ExxonMobil
Environmental Services Company

Transmitted Via Federal Express

June 20, 2012

Ms. Laura Alvey
Remediation Division
Montana Department of Environmental Quality
1100 N. Last Chance Gulch
P.O. Box 200901
Helena, MT 59620-0901

Re: ExxonMobil Silvertip Pipeline Incident Response
Docket No, WQA-12-08
Final Assessment Report for Reported Fish Kill, Huntley, MT

Dear Ms. Alvey:

In response to the Montana Department of Environmental Quality's (MDEQ) March 15, 2012 letter to ExxonMobil, this letter summarizes field efforts and results for assessment activities that were implemented by ExxonMobil Environmental Services Company (EMES), on behalf of ExxonMobil Pipeline Company to evaluate a reported fish kill within a side channel of the Yellowstone River located near Huntley, Montana. The assessment area is located within portions of Shoreline Cleanup Assessment Technique (SCAT) River Segments 24 and 28. A site location map is shown on Figure 1. Figure 2 shows a more detailed location of the assessment area in relation to the Highway 321 Bridge over the Yellowstone River.

The assessment results indicate that the fish kill event is not related to crude oil from the Silvertip Pipeline Incident based on multiple lines of evidence. A summary of the field activities and validated analytical results for assessment efforts that were performed by ARCADIS US, Inc. (ARCADIS) on behalf of EMES is presented below.

Summary of Field Activities

The March 15, 2012 letter from MDEQ requested that EMES complete an expedited evaluation of water, soil, and sediment in the area of the reported fish kill. Accordingly, EMES representatives and contractors mobilized to the site and completed field assessment efforts between March 17 and March 20, 2012. Field activities included:

- A reconnaissance of the side channel area was conducted to determine the potential scope of the issue. Representative photographs of the assessment area are included as Attachment A. The reconnaissance focused on 5 pools within the section of the side channel identified by the MDEQ's

letter (Pools 1 through 5 as shown on Figure 3) and also included an upstream location (Pool 0) and downstream location (Pool 6) in accordance with the MDEQ letter. The pools are numbered and described below from upstream to downstream locations:

- Pool 1 - Approximately 1200-feet long, 40-feet wide, and up to 10-feet deep. Note that depths are based on estimates from the bank.
- Pool 2 South - Approximately 225-feet long, 15-feet in width, up to 2-feet deep.
- Pool 2 North - Approximately 225-feet long, 15-feet in width, up to 2-feet deep.
- Pool 3 - Approximately 450-feet long, 30-feet in width, up to 6-feet deep.
- Pool 4 - Approximately 90-feet long, 15-feet in width, up to 2-feet deep.
- Pool 5 - Approximately 125-feet long, 8-feet in width, up to 2-feet deep.

- The reconnaissance included a visual assessment of each pool for the presence of sheens and dead fish/frogs, probing of sediment within the pools using a steel rod, and using a portable water quality meter to evaluate field water quality parameters in Pools 1 through 5, at the upstream and downstream pools within the assessment area, and at the Highway 321 Bridge upstream monitoring location (shown on Figure 2). Water quality field parameter measurements included pH, conductivity, dissolved oxygen (DO), temperature, and oxidation/reduction potential (ORP).

- Collection of 15 surface water samples from upstream, downstream, and Pools 1 through 5. Sampling locations are shown on Figure 3. Surface water samples were analyzed for semi-volatile organic compounds (SVOCs) (including polycyclic aromatic hydrocarbons [PAHs] by 8270 Selective Ion Monitoring [SIM]), volatile organic compounds (VOCs), volatile petroleum hydrocarbons (VPH), extractable petroleum hydrocarbons (EPH), target analyte list (TAL) metals plus mercury, pesticides, and herbicides.

- Nine sediment samples were collected from upstream, Pool 1, Pool 3, Pool 5, and downstream locations (no fine grained materials were identified at Pools 2S, 2N or 4 to allow for sample collection). Sediment samples were collected from 0-0.3 feet (approximately) at each location. Sediment sample locations are shown on Figure 3. Sediment samples were analyzed for SVOCs (including PAHs by 8270 SIM), VOCs, VPH, EPH, TAL metals plus mercury, pesticides, herbicides, and total organic carbon (TOC).

Assessment Results

A summary of relevant field observations and the surface water and sediment sampling results is presented below.

Field Observations

The site reconnaissance results indicate:

- No oil sheens were generated from the sheen probing study performed at Pools 1 through 5. A probing rod was used to agitate the sediment at numerous locations in each pool and at each sampling location to check for sheen generation and none occurred based on visual observations.

- Visual sheens were observed in several small opening within algae mats in three pools. Field observations (including broken edges, minor iridescence, lack of cohesiveness, presence in areas of high organic matter in shallow water, and no observations in open water) may indicate that these sheens are biogenic. Teflon nets were used to collect samples of two sheens from Pool 5; however, the recovered mass was very limited. The sheen samples were submitted for laboratory analysis for an extended list of over 40 PAHs, including the 2- to 6-ring priority pollutant PAHs and 2- and 4-ring alkylated PAHs by modified United States Environmental Protection Agency (USEPA) Method 8270C (gas chromatography/mass spectrometry in SIM mode [GC/MS SIM]). The sheen samples were also analyzed for total petroleum hydrocarbons (TPH) by modified USEPA Method 8015 (gas chromatography/Flame ionization detection [GC/FID]). These analyses are commonly identified as 'forensic PAHs' and 'forensic TPH' analyses, respectively.

- Dead fish and frogs were observed in some of the pools. Reasonable attempts were made to identify the dead species to the lowest taxonomic level; however, due to advanced decomposition, identification was limited. The observed species included carp (Cyprinidae), catfish (*Ameiurus* sp.), and minnows (e.g., *Luxilus* sp. and *Leuciscus* sp.). The fish were of various age classes. Only one species of dead frog was observed, northern leopard frog (*Rana pipiens*).

- Live fish and invertebrates were observed in the pools. Live fish, primarily minnows, were observed in all pools except Pool 4, where no live or dead fish were observed.

- The pools appeared to offer little or no cover or structure for the species within. The substrate was primarily large cobble in all pools, with finer grained sands observed in several limited areas. The relatively high number of individuals in the small pools and the different species in a pool with very limited habitat resources may be an indication that fish were trapped and aggregated as the flow in the channel dropped over time, leaving the pools isolated from the main channel and eventually from each other.

- Water quality field parameter measurements and observations from the site reconnaissance are presented in Table 1. The water quality field parameter measurements (indicating near neutral pH, saturated or nearly saturated DO, and typical conductivity/ORP levels) do not indicate any obvious water quality issues.

Surface Water Sample Results

Analytical data reports for the laboratory analysis of surface water samples have been validated by ARCADIS and Data Verification/Validation Reports are presented in Attachment B (hard copy of Data Verification/Validation Reports provided to MDEQ under separate cover and included with the full

electronic version of this letter report on the enclosed compact disk). Validated analytical results for surface water samples are presented in Table 2. Sample locations and results for constituents in surface water that exceed regulatory screening levels are shown on Figure 4. The surface water analytical results indicate:

- No EPH or VPH fractions were detected in the surface water samples above detection limits. The detection limits for EPH and VPH fractions for the surface water samples were below the relevant screening criteria/cleanup levels presented within the Administrative Order on Consent (AOC), Docket No. WQA-12-08, Attachment A, Paragraph 12 (Tier 1 Groundwater RBSLs and Standards, Column F in Table 2).

- Concentrations of VOCs detected in the surface water samples are mostly below detection limits. Acetone was detected in three surface water samples; however, acetone is a common laboratory-related contaminant and unrelated to crude oil.

- PAHs were not detected in the surface water samples above the detection limits.

- No pesticides or herbicides were detected in the surface water samples above the detection limits.

- Metals detected above detection limits in the surface water samples (including aluminum, arsenic, barium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, sodium, and thallium) appear to be consistent with background conditions and unrelated to crude oil.

Sediment Sample Results

Analytical data reports for the laboratory analysis of sediment samples have been validated by ARCADIS and Data Verification/Validation Reports are presented in Attachment B (hard copy of Data Verification/Validation Reports provided to MDEQ under separate cover and included with the full electronic version of this letter report on the enclosed compact disk). Validated analytical results for sediment samples are presented in Table 3. Sample locations and results for constituents that exceed regulatory screening levels are shown on Figure 5. All sediment sample results are reported and shown on a dry weight basis. The sediment analytical results indicate:

- No EPH or VPH fractions were detected in the sediment samples above detection limits. There are no USEPA Biological Technical Assistance Group (BTAG) freshwater sediment screening benchmarks for EPH or VPH fractions. There are also no National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Table (SQuiRT) levels for EPH and VPH fractions. In cases where there are no BTAG benchmarks or SQuiRT values, the AOC indicates that it may be appropriate to compare the results to surface soil RBSLs. EPH and VPH fraction detection limits were below the RBSL Tier 1 surface soil screening levels for aliphatics and aromatics and were above screening levels for total extractable hydrocarbons.

- Concentrations of VOCs detected in the sediment samples are mostly below detection limits. Acetone and methyl ethyl ketone (MEK) were detected in several sediment samples; however, it should be noted that these are common laboratory-related contaminants and are not related to crude oil.

- Certain PAHs were detected in the sediment samples; however, all PAH compounds were below their respective BTAG freshwater sediment screening benchmarks except for 2-methylnapthlene. 2-methylnapthlene was the only PAH compound detected at concentrations above the BTAG screening criteria (0.0202 mg/kg) in background upstream sample P0 (0.021 mg/kg) and in a sample collected from Pool #3 (0.022J mg/kg).

- No herbicides were detected in the sediment samples.

- Several pesticides were detected in sediment samples (including 4,4-DDE, aldrin, alpha-BHC, delta-BHC, dieldrin, endosulfan I, endosulfan II, endrin aldehyde, heptachlor, and heptachlor epoxide). Aldrin, dieldrin, endosulfan I and heptachlor epoxide were detected in sediment samples at concentrations above the BATG screening criteria. These detections are unrelated to crude oil.

- Certain metals (e.g., arsenic, manganese) are present in sediment samples at concentrations which are close to and slightly above sediment screening criteria. These detections appear to represent background conditions and are unrelated to crude oil.

Sheen Sample Results

The forensic PAH and forensic TPH results indicate that the hydrocarbons present in the two surface water sheen samples collected from Pond 5 are not of petrogenic origin (i.e., not related to petroleum or crude oil). A memorandum which presents a detailed evaluation of the sheen sample results is presented in Attachment C.

Analytical data reports for the forensic PAH and TPH analysis of the two sheen samples are presented in Attachment D (hard copy of analytical data reports provided to MDEQ under separate cover and included with the full electronic version of this letter report on the enclosed compact disk).

Findings

The analytical results and field observations summarized above indicate that the fish kill event that occurred near Huntley, Montana is not associated with crude oil based on multiple lines of evidence including field data and the analytical results from surface water, sediment and sheen samples collected as requested by the MDEQ. No further activities in connection with the reported fish kill event are proposed.

If there are any questions regarding the information presented above, please feel free to contact me at 225.324.5640, or via e-mail at tom.s.henson@exxonmobil.com.

Sincerely,

Tom S. Henson /jec

Tom S. Henson, P.E.
Major Projects Manager

cc: Katherine Haque-Hausrath, MDEQ
Kurt Fischer, ExxonMobil Environmental Services Company
Kevin Vaughan, Exxon Mobil Corporation
Bill Mercer, Holland & Hart, LLP
Scott Davies, ARCADIS

Tables

Tables

Table 1
Huntley Channel Assessment - Field Parameters and Observations
Silvertip Pipeline Incident Response

Sample Location	Sample ID	Date	pH (S.U.)	Dissolved Oxygen	Dissolved Oxygen (%)	Temperature (ºC)	ORP (mV)	Conductivity (mS/cm)	Comments
HUMT-P0-1A	HUMT-P0-SW(031712)1-A	3/17/2012	8.29	9.49	101.5	17.9	168.1	0.953	Pool 0 is the first pool upgradient of Pool 1
	HUMT-P0-SW(032012)1-A	3/20/2012	7.73	7.46	64.3	5.43	142.3	0.377	No sheen, dead fish, or frogs observed.
HUMT-P1-1A	HUMT-P1-SW(031712)1-A	3/17/2012	8.09	10.91	113.0	14.28	210.5	1.478	Cobble channel with sand in wetted areas.
	HUMT-P1-SW(032012)1-A	3/20/2012	7.37	8.27	69.0	6.80	184.9	0.737	Sheen observed at end of pond
HUMT-P1-2A	HUMT-P1-SW(031812)2-A	3/18/2012	8.02	8.78	76.1	8.82	178.1	1.340	Approximate dimensions: 20 - 40' wide, 4 - 5' deep, 0.25 mile long.
	HUMT-P1-SW(032012)2-A	3/20/2012	8.01	9.04	77.3	8.20	166.4	1.101	Dead and decaying wildlife on bottom (carp and frogs)
HUMT-P1-3A	HUMT-P1-SW(031812)3-A	3/18/2012	8.09	8.27	74.6	10.24	191.5	1.315	
	HUMT-P1-SW(032012)3-A	3/20/2012	8.12	11.23	105.4	6.74	136.6	0.687	
HUMT-P2N-1A	HUMT-P2N-SW(031812)1-A	3/18/2012	7.67	7.91	69.9	8.44	198.4	1.126	Cobble channel. Fresh green algae on bottom.
	HUMT-P2N-SW(032012)1-A	3/20/2012	7.61	5.52	44.2	4.74	155.1	0.500	Approximate dimensions: 1 - 4 m wide, 0.3 m deep, 50 m long
HUMT-P2N-2A	HUMT-P2N-SW(031812)2-A	3/18/2012	7.84	8.15	74.0	10.62	182.3	1.232	1 dead fish observed, no live fish
	HUMT-P2N-SW(032012)2-A	3/20/2102	7.49	6.71	55.0	5.94	153.9	0.620	
HUMT-P2S-1A	HUMT-P2S-SW(031812)1-A	3/18/2012	7.49	3.71	32.3	9.01	5.3	1.229	Thick algal mats on bottom. Surface algal blooms show sheen
	HUMT-P2S-SW(032012)1-A	3/20/2012	7.33	3.91	32.5	6.73	94.8	0.630	Approximate dimensions: 1 - 5 m wide, 0.3 m deep, 70 m long
HUMT-P2S-2A	HUMT-P2S-SW(031812)2-A	3/18/2012	7.66	7.56	71.7	12.82	56.0	1.326	Dead fingerling observed.
	HUMT-P2S-SW(032012)2-A	3/20/2012	7.33	5.53	47.4	8.11	20.1	0.668	Approximately 30 live fingerlings observed
HUMT-P3-1A	HUMT-P3-SW(031812)1-A	3/18/2012	7.88	8.34	77.2	11.47	128.0	1.221	Cobble channel, fine sand and silt on east end. Algal slime on rocks
	HUMT-P3-SW(032012)1-A	3/20/2012	7.60	7.74	63.1	6.01	41.3	0.584	Approximate dimensions: 10 m wide, 1 - 2 m deep, 100 m long
HUMT-P3-2A	HUMT-P3-SW(031812)2-A	3/18/2012	8.15	9.16	84.5	11.87	179.1	1.224	No fish observed
	HUMT-P3-SW(032012)2-A	3/20/2012	7.91	8.33	67.8	6.48	64.5	0.591	
HUMT-P3-3A	HUMT-P3-SW(031812)3-A	3/18/2012	8.27	8.35	81.5	13.99	177.5	1.267	
	HUMT-P3-SW(032012)3-A	3/20/2012	8.05	8.60	70.1	6.27	65.6	0.569	
HUMT-P4-1A	HUMT-P4-SW(031812)1-A	3/18/2012	8.06	7.33	71.0	13.67	148.0	1.183	Brown slime on rocks, green algae along banks Sheen observed in algal openings
	HUMT-P4-SW(032012)1-A	3/20/2012	8.13	7.80	69.9	10.70	64.3	0.627	Approximate dimensions: 10 m wide, 0.3 m deep, 30 m long No fish observed. Aquatic invertebrates observed
HUMT-P5-1A	HUMT-P5-SW(031812)1-A	3/18/2012	7.62	6.40	56.5	9.43	93.5	1.173	Silty sand substrate with cobble banks Dusty film on surface
	HUMT-P5-SW(032012)1-A	3/20/2012	7.32	1.26	10.6	6.63	-28.9	0.623	Live fish observed
HUMT-P6-1A	HUMT-P6-SW(031812)1-A	3/18/2012	8.14	8.61	83.0	13.37	169.2	1.170	
	HUMT-P6-SW(032012)1-A	3/20/2012	7.91	9.18	79.0	8.66	40.5	0.612	
HUMT-Upstream	HUMT-Upstream-SW(032012)1-A	3/20/2012	8.29	9.58	80.5	7.59	112.4	0.394	Main stream of the Yellowstone River at Highway 321 Bridge.

Note: Field meter calibration on 3/20/12 indicated a problem for conductivty that may account for conductivty measurments for 3/20/12 being around 50% of those measured on 3/17 and 3/18.

Table 2
Huntley Channel Assessment - Surface Water Sample Analytical Results
Silvertip Pipeline Incident Response

						Location	HUMT-P0-SW-1-A	HUMT-P1-SW-1-A	HUMT-P1-SW-2-A	HUMT-P1-SW-3-A	HUMT-P2N-SW-1-A	HUMT-P2N-SW-2-A
						Sample Name	HUMT-P0-SW(031712)1-A	HUMT-P1-SW(031712)1-A	HUMT-P1-SW(031812)2-A	HUMT-P1-SW(031812)3-A	HUMT-P2N-SW(031812)1-A	HUMT-P2N-SW(031812)2-A
						Date	3/17/2012	3/17/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012
						SDG	1296417	1296417	1296417	1296417	1296417	1296417
						Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
Chemical	Chemical Registry Number	DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water	DEQ-7 Aquatic Life Standards - Acute	DEQ-7 Aquatic Life Standards - Chronic	Tier 1 Groundwater RBSLs and Standards Table	Units						
Metals By EPA 6010 and EPA 7470A												
Aluminum	7429-90-5	NS	750	87	NS	ug/l	< 200 U	144 J	193 J	99.5 J	< 200 U	< 200 U
Iron	7439-89-6	NS	NS	1000	NS	ug/l	122 J	174 J	202	121 J	152 J	163 J
Lead	7439-92-1	15	13980	0.545	NS	ug/l	< 15.0 U	< 15.0 U	2.4 J	< 15.0 U	< 15.0 U	< 15.0 U
Magnesium	7439-95-4	NS	NS	NS	NS	ug/l	17800	25100	25100	25400	23500	24100
Manganese	7439-96-5	NS	NS	NS	NS	ug/l	200	251	204	114	567	99.1
Nickel	7440-02-0	100	145	16.1	NS	ug/l	2.7 J	< 10.0 U	< 10.0 U	1.1 J	< 10.0 U	4.3 J
Potassium	7440-09-7	NS	NS	NS	NS	ug/l	3040	3460	3480	3460	3220	3340
Silver	7440-22-4	100	0.3740	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Sodium	7440-23-5	NS	NS	NS	NS	ug/l	24500	42400	42200	42400	32400	32200
Thallium	7440-28-0	0.24	NS	NS	NS	ug/l	**4.9 J**	< 30.0 U	< 30.0 U	< 30.0 U	**5.0 J**	< 30.0 U
Antimony	7440-36-0	5.6	NS	NS	NS	ug/l	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U
Arsenic	7440-38-2	10	340	150	NS	ug/l	6.0 J	7.5 J	9.6 J	< 20.0 U	5.2 J	< 20.0 U
Barium	7440-39-3	1000	NS	NS	NS	ug/l	65.0	84.6	86.1	82.8	86.8	95.0
Beryllium	7440-41-7	4	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Cadmium	7440-43-9	5	0.52	0.097	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Chromium	7440-47-3	100	NS	NS	NS	ug/l	3.5 J	< 15.0 U	1.4 J	1.5 J	< 15.0 U	10.1 J
Cobalt	7440-48-4	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Copper	7440-50-8	1300	3.79	2.85	NS	ug/l	< 10.0 U	< 10.0 U	< 10.0 U	1.8 J	< 10.0 U	< 10.0 U
Vanadium	7440-62-2	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Zinc	7440-66-6	2000	37	37	NS	ug/l	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U
Calcium	7440-70-2	NS	NS	NS	NS	ug/l	55900	99400	99700	96700	87800	89600
Selenium	7782-49-2	50	20	5	NS	ug/l	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U
Mercury	7439-97-6	0.05	1.7	0.91	NS	ug/l	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
Pesticides by EPA 8081A												
Heptachlor Epoxide	1024-57-3	0.0003900	0.2600	0.003800	NS	ug/l	< 0.0099 U	< 0.0099 U	< 0.0098 U	< 0.0097 U	< 0.010 U	< 0.011 U
Endosulfan Sulfate	1031-07-8	62.00	NS	NS	NS	ug/l	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U	< 0.021 U	< 0.022 U
Aldrin	309-00-2	0.0004900	1.500	NS	NS	ug/l	< 0.0099 U	< 0.0099 U	< 0.0098 U	< 0.0097 U	< 0.010 U	< 0.011 U
Alpha-Bhc	319-84-6	0.02600	NS	NS	NS	ug/l	< 0.0099 U	< 0.0099 U	< 0.0098 U	< 0.0097 U	< 0.010 U	< 0.011 U
Beta-Bhc	319-85-7	0.09100	NS	NS	NS	ug/l	< 0.0099 U	< 0.0099 U	< 0.0098 U	< 0.0097 U	< 0.010 U	< 0.011 U
Delta-Bhc	319-86-8	0.2000	NS	NS	NS	ug/l	< 0.0099 U	< 0.0099 U	< 0.0098 U	< 0.0097 U	< 0.010 U	< 0.011 U
Endosulfan II	33213-65-9	62.00	0.1100	0.05600	NS	ug/l	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U	< 0.021 U	< 0.022 U
DDT	50-29-3	0.002200	0.5000	0.001000	NS	ug/l	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U	< 0.021 U	< 0.022 U
alpha-Chlordane	5103-71-9	0.008000	NS	NS	NS	ug/l	< 0.0099 U	< 0.0099 U	< 0.0098 U	< 0.0097 U	< 0.010 U	< 0.011 U
Endrin Ketone	53494-70-5	NS	NS	NS	NS	ug/l	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U	< 0.021 U	< 0.022 U
gamma-Chlordane	5566-34-7	0.008000	NS	NS	NS	ug/l	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U	< 0.021 U	< 0.022 U
gamma-BHC (Lindane)	58-89-9	0.2000	0.9500	NS	NS	ug/l	< 0.0099 U	< 0.0099 U	< 0.0098 U	< 0.0097 U	< 0.010 U	< 0.011 U
Dieldrin	60-57-1	0.0005200	0.2400	0.05600	NS	ug/l	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U	< 0.021 U	< 0.022 U
Endrin	72-20-8	0.05900	0.04300	0.003600	NS	ug/l	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U	< 0.021 U	< 0.022 U
Methoxychlor	72-43-5	40.00	NS	0.03000	NS	ug/l	< 0.099 U	< 0.099 U	< 0.098 U	< 0.097 U	< 0.10 U	< 0.11 U
4,4-DDD	72-54-8	0.003100	NS	NS	NS	ug/l	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U	< 0.021 U	< 0.022 U
4,4-DDE	72-55-9	0.002200	NS	NS	NS	ug/l	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U	< 0.021 U	< 0.022 U
Endrin Aldehyde	7421-93-4	0.2900	NS	NS	NS	ug/l	< 0.099 U	< 0.099 U	< 0.098 U	< 0.097 U	< 0.10 U	< 0.11 U
Heptachlor	76-44-8	0.0007900	0.2600	0.003800	NS	ug/l	< 0.0099 U	< 0.0099 U	< 0.0098 U	< 0.0097 U	< 0.010 U	< 0.011 U
Toxaphene	8001-35-2	0.002800	0.7300	0.0002000	NS	ug/l	< 3.0 U	< 3.0 U	< 2.9 U	< 2.9 U	< 3.1 U	< 3.3 U
Endosulfan I	959-98-8	62.00	0.1100	0.05600	NS	ug/l	< 0.0099 U	< 0.0099 U	< 0.0098 U	< 0.0097 U	< 0.010 U	< 0.011 U
Herbicides by EPA 8151A												

Table 2
Huntley Channel Assessment - Surface Water Sample Analytical Results
Silvertip Pipeline Incident Response

						Location	HUMT-P0-SW-1-A	HUMT-P1-SW-1-A	HUMT-P1-SW-2-A	HUMT-P1-SW-3-A	HUMT-P2N-SW-1-A	HUMT-P2N-SW-2-A
						Sample Name	HUMT-P0-SW(031712)1-A	HUMT-P1-SW(031712)1-A	HUMT-P1-SW(031812)2-A	HUMT-P1-SW(031812)3-A	HUMT-P2N-SW(031812)1-A	HUMT-P2N-SW(031812)2-A
						Date	3/17/2012	3/17/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012
						SDG	1296417	1296417	1296417	1296417	1296417	1296417
						Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
Chemical	Chemical Registry Number	DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water	DEQ-7 Aquatic Life Standards - Acute	DEQ-7 Aquatic Life Standards - Chronic	Tier 1 Groundwater RBSLs and Standards Table	Units						
Dinoseb	88-85-7	7.000	NS	NS	NS	ug/l	---	---	< 0.49 U	< 0.49 U	< 0.54 U	< 0.53 U
2,4,5-TP	93-72-1	10.00	NS	NS	NS	ug/l	---	---	< 0.049 U	< 0.049 U	< 0.054 U	< 0.053 U
2,4,5-T	93-76-5	70.00	NS	NS	NS	ug/l	---	---	< 0.049 U	< 0.049 U	< 0.054 U	< 0.053 U
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	70.00	NS	NS	NS	ug/l	---	---	< 0.49 U	< 0.49 U	< 0.54 U	< 0.53 U
Volatile Organic Compounds by EPA 8260B												
Ethylbenzene	100-41-4	530.0	NS	NS	700.0	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Styrene	100-42-5	100.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,3-Dichloropropene	10061-01-5	3.400	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,3-Dichloropropene	10061-02-6	2.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
N-Propylbenzene	103-65-1	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
N-Butylbenzene	104-51-8	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Chlorotoluene	106-43-4	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,4-Dichlorobenzene	106-46-7	75.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane (EDB)	106-93-4	0.004000	NS	NS	0.004000	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Allyl chloride	107-05-1	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloroethane	107-06-2	3.800	NS	NS	4.000	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Methyl-2-pentanone (MIBK)	108-10-1	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
1,3,5-Trimethylbenzene	108-67-8	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromobenzene	108-86-1	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Toluene	108-88-3	1000.0	NS	NS	1000.0	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chlorobenzene	108-90-7	100.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tetrahydrofuran	109-99-9	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
1,2,4-Trichlorobenzene	120-82-1	35.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chlorodibromomethane	124-48-1	4.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tetrachloroethene	127-18-4	5.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Xylenes, Total	1330-20-7	10000.0	NS	NS	10000.0	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
sec-Butylbenzene	135-98-8	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichloropropane	142-28-9	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	156-59-2	70.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	156-60-5	100.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Methyl-Tert-Butylether	1634-04-4	30.00	NS	NS	30.00	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichlorobenzene	541-73-1	320.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Carbon Tetrachloride	56-23-5	2.300	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloropropene	563-58-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2,2-Dichloropropane	594-20-7	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Diethyl ether (Ethyl ether)	60-29-7	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,1,2-Tetrachloroethane	630-20-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Acetone	67-64-1	NS	NS	NS	NS	ug/l	< 5.0 U	4.1 J	3.7 J	3.3 J	< 5.0 U	< 5.0 U
Chloroform	67-66-3	57.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Benzene	71-43-2	5.000	NS	NS	5.000	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,1-Trichloroethane	71-55-6	200.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromomethane	74-83-9	47.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloromethane	74-87-3	30.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromomethane	74-95-3	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromochloromethane	74-97-5	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroethane	75-00-3	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Vinyl Chloride	75-01-4	0.2500	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Methylene Chloride	75-09-2	5.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tribromomethane	75-25-2	43.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromodichloromethane	75-27-4	5.500	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethane	75-34-3	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U

Table 2
Huntley Channel Assessment - Surface Water Sample Analytical Results
Silvertip Pipeline Incident Response

