M8021B/8015D GC/PID/	95.7	95.7		%	70	130	4/26/2012 pml	460-00-4
L94087-03	DUMLER 2	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 Bromofluorobenzene (TVH)	SO	M8021B/8015D GC/PID/	96.7	96.7		%	70	130	4/26/2012 pml	460-00 4
L94087-03	DUMLER 2	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 Ethylbenzene	SO	M8021B/8015D GC/PID/		100000	U	ug/Kg	0.2	1	4/26/2012 pml	100-41-4
L94087-03	DUMLER 2	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 m p Xylene	SO	M8021B/8015D GC/PID/			U	ug/Kg	0.4	2	4/26/2012 pml	1330-20-7
L94087-03	DUMLER 2	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 o Xylene	SO	M8021B/8015D GC/PID/			U	ug/Kg	0.2	1	4/26/2012 pml	95-47- 6
					Total Xylenes			0	175000						
L94087-03	DUMLER 2	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 OTP	SO	M8015D GC/FID	98.1	98.1		%	70	130	4/25/2012 itk	84-15-1
L94087-03	DUMLER 2	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 Toluene	SO	M8021B/8015D GC/PID/		85000	U	ug/Kg	0.2	1	4/26/2012 pml	108-88-3

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L94087-03	DUMLER 2	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 TPH C10 to C28	SO	M8015D GC/FID	110	110		mg/Kg	20	80	4/25/2012 itk	
L94087-03	DUMLER 2	LONE PINE GAS	Gas Chromatography	4/13/2012	4/17/2012 TVH C6 to C10	SO	M8021B/8015D GC/PID/			U	mg/Kg	0.05	0.05	4/26/2012 pml	TVH
					Total TPH			110	500						
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 2-Fluorobiphenyl	SO	M8270C GC/MS	84.9	84.9		%	45	105	5/9/2012 itk	321-60-8
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 2-Methylnaphthalene	SO	M8270C GC/MS			UH	ug/Kg	300	2000	5/9/2012 itk	91-57-6
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Acenaphthene	SO	M8270C GC/MS		1000000	UH	ug/Kg	300	2000	5/9/2012 itk	83-32-9
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Acenaphthylene	SO	M8270C GC/MS			UH	ug/Kg	300	2000	5/9/2012 itk	208-96-8
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Anthracene	SO	M8270C GC/MS		1000000	UH	ug/Kg	300	2000	5/9/2012 itk	120-12-7
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Benzo(a)anthracene	SO	M8270C GC/MS		220	UH	ug/Kg	300	2000	5/9/2012 itk	56-55-3
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Benzo(a)pyrene	SO	M8270C GC/MS		22	UH	ug/Kg	300	2000	5/9/2012 itk	50-32-8
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Benzo(b)fluoranthene	SO	M8270C GC/MS		220	UH	ug/Kg	300	2000	5/9/2012 itk	205-99-2
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Benzo(g,h,i)perylene	SO	M8270C GC/MS			UH	ug/Kg	300	2000	5/9/2012 itk	191-24-2
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Benzo(k)fluoranthene	SO	M8270C GC/MS		2200	UH	ug/Kg	300	2000	5/9/2012 itk	207-08-9
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Chrysene	SO	M8270C GC/MS		22000	UH	ug/Kg	300	2000	5/9/2012 itk	218-01-9
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Dibenzo(a,h)anthracene	SO	M8270C GC/MS		22	UH	ug/Kg	300	2000	5/9/2012 itk	53-70-3
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Fluoranthene	SO	M8270C GC/MS		1000000	UH	ug/Kg	300	2000	5/9/2012 itk	206-44-0
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Fluorene	SO	M8270C GC/MS		1000000	UH	ug/Kg	300	2000	5/9/2012 itk	86-73-7
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Indeno(1,2,3-cd)pyrene	SO	M8270C GC/MS		220	UH	ug/Kg	300	2000	5/9/2012 itk	193-39-5
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Naphthalene	SO	M8270C GC/MS		23000	UH	ug/Kg	300	2000	5/9/2012 itk	91-20-3