						Location	HUMT-P0-SW-1-A	HUMT-P1-SW-1-A	HUMT-P1-SW-2-A	HUMT-P1-SW-3-A	HUMT-P2N-SW-1-A	HUMT-P2N-SW-2-A
						Sample Name	HUMT-P0-SW(031712)1-A	HUMT-P1-SW(031712)1-A	HUMT-P1-SW(031812)2-A	HUMT-P1-SW(031812)3-A	HUMT-P2N-SW(031812)1-A	HUMT-P2N-SW(031812)2-A
						Date	3/17/2012	3/17/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012
						SDG	1296417	1296417	1296417	1296417	1296417	1296417
						Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
Chemical	Chemical Registry Number	DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water	DEQ-7 Aquatic Life Standards - Acute	DEQ-7 Aquatic Life Standards - Chronic	Tier 1 Groundwater RBSLs and Standards Table	Units						
1,1-Dichloroethene	75-35-4	0.5700	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorofluoromethane	75-43-4	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichlorofluoromethane (CFC-11)	75-69-4	10000.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane (CFC-12)	75-71-8	1000.0	NS	NS	NS	ug/l	< 0.5 UJ-	< 0.5 UJ-	< 0.5 UJ-	< 0.5 UJ-	< 0.5 UJ-	< 0.5 UJ-
1,1,2-Trichlorotrifluoroethane	76-13-1	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloropropane	78-87-5	5.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Butanone (MEK)	78-93-3	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
1,1,2-Trichloroethane	79-00-5	3.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	79-01-6	5.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	79-34-5	1.700	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichlorobenzene	87-61-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Hexachloro-1,3-Butadiene	87-68-3	4.400	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Naphthalene	91-20-3	100.0	NS	NS	100.0	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	95-50-1	420.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trimethylbenzene	95-63-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromo-3-Chloropropane	96-12-8	0.2000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichloropropane	96-18-4	NS	NS	NS	NS	ug/l	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tert-Butylbenzene	98-06-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Isopropylbenzene (Cumene)	98-82-8	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
p-Isopropyltoluene	99-87-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Semi Volatile Organic Compounds by EPA 8270												
4-Nitroaniline	100-01-6	NS	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
4-Nitrophenol	100-02-7	60.00	NS	NS	NS	ug/l	< 30 U	---	< 29 U	< 30 U	< 31 U	< 32 U
4-Bromophenyl Phenyl Ether	101-55-3	NS	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
2,4-Dimethylphenol	105-67-9	380.0	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
4-Methylphenol	106-44-5	NS	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	106-46-7	75.00	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
4-Chloroaniline	106-47-8	NS	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
bis(2-Chloroisopropyl) ether	108-60-1	1400.0	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Phenol	108-95-2	300.0	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Bis(2-Chloroethyl)ether	111-44-4	0.3000	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Bis(2-Chloroethoxy)methane	111-91-1	NS	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Bis(2-Ethylhexyl)phthalate	117-81-7	6.000	NS	NS	NS	ug/l	< 5 U	---	< 5 U	< 5 U	< 5 U	< 5 U
Di-n-Octyl Phthalate	117-84-0	NS	NS	NS	NS	ug/l	< 5 U	---	< 5 U	< 5 U	< 5 U	< 5 U
Hexachlorobenzene	118-74-1	0.002800	NS	NS	NS	ug/l	< 0.5 U	---	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Anthracene	120-12-7	8300.0	NS	NS	2100.0	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
1,2,4-Trichlorobenzene	120-82-1	35.00	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
2,4-Dichlorophenol	120-83-2	77.00	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
2,4-Dinitrotoluene	121-14-2	1.100	NS	NS	NS	ug/l	< 5 U	---	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Diphenylhydrazine	122-66-7	0.3600	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Pyrene	129-00-0	830.0	NS	NS	830.0	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
Dimethyl Phthalate	131-11-3	270000.0	NS	NS	NS	ug/l	< 5 U	---	< 5 U	< 5 U	< 5 U	< 5 U
Dibenzofuran	132-64-9	NS	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Benzo(g,h,i)Perylene	191-24-2	NS	NS	NS	NS	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
Indeno(1,2,3-cd)Pyrene	193-39-5	0.03800	NS	NS	0.5000	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
Benzo(b)fluoranthene	205-99-2	0.03800	NS	NS	0.5000	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
Fluoranthene	206-44-0	130.0	NS	NS	130.0	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
Benzo(k)Fluoranthene	207-08-9	0.03800	NS	NS	5.000	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
Acenaphthylene	208-96-8	NS	NS	NS	NS	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
Chrysene	218-01-9	0.03800	NS	NS	50.00	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
Benzo(a)Pyrene	50-32-8	0.03800	NS	NS	0.05000	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U

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						Sample Name	HUMT-P0-SW(031712)1-A	HUMT-P1-SW(031712)1-A	HUMT-P1-SW(031812)2-A	HUMT-P1-SW(031812)3-A	HUMT-P2N-SW(031812)1-A	HUMT-P2N-SW(031812)2-A
						Date	3/17/2012	3/17/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012
						SDG	1296417	1296417	1296417	1296417	1296417	1296417
						Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
Chemical	Chemical Registry Number	DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water	DEQ-7 Aquatic Life Standards - Acute	DEQ-7 Aquatic Life Standards - Chronic	Tier 1 Groundwater RBSLs and Standards Table	Units						
2,4-Dinitrophenol	51-28-5	69.00	NS	NS	NS	ug/l	< 30 U	---	< 29 U	< 30 U	< 31 U	< 32 U
4,6-Dinitro-2-methylphenol	534-52-1	13.00	NS	NS	NS	ug/l	< 15 U	---	< 14 U	< 15 U	< 16 U	< 16 U
Dibenzo(a,h)Anthracene	53-70-3	0.03800	NS	NS	NS	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
1,3-Dichlorobenzene	541-73-1	320.0	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Benzo(a)Anthracene	56-55-3	0.03800	NS	NS	0.5000	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
4-Chloro-3-Methylphenol	59-50-7	3000.0	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
2,6-Dinitrotoluene	606-20-2	0.5000	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
N-Nitroso-di-n-propylamine	621-64-7	0.05000	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
N-Nitrosodimethylamine	62-75-9	0.006900	NS	NS	NS	ug/l	< 5 U	---	< 5 U	< 5 U	< 5 U	< 5 U
Hexachloroethane	67-72-1	14.00	NS	NS	NS	ug/l	< 5 U	---	< 5 U	< 5 U	< 5 U	< 5 U
4-Chlorophenyl Phenyl Ether	7005-72-3	NS	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Isophorone	78-59-1	350.0	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Acenaphthene	83-32-9	670.0	NS	NS	670.0	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
Diethyl Phthalate	84-66-2	17000.0	NS	NS	NS	ug/l	< 5 U	---	< 5 U	< 5 U	< 5 U	< 5 U
Di-N-Butyl Phthalate	84-74-2	2000.0	NS	NS	NS	ug/l	< 5 U	---	< 5 U	< 5 U	< 5 U	< 5 U
Phenanthrene	85-01-8	NS	NS	NS	NS	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
Butylbenzylphthalate	85-68-7	1500.0	NS	NS	NS	ug/l	< 5 U	---	< 5 U	< 5 U	< 5 U	< 5 U
N-nitrosodiphenylamine	86-30-6	33.00	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Fluorene	86-73-7	1100.0	NS	NS	1100.0	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
Carbazole	86-74-8	NS	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Hexachloro-1,3-Butadiene	87-68-3	4.400	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Pentachlorophenol	87-86-5	1.000	5.300	4.000	NS	ug/l	< 5 U	---	< 5 U	< 5 U	< 5 U	< 5 U
2,4,6-Trichlorophenol	88-06-2	14.00	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
2-Nitroaniline	88-74-4	NS	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
2-Nitrophenol	88-75-5	NS	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
1-Methylnaphthalene	90-12-0	NS	NS	NS	NS	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
Naphthalene	91-20-3	100.0	NS	NS	100.0	ug/l	< 0.051 U	0.082	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
2-Methylnaphthalene	91-57-6	NS	NS	NS	NS	ug/l	< 0.051 U	< 0.048 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.051 U
2-Chloronaphthalene	91-58-7	1000.0	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
3,3'-Dichlorobenzidine	91-94-1	0.2100	NS	NS	NS	ug/l	< 5 U	---	< 5 U	< 5 U	< 5 U	< 5 U
2-Methylphenol(o-Cresol)	95-48-7	NS	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	95-50-1	420.0	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
2-Chlorophenol	95-57-8	81.00	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
2,4,5-Trichlorophenol	95-95-4	1800.0	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Nitrobenzene	98-95-3	17.00	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
3-Nitroaniline	99-09-2	NS	NS	NS	NS	ug/l	< 1 U	---	< 1 U	< 1 U	< 1 U	< 1 U
Petroleum Hydrocarbons by MADEP VPH/EPH												
Total Extractable Hydrocarbons	ARC-EPH	NS	NS	NS	1000.0	ug/l	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U
Aliphatic (C05-C08).Unadjusted	ARC-C5-C8ALIUNA	NS	NS	NS	700.0	ug/l	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Aliphatic (C09-C12).Unadjusted	ARC-C9-C12ALIUN	NS	NS	NS	1000.0	ug/l	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Total Purgeable Hydrocarbons	ARC-PPH	NS	NS	NS	NS	ug/l	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
C9-C10 Aromatics	C9-C10-A	NS	NS	NS	1000.0	ug/l	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U

Table 2
Huntley Channel Assessment - Surface Water Sample Analytical Results
Silvertip Pipeline Incident Response

						Location	HUMT-P2S-SW-1-A	HUMT-P2S-SW-2-A	HUMT-P3-SW-1-A	HUMT-P3-SW-2-A	HUMT-P3-SW-3-A	HUMT-P4-SW-1-A	HUMT-P5-SW-1-A
						Sample Name	HUMT-P2S-SW(031812)1-A	HUMT-P2S-SW(031812)2-A	HUMT-P3-SW(031812)1-A	HUMT-P3-SW(031812)2-A	HUMT-P3-SW(031812)3-A	HUMT-P4-SW(031812)1-A	HUMT-P5-SW(031812)1-A
						Date	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012
						SDG	1296417	1296417	1296417	1296417	1296417	1296417	1296417
						Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Chemical	Chemical Registry Number	DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water	DEQ-7 Aquatic Life Standards - Acute	DEQ-7 Aquatic Life Standards - Chronic	Tier 1 Groundwater RBSLs and Standards Table	Units							
Metals By EPA 6010 and EPA 7470A													
Aluminum	7429-90-5	NS	750	87	NS	ug/l	< 200 U	< 200 U	< 200 U	< 200 U	103 J	< 200 U	110 J
Iron	7439-89-6	NS	NS	1000	NS	ug/l	389	537	175 J	143 J	161 J	68.0 J	453
Lead	7439-92-1	15	13980	0.545	NS	ug/l	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U
Magnesium	7439-95-4	NS	NS	NS	NS	ug/l	26400	24400	22500	22400	22400	21200	24400
Manganese	7439-96-5	NS	NS	NS	NS	ug/l	469	389	154	71.1	78.5	155	1380
Nickel	7440-02-0	100	145	16.1	NS	ug/l	< 10.0 U	1.4 J	0.99 J	< 10.0 U	< 10.0 U	< 10.0 U	1.5 J
Potassium	7440-09-7	NS	NS	NS	NS	ug/l	3420	3330	2770	2840	2850	3060	3090
Silver	7440-22-4	100	0.3740	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Sodium	7440-23-5	NS	NS	NS	NS	ug/l	31400	32600	34300	33700	33700	31800	32500
Thallium	7440-28-0	0.24	NS	NS	NS	ug/l	< 30.0 U	**4.4 J**	**4.2 J**	< 30.0 U	< 30.0 U	< 30.0 U	**4.4 J**
Antimony	7440-36-0	5.6	NS	NS	NS	ug/l	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U
Arsenic	7440-38-2	10	340	150	NS	ug/l	7.6 J	**12.1 J**	8.5 J	9.4 J	6.5 J	7.3 J	**12.5 J**
Barium	7440-39-3	1000	NS	NS	NS	ug/l	123	138	76.5	73.5	75.1	80.5	123
Beryllium	7440-41-7	4	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Cadmium	7440-43-9	5	0.52	0.097	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Chromium	7440-47-3	100	NS	NS	NS	ug/l	< 15.0 U	2.4 J	1.2 J	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U
Cobalt	7440-48-4	NS	NS	NS	NS	ug/l	0.78 J	0.88 J	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	1.2 J
Copper	7440-50-8	1300	3.79	2.85	NS	ug/l	< 10.0 U	< 10.0 U	0.95 J	2.1 J	< 10.0 U	8.0 J	< 10.0 U
Vanadium	7440-62-2	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Zinc	7440-66-6	2000	37	37	NS	ug/l	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U
Calcium	7440-70-2	NS	NS	NS	NS	ug/l	92000	92600	84800	81700	81700	74100	91300
Selenium	7782-49-2	50	20	5	NS	ug/l	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U	< 20.0 U
Mercury	7439-97-6	0.05	1.7	0.91	NS	ug/l	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
Pesticides by EPA 8081A													
Heptachlor Epoxide	1024-57-3	0.0003900	0.2600	0.003800	NS	ug/l	< 0.0098 U	< 0.011 U	< 0.0097 U	< 0.0099 U	< 0.010 U	< 0.010 U	< 0.0095 U
Endosulfan Sulfate	1031-07-8	62.00	NS	NS	NS	ug/l	< 0.020 U	< 0.021 U	< 0.019 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U
Aldrin	309-00-2	0.0004900	1.500	NS	NS	ug/l	< 0.0098 U	< 0.011 U	< 0.0097 U	< 0.0099 U	< 0.010 U	< 0.010 U	< 0.0095 U
Alpha-Bhc	319-84-6	0.02600	NS	NS	NS	ug/l	< 0.0098 U	< 0.011 U	< 0.0097 U	< 0.0099 U	< 0.010 U	< 0.010 U	< 0.0095 U
Beta-Bhc	319-85-7	0.09100	NS	NS	NS	ug/l	< 0.0098 U	< 0.011 U	< 0.0097 U	< 0.0099 U	< 0.010 U	< 0.010 U	< 0.0095 U
Delta-Bhc	319-86-8	0.2000	NS	NS	NS	ug/l	< 0.0098 U	< 0.011 U	< 0.0097 U	< 0.0099 U	< 0.010 U	< 0.010 U	< 0.0095 U
Endosulfan II	33213-65-9	62.00	0.1100	0.05600	NS	ug/l	< 0.020 U	< 0.021 U	< 0.019 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U
DDT	50-29-3	0.002200	0.5000	0.001000	NS	ug/l	< 0.020 U	< 0.021 U	< 0.019 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U
alpha-Chlordane	5103-71-9	0.008000	NS	NS	NS	ug/l	< 0.0098 U	< 0.011 U	< 0.0097 U	< 0.0099 U	< 0.010 U	< 0.010 U	< 0.0095 U
Endrin Ketone	53494-70-5	NS	NS	NS	NS	ug/l	< 0.020 U	< 0.021 U	< 0.019 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U
gamma-Chlordane	5566-34-7	0.008000	NS	NS	NS	ug/l	< 0.020 U	< 0.021 U	< 0.019 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U
gamma-BHC (Lindane)	58-89-9	0.2000	0.9500	NS	NS	ug/l	< 0.0098 U	< 0.011 U	< 0.0097 U	< 0.0099 U	< 0.010 U	< 0.010 U	< 0.0095 U
Dieldrin	60-57-1	0.0005200	0.2400	0.05600	NS	ug/l	< 0.020 U	< 0.021 U	< 0.019 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U
Endrin	72-20-8	0.05900	0.04300	0.003600	NS	ug/l	< 0.020 U	< 0.021 U	< 0.019 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U
Methoxychlor	72-43-5	40.00	NS	0.03000	NS	ug/l	< 0.098 U	< 0.11 U	< 0.097 U	< 0.099 U	< 0.10 U	< 0.10 U	< 0.095 U
4,4-DDD	72-54-8	0.003100	NS	NS	NS	ug/l	< 0.020 U	< 0.021 U	< 0.019 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U
4,4-DDE	72-55-9	0.002200	NS	NS	NS	ug/l	< 0.020 U	< 0.021 U	< 0.019 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.019 U
Endrin Aldehyde	7421-93-4	0.2900	NS	NS	NS	ug/l	< 0.098 U	< 0.11 U	< 0.097 U	< 0.099 U	< 0.10 U	< 0.10 U	< 0.095 U
Heptachlor	76-44-8	0.0007900	0.2600	0.003800	NS	ug/l	< 0.0098 U	< 0.011 U	< 0.0097 U	< 0.0099 U	< 0.010 U	< 0.010 U	< 0.0095 U
Toxaphene	8001-35-2	0.002800	0.7300	0.0002000	NS	ug/l	< 2.9 U	< 3.2 U	< 2.9 U	< 3.0 U	< 3.0 U	< 3.0 U	< 2.9 U
Endosulfan I	959-98-8	62.00	0.1100	0.05600	NS	ug/l	< 0.0098 U	< 0.011 U	< 0.0097 U	< 0.0099 U	< 0.010 U	< 0.010 U	< 0.0095 U
Herbicides by EPA 8151A													

Table 2

Huntley Channel Assessment - Surface Water Sample Analytical Results

Silvertip Pipeline Incident Response

						Location	HUMT-P2S-SW-1-A	HUMT-P2S-SW-2-A	HUMT-P3-SW-1-A	HUMT-P3-SW-2-A	HUMT-P3-SW-3-A	HUMT-P4-SW-1-A	HUMT-P5-SW-1-A
						Sample Name	HUMT-P2S-SW(031812)1-A	HUMT-P2S-SW(031812)2-A	HUMT-P3-SW(031812)1-A	HUMT-P3-SW(031812)2-A	HUMT-P3-SW(031812)3-A	HUMT-P4-SW(031812)1-A	HUMT-P5-SW(031812)1-A
						Date	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012
						SDG	1296417	1296417	1296417	1296417	1296417	1296417	1296417
						Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Chemical	Chemical Registry Number	DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water	DEQ-7 Aquatic Life Standards - Acute	DEQ-7 Aquatic Life Standards - Chronic	Tier 1 Groundwater RBSLs and Standards Table	Units							
Dinoseb	88-85-7	7.000	NS	NS	NS	ug/l	< 0.50 U	< 0.52 U	< 0.49 U	< 0.51 U	< 0.51 U	< 0.50 U	< 0.50 U
2,4,5-TP	93-72-1	10.00	NS	NS	NS	ug/l	< 0.050 U	< 0.052 U	< 0.049 U	< 0.051 U	< 0.051 U	< 0.050 U	< 0.050 U
2,4,5-T	93-76-5	70.00	NS	NS	NS	ug/l	< 0.050 U	< 0.052 U	< 0.049 U	< 0.051 U	< 0.051 U	< 0.050 U	< 0.050 U
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	70.00	NS	NS	NS	ug/l	< 0.50 U	< 0.52 U	< 0.49 U	< 0.51 U	< 0.51 U	< 0.50 U	< 0.50 U
Volatile Organic Compounds by EPA 8260B													
Ethylbenzene	100-41-4	530.0	NS	NS	700.0	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Styrene	100-42-5	100.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,3-Dichloropropene	10061-01-5	3.400	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,3-Dichloropropene	10061-02-6	2.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
N-Propylbenzene	103-65-1	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
N-Butylbenzene	104-51-8	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Chlorotoluene	106-43-4	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,4-Dichlorobenzene	106-46-7	75.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane (EDB)	106-93-4	0.004000	NS	NS	0.004000	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Allyl chloride	107-05-1	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloroethane	107-06-2	3.800	NS	NS	4.000	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Methyl-2-pentanone (MIBK)	108-10-1	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
1,3,5-Trimethylbenzene	108-67-8	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromobenzene	108-86-1	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Toluene	108-88-3	1000.0	NS	NS	1000.0	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chlorobenzene	108-90-7	100.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tetrahydrofuran	109-99-9	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
1,2,4-Trichlorobenzene	120-82-1	35.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chlorodibromomethane	124-48-1	4.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tetrachloroethene	127-18-4	5.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Xylenes, Total	1330-20-7	10000.0	NS	NS	10000.0	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
sec-Butylbenzene	135-98-8	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichloropropane	142-28-9	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	156-59-2	70.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	156-60-5	100.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Methyl-Tert-Butylether	1634-04-4	30.00	NS	NS	30.00	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichlorobenzene	541-73-1	320.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Carbon Tetrachloride	56-23-5	2.300	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloropropene	563-58-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2,2-Dichloropropane	594-20-7	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Diethyl ether (Ethyl ether)	60-29-7	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,1,2-Tetrachloroethane	630-20-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Acetone	67-64-1	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Chloroform	67-66-3	57.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Benzene	71-43-2	5.000	NS	NS	5.000	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,1-Trichloroethane	71-55-6	200.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromomethane	74-83-9	47.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloromethane	74-87-3	30.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromomethane	74-95-3	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromochloromethane	74-97-5	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroethane	75-00-3	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Vinyl Chloride	75-01-4	0.2500	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Methylene Chloride	75-09-2	5.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tribromomethane	75-25-2	43.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromodichloromethane	75-27-4	5.500	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethane	75-34-3	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U

Table 2
Huntley Channel Assessment - Surface Water Sample Analytical Results
Silvertip Pipeline Incident Response

						Location	HUMT-P2S-SW-1-A	HUMT-P2S-SW-2-A	HUMT-P3-SW-1-A	HUMT-P3-SW-2-A	HUMT-P3-SW-3-A	HUMT-P4-SW-1-A	HUMT-P5-SW-1-A
						Sample Name	HUMT-P2S-SW(031812)1-A	HUMT-P2S-SW(031812)2-A	HUMT-P3-SW(031812)1-A	HUMT-P3-SW(031812)2-A	HUMT-P3-SW(031812)3-A	HUMT-P4-SW(031812)1-A	HUMT-P5-SW(031812)1-A
						Date	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012
						SDG	1296417	1296417	1296417	1296417	1296417	1296417	1296417
						Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Chemical	Chemical Registry Number	DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water	DEQ-7 Aquatic Life Standards - Acute	DEQ-7 Aquatic Life Standards - Chronic	Tier 1 Groundwater RBSLs and Standards Table	Units							
1,1-Dichloroethene	75-35-4	0.5700	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorofluoromethane	75-43-4	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichlorofluoromethane (CFC-11)	75-69-4	10000.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane (CFC-12)	75-71-8	1000.0	NS	NS	NS	ug/l	< 0.5 UJ-	< 0.5 UJ-	< 0.5 UJ-	< 0.5 UJ-	< 0.5 UJ-	< 0.5 UJ-	< 0.5 UJ-
1,1,2-Trichlorotrifluoroethane	76-13-1	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloropropane	78-87-5	5.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Butanone (MEK)	78-93-3	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
1,1,2-Trichloroethane	79-00-5	3.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	79-01-6	5.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	79-34-5	1.700	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichlorobenzene	87-61-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Hexachloro-1,3-Butadiene	87-68-3	4.400	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Naphthalene	91-20-3	100.0	NS	NS	100.0	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	95-50-1	420.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trimethylbenzene	95-63-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromo-3-Chloropropane	96-12-8	0.2000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichloropropane	96-18-4	NS	NS	NS	NS	ug/l	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tert-Butylbenzene	98-06-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Isopropylbenzene (Cumene)	98-82-8	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
p-Isopropyltoluene	99-87-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Semi Volatile Organic Compounds by EPA 8270													
4-Nitroaniline	100-01-6	NS	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
4-Nitrophenol	100-02-7	60.00	NS	NS	NS	ug/l	< 30 U	< 32 U	< 29 U	< 30 U	< 30 U	< 30 U	< 29 U
4-Bromophenyl Phenyl Ether	101-55-3	NS	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2,4-Dimethylphenol	105-67-9	380.0	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
4-Methylphenol	106-44-5	NS	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	106-46-7	75.00	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
4-Chloroaniline	106-47-8	NS	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
bis(2-Chloroisopropyl) ether	108-60-1	1400.0	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Phenol	108-95-2	300.0	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bis(2-Chloroethyl)ether	111-44-4	0.3000	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bis(2-Chloroethoxy)methane	111-91-1	NS	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bis(2-Ethylhexyl)phthalate	117-81-7	6.000	NS	NS	NS	ug/l	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Di-n-Octyl Phthalate	117-84-0	NS	NS	NS	NS	ug/l	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Hexachlorobenzene	118-74-1	0.002800	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Anthracene	120-12-7	8300.0	NS	NS	2100.0	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
1,2,4-Trichlorobenzene	120-82-1	35.00	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2,4-Dichlorophenol	120-83-2	77.00	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2,4-Dinitrotoluene	121-14-2	1.100	NS	NS	NS	ug/l	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Diphenylhydrazine	122-66-7	0.3600	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Pyrene	129-00-0	830.0	NS	NS	830.0	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
Dimethyl Phthalate	131-11-3	270000.0	NS	NS	NS	ug/l	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dibenzofuran	132-64-9	NS	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzo(g,h,i)Perylene	191-24-2	NS	NS	NS	NS	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
Indeno(1,2,3-cd)Pyrene	193-39-5	0.03800	NS	NS	0.5000	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
Benzo(b)fluoranthene	205-99-2	0.03800	NS	NS	0.5000	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
Fluoranthene	206-44-0	130.0	NS	NS	130.0	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
Benzo(k)Fluoranthene	207-08-9	0.03800	NS	NS	5.000	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
Acenaphthylene	208-96-8	NS	NS	NS	NS	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
Chrysene	218-01-9	0.03800	NS	NS	50.00	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
Benzo(a)Pyrene	50-32-8	0.03800	NS	NS	0.05000	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U

Table 2
Huntley Channel Assessment - Surface Water Sample Analytical Results
Silvertip Pipeline Incident Response

						Location	HUMT-P2S-SW-1-A	HUMT-P2S-SW-2-A	HUMT-P3-SW-1-A	HUMT-P3-SW-2-A	HUMT-P3-SW-3-A	HUMT-P4-SW-1-A	HUMT-P5-SW-1-A
						Sample Name	HUMT-P2S-SW(031812)1-A	HUMT-P2S-SW(031812)2-A	HUMT-P3-SW(031812)1-A	HUMT-P3-SW(031812)2-A	HUMT-P3-SW(031812)3-A	HUMT-P4-SW(031812)1-A	HUMT-P5-SW(031812)1-A
						Date	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012
						SDG	1296417	1296417	1296417	1296417	1296417	1296417	1296417
						Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Chemical	Chemical Registry Number	DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water	DEQ-7 Aquatic Life Standards - Acute	DEQ-7 Aquatic Life Standards - Chronic	Tier 1 Groundwater RBSLs and Standards Table	Units							
2,4-Dinitrophenol	51-28-5	69.00	NS	NS	NS	ug/l	< 30 U	< 32 U	< 29 U	< 30 U	< 30 U	< 30 U	< 29 U
4,6-Dinitro-2-methylphenol	534-52-1	13.00	NS	NS	NS	ug/l	< 15 U	< 16 U	< 14 U	< 15 U	< 15 U	< 15 U	< 14 U
Dibenzo(a,h)Anthracene	53-70-3	0.03800	NS	NS	NS	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
1,3-Dichlorobenzene	541-73-1	320.0	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzo(a)Anthracene	56-55-3	0.03800	NS	NS	0.5000	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
4-Chloro-3-Methylphenol	59-50-7	3000.0	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2,6-Dinitrotoluene	606-20-2	0.5000	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
N-Nitroso-di-n-propylamine	621-64-7	0.05000	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
N-Nitrosodimethylamine	62-75-9	0.006900	NS	NS	NS	ug/l	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Hexachloroethane	67-72-1	14.00	NS	NS	NS	ug/l	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Chlorophenyl Phenyl Ether	7005-72-3	NS	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isophorone	78-59-1	350.0	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Acenaphthene	83-32-9	670.0	NS	NS	670.0	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
Diethyl Phthalate	84-66-2	17000.0	NS	NS	NS	ug/l	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Di-N-Butyl Phthalate	84-74-2	2000.0	NS	NS	NS	ug/l	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Phenanthrene	85-01-8	NS	NS	NS	NS	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
Butylbenzylphthalate	85-68-7	1500.0	NS	NS	NS	ug/l	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
N-nitrosodiphenylamine	86-30-6	33.00	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Fluorene	86-73-7	1100.0	NS	NS	1100.0	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
Carbazole	86-74-8	NS	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Hexachloro-1,3-Butadiene	87-68-3	4.400	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Pentachlorophenol	87-86-5	1.000	5.300	4.000	NS	ug/l	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2,4,6-Trichlorophenol	88-06-2	14.00	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2-Nitroaniline	88-74-4	NS	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2-Nitrophenol	88-75-5	NS	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1-Methylnaphthalene	90-12-0	NS	NS	NS	NS	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
Naphthalene	91-20-3	100.0	NS	NS	100.0	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
2-Methylnaphthalene	91-57-6	NS	NS	NS	NS	ug/l	< 0.050 U	< 0.055 U	< 0.050 U	< 0.054 U	< 0.050 U	< 0.052 U	< 0.049 U
2-Chloronaphthalene	91-58-7	1000.0	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
3,3'-Dichlorobenzidine	91-94-1	0.2100	NS	NS	NS	ug/l	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Methylphenol(o-Cresol)	95-48-7	NS	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	95-50-1	420.0	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2-Chlorophenol	95-57-8	81.00	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2,4,5-Trichlorophenol	95-95-4	1800.0	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Nitrobenzene	98-95-3	17.00	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
3-Nitroaniline	99-09-2	NS	NS	NS	NS	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Petroleum Hydrocarbons by MADEP VPH/EPH													
Total Extractable Hydrocarbons	ARC-EPH	NS	NS	NS	1000.0	ug/l	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U
Aliphatic (C05-C08).Unadjusted	ARC-C5-C8ALIUNA	NS	NS	NS	700.0	ug/l	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Aliphatic (C09-C12).Unadjusted	ARC-C9-C12ALIUN	NS	NS	NS	1000.0	ug/l	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Total Purgeable Hydrocarbons	ARC-PPH	NS	NS	NS	NS	ug/l	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
C9-C10 Aromatics	C9-C10-A	NS	NS	NS	1000.0	ug/l	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U

Table 2
Huntley Channel Assessment - Surface Water Sample Analytical Results
Silvertip Pipeline Incident Response

						Location	HUMT-P6-SW-1-A	HUMT-P6-SW-1-A
						Sample Name	HUMT-P6-SW(031812)1-A	HUMT-P6-SW(031812)1-A-FD
						Date	3/18/2012	3/18/2012
						SDG	1296417	1296417
						Sample Type	Normal	Field Duplicate
Chemical	Chemical Registry Number	DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water	DEQ-7 Aquatic Life Standards - Acute	DEQ-7 Aquatic Life Standards - Chronic	Tier 1 Groundwater RBSLs and Standards Table	Units		
Metals By EPA 6010 and EPA 7470A								
Aluminum	7429-90-5	NS	750	87	NS	ug/l	211	90.7 J
Iron	7439-89-6	NS	NS	1000	NS	ug/l	257	147 J
Lead	7439-92-1	15	13980	0.545	NS	ug/l	< 15.0 U	< 15.0 U
Magnesium	7439-95-4	NS	NS	NS	NS	ug/l	21200	20600
Manganese	7439-96-5	NS	NS	NS	NS	ug/l	260 J	181 J
Nickel	7440-02-0	100	145	16.1	NS	ug/l	0.96 J	< 10.0 U
Potassium	7440-09-7	NS	NS	NS	NS	ug/l	3060	3030
Silver	7440-22-4	100	0.3740	NS	NS	ug/l	< 5.0 U	< 5.0 U
Sodium	7440-23-5	NS	NS	NS	NS	ug/l	30300	29700
Thallium	7440-28-0	0.24	NS	NS	NS	ug/l	< 30.0 U	< 30.0 U
Antimony	7440-36-0	5.6	NS	NS	NS	ug/l	< 20.0 U	< 20.0 U
Arsenic	7440-38-2	10	340	150	NS	ug/l	8.8 J	**12.8 J**
Barium	7440-39-3	1000	NS	NS	NS	ug/l	83.6	76.4
Beryllium	7440-41-7	4	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U
Cadmium	7440-43-9	5	0.52	0.097	NS	ug/l	< 5.0 U	< 5.0 U
Chromium	7440-47-3	100	NS	NS	NS	ug/l	1.9 J	< 15.0 U
Cobalt	7440-48-4	NS	NS	NS	NS	ug/l	0.69 J	0.65 J
Copper	7440-50-8	1300	3.79	2.85	NS	ug/l	< 10.0 U	1.2 J
Vanadium	7440-62-2	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U
Zinc	7440-66-6	2000	37	37	NS	ug/l	< 20.0 U	< 20.0 U
Calcium	7440-70-2	NS	NS	NS	NS	ug/l	74600	72400
Selenium	7782-49-2	50	20	5	NS	ug/l	< 20.0 U	< 20.0 U
Mercury	7439-97-6	0.05	1.7	0.91	NS	ug/l	< 0.20 U	< 0.20 U
Pesticides by EPA 8081A								
Heptachlor Epoxide	1024-57-3	0.0003900	0.2600	0.003800	NS	ug/l	< 0.0098 U	< 0.0097 U
Endosulfan Sulfate	1031-07-8	62.00	NS	NS	NS	ug/l	< 0.020 U	< 0.019 U
Aldrin	309-00-2	0.0004900	1.500	NS	NS	ug/l	< 0.0098 U	< 0.0097 U
Alpha-Bhc	319-84-6	0.02600	NS	NS	NS	ug/l	< 0.0098 U	< 0.0097 U
Beta-Bhc	319-85-7	0.09100	NS	NS	NS	ug/l	< 0.0098 U	< 0.0097 U
Delta-Bhc	319-86-8	0.2000	NS	NS	NS	ug/l	< 0.0098 U	< 0.0097 U
Endosulfan II	33213-65-9	62.00	0.1100	0.05600	NS	ug/l	< 0.020 U	< 0.019 U
DDT	50-29-3	0.002200	0.5000	0.001000	NS	ug/l	< 0.020 U	< 0.019 U
alpha-Chlordane	5103-71-9	0.008000	NS	NS	NS	ug/l	< 0.0098 U	< 0.0097 U
Endrin Ketone	53494-70-5	NS	NS	NS	NS	ug/l	< 0.020 U	< 0.019 U
gamma-Chlordane	5566-34-7	0.008000	NS	NS	NS	ug/l	< 0.020 U	< 0.019 U
gamma-BHC (Lindane)	58-89-9	0.2000	0.9500	NS	NS	ug/l	< 0.0098 U	< 0.0097 U
Dieldrin	60-57-1	0.0005200	0.2400	0.05600	NS	ug/l	< 0.020 U	< 0.019 U
Endrin	72-20-8	0.05900	0.04300	0.003600	NS	ug/l	< 0.020 U	< 0.019 U
Methoxychlor	72-43-5	40.00	NS	0.03000	NS	ug/l	< 0.098 U	< 0.097 U
4,4-DDD	72-54-8	0.003100	NS	NS	NS	ug/l	< 0.020 U	< 0.019 U
4,4-DDE	72-55-9	0.002200	NS	NS	NS	ug/l	< 0.020 U	< 0.019 U
Endrin Aldehyde	7421-93-4	0.2900	NS	NS	NS	ug/l	< 0.098 U	< 0.097 U
Heptachlor	76-44-8	0.0007900	0.2600	0.003800	NS	ug/l	< 0.0098 U	< 0.0097 U
Toxaphene	8001-35-2	0.002800	0.7300	0.0002000	NS	ug/l	< 2.9 U	< 2.9 U
Endosulfan I	959-98-8	62.00	0.1100	0.05600	NS	ug/l	< 0.0098 U	< 0.0097 U
Herbicides by EPA 8151A								

Table 2
Huntley Channel Assessment - Surface Water Sample Analytical Results
Silvertip Pipeline Incident Response

						Location	HUMT-P6-SW-1-A	HUMT-P6-SW-1-A
						Sample Name	HUMT-P6-SW(031812)1-A	HUMT-P6-SW(031812)1-A-FD
						Date	3/18/2012	3/18/2012
						SDG	1296417	1296417
						Sample Type	Normal	Field Duplicate
Chemical	Chemical Registry Number	DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water	DEQ-7 Aquatic Life Standards - Acute	DEQ-7 Aquatic Life Standards - Chronic	Tier 1 Groundwater RBSLs and Standards Table	Units		
Dinoseb	88-85-7	7.000	NS	NS	NS	ug/l	< 0.49 U	< 0.49 U
2,4,5-TP	93-72-1	10.00	NS	NS	NS	ug/l	< 0.049 U	< 0.049 U
2,4,5-T	93-76-5	70.00	NS	NS	NS	ug/l	< 0.049 U	< 0.049 U
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	70.00	NS	NS	NS	ug/l	< 0.49 U	< 0.49 U
Volatile Organic Compounds by EPA 8260B								
Ethylbenzene	100-41-4	530.0	NS	NS	700.0	ug/l	< 0.5 U	< 0.5 U
Styrene	100-42-5	100.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
cis-1,3-Dichloropropene	10061-01-5	3.400	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
trans-1,3-Dichloropropene	10061-02-6	2.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
N-Propylbenzene	103-65-1	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
N-Butylbenzene	104-51-8	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
4-Chlorotoluene	106-43-4	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,4-Dichlorobenzene	106-46-7	75.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,2-Dibromoethane (EDB)	106-93-4	0.004000	NS	NS	0.004000	ug/l	< 0.5 U	< 0.5 U
Allyl chloride	107-05-1	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,2-Dichloroethane	107-06-2	3.800	NS	NS	4.000	ug/l	< 0.5 U	< 0.5 U
4-Methyl-2-pentanone (MIBK)	108-10-1	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U
1,3,5-Trimethylbenzene	108-67-8	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Bromobenzene	108-86-1	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Toluene	108-88-3	1000.0	NS	NS	1000.0	ug/l	< 0.5 U	< 0.5 U
Chlorobenzene	108-90-7	100.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Tetrahydrofuran	109-99-9	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U
1,2,4-Trichlorobenzene	120-82-1	35.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Chlorodibromomethane	124-48-1	4.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Tetrachloroethene	127-18-4	5.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Xylenes, Total	1330-20-7	10000.0	NS	NS	10000.0	ug/l	< 0.5 U	< 0.5 U
sec-Butylbenzene	135-98-8	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,3-Dichloropropane	142-28-9	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	156-59-2	70.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	156-60-5	100.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Methyl-Tert-Butylether	1634-04-4	30.00	NS	NS	30.00	ug/l	< 0.5 U	< 0.5 U
1,3-Dichlorobenzene	541-73-1	320.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Carbon Tetrachloride	56-23-5	2.300	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,1-Dichloropropene	563-58-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
2,2-Dichloropropane	594-20-7	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Diethyl ether (Ethyl ether)	60-29-7	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,1,1,2-Tetrachloroethane	630-20-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Acetone	67-64-1	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U
Chloroform	67-66-3	57.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Benzene	71-43-2	5.000	NS	NS	5.000	ug/l	< 0.5 U	< 0.5 U
1,1,1-Trichloroethane	71-55-6	200.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Bromomethane	74-83-9	47.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Chloromethane	74-87-3	30.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Dibromomethane	74-95-3	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Bromochloromethane	74-97-5	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Chloroethane	75-00-3	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Vinyl Chloride	75-01-4	0.2500	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Methylene Chloride	75-09-2	5.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Tribromomethane	75-25-2	43.00	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Bromodichloromethane	75-27-4	5.500	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,1-Dichloroethane	75-34-3	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U

Table 2
Huntley Channel Assessment - Surface Water Sample Analytical Results
Silvertip Pipeline Incident Response

						Location	HUMT-P6-SW-1-A	HUMT-P6-SW-1-A
						Sample Name	HUMT-P6-SW(031812)1-A	HUMT-P6-SW(031812)1-A-FD
						Date	3/18/2012	3/18/2012
						SDG	1296417	1296417
						Sample Type	Normal	Field Duplicate
Chemical	Chemical Registry Number	DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water	DEQ-7 Aquatic Life Standards - Acute	DEQ-7 Aquatic Life Standards - Chronic	Tier 1 Groundwater RBSLs and Standards Table	Units		
1,1-Dichloroethene	75-35-4	0.5700	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Dichlorofluoromethane	75-43-4	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Trichlorofluoromethane (CFC-11)	75-69-4	10000.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Dichlorodifluoromethane (CFC-12)	75-71-8	1000.0	NS	NS	NS	ug/l	< 0.5 UJ-	< 0.5 UJ-
1,1,2-Trichlorotrifluoroethane	76-13-1	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,2-Dichloropropane	78-87-5	5.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
2-Butanone (MEK)	78-93-3	NS	NS	NS	NS	ug/l	< 5.0 U	< 5.0 U
1,1,2-Trichloroethane	79-00-5	3.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Trichloroethene	79-01-6	5.000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	79-34-5	1.700	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,2,3-Trichlorobenzene	87-61-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Hexachloro-1,3-Butadiene	87-68-3	4.400	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Naphthalene	91-20-3	100.0	NS	NS	100.0	ug/l	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	95-50-1	420.0	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,2,4-Trimethylbenzene	95-63-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,2-Dibromo-3-Chloropropane	96-12-8	0.2000	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
1,2,3-Trichloropropane	96-18-4	NS	NS	NS	NS	ug/l	< 1.0 U	< 1.0 U
Tert-Butylbenzene	98-06-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Isopropylbenzene (Cumene)	98-82-8	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
p-Isopropyltoluene	99-87-6	NS	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Semi Volatile Organic Compounds by EPA 8270								
4-Nitroaniline	100-01-6	NS	NS	NS	NS	ug/l	< 1 U	< 1 U
4-Nitrophenol	100-02-7	60.00	NS	NS	NS	ug/l	< 31 U	< 31 U
4-Bromophenyl Phenyl Ether	101-55-3	NS	NS	NS	NS	ug/l	< 1 U	< 1 U
2,4-Dimethylphenol	105-67-9	380.0	NS	NS	NS	ug/l	< 1 U	< 1 U
4-Methylphenol	106-44-5	NS	NS	NS	NS	ug/l	< 1 U	< 1 U
1,4-Dichlorobenzene	106-46-7	75.00	NS	NS	NS	ug/l	< 1 U	< 1 U
4-Chloroaniline	106-47-8	NS	NS	NS	NS	ug/l	< 1 U	< 1 U
bis(2-Chloroisopropyl) ether	108-60-1	1400.0	NS	NS	NS	ug/l	< 1 U	< 1 U
Phenol	108-95-2	300.0	NS	NS	NS	ug/l	< 1 U	< 1 U
Bis(2-Chloroethyl)ether	111-44-4	0.3000	NS	NS	NS	ug/l	< 1 U	< 1 U
Bis(2-Chloroethoxy)methane	111-91-1	NS	NS	NS	NS	ug/l	< 1 U	< 1 U
Bis(2-Ethylhexyl)phthalate	117-81-7	6.000	NS	NS	NS	ug/l	< 5 U	< 5 U
Di-n-Octyl Phthalate	117-84-0	NS	NS	NS	NS	ug/l	< 5 U	< 5 U
Hexachlorobenzene	118-74-1	0.002800	NS	NS	NS	ug/l	< 0.5 U	< 0.5 U
Anthracene	120-12-7	8300.0	NS	NS	2100.0	ug/l	< 0.051 U	< 0.051 U
1,2,4-Trichlorobenzene	120-82-1	35.00	NS	NS	NS	ug/l	< 1 U	< 1 U
2,4-Dichlorophenol	120-83-2	77.00	NS	NS	NS	ug/l	< 1 U	< 1 U
2,4-Dinitrotoluene	121-14-2	1.100	NS	NS	NS	ug/l	< 5 U	< 5 U
1,2-Diphenylhydrazine	122-66-7	0.3600	NS	NS	NS	ug/l	< 1 U	< 1 U
Pyrene	129-00-0	830.0	NS	NS	830.0	ug/l	< 0.051 U	< 0.051 U
Dimethyl Phthalate	131-11-3	270000.0	NS	NS	NS	ug/l	< 5 U	< 5 U
Dibenzofuran	132-64-9	NS	NS	NS	NS	ug/l	< 1 U	< 1 U
Benzo(g,h,i)Perylene	191-24-2	NS	NS	NS	NS	ug/l	< 0.051 U	< 0.051 U
Indeno(1,2,3-cd)Pyrene	193-39-5	0.03800	NS	NS	0.5000	ug/l	< 0.051 U	< 0.051 U
Benzo(b)fluoranthene	205-99-2	0.03800	NS	NS	0.5000	ug/l	< 0.051 U	< 0.051 U
Fluoranthene	206-44-0	130.0	NS	NS	130.0	ug/l	< 0.051 U	< 0.051 U
Benzo(k)Fluoranthene	207-08-9	0.03800	NS	NS	5.000	ug/l	< 0.051 U	< 0.051 U
Acenaphthylene	208-96-8	NS	NS	NS	NS	ug/l	< 0.051 U	< 0.051 U
Chrysene	218-01-9	0.03800	NS	NS	50.00	ug/l	< 0.051 U	< 0.051 U
Benzo(a)Pyrene	50-32-8	0.03800	NS	NS	0.05000	ug/l	< 0.051 U	< 0.051 U

Table 2
Huntley Channel Assessment - Surface Water Sample Analytical Results
Silvertip Pipeline Incident Response

						Location	HUMT-P6-SW-1-A	HUMT-P6-SW-1-A
						Sample Name	HUMT-P6-SW(031812)1-A	HUMT-P6-SW(031812)1-A-FD
						Date	3/18/2012	3/18/2012
						SDG	1296417	1296417
						Sample Type	Normal	Field Duplicate
Chemical	Chemical Registry Number	DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water	DEQ-7 Aquatic Life Standards - Acute	DEQ-7 Aquatic Life Standards - Chronic	Tier 1 Groundwater RBSLs and Standards Table	Units		
2,4-Dinitrophenol	51-28-5	69.00	NS	NS	NS	ug/l	< 31 U	< 31 U
4,6-Dinitro-2-methylphenol	534-52-1	13.00	NS	NS	NS	ug/l	< 15 U	< 15 U
Dibenzo(a,h)Anthracene	53-70-3	0.03800	NS	NS	NS	ug/l	< 0.051 U	< 0.051 U
1,3-Dichlorobenzene	541-73-1	320.0	NS	NS	NS	ug/l	< 1 U	< 1 U
Benzo(a)Anthracene	56-55-3	0.03800	NS	NS	0.5000	ug/l	< 0.051 U	< 0.051 U
4-Chloro-3-Methylphenol	59-50-7	3000.0	NS	NS	NS	ug/l	< 1 U	< 1 U
2,6-Dinitrotoluene	606-20-2	0.5000	NS	NS	NS	ug/l	< 1 U	< 1 U
N-Nitroso-di-n-propylamine	621-64-7	0.05000	NS	NS	NS	ug/l	< 1 U	< 1 U
N-Nitrosodimethylamine	62-75-9	0.006900	NS	NS	NS	ug/l	< 5 U	< 5 U
Hexachloroethane	67-72-1	14.00	NS	NS	NS	ug/l	< 5 U	< 5 U
4-Chlorophenyl Phenyl Ether	7005-72-3	NS	NS	NS	NS	ug/l	< 1 U	< 1 U
Isophorone	78-59-1	350.0	NS	NS	NS	ug/l	< 1 U	< 1 U
Acenaphthene	83-32-9	670.0	NS	NS	670.0	ug/l	< 0.051 U	< 0.051 U
Diethyl Phthalate	84-66-2	17000.0	NS	NS	NS	ug/l	< 5 U	< 5 U
Di-N-Butyl Phthalate	84-74-2	2000.0	NS	NS	NS	ug/l	< 5 U	< 5 U
Phenanthrene	85-01-8	NS	NS	NS	NS	ug/l	< 0.051 U	< 0.051 U
Butylbenzylphthalate	85-68-7	1500.0	NS	NS	NS	ug/l	< 5 U	< 5 U
N-nitrosodiphenylamine	86-30-6	33.00	NS	NS	NS	ug/l	< 1 U	< 1 U
Fluorene	86-73-7	1100.0	NS	NS	1100.0	ug/l	< 0.051 U	< 0.051 U
Carbazole	86-74-8	NS	NS	NS	NS	ug/l	< 1 U	< 1 U
Hexachloro-1,3-Butadiene	87-68-3	4.400	NS	NS	NS	ug/l	< 1 U	< 1 U
Pentachlorophenol	87-86-5	1.000	5.300	4.000	NS	ug/l	< 5 U	< 5 U
2,4,6-Trichlorophenol	88-06-2	14.00	NS	NS	NS	ug/l	< 1 U	< 1 U
2-Nitroaniline	88-74-4	NS	NS	NS	NS	ug/l	< 1 U	< 1 U
2-Nitrophenol	88-75-5	NS	NS	NS	NS	ug/l	< 1 U	< 1 U
1-Methylnaphthalene	90-12-0	NS	NS	NS	NS	ug/l	< 0.051 U	< 0.051 U
Naphthalene	91-20-3	100.0	NS	NS	100.0	ug/l	< 0.051 U	< 0.051 U
2-Methylnaphthalene	91-57-6	NS	NS	NS	NS	ug/l	< 0.051 UJ-	< 0.051 U
2-Chloronaphthalene	91-58-7	1000.0	NS	NS	NS	ug/l	< 1 U	< 1 U
3,3'-Dichlorobenzidine	91-94-1	0.2100	NS	NS	NS	ug/l	< 5 U	< 5 U
2-Methylphenol(o-Cresol)	95-48-7	NS	NS	NS	NS	ug/l	< 1 U	< 1 U
1,2-Dichlorobenzene	95-50-1	420.0	NS	NS	NS	ug/l	< 1 U	< 1 U
2-Chlorophenol	95-57-8	81.00	NS	NS	NS	ug/l	< 1 U	< 1 U
2,4,5-Trichlorophenol	95-95-4	1800.0	NS	NS	NS	ug/l	< 1 U	< 1 U
Nitrobenzene	98-95-3	17.00	NS	NS	NS	ug/l	< 1 U	< 1 U
3-Nitroaniline	99-09-2	NS	NS	NS	NS	ug/l	< 1 U	< 1 U
Petroleum Hydrocarbons by MADEP VPH/EPH								
Total Extractable Hydrocarbons	ARC-EPH	NS	NS	NS	1000.0	ug/l	< 500 U	< 500 U
Aliphatic (C05-C08).Unadjusted	ARC-C5-C8ALIUNA	NS	NS	NS	700.0	ug/l	< 100 U	< 100 U
Aliphatic (C09-C12).Unadjusted	ARC-C9-C12ALIUN	NS	NS	NS	1000.0	ug/l	< 100 U	< 100 U
Total Purgeable Hydrocarbons	ARC-PPH	NS	NS	NS	NS	ug/l	< 100 U	< 100 U
C9-C10 Aromatics	C9-C10-A	NS	NS	NS	1000.0	ug/l	< 100 U	< 100 U

Table 2

Huntley Channel Assessment - Surface Water Sample Analytical Results

Silvertip Pipeline Incident Response

8 Exceedences of the DEQ's Circular DEQ-7 Montana Numeric Water Quality Standards - Human Health - Surface Water are boldfaced

1 Exceedence of the DEQ-7 Aquatic Life Standards - Acute are shaded gray

9 Exceedences of the DEQ-7 Aquatic Life Standards - Chronic are outlined

There are no Exceedences of the Tier 1 Groundwater RBSLs and Standards Table

Notes:

NS No Screening Level

--- Not sampled

ug/l microgram/liter

mg/l milligram/liter

U The compound was not detected above the reported detection limit

J- The compound was positively identified; however, the associated numerical value is an estimated concentration only

UJ- The compound was not detected above the reported sample quantitation limit. However, the reported limit is estimated with a potential low bias.

SDG Sample Delivery Group

RBSLs Risk based Screen Levels

< Less Than

Table 3
Huntley Channel Assessment - Sediment Analytical Results
Silvertip Pipeline Incident Response