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Nitrobenzene-d5	SO	M8270C GC/MS	78	78		%	35	100	5/9/2012 itk	4165-60-0
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Phenanthrene	SO	M8270C GC/MS			UH	ug/Kg	300	2000	5/9/2012 itk	85-01-8
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Pyrene	SO	M8270C GC/MS		1000000	UH	ug/Kg	300	2000	5/9/2012 itk	129-00-0
L94087-03	DUMLER 2	LONE PINE GAS	GC/MS	4/13/2012	4/17/2012 Terphenyl-d14	SO	M8270C GC/MS	105.2	105.2		%	30	125	5/9/2012 itk	1718-51-0
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Arsenic, total (3050)	SO	M6020 ICP-MS	6.5	0.39		mg/Kg	0.3	1	4/30/2012 pmc	7440-38-2
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Barium, total (3050)	SO	M6010B ICP	223	15000		mg/Kg	0.3	2	4/30/2012 aeb	7440-39-3
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Boron, total (3050)	SO	M6010B ICP	5	2		mg/Kg	1	5	4/30/2012 aeb	7440-42-8
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Cadmium, total (3050)	SO	M6010B ICP	0.7	70	B	mg/Kg	0.5	2	4/30/2012 aeb	7440-43-9
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Calcium, soluble (Sat. Paste)	SO	M6010B ICP	2.09	2.09		meq/L	0.01	0.05	5/3/2012 aeb	7440-70-2
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Chromium, total (3050)	SO	M6010B ICP	10	10		mg/Kg	1	5	4/30/2012 aeb	7440-47-3
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Chromium, Trivalent	SO	Calculation (Total -	10	120000		mg/Kg	1	5	5/11/2012 calc	
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Copper, total (3050)	SO	M6010B ICP	8	3100		mg/Kg	1	5	4/30/2012 aeb	7440-50-8
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Lead, total (3050)	SO	M6010B ICP	10	400	B	mg/Kg	4	20	4/30/2012 aeb	7439-92-1
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Magnesium, soluble (Sat. Paste)	SO	M6010B ICP	1.09	1.09		meq/L	0.02	0.08	5/3/2012 aeb	7439-95-4
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Mercury by Direct Combustion AA	SO	M7473	6.7	23	B	ng/g	2.25	11.25	5/1/2012 erf	7439-97-6
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Nickel, total (3050)	SO	M6010B ICP	9	1600		mg/Kg	1	5	4/30/2012 aeb	7440-02-0
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Selenium, total (3050)	SO	M6010B ICP		390	U	mg/Kg	6	30	4/30/2012 aeb	7782-49-2
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Silver, total (3050)	SO	M6010B ICP	1	390	B	mg/Kg	1	3	4/30/2012 aeb	7440-22-4
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Sodium Absorption Ratio	SO	Calculation	0.67	12			0.03	0.15	5/11/2012 calc	
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Sodium, soluble (Sat. Paste)	SO	M6010B ICP	0.84	0.84		meq/L	0.01	0.09	5/3/2012 aeb	7440-23-5
L94087-03	DUMLER 2	LONE PINE GAS	Metals Analysis	4/13/2012	4/17/2012 Zinc, total (3050)	SO	M6010B ICP	43	23000		mg/Kg	1	5	4/30/2012 aeb	7440-66-6
L94087-03	DUMLER 2	LONE PINE GAS	Soil Analysis	4/13/2012	4/17/2012 Conductivity @25C	SO	SM2510B	0.446	4		mmhos/cm	0.001	0.01	5/2/2012 nrc	
L94087-03	DUMLER 2	LONE PINE GAS	Soil Analysis	4/13/2012	4/17/2012 pH, Saturated Paste	SO	USDA No. 60 (21A)	8.1	6-9		units	0.1	0.1	5/2/2012 nrc	
L94087-03	DUMLER 2	LONE PINE GAS	Soil Analysis	4/13/2012	4/17/2012 Solids, Percent	SO	CLPSOW390, PART F, D	75.2	75.2		%	0.1	0.5	4/24/2012 bsu	
L94087-03	DUMLER 2	LONE PINE GAS	Wet Chemistry	4/13/2012	4/17/2012 Chromium, Hexavalent (3060)	SO	M7196A		23	U	mg/Kg	1.325	5.3	5/4/2012 abm	7440-47-3

Lone Pine Gas, Inc. (Facility ID 324634)



TN
MN
10 1/2°

0 0.5 1 MILE
0 1000 FEET 0 500 1000 METERS

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