					Location	HUMT-P0-SE-1-A	HUMT-P1-SE-1-A	HUMT-P1-SE-2-A	HUMT-P1-SE-3-A	HUMT-P3-SE-1-A	HUMT-P3-SE-2-A	HUMT-P3-SE-2-A	HUMT-P5-SE-1-A	HUMT-P6-SE-1-A
					Sample Name	HUMT-P0-SE(0.0-0.3)1-A	HUMT-P1-SE(0.0-0.5)1-A	HUMT-P1-SE(0.0-0.5)2-A	HUMT-P1-SE(0.0-0.2)3-A	HUMT-P3-SE(0.0-0.2)1-A	HUMT-P3-SE(0.0-0.5)2-A	HUMT-P3-SE(0.0-0.5)2-A-FD	HUMT-P5-SE(0.0-0.2)1-A	HUMT-P6-SE(0.0-0.3)1-A
					Date	3/17/2012	3/17/2012	3/17/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012
					Start Depth (ft)	0	0	0	0	0	0	0	0	0
					End Depth (ft)	0.3	0.5	0.5	0.2	0.2	0.5	0.5	0.2	0.3
					SDG	1296396	1296396	1296396	1296396	1296396	1296396	1296396	1296396	1296396
					Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Field Duplicate	Normal	Normal
Chemical	**Chemical Registry Number**	**USEPA Freshwater Sediment Screening Benchmarks**	**NOAA Screening Quick Reference Tables - Freshwater Sediment**	**Residential Risk-Based Screening Levels (RBSLs) - Tier 1 Surface Soil (0-2') (Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases)**	**Unit**									
Metals By EPA 6010 and EPA 7471A														
Aluminum	7429-90-5	NS	25,500	NS	mg/kg	14700	9040	8420	11200	12800	13700	11600	6960	11300
Antimony	7440-36-0	2.000	NS	NS	mg/kg	< 3.13 UJ-	< 2.53 UJ-	< 2.68 UJ-	< 2.92 UJ-	< 3.04 UJ-	< 2.82 UJ-	< 2.81 UJ-	< 2.74 UJ-	< 2.73 UJ-
Arsenic	7440-38-2	9.800	NS	NS	mg/kg	**12.4**	**11.1**	**10.8**	**12.1**	**19.6**	**17.2**	**15.9**	**10.8**	**16.2**
Barium	7440-39-3	NS	NS	NS	mg/kg	190	132	124	153	189	191	166	104	158
Beryllium	7440-41-7	NS	NS	NS	mg/kg	0.652 J	0.384 J	0.366 J	0.506 J	0.608 J	0.611 J	0.551 J	0.307 J	0.511 J
Cadmium	7440-43-9	0.9900	NS	NS	mg/kg	0.714 J	0.461 J	0.483 J	0.553 J	0.663 J	0.614 J	0.596 J	0.422 J	0.552 J
Calcium	7440-70-2	NS	NS	NS	mg/kg	11600	8470	7660	11300	14600	13100	13300	6050	10600
Chromium	7440-47-3	43.40	NS	NS	mg/kg	37.8	21.1	20.0	26.4	29.6	30.0	26.7	17.0	24.9
Cobalt	7440-48-4	50.00	NS	NS	mg/kg	9.97	6.18	5.91	7.54	8.83	8.95	7.89	5.05	8.00
Copper	7440-50-8	31.60	NS	NS	mg/kg	21.5	10.4	10.7	13.7	17.6	17.3	16.1	9.60	27.1
Iron	7439-89-6	20000.0	NS	NS	mg/kg	**24900**	16100	16100	19000	**21000**	**22200**	19100	14300	19300
Lead	7439-92-1	35.80	NS	NS	mg/kg	10.8	7.18	7.92	8.82	10.3	10.7	9.23	6.73	9.39
Magnesium	7439-95-4	NS	NS	NS	mg/kg	8450	4850	4250	6370	7690	7700	6880	3380	6120
Manganese	7439-96-5	460.0	NS	NS	mg/kg	375	268	387	292	**691**	351	317	**495**	448
Nickel	7440-02-0	22.70	NS	NS	mg/kg	**24.1**	14.2	12.9	17.8	20.8	21.4	19.4	10.7	18.5
Potassium	7440-09-7	NS	NS	NS	mg/kg	2200 J+	1260 J+	1140 J+	1700 J+	2090 J+	2080 J+	1840 J+	890 J+	1660 J+
Selenium	7782-49-2	2.000	NS	NS	mg/kg	< 3.13 U	< 2.53 U	< 2.68 U	< 2.92 U	< 3.04 U	< 2.82 U	< 2.81 U	< 2.74 U	< 2.73 U
Silver	7440-22-4	1.000	NS	NS	mg/kg	0.149 J	< 0.632 U	< 0.671 U	< 0.729 U	0.199 J	< 0.704 U	< 0.703 U	< 0.686 U	0.138 J
Sodium	7440-23-5	NS	NS	NS	mg/kg	697	577	606	585	537	685	542	533	580
Thallium	7440-28-0	NS	NS	NS	mg/kg	0.656 J	0.908 J	< 4.02 U	1.24 J	< 4.56 U	1.34 J	0.727 J	< 4.11 U	0.702 J
Vanadium	7440-62-2	NS	NS	NS	mg/kg	64.2	39.5	39.7	46.4	48.4	52.1	44.4	35.7	42.6
Zinc	7440-66-6	121.0	NS	NS	mg/kg	57.0	35.2	34.8	45.8	50.7	51.4	47.4	28.6	45.3
Mercury	7439-97-6	0.1800	NS	NS	mg/kg	0.0192 J-	0.0137 J-	< 0.133 UJ-	0.0118 J-	0.0233 J-	0.137 J-	0.0118 J-	0.0109 J-	< 0.138 UJ-
Pesticides by EPA 8081A														
4,4-DDD	72-54-8	0.004880	NA	NS	mg/kg	< 0.0027 U	< 0.0022 U	< 0.0024 U	< 0.0025 U	< 0.0026 U	< 0.0025 UJ	< 0.0024 U	< 0.0024 U	< 0.0024 U
4,4-DDE	72-55-9	0.003160	NA	NS	mg/kg	< 0.0027 U	0.00078 J	< 0.0024 U	< 0.0025 U	< 0.0026 U	< 0.0025 UJ	< 0.0024 U	< 0.0024 U	< 0.0024 U
Aldrin	309-00-2	0.002000	NS	NS	mg/kg	0.00068 J	0.00084 J	< 0.0012 U	0.0015	**0.0023**	**0.0023 J-**	0.00051 J	< 0.0012 U	0.00046 J
Alpha-Bhc	319-84-6	0.006000	NS	NS	mg/kg	< 0.0013 U	< 0.0011 U	< 0.0012 U	< 0.0012 U	< 0.0013 U	R	< 0.0012 U	< 0.0012 U	< 0.0012 U
alpha-Chlordane	5103-71-9	NS	NS	NS	mg/kg	< 0.0013 U	< 0.0035 U	< 0.0012 U	< 0.0013 U	< 0.0013 U	< 0.022 UJ	< 0.0012 U	< 0.0012 U	0.00078 J
Beta-Bhc	319-85-7	0.005000	NS	NS	mg/kg	< 0.0030 U	< 0.0033 U	< 0.0029 U	< 0.0037 U	< 0.0040 U	< 0.0047 U	< 0.0055 U	< 0.0032 U	< 0.0064 U
DDT	50-29-3	NS	0.00119	NS	mg/kg	< 0.0027 U	< 0.0022 U	< 0.0024 U	< 0.0025 U	< 0.0026 U	0.00059 J	< 0.0024 U	< 0.0024 U	< 0.0024 U
Delta-Bhc	319-86-8	6.400	NS	NS	mg/kg	< 0.0013 U	0.0091	0.0034	0.0096	0.012	R	< 0.0012 U	0.0030	< 0.0045 U
Dieldrin	60-57-1	0.001900	NA	NS	mg/kg	< 0.0027 U	< 0.0022 U	0.00090 J	**0.0022 J**	0.0018 J	< 0.0025 UJ	< 0.0024 U	< 0.0024 U	0.0014 J
Endosulfan I	959-98-8	0.002900	NS	NS	mg/kg	< 0.0013 U	0.0011 J	0.00059 J	0.0013	0.0020	**0.0044 J-**	0.00059 J	0.00036 J	0.0013
Endosulfan II	33213-65-9	0.01400	NS	NS	mg/kg	< 0.0027 U	< 0.0022 U	< 0.0024 U	< 0.0025 U	< 0.0026 U	< 0.0025 UJ	< 0.0024 U	< 0.0024 U	< 0.0024 U
Endosulfan Sulfate	1031-07-8	0.005400	NS	NS	mg/kg	< 0.0027 U	< 0.0022 U	0.00063 J+	< 0.0025 U	< 0.0026 U	< 0.0025 UJ	< 0.0024 U	< 0.0024 U	< 0.0024 U
Endrin	72-20-8	0.002220	NA	NS	mg/kg	< 0.0027 U	< 0.0022 U	< 0.0024 U	< 0.0025 U	< 0.0026 U	0.0015 J	< 0.0024 U	< 0.0024 U	< 0.0024 U
Endrin Aldehyde	7421-93-4	NS	NS	NS	mg/kg	< 0.0027 U	< 0.0022 U	0.00066 J	0.00094 J	0.00094 J	< 0.0025 UJ	< 0.0024 U	< 0.0024 U	< 0.0024 U
Endrin Ketone	53494-70-5	NS	NS	NS	mg/kg	< 0.0029 U	< 0.0023 U	< 0.0025 U	< 0.0027 U	< 0.0028 U	< 0.0026 UJ	< 0.0026 U	< 0.0025 U	< 0.0025 U
gamma-BHC (Lindane)	58-89-9	0.002370	NA	NS	mg/kg	< 0.0013 U	< 0.0011 U	< 0.0012 U	< 0.0012 U	< 0.0020 U	< 0.0047 UJ	< 0.0012 U	< 0.0012 U	< 0.0012 U
gamma-Chlordane	5566-34-7	NS	NS	NS	mg/kg	< 0.0013 U	< 0.0011 U	< 0.0012 U	< 0.0012 U	< 0.0013 U	0.00052 J	< 0.0012 U	< 0.0012 U	< 0.0012 U
Heptachlor	76-44-8	0.06800	NS	NS	mg/kg	0.00097 J	0.0013	0.00055 J	0.0035	0.0051 J	< 0.0019 UJ	0.00088 J	< 0.0012 U	0.0013
Heptachlor Epoxide	1024-57-3	0.002470	NA	NS	mg/kg	0.00028 J	< 0.0052 U	**0.0030**	< 0.0085 U	**0.015**	< 0.026 UJ	**0.0025**	< 0.0021 U	< 0.0045 U
Methoxychlor	72-43-5	0.01870	NS	NS	mg/kg	< 0.013 U	< 0.011 U	< 0.012 U	< 0.012 U	< 0.013 U	0.0030 J-	< 0.012 U	< 0.012 U	< 0.012 U
Toxaphene	8001-35-2	0.0001000	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.048 U	< 0.047 U	< 0.046 U	< 0.046 U
Herbicides by EPA 8151A														
2,4,5-T	93-76-5	12.30	NS	NS	mg/kg	< 0.0027 U	< 0.0022 U	< 0.0024 U	< 0.0025 U	< 0.0026 U	< 0.0025 U	< 0.0024 U	< 0.0024 U	< 0.0024 U
2,4,5-TP	93-72-1	0.6750	NS	NS	mg/kg	< 0.0027 U	< 0.0022 U	< 0.0024 U	< 0.0025 U	< 0.0026 U	< 0.0025 U	< 0.0024 U	< 0.0024 U	< 0.0024 U
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	NS	NS	NS	mg/kg	< 0.057 U	< 0.047 U	< 0.05 U	< 0.053 U	< 0.055 U	< 0.053 U	< 0.051 U	< 0.05 U	< 0.05 U
Dinoseb	88-85-7	0.0006110	NS	NS	mg/kg	< 0.038 U	< 0.031 U	< 0.033 U	< 0.035 U	< 0.037 U	< 0.035 U	< 0.034 U	< 0.033 U	< 0.033 U
Volatile Organic Compounds by EPA 8260B														
1,1,1,2-Tetrachloroethane	630-20-6	NS	NS	NS	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,1,1-Trichloroethane	71-55-6	0.03020	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,1,2,2-Tetrachloroethane	79-34-5	1.360	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,1,2-Trichloroethane	79-00-5	1.240	NS	NS	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,1,2-Trichlorotrifluoroethane	76-13-1	NS	NS	NS	mg/kg	< 0.016 U	< 0.012 U	< 0.013 U	< 0.013 U	< 0.015 U	< 0.015 U	< 0.013 U	< 0.014 U	< 0.013 U
1,1-Dichloroethane	75-34-3	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,1-Dichloroethene	75-35-4	0.03100	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,1-Dichloropropene	563-58-6	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,2,3-Trichlorobenzene	87-61-6	0.8580	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,2,3-Trichloropropane	96-18-4	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,2,4-Trichlorobenzene	120-82-1	2.100	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,2,4-Trimethylbenzene	95-63-6	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,2-Dibromo-3-Chloropropane	96-12-8	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,2-Dibromoethane (EDB)	106-93-4	NS	NS	NA	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,2-Dichlorobenzene	95-50-1	0.01650	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,2-Dichloroethane	107-06-2	NS	NS	NA	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,2-Dichloropropane	78-87-5	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,3,5-Trichlorobenzene	108-70-3	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,3-Dichlorobenzene	541-73-1	4.430	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,3-Dichloropropane	142-28-9	NS	NS	NS	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
1,4-Dichlorobenzene	106-46-7	0.5990	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
2,2-Dichloropropane	594-20-7	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
2-Butanone (MEK)	78-93-3	NS	NS	NS	mg/kg	0.008 J	< 0.012 U	< 0.013 U	< 0.013 U	< 0.015 U	< 0.015 UJ	0.007 J	< 0.014 U	< 0.013 U
4-Chlorotoluene	106-43-4	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
4-Methyl-2-pentanone (MIBK)	108-10-1	NS	NS	NS	mg/kg	< 0.016 U	< 0.012 U	< 0.013 U	< 0.013 U	< 0.015 U	< 0.015 U	< 0.013 U	< 0.014 U	< 0.013 U
Acetone	67-64-1	NS	NS	NS	mg/kg	0.046	0.017 J	0.026 J	0.015 J	0.012 J	0.026 J+	0.038	< 0.027 U	0.014 J
Allyl chloride	107-05-1	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Benzene	71-43-2	NS	NS	NA	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U

Table 3
Huntley Channel Assessment - Sediment Analytical Results
Silvertip Pipeline Incident Response

					Location	HUMT-P0-SE-1-A	HUMT-P1-SE-1-A	HUMT-P1-SE-2-A	HUMT-P1-SE-3-A	HUMT-P3-SE-1-A	HUMT-P3-SE-2-A	HUMT-P3-SE-2-A	HUMT-P5-SE-1-A	HUMT-P6-SE-1-A
					Sample Name	HUMT-P0-SE(0.0-0.3)1-A	HUMT-P1-SE(0.0-0.5)1-A	HUMT-P1-SE(0.0-0.5)2-A	HUMT-P1-SE(0.0-0.2)3-A	HUMT-P3-SE(0.0-0.2)1-A	HUMT-P3-SE(0.0-0.5)2-A	HUMT-P3-SE(0.0-0.5)2-A-FD	HUMT-P5-SE(0.0-0.2)1-A	HUMT-P6-SE(0.0-0.3)1-A
					Date	3/17/2012	3/17/2012	3/17/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012
					Start Depth (ft)	0	0	0	0	0	0	0	0	0
					End Depth (ft)	0.3	0.5	0.5	0.2	0.2	0.5	0.5	0.2	0.3
					SDG	1296396	1296396	1296396	1296396	1296396	1296396	1296396	1296396	1296396
					Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Field Duplicate	Normal	Normal
Chemical	**Chemical Registry Number**	**USEPA Freshwater Sediment Screening Benchmarks**	**NOAA Screening Quick Reference Tables - Freshwater Sediment**	**Residential Risk-Based Screening Levels (RBSLs) - Tier 1 Surface Soil (0-2') (Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases)**	**Unit**									
Bromobenzene	108-86-1	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Bromochloromethane	74-97-5	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Bromodichloromethane	75-27-4	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Bromomethane	74-83-9	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Carbon Tetrachloride	56-23-5	0.06420	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Chlorobenzene	108-90-7	0.008420	NS	NS	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Chlorodibromomethane	124-48-1	NS	NS	NS	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Chloroethane	75-00-3	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Chloroform	67-66-3	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Chloromethane	74-87-3	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
cis-1,2-Dichloroethene	156-59-2	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
cis-1,3-Dichloropropene	10061-01-5	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Dibromomethane	74-95-3	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Dichlorodifluoromethane (CFC-12)	75-71-8	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Dichlorofluoromethane	75-43-4	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Diethyl ether (Ethyl ether)	60-29-7	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Ethylbenzene	100-41-4	1.100	NS	NA	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Hexachloro-1,3-Butadiene	87-68-3	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 UJ	< 0.006 U	< 0.007 U	< 0.006 U
Isopropylbenzene (Cumene)	98-82-8	0.08600	NS	NS	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Methylene Chloride	75-09-2	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Methyl-Tert-Butylether	1634-04-4	NS	NS	NA	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Naphthalene	91-20-3	0.1760	NA	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
N-Butylbenzene	104-51-8	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
N-Propylbenzene	103-65-1	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
p-Isopropyltoluene	99-87-6	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
sec-Butylbenzene	135-98-8	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Styrene	100-42-5	0.5590	NS	NS	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Tert-Butylbenzene	98-06-6	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Tetrachloroethene	127-18-4	0.4680	NS	NS	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Tetrahydrofuran	109-99-9	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Toluene	108-88-3	NS	NS	NA	mg/kg	0.005 J-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
trans-1,2-Dichloroethene	156-60-5	1.050	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
trans-1,3-Dichloropropene	10061-02-6	NS	NS	NS	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Tribromomethane	75-25-2	0.6540	NS	NS	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Trichloroethene	79-01-6	0.09690	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Trichlorofluoromethane (CFC-11)	75-69-4	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Vinyl Chloride	75-01-4	NS	NS	NS	mg/kg	< 0.008 U	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Xylenes, Total	1330-20-7	0.0252	NS	NA	mg/kg	< 0.008 UJ-	< 0.006 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.007 U	< 0.006 U	< 0.007 U	< 0.006 U
Semi Volatile Organic Compounds by EPA 8270														
1,2,4-Trichlorobenzene	120-82-1	2.100	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
1,2-Dichlorobenzene	95-50-1	0.01650	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
1,2-Diphenylhydrazine	122-66-7	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
1,3-Dichlorobenzene	541-73-1	4.430	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
1,4-Dichlorobenzene	106-46-7	0.5990	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
1-Methylnaphthalene	90-12-0	NS	NS	NS	mg/kg	0.018	0.0050	0.0036 J	0.0067	< 0.052 U	0.016	0.0095	0.0030 J	0.0051
2,4,5-Trichlorophenol	95-95-4	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
2,4,6-Trichlorophenol	88-06-2	0.2130	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
2,4-Dichlorophenol	120-83-2	0.1170	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
2,4-Dimethylphenol	105-67-9	0.02900	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
2,4-Dinitrophenol	51-28-5	NS	NS	NS	mg/kg	< 1.6 U	< 1.3 U	< 1.4 U	< 1.5 U	< 1.5 U	< 1.5 U	< 1.4 U	< 1.4 U	< 1.4 U
2,4-Dinitrotoluene	121-14-2	0.04160	NS	NS	mg/kg	< 0.26 U	< 0.21 U	< 0.23 U	< 0.24 U	< 0.25 U	< 0.24 U	< 0.24 U	< 0.23 U	< 0.23 U
2,6-Dinitrotoluene	606-20-2	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
2-Chloronaphthalene	91-58-7	NS	NS	NS	mg/kg	< 0.052 U	< 0.042 U	< 0.045 U	< 0.048 U	< 0.05 U	< 0.048 U	< 0.047 U	< 0.046 U	< 0.045 U
2-Chlorophenol	95-57-8	0.03120	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
2-Methylnaphthalene	91-57-6	0.02020	NS	NS	mg/kg	**0.021**	0.0066	0.0045 J	0.0089	**0.022 J**	0.014 J-	0.012	0.0033 J	0.0066
2-Methylphenol(o-Cresol)	95-48-7	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
2-Nitroaniline	88-74-4	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
2-Nitrophenol	88-75-5	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
3,3'-Dichlorobenzidine	91-94-1	0.1270	NS	NS	mg/kg	< 0.53 U	< 0.43 U	< 0.46 U	< 0.49 U	< 0.51 U	< 0.49 U	< 0.47 U	< 0.46 U	< 0.46 U
3-Nitroaniline	99-09-2	NS	NS	NS	mg/kg	< 0.26 U	< 0.21 U	< 0.23 U	< 0.24 U	< 0.25 U	< 0.24 U	< 0.24 U	< 0.23 U	< 0.23 U
4,6-Dinitro-2-methylphenol	534-52-1	NS	NS	NS	mg/kg	< 0.79 U	< 0.64 U	< 0.69 U	< 0.73 U	< 0.76 U	< 0.73 U	< 0.71 U	< 0.69 U	< 0.68 U
4-Bromophenyl Phenyl Ether	101-55-3	1.230	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
4-Chloro-3-Methylphenol	59-50-7	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
4-Chloroaniline	106-47-8	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
4-Chlorophenyl Phenyl Ether	7005-72-3	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
4-Methylphenol	106-44-5	0.6700	NS	NS	mg/kg	0.043 J	< 0.043 U	0.036 J	< 0.049 U	< 0.051 U	0.058	0.041 J	< 0.046 U	< 0.046 U
4-Nitroaniline	100-01-6	NS	NS	NS	mg/kg	< 0.26 U	< 0.21 U	< 0.23 U	< 0.24 U	< 0.25 U	< 0.24 U	< 0.24 U	< 0.23 U	< 0.23 U
4-Nitrophenol	100-02-7	NS	NS	NS	mg/kg	< 0.79 U	< 0.64 U	< 0.69 U	< 0.73 U	< 0.76 U	< 0.73 U	< 0.71 U	< 0.69 U	< 0.68 U
Acenaphthene	83-32-9	0.006700	NS	NA	mg/kg	< 0.0053 U	< 0.0043 U	< 0.0046 U	< 0.0049 U	< 0.052 U	< 0.0049 U	< 0.0047 U	< 0.0047 U	< 0.0046 U
Acenaphthylene	208-96-8	0.005900	NS	NS	mg/kg	< 0.0053 U	< 0.0043 U	< 0.0046 U	< 0.0049 U	< 0.052 U	< 0.0049 U	< 0.0047 U	< 0.0047 U	< 0.0046 U
Anthracene	120-12-7	0.05720	NA	NA	mg/kg	< 0.0053 U	< 0.0043 U	< 0.0046 U	< 0.0049 U	< 0.052 U	< 0.0049 U	< 0.0047 U	< 0.0047 U	< 0.0046 U
Benzo(a)Anthracene	56-55-3	0.1080	NA	NA	mg/kg	< 0.0053 U	< 0.0043 U	< 0.0046 U	< 0.0049 U	< 0.052 U	0.0024 J	0.0026 J	< 0.0047 U	< 0.0046 U
Benzo(a)Pyrene	50-32-8	0.1500	NA	NA	mg/kg	0.0030 J	< 0.0043 U	< 0.0046 U	< 0.0049 U	< 0.052 U	0.0027 J	0.0027 J	< 0.0047 U	< 0.0046 U
Benzo(b)fluoranthene	205-99-2	NS	NS	NA	mg/kg	0.0047 J	0.0026 J	< 0.0046 U	0.0028 J	< 0.052 U	0.0041 J	0.0047 J	0.0023 J	< 0.0046 U
Benzo(g,h,i)Perylene	191-24-2	0.1700	NS	NS	mg/kg	0.0058	0.0030 J	0.0019 J	0.0031 J	< 0.052 U	0.0057	0.0053	< 0.0047 U	0.0025 J
Benzo(k)Fluoranthene	207-08-9	0.2400	NA	NA	mg/kg	< 0.0053 U	< 0.0043 U	< 0.0046 U	< 0.0049 U	< 0.052 U	< 0.0049 U	< 0.0047 U	< 0.0047 U	< 0.0046 U
Bis(2-Chloroethoxy)methane	111-91-1	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
Bis(2-Chloroethyl)ether	111-44-4	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
bis(2-Chloroisopropyl) ether	108-60-1	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
Bis(2-Ethylhexyl)phthalate	117-81-7	0.1800	NS	NS	mg/kg	< 0.27 U	< 0.22 U	< 0.23 U	< 0.25 U	< 0.26 U	< 0.25 U	< 0.24 U	< 0.24 U	< 0.23 U
Butylbenzylphthalate	85-68-7	10.90	NS	NS	mg/kg	< 0.26 U	< 0.21 U	< 0.23 U	< 0.24 U	< 0.25 U	< 0.24 U	< 0.24 U	< 0.23 U	< 0.23 U

Table 3
Huntley Channel Assessment - Sediment Analytical Results
Silvertip Pipeline Incident Response

					Location	HUMT-P0-SE-1-A	HUMT-P1-SE-1-A	HUMT-P1-SE-2-A	HUMT-P1-SE-3-A	HUMT-P3-SE-1-A	HUMT-P3-SE-2-A	HUMT-P3-SE-2-A	HUMT-P5-SE-1-A	HUMT-P6-SE-1-A
					Sample Name	HUMT-P0-SE(0.0-0.3)1-A	HUMT-P1-SE(0.0-0.5)1-A	HUMT-P1-SE(0.0-0.5)2-A	HUMT-P1-SE(0.0-0.2)3-A	HUMT-P3-SE(0.0-0.2)1-A	HUMT-P3-SE(0.0-0.5)2-A	HUMT-P3-SE(0.0-0.5)2-A-FD	HUMT-P5-SE(0.0-0.2)1-A	HUMT-P6-SE(0.0-0.3)1-A
					Date	3/17/2012	3/17/2012	3/17/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012	3/18/2012
					Start Depth (ft)	0	0	0	0	0	0	0	0	0
					End Depth (ft)	0.3	0.5	0.5	0.2	0.2	0.5	0.5	0.2	0.3
					SDG	1296396	1296396	1296396	1296396	1296396	1296396	1296396	1296396	1296396
					Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Field Duplicate	Normal	Normal
Chemical	**Chemical Registry Number**	**USEPA Freshwater Sediment Screening Benchmarks**	**NOAA Screening Quick Reference Tables - Freshwater Sediment**	**Residential Risk-Based Screening Levels (RBSLs) - Tier 1 Surface Soil (0-2') (Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases)**	**Unit**									
Carbazole	86-74-8	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
Chrysene	218-01-9	0.1660	NA	NA	mg/kg	0.0055	0.0027 J	0.0019 J	0.0031 J	< 0.052 U	0.0050	0.0052	0.0022 J	0.0023 J
Dibenzo(a,h)Anthracene	53-70-3	0.03300	NA	NA	mg/kg	< 0.0053 U	< 0.0043 U	< 0.0046 U	< 0.0049 U	< 0.052 U	< 0.0049 U	< 0.0047 U	< 0.0047 U	< 0.0046 U
Dibenzofuran	132-64-9	0.4150	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
Diethyl Phthalate	84-66-2	0.6030	NS	NS	mg/kg	< 0.26 U	< 0.21 U	< 0.23 U	< 0.24 U	< 0.25 U	< 0.24 U	< 0.24 U	< 0.23 U	< 0.23 U
Dimethyl Phthalate	131-11-3	NS	NS	NS	mg/kg	< 0.26 U	< 0.21 U	< 0.23 U	< 0.24 U	< 0.25 U	< 0.24 U	< 0.24 U	< 0.23 U	< 0.23 U
Di-N-Butyl Phthalate	84-74-2	6.470	0.110	NS	mg/kg	< 0.26 U	< 0.21 U	< 0.23 U	< 0.24 U	< 0.25 U	< 0.24 U	< 0.24 U	< 0.23 U	< 0.23 U
Di-n-Octyl Phthalate	117-84-0	NS	NS	NS	mg/kg	< 0.26 U	< 0.21 U	< 0.23 U	< 0.24 U	< 0.25 U	< 0.24 U	< 0.24 U	< 0.23 U	< 0.23 U
Fluoranthene	206-44-0	0.4230	NA	NA	mg/kg	0.0046 J	0.0028 J	< 0.0046 U	0.0033 J	< 0.052 U	0.0050	0.0054	0.0032 J	0.0024 J
Fluorene	86-73-7	0.07740	NA	NA	mg/kg	0.0029 J	< 0.0043 U	< 0.0046 U	< 0.0049 U	< 0.052 U	0.0025 J-	0.0021 J	< 0.0047 U	< 0.0046 U
Hexachloro-1,3-Butadiene	87-68-3	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
Hexachlorobenzene	118-74-1	0.02000	NS	NS	mg/kg	< 0.027 U	< 0.022 U	< 0.023 U	< 0.025 U	< 0.026 U	< 0.025 U	< 0.024 U	< 0.024 U	< 0.023 U
Hexachloroethane	67-72-1	1.027	NS	NS	mg/kg	< 0.26 U	< 0.21 U	< 0.23 U	< 0.24 U	< 0.25 U	< 0.24 U	< 0.24 U	< 0.23 U	< 0.23 U
Indeno(1,2,3-cd)Pyrene	193-39-5	0.01700	NS	NA	mg/kg	< 0.0053 U	< 0.0043 U	< 0.0046 U	< 0.0049 U	< 0.052 U	< 0.0049 U	< 0.0047 U	< 0.0047 U	< 0.0046 U
Isophorone	78-59-1	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
Naphthalene	91-20-3	0.1760	NA	NA	mg/kg	0.014	0.071	0.0063	0.0081	< 0.052 U	0.012	0.01	0.0044 J	0.0069
Nitrobenzene	98-95-3	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
N-Nitrosodimethylamine	62-75-9	NS	NS	NS	mg/kg	< 0.26 U	< 0.21 U	< 0.23 U	< 0.24 U	< 0.25 U	< 0.24 U	< 0.24 U	< 0.23 U	< 0.23 U
N-Nitroso-di-n-propylamine	621-64-7	NS	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
N-nitrosodiphenylamine	86-30-6	2.680	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
Pentachlorophenol	87-86-5	0.5040	NS	NS	mg/kg	< 0.27 U	< 0.22 U	< 0.23 U	< 0.25 U	< 0.26 U	< 0.25 U	< 0.24 U	< 0.24 U	< 0.23 U
Phenanthrene	85-01-8	0.2040	NA	NS	mg/kg	0.011	0.0062	0.0056	0.0064	< 0.052 U	0.011	0.011	0.0041 J	0.0056
Phenol	108-95-2	0.4200	NS	NS	mg/kg	< 0.053 U	< 0.043 U	< 0.046 U	< 0.049 U	< 0.051 U	< 0.049 U	< 0.047 U	< 0.046 U	< 0.046 U
Pyrene	129-00-0	0.1950	NA	NA	mg/kg	0.0055	0.0034 J	0.0019 J	0.0035 J	< 0.052 U	0.0064	0.0066	0.0035 J	0.0028 J
TOC Solids/Sludges Combustion by EPA 9060														
TOC Solids/Sludges Combust	ARC-SSCOMB	NS	NS	NS	mg/kg	8100	11400	2010	4860	5310	8460 J	3850 J	3790	1560
Petroleum Hydrocarbons by MADEP VPH/EPH														
Total Extractable Hydrocarbons	ARC-EPH	NS	NS	200	mg/kg	< 240 U	< 200 U	< 210 U	< 220 U	< 230 U	< 220 U	< 210 U	< 210 U	< 210 U
Aliphatic (C05-C08).Unadjusted	ARC-C5-C8ALIUNA	NS	NS	60	mg/kg	< 8.01 U	< 6.32 U	< 6.69 U	< 6.43 U	< 7.40 U	< 6.80 U	< 6.68 U	< 6.88 U	< 6.60 U
Aliphatic (C09-C12).Unadjusted	ARC-C9-C12ALIUN	NS	NS	100	mg/kg	< 8.01 U	< 6.32 U	< 6.69 U	< 6.43 U	< 7.40 U	< 6.80 U	< 6.68 U	< 6.88 U	< 6.60 U
C9-C10 Aromatics	C9-C10-A	NS	NS	100	mg/kg	< 8.01 U	< 6.32 U	< 6.69 U	< 6.43 U	< 7.40 U	< 6.80 U	< 6.68 U	< 6.88 UJ-	< 6.60 UJ-
Total Purgeable Hydrocarbons	ARC-PPH	NS	NS	NS	mg/kg	< 8.01 U	< 6.32 U	< 6.69 U	< 6.43 U	< 7.40 U	< 6.80 U	< 6.68 U	< 6.88 U	< 6.60 U

24 Exceedences of the USEPA Freshwater Sediment Screening Benchmarks are boldfaced

No Exceedences of the NOAA Screening Quick Reference Tables - Freshwater Sediment LEL

No Exceedences of the Residential Risk-Based Screening Levels (RBSLs) - Tier 1 Surface Soil (0-2')

Notes:

NS No Screening Level
NA Screening Level is not applicable
--- Not sampled
mg/kg milligram/kilogram
NOAA National Oceanic and Atmospheric Administration
U The compound was not detected above the reported detection limit

J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

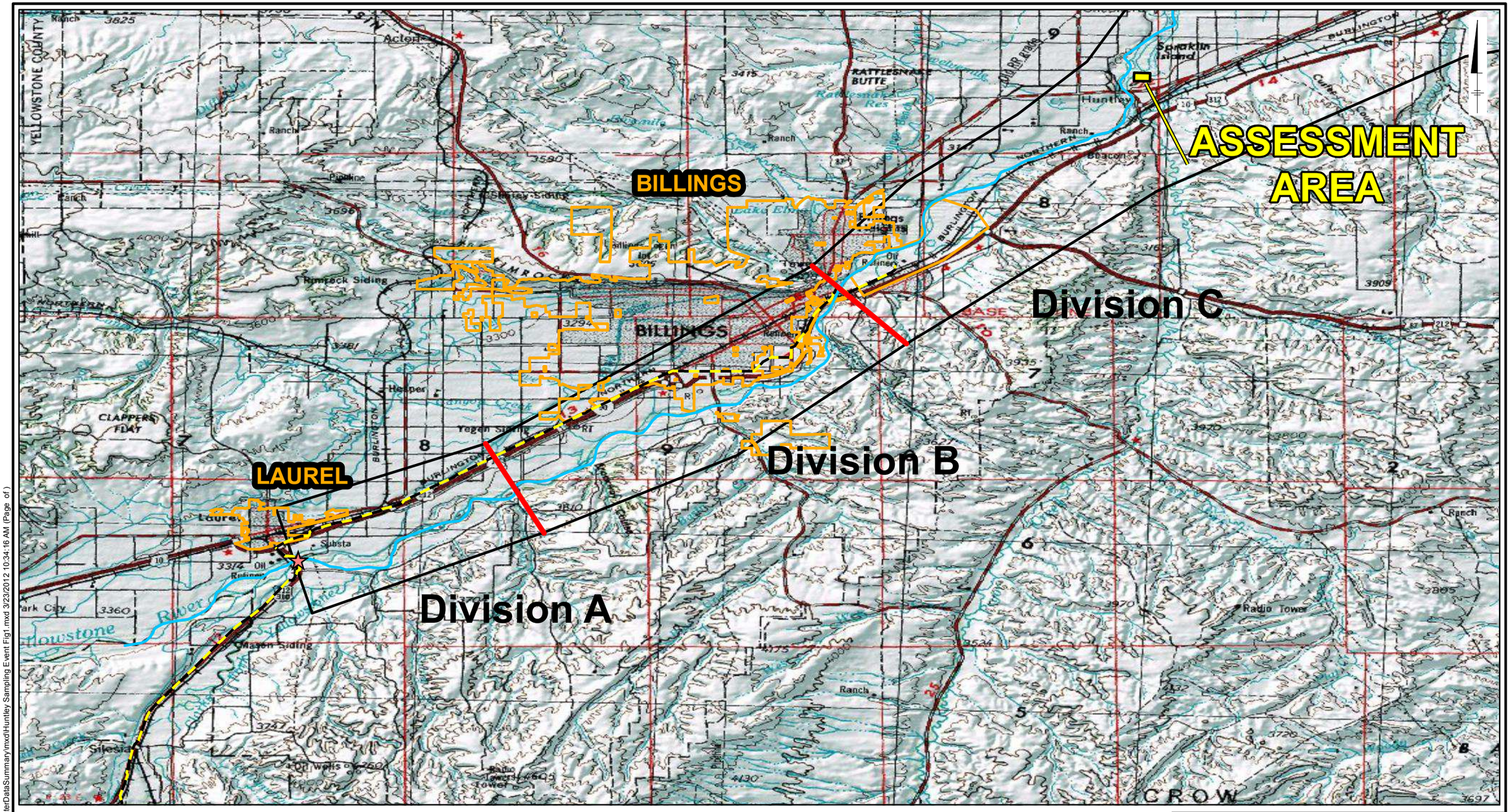
J- The compound was positively identified; however, the associated numerical value is an estimated concentration only. Result may be biased low.

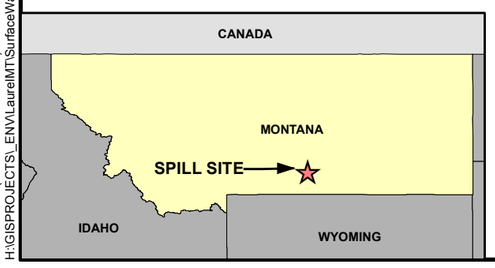
J+ The compound was positively identified; however, the associated numerical value is an estimated concentration only. Result may be biased high.

UJ- The compound was not detected above the reported sample quantitation limit. However, the reported limit is estimated with a potential low bias.

SDG Sample Delivery Group
< Less Than
All samples reported on dry weight basis.
NOAA Screening Quick Reference Table Fresh Water Sediment Criteria include ARCS for silver, LEL for DDT, and UET for di-n-butylphthalate.

Figures





LEGEND:

- SPILL SITE
- PIPELINE
- DIVISION BREAK
- YELLOWSTONE RIVER CENTERLINE (APPROXIMATE)
- CITY BOUNDARY

0 3.5 7 Miles

GRAPHIC SCALE

NOTES:

1. BASEMAPPING TOPOGRAPHIC MAP PROVIDED BY ESRI ARCGIS ONLINE MAP SERVICE.
2. YELLOWSTONE RIVER CENTERLINE APPROXIMATED FROM 2009 AERIAL IMAGERY.

SILVERTIP PIPELINE INCIDENT
LAUREL, MONTANA

HUNTLEY CHANNEL ASSESSMENT

ARCADIS

FIGURE
1

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
H:\GISPROJECTS_EN\VLaurelMT\SurfaceWaterDataSummary\mxd\Huntley Sampling Event Fig1.mxd 3/23/2012 10:34:16 AM (Page of)

LEGEND:

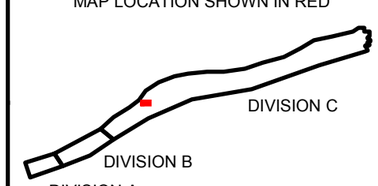
Sample Type

Surface Water

NOTES:

1. AERIALS: IMAGERY FROM BING MAPS THROUGH ARCGIS ONLINE FROM ARCGIS 10 ON DATE: 3/23/2012
2. SAMPLE LOCATION COORDINATES RECORDED USING HAND HELD GLOBAL POSITIONING SYSTEM (GPS) AND CORRECTED BASED ON SAMPLING OBSERVATONS AND FIELD NOTES.

MAP LOCATION SHOWN IN RED



SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

HUNTLEY CHANNEL ASSESSMENT

ARCADIS

FIGURE
2

City: MPLS Div/Group: IM Created By: m.gress Last Saved By: gmckinney
Exxon-Mobil (Silvertip)
H:\GIS\PROJECTS_ENV\LaurelMT\SurfaceWaterDataSummary\mxd\Huntley Sampling Event Fig2.mxd 3/23/2012 10:21:33 AM (Page of)

LEGEND:

Sample Types

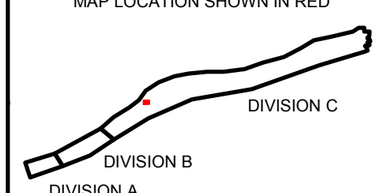
- Sediment
- Soil
- Surface Water
- Teflon Net

- Pool 1
- Pool 2N
- Pool 2S
- Pool 3
- Pool 4
- Pool 5

NOTES:

1. AERIALS: IMAGERY FROM BING MAPS THROUGH ARCGIS ONLINE FROM ARCGIS 10 ON DATE: 3/28/2012
2. SAMPLE LOCATION COORDINATES RECORDED USING HAND HELD GLOBAL POSITIONING SYSTEM (GPS) AND CORRECTED BASED ON SAMPLING OBSERVATONS AND FIELD NOTES.

MAP LOCATION SHOWN IN RED



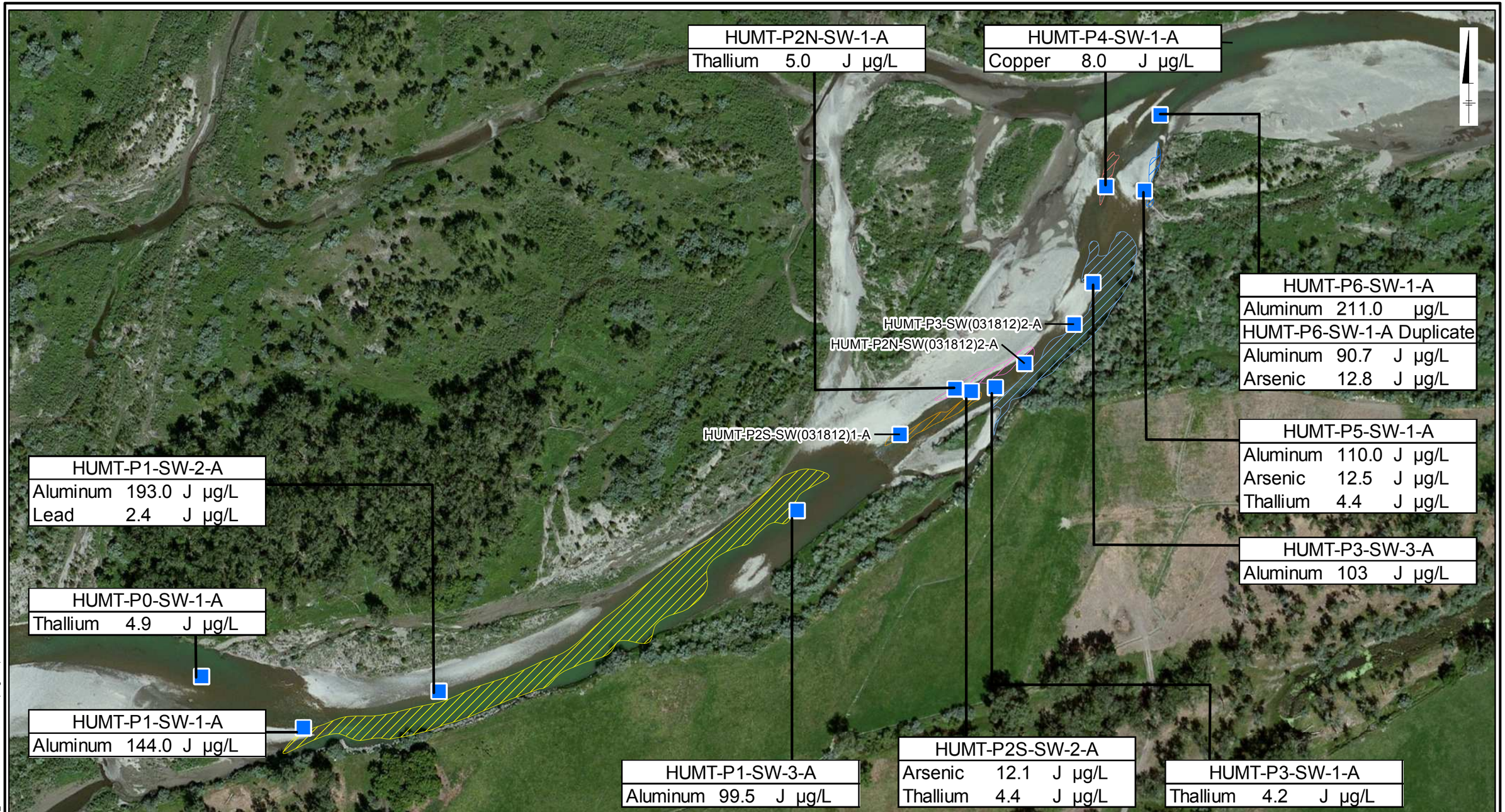
SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

HUNTLEY CHANNEL ASSESSMENT

ARCADIS

FIGURE
3

City: MPLS Div/Group: IM Created By: m.gress Last Saved By: gmckinney
Exxon-Mobil (Silvertip)
H:\GISPROJECTS_ENV\LaurelMT\SurfaceWaterDataSummary\mxd\Huntley Sampling Event Fig3.mxd 3/23/2012 9:59:11 AM (Page of)



LEGEND:

- Surface Water Samples
- Pool 1
- Pool 2N
- Pool 2S
- Pool 3
- Pool 4
- Pool 5

HUMT-P2S-SW-2-A — SAMPLE LOCATION

CHEMICAL	RESULT	QUALIFIER	
Arsenic	0.0121	J	mg/l
Thallium	0.0044	J	mg/l

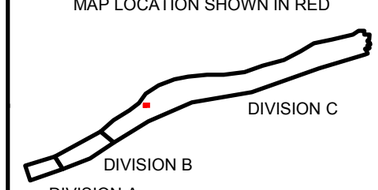
0 200 400 Feet

GRAPHIC SCALE

NOTES:

1. AERIALS: IMAGERY FROM BING MAPS THROUGH ARCGIS ONLINE FROM ARCGIS 10 ON 3/28/2012
2. SAMPLE LOCATION COORDINATES RECORDED USING HAND HELD GLOBAL POSITIONING SYSTEM (GPS) AND CORRECTED BASED ON SAMPLING OBSERVATONS AND FIELD NOTES.
3. A "J" QUALIFIER SIGNIFIES THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS ESTIMATED.
4. SAMPLE RESULTS ARE VALIDATED.
5. ONLY PARAMETERS WITH RESULTS ABOVE DEQ'S CIRCULAR DEQ-7 MONTANA NUMERIC WATER QUALITY STANDARDS, DEQ-7 AQUATIC LIFE STANDARDS - CHRONIC AND DEQ-7 AQUATIC LIFE STANDARDS - ACUTE ARE SHOWN IN DATA BOXES.

MAP LOCATION SHOWN IN RED



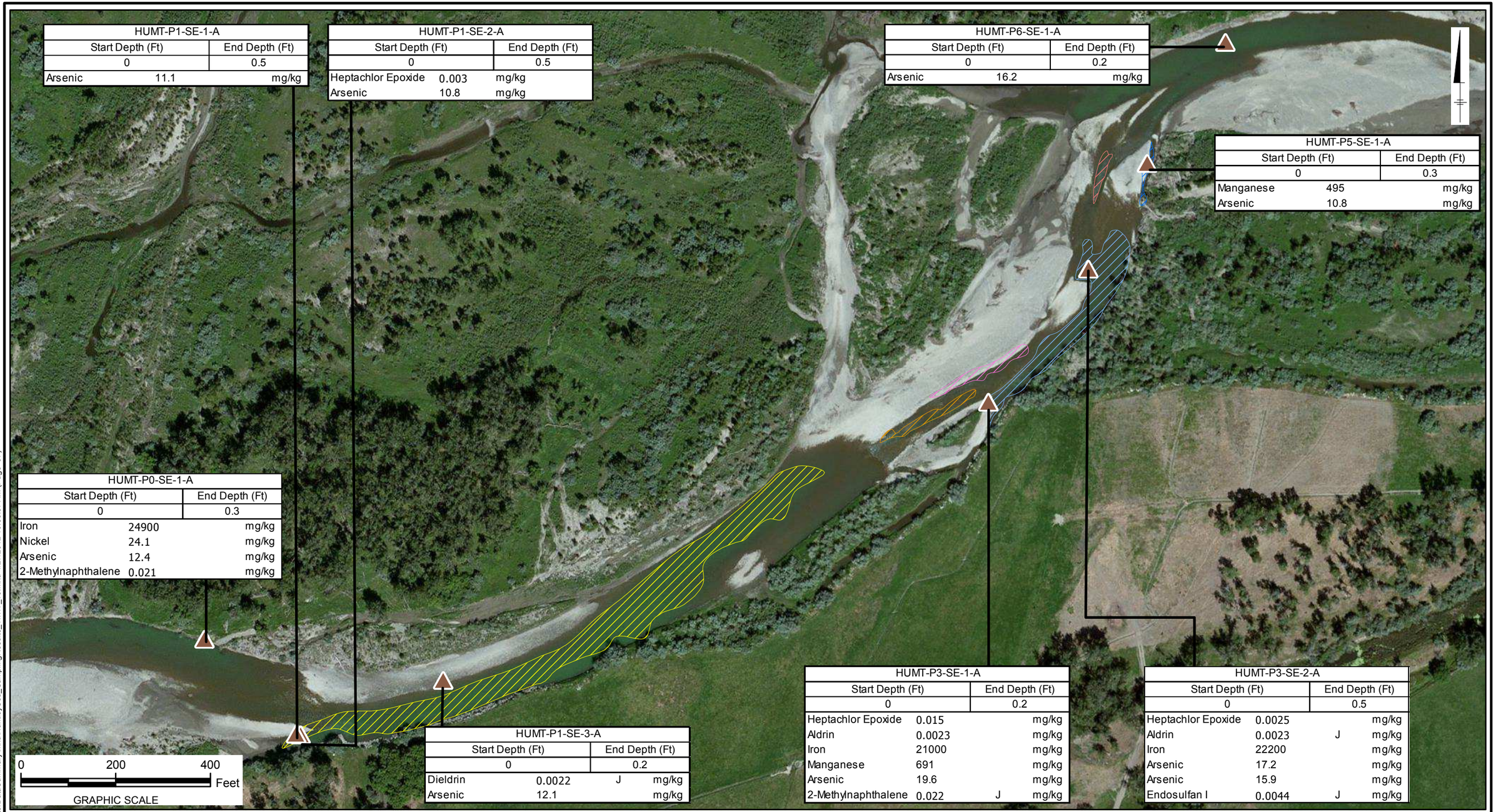
SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

HUNTLEY CHANNEL ASSESSMENT SURFACE WATER SAMPLE EXCEEDANCE RESULTS

ARCADIS

FIGURE 4

City: MPLS Div/Group: IM Created By: m.gress Last Saved By: gmckinney
Exxon-Mobil (Silvertip)
D:\GIS\BOA\Huntley\SW_SamplingResults_11x17_v2.mxd 6/19/2012 7:43:10 AM (Page of)



HUMT-P1-SE-1-A		
Start Depth (Ft)	End Depth (Ft)	
0	0.5	
Arsenic	11.1	mg/kg

HUMT-P1-SE-2-A		
Start Depth (Ft)	End Depth (Ft)	
0	0.5	
Heptachlor Epoxide	0.003	mg/kg
Arsenic	10.8	mg/kg

HUMT-P6-SE-1-A		
Start Depth (Ft)	End Depth (Ft)	
0	0.2	
Arsenic	16.2	mg/kg

HUMT-P5-SE-1-A		
Start Depth (Ft)	End Depth (Ft)	
0	0.3	
Manganese	495	mg/kg
Arsenic	10.8	mg/kg

HUMT-P0-SE-1-A		
Start Depth (Ft)	End Depth (Ft)	
0	0.3	
Iron	24900	mg/kg
Nickel	24.1	mg/kg
Arsenic	12.4	mg/kg
2-Methylnaphthalene	0.021	mg/kg

HUMT-P1-SE-3-A			
Start Depth (Ft)	End Depth (Ft)		
0	0.2		
Dieldrin	0.0022	J	mg/kg
Arsenic	12.1		mg/kg

HUMT-P3-SE-1-A			
Start Depth (Ft)	End Depth (Ft)		
0	0.2		
Heptachlor Epoxide	0.015		mg/kg
Aldrin	0.0023		mg/kg
Iron	21000		mg/kg
Manganese	691		mg/kg
Arsenic	19.6		mg/kg
2-Methylnaphthalene	0.022	J	mg/kg

HUMT-P3-SE-2-A			
Start Depth (Ft)	End Depth (Ft)		
0	0.5		
Heptachlor Epoxide	0.0025		mg/kg
Aldrin	0.0023	J	mg/kg
Iron	22200		mg/kg
Arsenic	17.2		mg/kg
Arsenic	15.9		mg/kg
Endosulfan I	0.0044	J	mg/kg

LEGEND:

- Sediment Samples
- Pool 1
- Pool 2N
- Pool 2S
- Pool 3
- Pool 4
- Pool 5

HUMT-P1-SE-3-A			
Start Depth (Ft)	End Depth (Ft)		
0	0.2		
Dieldrin	0.0022	J	mg/kg
Arsenic	12.1		mg/kg

SAMPLE LOCATION

SAMPLE DEPTH

CHEMICAL

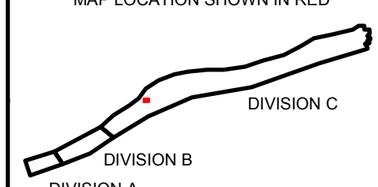
RESULT

QUALIFIER

NOTES:

1. AERIALS: IMAGERY FROM BING MAPS THROUGH ARCGIS ONLINE FROM ARCGIS 10 ON 3/28/2012
2. SAMPLE LOCATION COORDINATES RECORDED USING HAND HELD GLOBAL POSITIONING SYSTEM (GPS) AND CORRECTED BASED ON SAMPLING OBSERVATONS AND FIELD NOTES.
3. A "J" QUALIFIER SIGNIFIES THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS ESTIMATED.
4. SAMPLE RESULTS ARE VALIDATED.
5. ONLY PARAMETERS WITH RESULTS ABOVE USEPA FRESHWATER SEDIMENT SCREENING BENCHMARKS ARE SHOWN IN DATABOXES.

MAP LOCATION SHOWN IN RED



SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

HUNTLEY CHANNEL ASSESSMENT
SEDIMENT SAMPLE EXCEEDANCE RESULTS

ARCADIS

FIGURE
5

City: MPLS Div/Group: IM Created By: m.gress Last Saved By: gmckinney
Exxon-Mobil (Silvertip)
H:\GISPROJECTS_ENV\LaurelMT\SurfaceWaterDataSummary\mxd\HuntleySed_SamplingResults_11x17_v3.mxd 4/27/2012 10:53:57 AM (Page of)

Attachment A

Site Reconnaissance Photographs

ExxonMobil Silvertip Pipeline Incident Response
Preliminary Assessment of Reported Fish Kill, Huntley, MT
Photo Log

ExxonMobil Silvertip Pipeline Incident Response
Preliminary Assessment of Reported Fish Kill, Huntley, MT
Photo Log

ExxonMobil Silvertip Pipeline Incident Response
Preliminary Assessment of Reported Fish Kill, Huntley, MT
Photo Log

Attachment B

Data Verification/Validation Reports

Imagine the result

ExxonMobil- Silvertip
Huntley Channel

Data Verification/Validation Report

BILLINGS, MONTANA

Volatile, Semivolatile, Pesticide, Herbicide, MADEP
VPH/EPH, and Metals Analyses

SDG #ESM02 (1296417)

Analyses Performed By:
Lancaster Laboratories
Lancaster, Pennsylvania

Report #16098R
Review Level: Tier III
Project: B0085904.1205.00011

TIER 3 DATA VERIFICATION/VALIDATION REPORT

Project Name: Silvertip Huntley Channel
QAPP: Draft Quality Assurance Project Plan Silvertip Pipeline Incident, Laurel, Montana, March 2012
SDG: ESM02 (1296417)
Analytical Laboratory: Lancaster Laboratories
Analytical Parameters/Method: VOC-8260, SVOC-8270, PAH-8270-SIM, PEST-8081, HERB-8051, MADEP VPH/EPH, and MET-6010B/7141
Data Reviewer/Affiliation: Lyndi Mott/ARCADIS
Date Completed: April 19, 2012

This review was conducted as a Tier III evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis					
					VOC	SVOC	PEST/ HERB	VPH/EPH	MET	TOC
HUMT-P0-SW(031712)1-A	6584698	Surface water	3/17/2012		X	X	X	X	X	
HUMT-P1-SW(031712)1-A	6584699	Surface water	3/17/2012		X	X	X	X	X	
HUMT-P1-SW(031812)3-A	6584700	Surface water	3/18/2012		X	X	X	X	X	
HUMT-P1-SW(031812)2-A	6584701	Surface water	3/18/2012		X	X	X	X	X	
HUMT-P2S-SW(031812)2-A	6584702	Surface water	3/18/2012		X	X	X	X	X	
HUMT-P3-SW(031812)2-A	6584703	Surface water	3/18/2012		X	X	X	X	X	
HUMT-P2N-SW(031812)1-A	6584704	Surface water	3/18/2012		X	X	X	X	X	
HUMT-P2N-SW(031812)2-A	6584705	Surface water	3/18/2012		X	X	X	X	X	
HUMT-P2S-SW(031812)1-A	6584706	Surface water	3/18/2012		X	X	X	X	X	
HUMT-P3-SW(031812)1-A	6584707	Surface water	3/18/2012		X	X	X	X	X	
HUMT-P3-SW(031812)3-A	6584708	Surface water	3/18/2012		X	X	X	X	X	
HUMT-P4-SW(031812)1-A	6584709	Surface water	3/18/2012		X	X	X	X	X	
HUMT-P5-SW(031812)1-A	6584710	Surface water	3/18/2012		X	X	X	X	X	
HUMT-P6-SW(031812)1-A	6584711	Surface water	3/18/2012		X	X	X	X	X	

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis					
					VOC	SVOC	PEST/ HERB	VPH/EPH	MET	TOC
HUMT-P6-SW(031812)1-A-FD	6584715	Surface water	3/18/2012	HUMT-P6-SW (031812)1-A	X	X	X	X	X	
TRIPBLANK-1_20120319	6584716	Water	3/19/2012		X					
TRIPBLANK-2_20120319	6584717	Water	3/19/2012		X					
TRIPBLANK-3_20120319	6584718	Water	3/19/2012		X					

Note:

1. Volatile Petroleum Hydrocarbons/ Extractable Petroleum Hydrocarbons – Massachusetts Department of Environmental Protection (MADEP) method VPH/EPH
2. Total Organic Carbon – TOC
3. Matrix spike/matrix spike duplicate (MS/MSD) analysis was performed on sample location HUMT-P6-SW(031812)1-A.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

The chain of custody (COC) indicated that sample HUMT-P0-SW(031712)1-A and HUMT-P1-SW (031712)1-A were to be analyzed for Volatile, Semivolatile, Pesticides, Herbicides, MADEP VPH/EPH, and Metals analyses; however, due to limited sample volume, Herbicides were not analyzed.

The laboratory Receipt Documentation Log indicates that some amber bottles were received broken for sample locations HUMT-P4-SW (031812)1-A and HUMT-P6-SW(031812)1-A. It also indicated that the ambers were missing for HUMT-P1-SW (031812)3-A. The cooler that contained the missing ambers was received the next day, March 21, 2012. The lab noted it received 5 empty vials for HUMT-P2N (031812)2-A.

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260 8270, 8270-SIM, 8081, 8151, and Massachusetts Department of Environmental Protection (MADEP) Volatile Petroleum Hydrocarbons (VPH) and Extractable Petroleum Hydrocarbons (EPH). Data were reviewed based on laboratory method criteria and/or USEPA's National Functional Guidelines for Organics Data Review (October 1999), and Montana Department of Environmental Quality Data Validation Guideline for Evaluating Analytical Data (updated August 5, 2010).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  + Result may be biased high

  - Result may be biased low

  U Compound considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260	Water	14 days from collection to analysis	Cool to 4°C±2°C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to 4°C±2°C.

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (15%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compound	Criteria
HUMT-P0-SW(031712)1-A HUMT-P1-SW(031712)1-A HUMT-P1-SW(031812)3-A HUMT-P1-SW(031812)2-A HUMT-P2S-SW(031812)2-A HUMT-P3-SW(031812)2-A HUMT-P2N-SW(031812)1-A HUMT-P2N-SW(031812)2-A HUMT-P2S-SW(031812)1-A HUMT-P3-SW(031812)1-A HUMT-P3-SW(031812)3-A HUMT-P4-SW(031812)1-A HUMT-P5-SW(031812)1-A HUMT-P6-SW(031812)1-A HUMT-P6-SW(031812)1-A-FD TRIPBLANK-1_20120319 TRIPBLANK-2_20120319 TRIPBLANK-3_20120319	CCV %D	Dichlorodifluoromethane	-25%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J-
	RRF <0.01[1]	Non-detect	R
		Detect	J-
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 15% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J+
	%D >20% (decrease in sensitivity)	Non-detect	UJ-
		Detect	J-

[1] RRF of 0.01 only applies to compounds which are typically poor responding compounds (i.e., ketones, 1,4-dioxane, etc.)

All sample results for dichlorodifluoromethane were qualified as estimated, UJ-.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
HUMT-P6-SW(031812)1-A	Vinyl chloride	>UL	>UL

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J+
< the lower control limit (LL) but > 10%	Non-detect	UJ-
	Detect	J-
< 10%	Non-detect	R
	Detect	J-

Control Limit	Sample Result	Qualification
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

8. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
HUMT-P0-SW(031712)1-A HUMT-P1-SW(031712)1-A HUMT-P1-SW(031812)3-A HUMT-P1-SW(031812)2-A HUMT-P2S-SW(031812)2-A HUMT-P3-SW(031812)2-A HUMT-P2N-SW(031812)1-A HUMT-P2N-SW(031812)2-A HUMT-P2S-SW(031812)1-A HUMT-P3-SW(031812)1-A HUMT-P3-SW(031812)3-A HUMT-P4-SW(031812)1-A HUMT-P5-SW(031812)1-A HUMT-P6-SW(031812)1-A HUMT-P6-SW(031812)1-A-FD TRIPBLANK-1_20120319 TRIPBLANK-2_20120319 TRIPBLANK-3_20120319	Vinyl chloride	> UL

The criteria used to evaluate the LCS recoveries are presented in the following table. In the case of an LCS deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J+
< the lower control limit (LL) but > 10%	Non-detect	UJ-
	Detect	J-
< 10%	Non-detect	R
	Detect	J-

Vinyl chloride was not detected in the associated sample locations; therefore, the data was not qualified.

9. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
HUMT-P6-SW(031812)1-A/ HUMT-P6-SW(031812)1-A-FD	All compounds	U	U	AC

AC Acceptable
U Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
C. Trip blanks		X		X	
Laboratory Control Sample (LCS)		X	X		
Laboratory Control Sample Duplicate(LCSD)					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS)		X	X		
Matrix Spike Duplicate(MSD)		X	X		
MS/MSD Precision (RPD)		X		X	
Field Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present				X	

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
E. Reporting limits adjusted to reflect sample dilutions		X		X	

%RSD Relative standard deviation
%R Percent recovery
RPD Relative percent difference
%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270/ 8270 SIM	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4°C ± 2°
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4°C ± 2°

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (15%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compound	Criteria
HUMT-P0-SW(031712)1-A HUMT-P1-SW(031712)1-A HUMT-P1-SW(031812)2-A HUMT-P2S-SW(031812)2-A HUMT-P3-SW(031812)2-A HUMT-P2N-SW(031812)1-A HUMT-P2N-SW(031812)2-A HUMT-P2S-SW(031812)1-A HUMT-P3-SW(031812)1-A HUMT-P3-SW(031812)3-A HUMT-P4-SW(031812)1-A HUMT-P5-SW(031812)1-A HUMT-P6-SW(031812)1-A HUMT-P6-SW(031812)1-A-FD	CCV %D	Bis(2-Chloroethoxy) methane	22.0%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J-
	RRF <0.01[1]	Non-detect	R
		Detect	J-
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 15% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J+
	%D >20% (decrease in sensitivity)	Non-detect	UJ-
		Detect	J-

[1] RRF of 0.01 only applies to compounds which are typically poor responding compounds (i.e., ketones, 1,4-dioxane, etc.)

Bis(2-Chloroethoxy) methane was not detected in the samples, therefore, the sample results were not qualified.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
HUMT-P6-SW(031812)1-A	1-Methylnapthalene	<LL but >10%	<LL but >10%

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J+
< the lower control limit (LL) but > 10%	Non-detect	UJ-
	Detect	J-
< 10%	Non-detect	R
	Detect	J-
Parent sample concentration > four times the MS/MSD spiking solution concentration (D).	Detect	No Action
	Non-detect	

8. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

9. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
HUMT-P6-SW(031812)1-A/ HUMT-P6-SW(031812)1-A-FD	All compounds	U	U	AC

AC Acceptable
U Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present				X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

%RSD Relative standard deviation
%R Percent recovery
RPD Relative percent difference
%D Percent difference

PESTICIDES AND HERBICIDES ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8081/8051	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to 4°C±2°C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to 4°C±2°C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. System Performance

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

A maximum RSD of 20% is allowed or a correlation coefficient greater than 0.99 is allowed.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (15%).

All calibration criteria were within the control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. Pesticide and herbicide analysis requires that one of the two surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
HUMT-P5-SW(031812)1-A (PEST)	Tetrachloro-m-xylene	> UL
	Decachlorobiphenyl	> UL

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J+
< the lower control limit (LL) but > 10%	Non-detect	UJ-
	Detect	J-
< 10%	Non-detect	R
	Detect	J-
One surrogate exhibiting recovery outside the control limits but > 10%	Non-detect	No Action
	Detect	

Pesticides were not detected in sample location HUMT-P5-SW (031812)1-A, therefore, pesticide results were not qualified.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

7. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

8. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
HUMT-P6-SW(031812)1-A/ HUMT-P6-SW(031812)1-A-FD	All compounds	U	U	AC

AC Acceptable
U Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

9. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the percent difference (%D) of detected sample results must be less than 40%.

Pesticides and herbicides were not detected in the samples associated with this SDG.

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PESTICIDES & HERBICIDES

Pesticides & Herbicides; SW-846 8081/8151	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X	X		
Column %D $\leq$ 40%					X
Dilution Factor		X		X	
Moisture Content					X
Tier III Validation					
Initial calibration %RSDs		X		X	
Continuing calibration %Ds		X	X		
System performance and column resolution		X		X	
Compound identification and quantitation					
A. Quantitation Reports		X		X	
B. RT of sample compounds within the established RT windows		X		X	
C. Identification/confirmation					X
D. Transcription/calculation errors present				X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference.

VOLATILE PETROLEUM HYDROCARBON (VPH) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
MADEP VPH	Water	14 days from collection to analysis	Cooled @ 4°C ± 2°; preserved to a pH of less than 2.
	Soil	14 days from collection to analysis	Cooled @ 4°C ± 2°.

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

A maximum RSD of 25% is allowed.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (25%).

All calibration criteria were within the control limits.

4. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The VPH analysis requires the surrogate compounds exhibit recoveries within the recovery range of 70 to 130%.

All surrogate recoveries were within control limits.

5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the method-established acceptance limits of 70 to 130%. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within 30%.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
HUMT-P6-SW(031812)1-A	Unadjusted C5-C8 Aliphatics	>UL	>UL
	C9-C10 Aromatic Hydrocarbons	>UL	>UL
	Unadjusted C9-C12 Aliphatics	>UL	>UL
	Total Purgeable Hydrocarbons	>UL	>UL

AC = Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL) of 130%	Non-detect	No Action
	Detect	J+
< the lower control limit (LL) of 70% but > 10%	Non-detect	UJ-
	Detect	J-
< 10%	Non-detect	R
	Detect	J-
Parent sample concentration > four times the MS/MSD spiking solution concentration (D).	Detect	No Action
	Non-detect	

The VPH sample results were non-detect for sample location HUMT-P6-SW(031812)1-A, therefore, the sample results were not qualified.

6. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the acceptance limits of 70 to 130%.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

7. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
HUMT-P6-SW(031812)1-A/ HUMT-P6-SW(031812)1-A-FD	Unadjusted C5-C8 Aliphatics	100 U	100 U	AC
	C9-C10 Aromatic Hydrocarbons	100 U	100 U	AC
	Unadjusted C9-C12 Aliphatics	100 U	100 U	AC
	Total Purgeable Hydrocarbons	100 U	100 U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VPH ANALYSIS

VPH; MADEP VPH	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID/PID)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Field blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X
Tier III Validation					
Initial calibration %RSDs		X		X	
Continuing calibration %Ds		X		X	
System performance and column resolution		X		X	
Compound identification and quantitation					
A. Quantitation Reports		X		X	
B. RT of sample compounds within the established RT windows		X		X	
C. Pattern identification					X
D. Transcription/calculation errors present				X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

EXTRACTABLE PETROLEUM HYDROCARBON (EPH) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
MADEP EPH	Water	14 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4°C ± 2°; preserved to a pH of less than 2.
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4°C ± 2°.

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

A maximum RSD of 25% is allowed.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (25%).

All calibration criteria were within the control limits.

4. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The EPH analysis requires surrogate compounds exhibit recoveries within the acceptance limits of 40 to 140%.

All surrogate recoveries were within control limits.

5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the method specified acceptance limits of 40 to 140%. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within 50%.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not performed on a sample location associated with the SDG.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the acceptance limits of 40 to 140%.

The LCS analysis is not performed for an EPH Screen analysis.

7. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
HUMT-P6-SW(031812)1-A/ HUMT-P6-SW(031812)1-A-FD	EPH Screen	500 U	500 U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR EPH ANALYSIS

EPH; MADEP EPH	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R					X
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X
Tier III Validation					
Initial calibration %RSDs		X		X	
Continuing calibration %Ds		X		X	
System performance and column resolution		X		X	
Compound identification and quantitation					
A. Quantitation Reports		X		X	
B. RT of sample compounds within the established RT windows		X		X	
C. Pattern identification					X
D. Transcription/calculation errors present				X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 6010 and 7471. Data were reviewed based on laboratory method criteria and/or USEPA's National Functional Guidelines for Inorganic Data Review, October 2004, where applicable, and Montana Department of Environmental Quality Data Validation Guideline for Evaluating Analytical Data (updated August 5, 2010).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

  B The reported value was obtained from a reading less than the contract-required detection limit (CRDL), but greater than or equal to the instrument detection limit (IDL).

- Quantitation (Q) Qualifiers

  E The reported value is estimated due to the presence of interference.

  N Spiked sample recovery is not within control limits.

  * Duplicate analysis is not within control limits.

- Validation Qualifiers

  J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

  + Result may be biased high

  - Result may be biased low

  U Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010B	Water	180 days from collection to analysis	Cool to 4°C±2°C; preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to 4°C±2°C.
SW-846 7470	Water	28 days from collection to analysis	Cool to 4°C±2°C; preserved to a pH of less than 2.
SW-846 7471	Soil	28 days from collection to analysis	Cool to 4°C±2°C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL. No other qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All continuing calibration verification standard recoveries were within the control limit.

3.2 CRDL Check Standard

The CRDL check standard serves to verify the linearity of calibration of the analysis at the CRDL. The CRDL standard is not required for the analysis of aluminum (Al), barium (Ba), calcium (Ca), iron (Fe), magnesium (Mg), sodium (Na), and potassium (K). The criteria used to evaluate the CRDL standard analysis are presented below in the CRDL standards evaluation table.

All CRDL standard recoveries were within control limits.

3.3 ICP Interference Control Sample (ICS)

The ICS verifies the laboratories interelement and background correction factors.

All ICS exhibited recoveries within the control limits.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater.

The MS/MSD analysis performed on sample location HUMT-P6-SW(031812)1-A exhibited recoveries and RPD within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD recoveries exhibited acceptable RPD.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
HUMT-P6-SW(031812)1-A/ HUMT-P6-SW(031812)1-A-FD	Aluminum	0.211	0.0907 J	AC
	Arsenic	0.0088 J	0.0128 J	AC
	Barium	0.0836	0.0764	9.0%
	Calcium	74.6	72.4	3.0%
	Chromium	0.0019 J	0.015 U	AC
	Cobalt	0,00069 J	0.00065 J	AC
	Copper	0.01 U	0.0012 J	AC
	Iron	0.257	0.147 J	AC
	Magnesium	21.2	20.6	2.9%
	Manganese	0.260	0.181	35.8%
	Nickel	0.00096 J	0.01 U	AC
	Potassium	3.06	3.03	1.0%
	Sodium	30.3	29.7	2.0%

The analyte manganese associated with samples locations HUMT-P6-SW(031812)1-A and HUMT-P6-SW(031812)1-A-FD exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

The serial dilution performed on sample location HUMT-P6-SW(031812)1-A exhibited %D within the control limit.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW-846 6010/7471	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP) Atomic Absorption – Manual Cold Vapor (CV)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks					X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field Duplicate (RPD)		X	X		
ICP Serial Dilution		X		X	
Reporting Limit Verification		X		X	
Raw Data					X
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
CRDL Standard		X		X	
ICP Interference Check		X		X	
Transcription/calculation errors present				X	
Reporting limits adjusted to reflect sample dilutions		X		X	

%R Percent recovery
RPD Relative percent difference

VALIDATION PERFORMED BY: Lyndi Mott

SIGNATURE:

DATE: April 19, 2012

PEER REVIEW: Dennis Capria

DATE: April 23, 2012

CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS

13509/1296417 / 6584698-718

Chain of Custody and Analytical Request Record

ENERGY

Page _____ of _____

PLEASE PRINT (Provide as much information as possible.)

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
ARCADIS US Inc.	Silvertip Project - Hunt Channel	State:	Yes ☒ No ☐
Report Mail Address:	**Contact Name:**	**Phone/Fax:**	**Email:**
6723 Towpath Rd. Syracuse, NY 13214-0066	Mike Jones	315-671-9211	**Sampler: (Please Print)** Gordon Levin
Invoice Address:	**Invoice Contact & Phone:**	**Purchase Order:**	**Quote/Bottle Order:**

Special Report/Formats:

- ☐ DW
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☒ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Report sample ID's As!

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	VOC 8260, SVOC 8270 SIM	VPH, EPH Mass/MS Mod → Tetraethylene Glycol EPH Fractions	Pesticides 8081	Herbicides 8151	Forensic VPH 8260 Mod	TAL Metals 6010	Mercury 7470/7471	SEE ATTACHED	Comments
1 Hunt-P0-SW(031712)1-A	3/17/12	1430	W	X	X	X	X	X	X	X		OK as submitted
2 HUNT-P1-SW(031712)1-A	3/17/12	1615										OK as submitted
3 Hunt-P1(031812)3-A	3/18/12	1020										Hunt-P1-SW(031812)3-A
4 Hunt-P1(031312)2-A	3/13/12	0915										Hunt-P1-SW(031312)2-A
5 Hunt-P2S(031312)2-A	3/13/12	1207										Hunt-P2S-SW(031312)2-A
6 Hunt-SW-P3(031312)2-A	3/13/12	1345										Hunt-P3-SW(031312)2-A
7 HUNT-P2N(031312)1-A	3/18/12	1050										Hunt-P2N-SW(031912)1-A
8 HUNT-P2N(031312)2-A	3/13/12	1111										Hunt-P2N-SW(031812)2-A
9 Hunt-P2S(031312)1-A	3/13/12	1137										Hunt-P2S-SW(031312)1A
10 Hunt-P3(031312)1-A	3/13/12	1233										Hunt-P3(SW(031312)1A

Shipped by:

Cooler ID(s):

Receipt Temp 1.0-3.9 °C

On Ice: (Y) N

Custody Seal On Bottle (Y) N; On Cooler (Y) N

Intact (Y) N

Signature Match (Y) N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Gordon Levin	3/19/12 1500				
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:

Received by Laboratory: Date/Time: 3/20/12 0930 Signature: Carolyn M Ayers

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly noted on your analytical report.

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13509 | 12964171 | 6584698-718

ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

Page _____ of _____

PLEASE PRINT (Provide as much information as possible.)

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
ARCADIS US Inc.	Silvertip Project - Huntley Channel	State: MT	Yes ☒ No ☐
Report Mail Address:	**Contact Name:**	**Phone/Fax:**	**Email:**
6723 Towpath Rd, Syracuse, NY 13214-0066	Mike Jones	315-6719211	
Invoice Address:	**Invoice Contact & Phone:**	**Purchase Order:**	**Quote/Bottle Order:**

Sampler: (Please Print) Gordon Levin

Special Report/Formats:

- ☐ DW
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☒ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

Standard Turnaround (TAT) → RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Report Sample IDs As:

Shipped by:

Cooler ID(s):

Receipt Temp 1.0-3.9 °C

On Ice: (Y) N

Custody Seal: On Bottle (Y) N; On Cooler (Y) N; Intact (Y) N; Signature Match (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	VOC 8260, SVOC 8270 SIM	VPH, EPH screen → fractions	Pesticides 8081	Herbicides 8151	Forensic VPH 8260 Mod	TAL Metals 6010 no Hg	Hg Mercury 7470/7471			SEE ATTACHED	Comments
1	HUNT-SW-P3(031312)3-A	3/13/12	1439	W	X	X	X	X	X	X	X				HUNT-P3-SW(031312)3-A
2	HUNT-SW-P4(031312)1-A	3/13/12	1545		X	X	X	X	X	X	X				HUNT-P4-SW(031312)1-A
3	HUNT-SW-P5(031312)1A	3/13/12	1610		X	X	X	X	X	X	X				HUNT-P5-SW(031312)1A
4	HUNT-SW-P6(031312)1-A	3/13/12	1645		X	X	X	X	X	X	X				HUNT-P6-SW(031312)1-A
5	HUNT-SW-P6(031312)1-A DUP	3/13/12	1650		X	X	X	X	X	X	X				HUNT-P6-SW(031312)1-A DUP
6	Trip Blank-1	3/19/12			X										
7	Trip Blank-2	3/19/12			X										
8	Trip Blank-3	3/19/12			X										
9															
10															

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Gordon Levin	3/19/12 1500				

Received by Laboratory: Carolyn M Cyrus 3/20/12 0930

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P0-SW(031712)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584698
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 14:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P0W1A SDG#: ESM02-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

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Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P0-SW(031712)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584698
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 14:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P0W1A SDG#: ESM02-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	15		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	30		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

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Sample Description: HUMT-P0-SW(031712)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584698
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 14:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P0W1A SDG#: ESM02-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	10	30		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.051		1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.051		1
08357	Anthracene	120-12-7	N.D.	0.010	0.051		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.051		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.051		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.010	0.051		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.051		1
08357	Chrysene	218-01-9	N.D.	0.010	0.051		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051		1
08357	Fluoranthene	206-44-0	N.D.	0.010	0.051		1
08357	Fluorene	86-73-7	N.D.	0.010	0.051		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.051		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.051		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.051		1
08357	Naphthalene	91-20-3	N.D.	0.031	0.051		1
08357	Phenanthrene	85-01-8	N.D.	0.031	0.051		1
08357	Pyrene	129-00-0	N.D.	0.010	0.051		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0020	0.0099		1
00177	Alpha BHC	319-84-6	N.D.	0.0030	0.0099		1
00177	Beta BHC	319-85-7	N.D.	0.0034	0.0099		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0020	0.0099		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0020	0.0099		1

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Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P0-SW(031712)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584698
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 14:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P0W1A SDG#: ESM02-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Gamma Chlordane	5103-74-2	N.D.	0.0043	0.020		1
00177	p,p-DDD	72-54-8	N.D.	0.0050	0.020		1
00177	p,p-DDE	72-55-9	N.D.	0.0050	0.020		1
00177	p,p-DDT	50-29-3	N.D.	0.0050	0.020		1
00177	Delta BHC	319-86-8	N.D.	0.0034	0.0099		1
00177	Dieldrin	60-57-1	N.D.	0.0052	0.020		1
00177	Endosulfan I	959-98-8	N.D.	0.0043	0.0099		1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.020		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0057	0.020		1
00177	Endrin	72-20-8	N.D.	0.0080	0.020		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.020	0.099		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0050	0.020		1
00177	Heptachlor	76-44-8	N.D.	0.0020	0.0099		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0023	0.0099		1
00177	Methoxychlor	72-43-5	N.D.	0.030	0.099		1
00177	Toxaphene	8001-35-2	N.D.	0.99	3.0		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	N.D.	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0060 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.0650	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	55.9	0.0705	0.200		1
07051	Chromium	7440-47-3	0.0035 J	0.0011	0.0150		1
07052	Cobalt	7440-48-4	N.D.	0.00062	0.0050		1
07053	Copper	7440-50-8	N.D.	0.00094	0.0100		1
01754	Iron	7439-89-6	0.122 J	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1
01757	Magnesium	7439-95-4	17.8	0.0067	0.100		1
07058	Manganese	7439-96-5	0.200	0.00044	0.0050		1
07061	Nickel	7440-02-0	0.0027 J	0.00095	0.0100		1
01762	Potassium	7440-09-7	3.04	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	24.5	0.0647	1.00		1
07022	Thallium	7440-28-0	0.0049 J	0.0042	0.0300		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P0-SW(031712)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584698
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 14:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P0W1A SDG#: ESM02-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	16:46	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	16:46	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/21/2012	21:43	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012	09:18	Joseph M Gambler	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012	17:40	Kelli M Barto	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	11:36	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/20/2012	21:31	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/20/2012	22:08	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012	11:18	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012	21:44	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012	11:18	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012	11:18	Joanne M Gates	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P0-SW(031712)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584698
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 14:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P0W1A SDG#: ESM02-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 21:44	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 21:44	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 21:44	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:04	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SW(031712)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584699
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 16:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W1A SDG#: ESM02-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	4.1 J	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SW(031712)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584699
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 16:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W1A SDG#: ESM02-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		ug/l	ug/l	ug/l	ug/l	
08357	Acenaphthene	83-32-9	N.D.	0.0096	0.048		1
08357	Acenaphthylene	208-96-8	N.D.	0.0096	0.048		1
08357	Anthracene	120-12-7	N.D.	0.0096	0.048		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.0096	0.048		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.0096	0.048		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.0096	0.048		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.0096	0.048		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.0096	0.048		1
08357	Chrysene	218-01-9	N.D.	0.0096	0.048		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0096	0.048		1
08357	Fluoranthene	206-44-0	N.D.	0.0096	0.048		1
08357	Fluorene	86-73-7	N.D.	0.0096	0.048		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0096	0.048		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.0096	0.048		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.0096	0.048		1
08357	Naphthalene	91-20-3	0.082	0.029	0.048		1
08357	Phenanthrene	85-01-8	N.D.	0.029	0.048		1
08357	Pyrene	129-00-0	N.D.	0.0096	0.048		1
Pesticides/PCBs	**SW-846 8081A**		ug/l	ug/l	ug/l	ug/l	
00177	Aldrin	309-00-2	N.D.	0.0020	0.0099		1
00177	Alpha BHC	319-84-6	N.D.	0.0030	0.0099		1
00177	Beta BHC	319-85-7	N.D.	0.0034	0.0099		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0020	0.0099		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0020	0.0099		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0043	0.020		1
00177	p,p-DDD	72-54-8	N.D.	0.0050	0.020		1
00177	p,p-DDE	72-55-9	N.D.	0.0050	0.020		1
00177	p,p-DDT	50-29-3	N.D.	0.0050	0.020		1
00177	Delta BHC	319-86-8	N.D.	0.0034	0.0099		1
00177	Dieldrin	60-57-1	N.D.	0.0053	0.020		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SW(031712)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584699
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 16:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W1A SDG#: ESM02-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Endosulfan I	959-98-8	N.D.	0.0043	0.0099		1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.020		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0058	0.020		1
00177	Endrin	72-20-8	N.D.	0.0080	0.020		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.020	0.099		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0050	0.020		1
00177	Heptachlor	76-44-8	N.D.	0.0020	0.0099		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0023	0.0099		1
00177	Methoxychlor	72-43-5	N.D.	0.030	0.099		1
00177	Toxaphene	8001-35-2	N.D.	0.99	3.0		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.144 J	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0075 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.0846	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	99.4	0.0705	0.200		1
07051	Chromium	7440-47-3	N.D.	0.0011	0.0150		1
07052	Cobalt	7440-48-4	N.D.	0.00062	0.0050		1
07053	Copper	7440-50-8	N.D.	0.00094	0.0100		1
01754	Iron	7439-89-6	0.174 J	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1
01757	Magnesium	7439-95-4	25.1	0.0067	0.100		1
07058	Manganese	7439-96-5	0.251	0.00044	0.0050		1
07061	Nickel	7440-02-0	N.D.	0.00095	0.0100		1
01762	Potassium	7440-09-7	3.46	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	42.4	0.0647	1.00		1
07022	Thallium	7440-28-0	N.D.	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SW(031712)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584699
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 16:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W1A SDG#: ESM02-02

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012 17:07	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012 17:07	Jason M Long	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012 09:50	Joseph M Gambler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012 17:40	Kelli M Barto	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012 11:48	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012 02:30	Sherry L Morrow	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/20/2012 22:13	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/20/2012 22:34	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012 17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 11:22	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 11:22	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 11:22	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 21:48	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:05	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SW(031812)3-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584700
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 10:20 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W3A SDG#: ESM02-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	3.3 J	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P1-SW(031812)3-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584700
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 10:20 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W3A SDG#: ESM02-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	15		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	30		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

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Sample Description: HUMT-P1-SW(031812)3-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584700
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 10:20 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W3A SDG#: ESM02-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	10	30		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
	The laboratory did not receive sufficient sample volume to perform the method QC requirement for MS/MSD or MS/DUP analysis.						
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.050		1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.050		1
08357	Anthracene	120-12-7	N.D.	0.010	0.050		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.050		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.050		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.050		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.010	0.050		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.050		1
08357	Chrysene	218-01-9	N.D.	0.010	0.050		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.050		1
08357	Fluoranthene	206-44-0	N.D.	0.010	0.050		1
08357	Fluorene	86-73-7	N.D.	0.010	0.050		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.050		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.050		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.050		1
08357	Naphthalene	91-20-3	N.D.	0.030	0.050		1
08357	Phenanthrene	85-01-8	N.D.	0.030	0.050		1
08357	Pyrene	129-00-0	N.D.	0.010	0.050		1
	The laboratory did not receive sufficient sample volume to perform the method QC requirement for MS/MSD or MS/DUP analysis.						
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.16	0.49		1
10407	Dinoseb	88-85-7	N.D.	0.099	0.49		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SW(031812)3-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584700
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 10:20 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W3A SDG#: ESM02-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.							
10407	2,4,5-T	93-76-5	N.D.	0.015	0.049		1
10407	2,4,5-TP	93-72-1	N.D.	0.0099	0.049		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0019	0.0097		1
00177	Alpha BHC	319-84-6	N.D.	0.0029	0.0097		1
00177	Beta BHC	319-85-7	N.D.	0.0033	0.0097		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0019	0.0097		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0019	0.0097		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0042	0.019		1
00177	p,p-DDD	72-54-8	N.D.	0.0049	0.019		1
00177	p,p-DDE	72-55-9	N.D.	0.0049	0.019		1
00177	p,p-DDT	50-29-3	N.D.	0.0049	0.019		1
00177	Delta BHC	319-86-8	N.D.	0.0033	0.0097		1
00177	Dieldrin	60-57-1	N.D.	0.0052	0.019		1
00177	Endosulfan I	959-98-8	N.D.	0.0042	0.0097		1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.019		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0056	0.019		1
00177	Endrin	72-20-8	N.D.	0.0079	0.019		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.019	0.097		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0049	0.019		1
00177	Heptachlor	76-44-8	N.D.	0.0019	0.0097		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0022	0.0097		1
00177	Methoxychlor	72-43-5	N.D.	0.029	0.097		1
00177	Toxaphene	8001-35-2	N.D.	0.97	2.9		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.0995 J	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	N.D.	0.0051	0.0200		1
07046	Barium	7440-39-3	0.0828	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	96.7	0.0705	0.200		1
07051	Chromium	7440-47-3	0.0015 J	0.0011	0.0150		1
07052	Cobalt	7440-48-4	N.D.	0.00062	0.0050		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SW(031812)3-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584700
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 10:20 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W3A SDG#: ESM02-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
07053	Copper	7440-50-8	0.0018 J	0.00094	0.0100		1
01754	Iron	7439-89-6	0.121 J	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1
01757	Magnesium	7439-95-4	25.4	0.0067	0.100		1
07058	Manganese	7439-96-5	0.114	0.00044	0.0050		1
07061	Nickel	7440-02-0	0.0011 J	0.00095	0.0100		1
01762	Potassium	7440-09-7	3.46	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	42.4	0.0647	1.00		1
07022	Thallium	7440-28-0	N.D.	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

Additional sample volume received on 03/21/12 for SVOCs, PAHs, EPH, Pesticides & Herbicides.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	17:29	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	17:29	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12081WAD026	03/22/2012	06:41	Brian K Graham	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12081WAG026	03/22/2012	05:11	Mark A Clark	1
00813	BNA Water Extraction	SW-846 3510C	1	12081WAD026	03/21/2012	14:00	David S Schrum	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12081WAG026	03/21/2012	22:00	Elaine F Stoltzfus	1
10407	Herb water 8151A Master	SW-846 8151A	1	120810018A	03/22/2012	14:22	Lisa A Reinert	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120810012A	03/22/2012	12:20	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120810012A	03/21/2012	21:40	Karen L Beyer	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120810018A	03/22/2012	03:45	Roman Kuropatkin	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/20/2012	22:54	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120810010A	03/22/2012	12:00	Heather E Williams	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120810010A	03/21/2012	22:00	Elaine F Stoltzfus	1

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Analysis Report

Sample Description: HUMT-P1-SW(031812)3-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584700
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 10:20 by GL

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Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W3A SDG#: ESM02-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01743	Aluminum	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07044	Antimony	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07035	Arsenic	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07046	Barium	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07047	Beryllium	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07049	Cadmium	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
01750	Calcium	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07051	Chromium	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07052	Cobalt	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07053	Copper	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
01754	Iron	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07055	Lead	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
01757	Magnesium	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07058	Manganese	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07061	Nickel	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
01762	Potassium	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07066	Silver	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07071	Vanadium	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
07072	Zinc	SW-846 6010B	1	120811848001	03/22/2012 08:56	Joanne M Gates	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:06	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120811848001	03/21/2012 23:00	Annamaria Stipkovits	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

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Sample Description: HUMT-P1-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584701
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 09:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W2A SDG#: ESM02-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	3.7 J	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

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S20113949 Laurel, MT

LLI Sample # WW 6584701
LLI Group # 1296417
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Raleigh NC 27607

P1W2A SDG#: ESM02-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	14		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	29		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

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S20113949 Laurel, MT

LLI Sample # WW 6584701
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 09:15 by GL

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c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W2A SDG#: ESM02-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	10	29		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.050		1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.050		1
08357	Anthracene	120-12-7	N.D.	0.010	0.050		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.050		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.050		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.050		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.010	0.050		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.050		1
08357	Chrysene	218-01-9	N.D.	0.010	0.050		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.050		1
08357	Fluoranthene	206-44-0	N.D.	0.010	0.050		1
08357	Fluorene	86-73-7	N.D.	0.010	0.050		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.050		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.050		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.050		1
08357	Naphthalene	91-20-3	N.D.	0.030	0.050		1
08357	Phenanthrene	85-01-8	N.D.	0.030	0.050		1
08357	Pyrene	129-00-0	N.D.	0.010	0.050		1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.16	0.49		1
10407	Dinoseb	88-85-7	N.D.	0.098	0.49		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10407	2,4,5-T	93-76-5	N.D.	0.015	0.049		1

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Analysis Report

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Sample Description: HUMT-P1-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584701
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P1W2A SDG#: ESM02-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4,5-TP	93-72-1	N.D.	0.0098	0.049		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0020	0.0098		1
00177	Alpha BHC	319-84-6	N.D.	0.0029	0.0098		1
00177	Beta BHC	319-85-7	N.D.	0.0033	0.0098		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0020	0.0098		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0020	0.0098		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0042	0.020		1
00177	p,p-DDD	72-54-8	N.D.	0.0049	0.020		1
00177	p,p-DDE	72-55-9	N.D.	0.0049	0.020		1
00177	p,p-DDT	50-29-3	N.D.	0.0049	0.020		1
00177	Delta BHC	319-86-8	N.D.	0.0033	0.0098		1
00177	Dieldrin	60-57-1	N.D.	0.0052	0.020		1
00177	Endosulfan I	959-98-8	N.D.	0.0042	0.0098		1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.020		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0057	0.020		1
00177	Endrin	72-20-8	N.D.	0.0079	0.020		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.020	0.098		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0049	0.020		1
00177	Heptachlor	76-44-8	N.D.	0.0020	0.0098		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0023	0.0098		1
00177	Methoxychlor	72-43-5	N.D.	0.029	0.098		1
00177	Toxaphene	8001-35-2	N.D.	0.98	2.9		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.193 J	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0096 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.0861	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	99.7	0.0705	0.200		1
07051	Chromium	7440-47-3	0.0014 J	0.0011	0.0150		1
07052	Cobalt	7440-48-4	N.D.	0.00062	0.0050		1
07053	Copper	7440-50-8	N.D.	0.00094	0.0100		1
01754	Iron	7439-89-6	0.202	0.0141	0.200		1
07055	Lead	7439-92-1	0.0024 J	0.0022	0.0150		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584701
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 09:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W2A SDG#: ESM02-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01757	Magnesium	7439-95-4	25.1	0.0067	0.100		1
07058	Manganese	7439-96-5	0.204	0.00044	0.0050		1
07061	Nickel	7440-02-0	N.D.	0.00095	0.0100		1
01762	Potassium	7440-09-7	3.48	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	42.2	0.0647	1.00		1
07022	Thallium	7440-28-0	N.D.	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	18:13	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	18:13	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/21/2012	22:07	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012	10:23	Joseph M Gambler	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012	17:40	Kelli M Barto	1
10407	Herb water 8151A Master	SW-846 8151A	1	120800029A	03/21/2012	22:53	John W Perkins	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	12:00	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120800029A	03/21/2012	09:00	Kerrie A Freeburn	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/20/2012	23:35	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/20/2012	23:00	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	21:59	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	21:59	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	21:59	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	21:59	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012	21:59	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012	21:59	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012	21:59	John W Yanzuk II	1
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012	21:59	John W Yanzuk II	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584701
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 09:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1W2A SDG#: ESM02-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 21:59	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 21:59	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 21:59	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 21:59	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 21:59	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 21:59	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 21:59	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 11:34	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 21:59	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 11:34	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 11:34	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 21:59	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 21:59	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 21:59	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:07	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

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Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P2S-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584702
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 12:07 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P2W2A SDG#: ESM02-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

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Sample Description: HUMT-P2S-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584702
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 12:07 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P2W2A SDG#: ESM02-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	16		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	11	32		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P2S-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584702
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 12:07 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P2W2A SDG#: ESM02-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	11	32		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.011	0.055		1
08357	Acenaphthylene	208-96-8	N.D.	0.011	0.055		1
08357	Anthracene	120-12-7	N.D.	0.011	0.055		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.011	0.055		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.011	0.055		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	0.055		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.011	0.055		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.011	0.055		1
08357	Chrysene	218-01-9	N.D.	0.011	0.055		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	0.055		1
08357	Fluoranthene	206-44-0	N.D.	0.011	0.055		1
08357	Fluorene	86-73-7	N.D.	0.011	0.055		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.055		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.011	0.055		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.011	0.055		1
08357	Naphthalene	91-20-3	N.D.	0.033	0.055		1
08357	Phenanthrene	85-01-8	N.D.	0.033	0.055		1
08357	Pyrene	129-00-0	N.D.	0.011	0.055		1
	The laboratory did not receive sufficient sample volume to perform the method QC requirement for MS/MSD or MS/DUP analysis.						
	Reporting limits were raised due to limited sample volume.						
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.17	0.52		1
10407	Dinoseb	88-85-7	N.D.	0.10	0.52		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P2S-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584702
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 12:07 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P2W2A SDG#: ESM02-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.							
10407	2,4,5-T	93-76-5	N.D.	0.016	0.052		1
10407	2,4,5-TP	93-72-1	N.D.	0.010	0.052		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0021	0.011		1
00177	Alpha BHC	319-84-6	N.D.	0.0032	0.011		1
00177	Beta BHC	319-85-7	N.D.	0.0036	0.011		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0021	0.011		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0021	0.011		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0046	0.021		1
00177	p,p-DDD	72-54-8	N.D.	0.0053	0.021		1
00177	p,p-DDE	72-55-9	N.D.	0.0053	0.021		1
00177	p,p-DDT	50-29-3	N.D.	0.0053	0.021		1
00177	Delta BHC	319-86-8	N.D.	0.0036	0.011		1
00177	Dieldrin	60-57-1	N.D.	0.0056	0.021		1
00177	Endosulfan I	959-98-8	N.D.	0.0046	0.011		1
00177	Endosulfan II	33213-65-9	N.D.	0.016	0.021		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0062	0.021		1
00177	Endrin	72-20-8	N.D.	0.0086	0.021		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.021	0.11		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0053	0.021		1
00177	Heptachlor	76-44-8	N.D.	0.0021	0.011		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0024	0.011		1
00177	Methoxychlor	72-43-5	N.D.	0.032	0.11		1
00177	Toxaphene	8001-35-2	N.D.	1.1	3.2		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	N.D.	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0121 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.138	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	92.6	0.0705	0.200		1
07051	Chromium	7440-47-3	0.0024 J	0.0011	0.0150		1
07052	Cobalt	7440-48-4	0.00088 J	0.00062	0.0050		1

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Analysis Report

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Sample Description: HUMT-P2S-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584702
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 12:07 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P2W2A SDG#: ESM02-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
07053	Copper	7440-50-8	N.D.	0.00094	0.0100		1
01754	Iron	7439-89-6	0.537	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1
01757	Magnesium	7439-95-4	24.4	0.0067	0.100		1
07058	Manganese	7439-96-5	0.389	0.00044	0.0050		1
07061	Nickel	7440-02-0	0.0014 J	0.00095	0.0100		1
01762	Potassium	7440-09-7	3.33	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	32.6	0.0647	1.00		1
07022	Thallium	7440-28-0	0.0044 J	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	18:36	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	18:36	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/21/2012	22:31	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12081WAG026	03/22/2012	05:41	Mark A Clark	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	2	12081WAG026	03/21/2012	22:00	Elaine F Stoltzfus	1
10407	Herb water 8151A Master	SW-846 8151A	1	120800029A	03/21/2012	23:20	John W Perkins	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	12:12	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120800029A	03/21/2012	09:00	Kerrie A Freeburn	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/21/2012	00:16	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/20/2012	23:52	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	22:03	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	22:03	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	22:03	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	22:03	John W Yanzuk II	1

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Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

Sample Description: HUMT-P2S-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584702
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 12:07 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P2W2A SDG#: ESM02-05

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 11:38	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 11:38	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 11:38	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 22:03	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:09	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

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Analysis Report

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Sample Description: HUMT-P3-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584703
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 13:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3W2A SDG#: ESM02-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P3-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584703
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 13:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3W2A SDG#: ESM02-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	15		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	30		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P3-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584703
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 13:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3W2A SDG#: ESM02-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	10	30		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.011	0.054		1
08357	Acenaphthylene	208-96-8	N.D.	0.011	0.054		1
08357	Anthracene	120-12-7	N.D.	0.011	0.054		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.011	0.054		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.011	0.054		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	0.054		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.011	0.054		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.011	0.054		1
08357	Chrysene	218-01-9	N.D.	0.011	0.054		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	0.054		1
08357	Fluoranthene	206-44-0	N.D.	0.011	0.054		1
08357	Fluorene	86-73-7	N.D.	0.011	0.054		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.054		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.011	0.054		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.011	0.054		1
08357	Naphthalene	91-20-3	N.D.	0.032	0.054		1
08357	Phenanthrene	85-01-8	N.D.	0.032	0.054		1
08357	Pyrene	129-00-0	N.D.	0.011	0.054		1
	Reporting limits were raised due to limited sample volume.						
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.16	0.51		1
10407	Dinoseb	88-85-7	N.D.	0.10	0.51		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584703
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 13:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3W2A SDG#: ESM02-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4,5-T	93-76-5	N.D.	0.015	0.051		1
10407	2,4,5-TP	93-72-1	N.D.	0.010	0.051		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0020	0.0099		1
00177	Alpha BHC	319-84-6	N.D.	0.0030	0.0099		1
00177	Beta BHC	319-85-7	N.D.	0.0034	0.0099		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0020	0.0099		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0020	0.0099		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0042	0.020		1
00177	p,p-DDD	72-54-8	N.D.	0.0049	0.020		1
00177	p,p-DDE	72-55-9	N.D.	0.0049	0.020		1
00177	p,p-DDT	50-29-3	N.D.	0.0049	0.020		1
00177	Delta BHC	319-86-8	N.D.	0.0034	0.0099		1
00177	Dieldrin	60-57-1	N.D.	0.0052	0.020		1
00177	Endosulfan I	959-98-8	N.D.	0.0042	0.0099		1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.020		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0057	0.020		1
00177	Endrin	72-20-8	N.D.	0.0080	0.020		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.020	0.099		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0049	0.020		1
00177	Heptachlor	76-44-8	N.D.	0.0020	0.0099		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0023	0.0099		1
00177	Methoxychlor	72-43-5	N.D.	0.030	0.099		1
00177	Toxaphene	8001-35-2	N.D.	0.99	3.0		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	N.D.	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0094 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.0735	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	81.7	0.0705	0.200		1
07051	Chromium	7440-47-3	N.D.	0.0011	0.0150		1
07052	Cobalt	7440-48-4	N.D.	0.00062	0.0050		1
07053	Copper	7440-50-8	0.0021 J	0.00094	0.0100		1
01754	Iron	7439-89-6	0.143 J	0.0141	0.200		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584703
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 13:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3W2A SDG#: ESM02-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1
01757	Magnesium	7439-95-4	22.4	0.0067	0.100		1
07058	Manganese	7439-96-5	0.0711	0.00044	0.0050		1
07061	Nickel	7440-02-0	N.D.	0.00095	0.0100		1
01762	Potassium	7440-09-7	2.84	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	33.7	0.0647	1.00		1
07022	Thallium	7440-28-0	N.D.	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	18:58	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	18:58	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/21/2012	22:55	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012	11:30	Joseph M Gambler	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012	17:40	Kelli M Barto	1
10407	Herb water 8151A Master	SW-846 8151A	1	120800029A	03/21/2012	23:48	John W Perkins	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	12:24	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120800029A	03/21/2012	09:00	Kerrie A Freeburn	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/21/2012	00:57	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/21/2012	00:19	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	22:07	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	22:07	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	22:07	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	22:07	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012	22:07	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012	22:07	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012	22:07	John W Yanzuk II	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584703
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 13:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3W2A SDG#: ESM02-06

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012 22:07	John W Yanzuk II	1
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 22:07	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 22:07	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 22:07	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 22:07	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 22:07	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 22:07	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 22:07	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 11:42	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 22:07	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 11:42	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 11:42	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 22:07	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 22:07	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 22:07	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:10	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P2N-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584704
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 10:50 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2NW1A SDG#: ESM02-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

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Sample Description: HUMT-P2N-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584704
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 10:50 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2NW1A SDG#: ESM02-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	16		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	31		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

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Sample Description: HUMT-P2N-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584704
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 10:50 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2NW1A SDG#: ESM02-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	10	31		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.050		1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.050		1
08357	Anthracene	120-12-7	N.D.	0.010	0.050		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.050		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.050		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.050		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.010	0.050		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.050		1
08357	Chrysene	218-01-9	N.D.	0.010	0.050		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.050		1
08357	Fluoranthene	206-44-0	N.D.	0.010	0.050		1
08357	Fluorene	86-73-7	N.D.	0.010	0.050		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.050		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.050		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.050		1
08357	Naphthalene	91-20-3	N.D.	0.030	0.050		1
08357	Phenanthrene	85-01-8	N.D.	0.030	0.050		1
08357	Pyrene	129-00-0	N.D.	0.010	0.050		1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.17	0.54		1
10407	Dinoseb	88-85-7	N.D.	0.11	0.54		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10407	2,4,5-T	93-76-5	N.D.	0.016	0.054		1

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Sample Description: HUMT-P2N-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584704
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 10:50 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2NW1A SDG#: ESM02-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4,5-TP	93-72-1	N.D.	0.011	0.054		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0021	0.010		1
00177	Alpha BHC	319-84-6	N.D.	0.0031	0.010		1
00177	Beta BHC	319-85-7	N.D.	0.0035	0.010		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0021	0.010		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0021	0.010		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0044	0.021		1
00177	p,p-DDD	72-54-8	N.D.	0.0052	0.021		1
00177	p,p-DDE	72-55-9	N.D.	0.0052	0.021		1
00177	p,p-DDT	50-29-3	N.D.	0.0052	0.021		1
00177	Delta BHC	319-86-8	N.D.	0.0035	0.010		1
00177	Dieldrin	60-57-1	N.D.	0.0055	0.021		1
00177	Endosulfan I	959-98-8	N.D.	0.0044	0.010		1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.021		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0060	0.021		1
00177	Endrin	72-20-8	N.D.	0.0084	0.021		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.021	0.10		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0052	0.021		1
00177	Heptachlor	76-44-8	N.D.	0.0021	0.010		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0024	0.010		1
00177	Methoxychlor	72-43-5	N.D.	0.031	0.10		1
00177	Toxaphene	8001-35-2	N.D.	1.0	3.1		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	N.D.	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0052 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.0868	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	87.8	0.0705	0.200		1
07051	Chromium	7440-47-3	N.D.	0.0011	0.0150		1
07052	Cobalt	7440-48-4	N.D.	0.00062	0.0050		1
07053	Copper	7440-50-8	N.D.	0.00094	0.0100		1
01754	Iron	7439-89-6	0.152 J	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P2N-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584704
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 10:50 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2NW1A SDG#: ESM02-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01757	Magnesium	7439-95-4	23.5	0.0067	0.100		1
07058	Manganese	7439-96-5	0.567	0.00044	0.0050		1
07061	Nickel	7440-02-0	N.D.	0.00095	0.0100		1
01762	Potassium	7440-09-7	3.22	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	32.4	0.0647	1.00		1
07022	Thallium	7440-28-0	0.0050 J	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	19:20	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	19:20	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/21/2012	23:19	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012	12:03	Joseph M Gambler	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012	17:40	Kelli M Barto	1
10407	Herb water 8151A Master	SW-846 8151A	1	120800029A	03/22/2012	00:16	John W Perkins	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	12:37	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120800029A	03/21/2012	09:00	Kerrie A Freeburn	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/21/2012	01:39	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/21/2012	00:45	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	22:11	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	22:11	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	22:11	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	22:11	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012	22:11	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012	22:11	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012	22:11	John W Yanzuk II	1
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012	22:11	John W Yanzuk II	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P2N-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584704
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 10:50 by GL

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c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2NW1A SDG#: ESM02-07

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 22:11	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 22:11	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 22:11	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 22:11	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 22:11	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 22:11	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 22:11	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 11:46	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 22:11	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 11:46	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 11:46	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 22:11	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 22:11	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 22:11	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:11	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

*=This limit was used in the evaluation of the final result
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Analysis Report

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Sample Description: HUMT-P2N-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584705
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 11:11 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2NW2A SDG#: ESM02-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

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Sample Description: HUMT-P2N-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584705
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 11:11 by GL

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801 Corporate Center Dr # 300
Raleigh NC 27607

2NW2A SDG#: ESM02-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	16		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	11	32		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

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Sample Description: HUMT-P2N-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584705
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 11:11 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2NW2A SDG#: ESM02-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	11	32		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.051		1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.051		1
08357	Anthracene	120-12-7	N.D.	0.010	0.051		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.051		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.051		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.010	0.051		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.051		1
08357	Chrysene	218-01-9	N.D.	0.010	0.051		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051		1
08357	Fluoranthene	206-44-0	N.D.	0.010	0.051		1
08357	Fluorene	86-73-7	N.D.	0.010	0.051		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.051		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.051		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.051		1
08357	Naphthalene	91-20-3	N.D.	0.031	0.051		1
08357	Phenanthrene	85-01-8	N.D.	0.031	0.051		1
08357	Pyrene	129-00-0	N.D.	0.010	0.051		1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.17	0.53		1
10407	Dinoseb	88-85-7	N.D.	0.11	0.53		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10407	2,4,5-T	93-76-5	N.D.	0.016	0.053		1

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Analysis Report

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Sample Description: HUMT-P2N-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584705
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 11:11 by GL

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Raleigh NC 27607

2NW2A SDG#: ESM02-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4,5-TP	93-72-1	N.D.	0.011	0.053		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0022	0.011		1
00177	Alpha BHC	319-84-6	N.D.	0.0033	0.011		1
00177	Beta BHC	319-85-7	N.D.	0.0037	0.011		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0022	0.011		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0022	0.011		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0047	0.022		1
00177	p,p-DDD	72-54-8	N.D.	0.0055	0.022		1
00177	p,p-DDE	72-55-9	N.D.	0.0055	0.022		1
00177	p,p-DDT	50-29-3	N.D.	0.0055	0.022		1
00177	Delta BHC	319-86-8	N.D.	0.0037	0.011		1
00177	Dieldrin	60-57-1	N.D.	0.0058	0.022		1
00177	Endosulfan I	959-98-8	N.D.	0.0047	0.011		1
00177	Endosulfan II	33213-65-9	N.D.	0.016	0.022		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0063	0.022		1
00177	Endrin	72-20-8	N.D.	0.0089	0.022		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.022	0.11		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0055	0.022		1
00177	Heptachlor	76-44-8	N.D.	0.0022	0.011		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0025	0.011		1
00177	Methoxychlor	72-43-5	N.D.	0.033	0.11		1
00177	Toxaphene	8001-35-2	N.D.	1.1	3.3		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	N.D.	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	N.D.	0.0051	0.0200		1
07046	Barium	7440-39-3	0.0950	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	89.6	0.0705	0.200		1
07051	Chromium	7440-47-3	0.0101 J	0.0011	0.0150		1
07052	Cobalt	7440-48-4	N.D.	0.00062	0.0050		1
07053	Copper	7440-50-8	N.D.	0.00094	0.0100		1
01754	Iron	7439-89-6	0.163 J	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P2N-SW(031812)2-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584705
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 11:11 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2NW2A SDG#: ESM02-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01757	Magnesium	7439-95-4	24.1	0.0067	0.100		1
07058	Manganese	7439-96-5	0.0991	0.00044	0.0050		1
07061	Nickel	7440-02-0	0.0043 J	0.00095	0.0100		1
01762	Potassium	7440-09-7	3.34	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	32.2	0.0647	1.00		1
07022	Thallium	7440-28-0	N.D.	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	19:42	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	19:42	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/21/2012	23:43	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012	12:36	Joseph M Gambler	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012	17:40	Kelli M Barto	1
10407	Herb water 8151A Master	SW-846 8151A	1	120800029A	03/22/2012	00:43	John W Perkins	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	12:49	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120800029A	03/21/2012	09:00	Kerrie A Freeburn	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/21/2012	02:20	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/21/2012	01:11	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	22:15	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	22:15	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	22:15	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	22:15	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012	22:15	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012	22:15	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012	22:15	John W Yanzuk II	1
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012	22:15	John W Yanzuk II	1

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S20113949 Laurel, MT

LLI Sample # WW 6584705
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

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Raleigh NC 27607

2NW2A SDG#: ESM02-08

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 22:15	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 22:15	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 22:15	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 22:15	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 22:15	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 22:15	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 22:15	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 11:50	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 22:15	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 11:50	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 11:50	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 22:15	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 22:15	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 22:15	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:12	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

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Analysis Report

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Sample Description: HUMT-P2S-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584706
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 11:37 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2SW1A SDG#: ESM02-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

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2SW1A SDG#: ESM02-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	15		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	30		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

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2SW1A SDG#: ESM02-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	10	30		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.0099	0.050		1
08357	Acenaphthylene	208-96-8	N.D.	0.0099	0.050		1
08357	Anthracene	120-12-7	N.D.	0.0099	0.050		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.0099	0.050		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.0099	0.050		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.0099	0.050		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.0099	0.050		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.0099	0.050		1
08357	Chrysene	218-01-9	N.D.	0.0099	0.050		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0099	0.050		1
08357	Fluoranthene	206-44-0	N.D.	0.0099	0.050		1
08357	Fluorene	86-73-7	N.D.	0.0099	0.050		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0099	0.050		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.0099	0.050		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.0099	0.050		1
08357	Naphthalene	91-20-3	N.D.	0.030	0.050		1
08357	Phenanthrene	85-01-8	N.D.	0.030	0.050		1
08357	Pyrene	129-00-0	N.D.	0.0099	0.050		1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.16	0.50		1
10407	Dinoseb	88-85-7	N.D.	0.099	0.50		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10407	2,4,5-T	93-76-5	N.D.	0.015	0.050		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P2S-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584706
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 11:37 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2SW1A SDG#: ESM02-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4,5-TP	93-72-1	N.D.	0.0099	0.050		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0020	0.0098		1
00177	Alpha BHC	319-84-6	N.D.	0.0030	0.0098		1
00177	Beta BHC	319-85-7	N.D.	0.0033	0.0098		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0020	0.0098		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0020	0.0098		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0042	0.020		1
00177	p,p-DDD	72-54-8	N.D.	0.0049	0.020		1
00177	p,p-DDE	72-55-9	N.D.	0.0049	0.020		1
00177	p,p-DDT	50-29-3	N.D.	0.0049	0.020		1
00177	Delta BHC	319-86-8	N.D.	0.0033	0.0098		1
00177	Dieldrin	60-57-1	N.D.	0.0052	0.020		1
00177	Endosulfan I	959-98-8	N.D.	0.0042	0.0098		1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.020		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0057	0.020		1
00177	Endrin	72-20-8	N.D.	0.0080	0.020		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.020	0.098		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0049	0.020		1
00177	Heptachlor	76-44-8	N.D.	0.0020	0.0098		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0023	0.0098		1
00177	Methoxychlor	72-43-5	N.D.	0.029	0.098		1
00177	Toxaphene	8001-35-2	N.D.	0.98	2.9		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	N.D.	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0076 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.123	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	92.0	0.0705	0.200		1
07051	Chromium	7440-47-3	N.D.	0.0011	0.0150		1
07052	Cobalt	7440-48-4	0.00078 J	0.00062	0.0050		1
07053	Copper	7440-50-8	N.D.	0.00094	0.0100		1
01754	Iron	7439-89-6	0.389	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1

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Analysis Report

Sample Description: HUMT-P2S-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584706
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 11:37 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2SW1A SDG#: ESM02-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01757	Magnesium	7439-95-4	26.4	0.0067	0.100		1
07058	Manganese	7439-96-5	0.469	0.00044	0.0050		1
07061	Nickel	7440-02-0	N.D.	0.00095	0.0100		1
01762	Potassium	7440-09-7	3.42	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	31.4	0.0647	1.00		1
07022	Thallium	7440-28-0	N.D.	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	20:04	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	20:04	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/22/2012	00:07	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012	13:09	Joseph M Gambler	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012	17:40	Kelli M Barto	1
10407	Herb water 8151A Master	SW-846 8151A	1	120800029A	03/22/2012	02:06	John W Perkins	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	13:01	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120800029A	03/21/2012	09:00	Kerrie A Freeburn	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/21/2012	03:01	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/21/2012	01:37	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	22:19	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	22:19	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	22:19	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	22:19	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012	22:19	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012	22:19	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012	22:19	John W Yanzuk II	1
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012	22:19	John W Yanzuk II	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P2S-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584706
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 11:37 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

2SW1A SDG#: ESM02-09

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 22:19	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 22:19	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 22:19	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 22:19	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 22:19	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 22:19	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 22:19	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 11:54	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 22:19	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 11:54	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 11:54	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 22:19	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 22:19	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 22:19	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:15	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584707
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 12:33 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

3SW1A SDG#: ESM02-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. US-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

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Sample Description: HUMT-P3-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584707
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 12:33 by GL

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ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

3SW1A SDG#: ESM02-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	14		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	29		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P3-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584707
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 12:33 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

3SW1A SDG#: ESM02-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	10	29		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.0099	0.050		1
08357	Acenaphthylene	208-96-8	N.D.	0.0099	0.050		1
08357	Anthracene	120-12-7	N.D.	0.0099	0.050		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.0099	0.050		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.0099	0.050		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.0099	0.050		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.0099	0.050		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.0099	0.050		1
08357	Chrysene	218-01-9	N.D.	0.0099	0.050		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0099	0.050		1
08357	Fluoranthene	206-44-0	N.D.	0.0099	0.050		1
08357	Fluorene	86-73-7	N.D.	0.0099	0.050		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0099	0.050		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.0099	0.050		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.0099	0.050		1
08357	Naphthalene	91-20-3	N.D.	0.030	0.050		1
08357	Phenanthrene	85-01-8	N.D.	0.030	0.050		1
08357	Pyrene	129-00-0	N.D.	0.0099	0.050		1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.16	0.49		1
10407	Dinoseb	88-85-7	N.D.	0.099	0.49		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10407	2,4,5-T	93-76-5	N.D.	0.015	0.049		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584707
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 12:33 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

3SW1A SDG#: ESM02-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4,5-TP	93-72-1	N.D.	0.0099	0.049		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0019	0.0097		1
00177	Alpha BHC	319-84-6	N.D.	0.0029	0.0097		1
00177	Beta BHC	319-85-7	N.D.	0.0033	0.0097		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0019	0.0097		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0019	0.0097		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0042	0.019		1
00177	p,p-DDD	72-54-8	N.D.	0.0049	0.019		1
00177	p,p-DDE	72-55-9	N.D.	0.0049	0.019		1
00177	p,p-DDT	50-29-3	N.D.	0.0049	0.019		1
00177	Delta BHC	319-86-8	N.D.	0.0033	0.0097		1
00177	Dieldrin	60-57-1	N.D.	0.0051	0.019		1
00177	Endosulfan I	959-98-8	N.D.	0.0042	0.0097		1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.019		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0056	0.019		1
00177	Endrin	72-20-8	N.D.	0.0079	0.019		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.019	0.097		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0049	0.019		1
00177	Heptachlor	76-44-8	N.D.	0.0019	0.0097		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0022	0.0097		1
00177	Methoxychlor	72-43-5	N.D.	0.029	0.097		1
00177	Toxaphene	8001-35-2	N.D.	0.97	2.9		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	N.D.	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0085 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.0765	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	84.8	0.0705	0.200		1
07051	Chromium	7440-47-3	0.0012 J	0.0011	0.0150		1
07052	Cobalt	7440-48-4	N.D.	0.00062	0.0050		1
07053	Copper	7440-50-8	0.00095 J	0.00094	0.0100		1
01754	Iron	7439-89-6	0.175 J	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584707
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 12:33 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

3SW1A SDG#: ESM02-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01757	Magnesium	7439-95-4	22.5	0.0067	0.100		1
07058	Manganese	7439-96-5	0.154	0.00044	0.0050		1
07061	Nickel	7440-02-0	0.00099 J	0.00095	0.0100		1
01762	Potassium	7440-09-7	2.77	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	34.3	0.0647	1.00		1
07022	Thallium	7440-28-0	0.0042 J	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	20:26	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	20:26	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/22/2012	00:31	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012	13:42	Joseph M Gambler	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012	17:40	Kelli M Barto	1
10407	Herb water 8151A Master	SW-846 8151A	1	120800029A	03/22/2012	02:33	John W Perkins	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	13:13	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120800029A	03/21/2012	09:00	Kerrie A Freeburn	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/21/2012	03:42	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/21/2012	02:03	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	22:23	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	22:23	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	22:23	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	22:23	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012	22:23	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012	22:23	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012	22:23	John W Yanzuk II	1
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012	22:23	John W Yanzuk II	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584707
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 12:33 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

3SW1A SDG#: ESM02-10

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 22:23	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 22:23	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 22:23	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 22:23	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 22:23	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 22:23	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 22:23	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 11:58	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 22:23	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 11:58	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 11:58	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 22:23	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 22:23	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 22:23	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:16	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SW(031812)3-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584708
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 14:39 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

3SW3A SDG#: ESM02-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P3-SW(031812)3-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584708
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 14:39 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

3SW3A SDG#: ESM02-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	15		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	30		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

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Sample Description: HUMT-P3-SW(031812)3-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584708
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 14:39 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

3SW3A SDG#: ESM02-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	10	30		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.050		1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.050		1
08357	Anthracene	120-12-7	N.D.	0.010	0.050		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.050		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.050		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.050		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.010	0.050		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.050		1
08357	Chrysene	218-01-9	N.D.	0.010	0.050		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.050		1
08357	Fluoranthene	206-44-0	N.D.	0.010	0.050		1
08357	Fluorene	86-73-7	N.D.	0.010	0.050		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.050		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.050		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.050		1
08357	Naphthalene	91-20-3	N.D.	0.030	0.050		1
08357	Phenanthrene	85-01-8	N.D.	0.030	0.050		1
08357	Pyrene	129-00-0	N.D.	0.010	0.050		1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.16	0.51		1
10407	Dinoseb	88-85-7	N.D.	0.10	0.51		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10407	2,4,5-T	93-76-5	N.D.	0.015	0.051		1

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Analysis Report

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Sample Description: HUMT-P3-SW(031812)3-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584708
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 14:39 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

3SW3A SDG#: ESM02-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4,5-TP	93-72-1	N.D.	0.010	0.051		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0020	0.010		1
00177	Alpha BHC	319-84-6	N.D.	0.0030	0.010		1
00177	Beta BHC	319-85-7	N.D.	0.0034	0.010		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0020	0.010		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0020	0.010		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0070	0.020		1
00177	p,p-DDD	72-54-8	N.D.	0.0050	0.020		1
00177	p,p-DDE	72-55-9	N.D.	0.0050	0.020		1
00177	p,p-DDT	50-29-3	N.D.	0.0050	0.020		1
00177	Delta BHC	319-86-8	N.D.	0.0034	0.010		1
00177	Dieldrin	60-57-1	N.D.	0.0053	0.020		1
00177	Endosulfan I	959-98-8	N.D.	0.0043	0.010		1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.020		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0058	0.020		1
00177	Endrin	72-20-8	N.D.	0.0081	0.020		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.020	0.10		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0050	0.020		1
00177	Heptachlor	76-44-8	N.D.	0.0020	0.010		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0023	0.010		1
00177	Methoxychlor	72-43-5	N.D.	0.030	0.10		1
00177	Toxaphene	8001-35-2	N.D.	1.0	3.0		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.103 J	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0065 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.0751	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	81.7	0.0705	0.200		1
07051	Chromium	7440-47-3	N.D.	0.0011	0.0150		1
07052	Cobalt	7440-48-4	N.D.	0.00062	0.0050		1
07053	Copper	7440-50-8	N.D.	0.00094	0.0100		1
01754	Iron	7439-89-6	0.161 J	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1

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Analysis Report

Sample Description: HUMT-P3-SW(031812)3-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584708
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 14:39 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

3SW3A SDG#: ESM02-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01757	Magnesium	7439-95-4	22.4	0.0067	0.100		1
07058	Manganese	7439-96-5	0.0785	0.00044	0.0050		1
07061	Nickel	7440-02-0	N.D.	0.00095	0.0100		1
01762	Potassium	7440-09-7	2.85	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	33.7	0.0647	1.00		1
07022	Thallium	7440-28-0	N.D.	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	20:48	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	20:48	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/22/2012	00:56	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012	14:48	Gregory J Drahovsky	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012	17:40	Kelli M Barto	1
10407	Herb water 8151A Master	SW-846 8151A	1	120800029A	03/22/2012	03:01	John W Perkins	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	13:25	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120800029A	03/21/2012	09:00	Kerrie A Freeburn	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/21/2012	04:23	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/21/2012	02:29	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	22:27	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	22:27	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	22:27	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	22:27	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012	22:27	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012	22:27	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012	22:27	John W Yanzuk II	1

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Analysis Report

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Sample Description: HUMT-P3-SW(031812)3-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584708
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 14:39 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

3SW3A SDG#: ESM02-11

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012 22:27	John W Yanzuk II	1
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 22:27	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 22:27	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 22:27	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 22:27	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 22:27	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 22:27	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 22:27	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 12:02	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 22:27	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 12:02	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 12:02	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 22:27	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 22:27	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 22:27	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:17	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P4-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584709
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

4SW1A SDG#: ESM02-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ -	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

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Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P4-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584709
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

4SW1A SDG#: ESM02-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	15		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	30		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

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Sample Description: HUMT-P4-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584709
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

4SW1A SDG#: ESM02-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	10	30		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.052		1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.052		1
08357	Anthracene	120-12-7	N.D.	0.010	0.052		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.052		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.052		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.052		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.010	0.052		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.052		1
08357	Chrysene	218-01-9	N.D.	0.010	0.052		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.052		1
08357	Fluoranthene	206-44-0	N.D.	0.010	0.052		1
08357	Fluorene	86-73-7	N.D.	0.010	0.052		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.052		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.052		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.052		1
08357	Naphthalene	91-20-3	N.D.	0.031	0.052		1
08357	Phenanthrene	85-01-8	N.D.	0.031	0.052		1
08357	Pyrene	129-00-0	N.D.	0.010	0.052		1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.16	0.50		1
10407	Dinoseb	88-85-7	N.D.	0.10	0.50		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10407	2,4,5-T	93-76-5	N.D.	0.015	0.050		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P4-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584709
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

4SW1A SDG#: ESM02-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4,5-TP	93-72-1	N.D.	0.010	0.050		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0020	0.010		1
00177	Alpha BHC	319-84-6	N.D.	0.0030	0.010		1
00177	Beta BHC	319-85-7	N.D.	0.0035	0.010		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0020	0.010		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0020	0.010		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0044	0.020		1
00177	p,p-DDD	72-54-8	N.D.	0.0051	0.020		1
00177	p,p-DDE	72-55-9	N.D.	0.0051	0.020		1
00177	p,p-DDT	50-29-3	N.D.	0.0051	0.020		1
00177	Delta BHC	319-86-8	N.D.	0.0035	0.010		1
00177	Dieldrin	60-57-1	N.D.	0.0054	0.020		1
00177	Endosulfan I	959-98-8	N.D.	0.0044	0.010		1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.020		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0059	0.020		1
00177	Endrin	72-20-8	N.D.	0.0082	0.020		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.020	0.10		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0051	0.020		1
00177	Heptachlor	76-44-8	N.D.	0.0020	0.010		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0023	0.010		1
00177	Methoxychlor	72-43-5	N.D.	0.030	0.10		1
00177	Toxaphene	8001-35-2	N.D.	1.0	3.0		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	N.D.	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0073 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.0805	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	74.1	0.0705	0.200		1
07051	Chromium	7440-47-3	N.D.	0.0011	0.0150		1
07052	Cobalt	7440-48-4	N.D.	0.00062	0.0050		1
07053	Copper	7440-50-8	0.0080 J	0.00094	0.0100		1
01754	Iron	7439-89-6	0.0680 J	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P4-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584709
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

4SW1A SDG#: ESM02-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01757	Magnesium	7439-95-4	21.2	0.0067	0.100		1
07058	Manganese	7439-96-5	0.155	0.00044	0.0050		1
07061	Nickel	7440-02-0	N.D.	0.00095	0.0100		1
01762	Potassium	7440-09-7	3.06	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	31.8	0.0647	1.00		1
07022	Thallium	7440-28-0	N.D.	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	21:10	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	21:10	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/22/2012	01:19	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012	15:22	Gregory J Drahovsky	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012	17:40	Kelli M Barto	1
10407	Herb water 8151A Master	SW-846 8151A	1	120800029A	03/22/2012	03:29	John W Perkins	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	13:37	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120800029A	03/21/2012	09:00	Kerrie A Freeburn	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/21/2012	05:04	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/21/2012	02:55	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	22:30	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	22:30	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	22:30	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	22:30	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012	22:30	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012	22:30	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012	22:30	John W Yanzuk II	1

*=This limit was used in the evaluation of the final result
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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P4-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584709
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

4SW1A SDG#: ESM02-12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012 22:30	John W Yanzuk II	1
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 22:30	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 22:30	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 22:30	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 22:30	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 22:30	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 22:30	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 22:30	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 12:06	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 22:30	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 12:06	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 12:06	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 22:30	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 22:30	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 22:30	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:19	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P5-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584710
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:10 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

5SW1A SDG#: ESM02-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P5-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584710
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:10 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

5SW1A SDG#: ESM02-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	14		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	29		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

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Sample Description: HUMT-P5-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584710
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:10 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

5SW1A SDG#: ESM02-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	10	29		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.0098	0.049		1
08357	Acenaphthylene	208-96-8	N.D.	0.0098	0.049		1
08357	Anthracene	120-12-7	N.D.	0.0098	0.049		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.0098	0.049		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.0098	0.049		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.0098	0.049		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.0098	0.049		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.0098	0.049		1
08357	Chrysene	218-01-9	N.D.	0.0098	0.049		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0098	0.049		1
08357	Fluoranthene	206-44-0	N.D.	0.0098	0.049		1
08357	Fluorene	86-73-7	N.D.	0.0098	0.049		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0098	0.049		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.0098	0.049		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.0098	0.049		1
08357	Naphthalene	91-20-3	N.D.	0.029	0.049		1
08357	Phenanthrene	85-01-8	N.D.	0.029	0.049		1
08357	Pyrene	129-00-0	N.D.	0.0098	0.049		1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.16	0.50		1
10407	Dinoseb	88-85-7	N.D.	0.10	0.50		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10407	2,4,5-T	93-76-5	N.D.	0.015	0.050		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P5-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584710
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:10 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

5SW1A SDG#: ESM02-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4,5-TP	93-72-1	N.D.	0.010	0.050		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0019	0.0095		1
00177	Alpha BHC	319-84-6	N.D.	0.0029	0.0095		1
00177	Beta BHC	319-85-7	N.D.	0.0032	0.0095		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0019	0.0095		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0019	0.0095		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0041	0.019		1
00177	p,p-DDD	72-54-8	N.D.	0.0048	0.019		1
00177	p,p-DDE	72-55-9	N.D.	0.0048	0.019		1
00177	p,p-DDT	50-29-3	N.D.	0.0048	0.019		1
00177	Delta BHC	319-86-8	N.D.	0.0032	0.0095		1
00177	Dieldrin	60-57-1	N.D.	0.0050	0.019		1
00177	Endosulfan I	959-98-8	N.D.	0.0041	0.0095		1
00177	Endosulfan II	33213-65-9	N.D.	0.014	0.019		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0055	0.019		1
00177	Endrin	72-20-8	N.D.	0.0077	0.019		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.019	0.095		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0048	0.019		1
00177	Heptachlor	76-44-8	N.D.	0.0019	0.0095		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0022	0.0095		1
00177	Methoxychlor	72-43-5	N.D.	0.029	0.095		1
00177	Toxaphene	8001-35-2	N.D.	0.95	2.9		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.110 J	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0125 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.123	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	91.3	0.0705	0.200		1
07051	Chromium	7440-47-3	N.D.	0.0011	0.0150		1
07052	Cobalt	7440-48-4	0.0012 J	0.00062	0.0050		1
07053	Copper	7440-50-8	N.D.	0.00094	0.0100		1
01754	Iron	7439-89-6	0.453	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P5-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584710
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:10 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

5SW1A SDG#: ESM02-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01757	Magnesium	7439-95-4	24.4	0.0067	0.100		1
07058	Manganese	7439-96-5	1.38	0.00044	0.0050		1
07061	Nickel	7440-02-0	0.0015 J	0.00095	0.0100		1
01762	Potassium	7440-09-7	3.09	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	32.5	0.0647	1.00		1
07022	Thallium	7440-28-0	0.0044 J	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	21:31	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	21:31	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/22/2012	01:43	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012	15:55	Gregory J Drahovsky	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012	17:40	Kelli M Barto	1
10407	Herb water 8151A Master	SW-846 8151A	1	120800029A	03/22/2012	03:56	John W Perkins	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	14:49	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120800029A	03/21/2012	09:00	Kerrie A Freeburn	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/20/2012	17:25	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/21/2012	03:22	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	22:34	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	22:34	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	22:34	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	22:34	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012	22:34	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012	22:34	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012	22:34	John W Yanzuk II	1

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Analysis Report

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Sample Description: HUMT-P5-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584710
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:10 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

5SW1A SDG#: ESM02-13

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012 22:34	John W Yanzuk II	1
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 22:34	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 22:34	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 22:34	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 22:34	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 22:34	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 22:34	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 22:34	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 12:10	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 22:34	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 12:10	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 12:10	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 22:34	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 22:34	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 22:34	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:20	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P6-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584711
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

6SW1A SDG#: ESM02-14BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

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S20113949 Laurel, MT

LLI Sample # WW 6584711
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Project Name: Silvertip Huntley Channel

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Raleigh NC 27607

6SW1A SDG#: ESM02-14BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	15		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	31		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P6-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584711
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

6SW1A SDG#: ESM02-14BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	10	31		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		ug/l	ug/l	ug/l	ug/l	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.051		1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.051		1
08357	Anthracene	120-12-7	N.D.	0.010	0.051		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.051		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.051		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.010	0.051		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.051		1
08357	Chrysene	218-01-9	N.D.	0.010	0.051		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051		1
08357	Fluoranthene	206-44-0	N.D.	0.010	0.051		1
08357	Fluorene	86-73-7	N.D.	0.010	0.051		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.051		1
08357	1-Methylnaphthalene	90-12-0	N.D. VJ-	0.010	0.051		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.051		1
08357	Naphthalene	91-20-3	N.D.	0.031	0.051		1
08357	Phenanthrene	85-01-8	N.D.	0.031	0.051		1
08357	Pyrene	129-00-0	N.D.	0.010	0.051		1
Herbicides	**SW-846 8151A**		ug/l	ug/l	ug/l	ug/l	
10407	2,4-D	94-75-7	N.D.	0.16	0.49		1
10407	Dinoseb	88-85-7	N.D.	0.099	0.49		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10407	2,4,5-T	93-76-5	N.D.	0.015	0.049		1

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S20113949 Laurel, MT

LLI Sample # WW 6584711
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

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ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

6SW1A SDG#: ESM02-14BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4,5-TP	93-72-1	N.D.	0.0099	0.049		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0020	0.0098		1
00177	Alpha BHC	319-84-6	N.D.	0.0029	0.0098		1
00177	Beta BHC	319-85-7	N.D.	0.0033	0.0098		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0020	0.0098		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0020	0.0098		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0042	0.020		1
00177	p,p-DDD	72-54-8	N.D.	0.0049	0.020		1
00177	p,p-DDE	72-55-9	N.D.	0.0049	0.020		1
00177	p,p-DDT	50-29-3	N.D.	0.0049	0.020		1
00177	Delta BHC	319-86-8	N.D.	0.0033	0.0098		1
00177	Dieldrin	60-57-1	N.D.	0.0052	0.020		1
00177	Endosulfan I	959-98-8	N.D.	0.0042	0.0098		1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.020		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0057	0.020		1
00177	Endrin	72-20-8	N.D.	0.0079	0.020		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.020	0.098		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0049	0.020		1
00177	Heptachlor	76-44-8	N.D.	0.0020	0.0098		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0022	0.0098		1
00177	Methoxychlor	72-43-5	N.D.	0.029	0.098		1
00177	Toxaphene	8001-35-2	N.D.	0.98	2.9		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100		1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.211	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0088 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.0836	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	74.6	0.0705	0.200		1
07051	Chromium	7440-47-3	0.0019 J	0.0011	0.0150		1
07052	Cobalt	7440-48-4	0.00069 J	0.00062	0.0050		1
07053	Copper	7440-50-8	N.D.	0.00094	0.0100		1
01754	Iron	7439-89-6	0.257	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1

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Analysis Report

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Sample Description: HUMT-P6-SW(031812)1-A Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584711
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

6SW1A SDG#: ESM02-14BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals		SW-846 6010B	mg/l	mg/l	mg/l	mg/l	
01757	Magnesium	7439-95-4	21.2	0.0067	0.100		1
07058	Manganese	7439-96-5	0.260 J	0.00044	0.0050		1
07061	Nickel	7440-02-0	0.00096 J	0.00095	0.0100		1
01762	Potassium	7440-09-7	3.06	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	30.3	0.0647	1.00		1
07022	Thallium	7440-28-0	N.D.	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
		SW-846 7470A	mg/l	mg/l	mg/l	mg/l	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	15:18	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	15:18	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/21/2012	20:31	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012	07:40	Joseph M Gambler	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012	17:40	Kelli M Barto	1
10407	Herb water 8151A Master	SW-846 8151A	1	120800029A	03/22/2012	04:24	John W Perkins	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	15:01	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120800029A	03/21/2012	09:00	Kerrie A Freeburn	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/20/2012	18:06	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/21/2012	03:48	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	21:21	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	21:21	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	21:21	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	21:21	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012	21:21	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012	21:21	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012	21:21	John W Yanzuk II	1
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012	21:21	John W Yanzuk II	1

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6SW1A SDG#: ESM02-14BKG

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 21:21	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 21:21	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 21:21	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 21:21	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 21:21	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 21:21	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 21:21	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 10:54	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 21:21	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 10:54	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 10:54	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 21:21	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 21:21	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 21:21	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:21	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

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Sample Description: HUMT-P6-SW(031812)1-A-DUP Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584715
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:50 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

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801 Corporate Center Dr # 300
Raleigh NC 27607

6SWFD SDG#: ESM02-15FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

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Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P6-SW(031812)1-A-DUP Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584715
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:50 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

6SWFD SDG#: ESM02-15FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1
GC/MS Semivolatiles	**SW-846 8270C**		ug/l	ug/l	ug/l	ug/l	
04678	4-Bromophenyl-phenylether	101-55-3	N.D.	0.5	1		1
04678	Butylbenzylphthalate	85-68-7	N.D.	2	5		1
04678	Di-n-butylphthalate	84-74-2	N.D.	2	5		1
04678	Carbazole	86-74-8	N.D.	0.5	1		1
04678	4-Chloro-3-methylphenol	59-50-7	N.D.	0.5	1		1
04678	4-Chloroaniline	106-47-8	N.D.	0.5	1		1
04678	bis(2-Chloroethoxy)methane	111-91-1	N.D.	0.5	1		1
04678	bis(2-Chloroethyl)ether	111-44-4	N.D.	0.5	1		1
04678	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	0.5	1		1
04678	2-Chloronaphthalene	91-58-7	N.D.	0.4	1		1
04678	2-Chlorophenol	95-57-8	N.D.	0.5	1		1
04678	4-Chlorophenyl-phenylether	7005-72-3	N.D.	0.5	1		1
04678	Dibenzofuran	132-64-9	N.D.	0.5	1		1
04678	1,2-Dichlorobenzene	95-50-1	N.D.	0.5	1		1
04678	1,3-Dichlorobenzene	541-73-1	N.D.	0.5	1		1
04678	1,4-Dichlorobenzene	106-46-7	N.D.	0.5	1		1
04678	3,3'-Dichlorobenzidine	91-94-1	N.D.	2	5		1
04678	2,4-Dichlorophenol	120-83-2	N.D.	0.5	1		1
04678	Diethylphthalate	84-66-2	N.D.	2	5		1
04678	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1		1
04678	Dimethylphthalate	131-11-3	N.D.	2	5		1
04678	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	5	15		1
04678	2,4-Dinitrophenol	51-28-5	N.D.	10	31		1
04678	2,4-Dinitrotoluene	121-14-2	N.D.	1	5		1
04678	2,6-Dinitrotoluene	606-20-2	N.D.	0.5	1		1
04678	1,2-Diphenylhydrazine	122-66-7	N.D.	0.5	1		1
04678	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	5		1
04678	Hexachlorobenzene	118-74-1	N.D.	0.1	0.5		1
04678	Hexachlorobutadiene	87-68-3	N.D.	0.5	1		1
04678	Hexachloroethane	67-72-1	N.D.	1	5		1
04678	Isophorone	78-59-1	N.D.	0.5	1		1

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Sample Description: HUMT-P6-SW(031812)1-A-DUP Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584715
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:50 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

6SWFD SDG#: ESM02-15FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
04678	2-Methylphenol	95-48-7	N.D.	0.5	1		1
04678	4-Methylphenol	106-44-5	N.D.	0.5	1		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
04678	2-Nitroaniline	88-74-4	N.D.	0.5	1		1
04678	3-Nitroaniline	99-09-2	N.D.	0.5	1		1
04678	4-Nitroaniline	100-01-6	N.D.	0.5	1		1
04678	Nitrobenzene	98-95-3	N.D.	0.5	1		1
04678	2-Nitrophenol	88-75-5	N.D.	0.5	1		1
04678	4-Nitrophenol	100-02-7	N.D.	10	31		1
04678	N-Nitrosodimethylamine	62-75-9	N.D.	2	5		1
04678	N-Nitroso-di-n-propylamine	621-64-7	N.D.	0.5	1		1
04678	N-Nitrosodiphenylamine	86-30-6	N.D.	0.5	1		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
04678	Di-n-octylphthalate	117-84-0	N.D.	2	5		1
04678	Pentachlorophenol	87-86-5	N.D.	1	5		1
04678	Phenol	108-95-2	N.D.	0.5	1		1
04678	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.5	1		1
04678	2,4,5-Trichlorophenol	95-95-4	N.D.	0.5	1		1
04678	2,4,6-Trichlorophenol	88-06-2	N.D.	0.5	1		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.051		1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.051		1
08357	Anthracene	120-12-7	N.D.	0.010	0.051		1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051		1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.051		1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.051		1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.010	0.051		1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.051		1
08357	Chrysene	218-01-9	N.D.	0.010	0.051		1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051		1
08357	Fluoranthene	206-44-0	N.D.	0.010	0.051		1
08357	Fluorene	86-73-7	N.D.	0.010	0.051		1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.051		1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.051		1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.051		1
08357	Naphthalene	91-20-3	N.D.	0.031	0.051		1
08357	Phenanthrene	85-01-8	N.D.	0.031	0.051		1
08357	Pyrene	129-00-0	N.D.	0.010	0.051		1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	N.D.	0.16	0.49		1
10407	Dinoseb	88-85-7	N.D.	0.099	0.49		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10407	2,4,5-T	93-76-5	N.D.	0.015	0.049		1

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Analysis Report

Sample Description: HUMT-P6-SW(031812)1-A-DUP Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584715
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:50 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

6SWFD SDG#: ESM02-15FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
10407	2,4,5-TP	93-72-1	N.D.	0.0099	0.049		1
Pesticides/PCBs	**SW-846 8081A**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
00177	Aldrin	309-00-2	N.D.	0.0019	0.0097		1
00177	Alpha BHC	319-84-6	N.D.	0.0029	0.0097		1
00177	Beta BHC	319-85-7	N.D.	0.0033	0.0097		1
00177	Gamma BHC - Lindane	58-89-9	N.D.	0.0019	0.0097		1
00177	Alpha Chlordane	5103-71-9	N.D.	0.0019	0.0097		1
00177	Gamma Chlordane	5103-74-2	N.D.	0.0042	0.019		1
00177	p,p-DDD	72-54-8	N.D.	0.0049	0.019		1
00177	p,p-DDE	72-55-9	N.D.	0.0049	0.019		1
00177	p,p-DDT	50-29-3	N.D.	0.0049	0.019		1
00177	Delta BHC	319-86-8	N.D.	0.0033	0.0097		1
00177	Dieldrin	60-57-1	N.D.	0.0052	0.019		1
00177	Endosulfan I	959-98-8	N.D.	0.0042	0.0097		1
00177	Endosulfan II	33213-65-9	N.D.	0.015	0.019		1
00177	Endosulfan Sulfate	1031-07-8	N.D.	0.0057	0.019		1
00177	Endrin	72-20-8	N.D.	0.0079	0.019		1
00177	Endrin Aldehyde	7421-93-4	N.D.	0.019	0.097		1
00177	Endrin Ketone	53494-70-5	N.D.	0.0049	0.019		1
00177	Heptachlor	76-44-8	N.D.	0.0019	0.0097		1
00177	Heptachlor Epoxide	1024-57-3	N.D.	0.0022	0.0097		1
00177	Methoxychlor	72-43-5	N.D.	0.029	0.097		1
00177	Toxaphene	8001-35-2	N.D.	0.97	2.9		1
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05869	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	50.0	100		1
05869	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	20.0	100		1
05869	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	20.0	100		1
05869	Total Purgeable Hydrocarbons	n.a.	N.D.	50.0	100	1000	1
GC Petroleum Hydrocarbons	**MT DEQ**		**ug/l**	**ug/l**	**ug/l**	**ug/l**	
05968	MTEPH Screen Water	n.a.	N.D.	500	500	1000	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	**mg/l**	**mg/l**	
01743	Aluminum	7429-90-5	0.0907 J	0.0801	0.200		1
07044	Antimony	7440-36-0	N.D.	0.0058	0.0200		1
07035	Arsenic	7440-38-2	0.0128 J	0.0051	0.0200		1
07046	Barium	7440-39-3	0.0764	0.00026	0.0050		1
07047	Beryllium	7440-41-7	N.D.	0.00024	0.0050		1
07049	Cadmium	7440-43-9	N.D.	0.00027	0.0050		1
01750	Calcium	7440-70-2	72.4	0.0705	0.200		1
07051	Chromium	7440-47-3	N.D.	0.0011	0.0150		1
07052	Cobalt	7440-48-4	0.00065 J	0.00062	0.0050		1
07053	Copper	7440-50-8	0.0012 J	0.00094	0.0100		1
01754	Iron	7439-89-6	0.147 J	0.0141	0.200		1
07055	Lead	7439-92-1	N.D.	0.0022	0.0150		1

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Analysis Report

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Sample Description: HUMT-P6-SW(031812)1-A-DUP Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584715
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:50 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

6SWFD SDG#: ESM02-15FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
Metals		**SW-846 6010B**	mg/l	mg/l	mg/l	mg/l	
01757	Magnesium	7439-95-4	20.6	0.0067	0.100		1
07058	Manganese	7439-96-5	0.181 J	0.00044	0.0050		1
07061	Nickel	7440-02-0	N.D.	0.00095	0.0100		1
01762	Potassium	7440-09-7	3.03	0.0874	0.500		1
07036	Selenium	7782-49-2	N.D.	0.0069	0.0200		1
07066	Silver	7440-22-4	N.D.	0.00091	0.0050		1
01767	Sodium	7440-23-5	29.7	0.0647	1.00		1
07022	Thallium	7440-28-0	N.D.	0.0042	0.0300		1
07071	Vanadium	7440-62-2	N.D.	0.00096	0.0050		1
07072	Zinc	7440-66-6	N.D.	0.0032	0.0200		1
		SW-846 7470A	mg/l	mg/l	mg/l	mg/l	
00259	Mercury	7439-97-6	N.D.	0.000026	0.00020		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012	21:53	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012	21:53	Jason M Long	1
04678	TCL SW846 Semivolatiles/Waters	SW-846 8270C	1	12080WAG026	03/22/2012	02:07	Jennifer R Riggs	1
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	12080WAF026	03/21/2012	16:29	Gregory J Drahovsky	1
00813	BNA Water Extraction	SW-846 3510C	1	12080WAG026	03/21/2012	09:40	Cynthia J Salvatori	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	12080WAF026	03/20/2012	17:40	Kelli M Barto	1
10407	Herb water 8151A Master	SW-846 8151A	1	120800029A	03/22/2012	05:46	John W Perkins	1
00177	TCL Pesticides 8081A Water	SW-846 8081A	1	120800028A	03/21/2012	15:37	Lisa A Reinert	1
11118	Pesticide Screen Waters Ext	SW-846 3510C	1	120800028A	03/21/2012	02:30	Sherry L Morrow	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	120800029A	03/21/2012	09:00	Kerrie A Freeburn	1
05869	MT-VPH Waters	MA DEP VPH 5/04	1	12080A08A	03/20/2012	20:50	Nicholas R Rossi	1
05968	MTEPH Screen Water	MT DEQ	1	120800025A	03/21/2012	05:32	Robert Brown	1
11174	MT EPH Waters Extraction	MT DEQ MA EPH	1	120800025A	03/20/2012	17:40	Kelli M Barto	1
01743	Aluminum	SW-846 6010B	1	120801848006	03/21/2012	22:46	John W Yanzuk II	1
07044	Antimony	SW-846 6010B	1	120801848006	03/21/2012	22:46	John W Yanzuk II	1
07035	Arsenic	SW-846 6010B	1	120801848006	03/21/2012	22:46	John W Yanzuk II	1
07046	Barium	SW-846 6010B	1	120801848006	03/21/2012	22:46	John W Yanzuk II	1
07047	Beryllium	SW-846 6010B	1	120801848006	03/21/2012	22:46	John W Yanzuk II	1
07049	Cadmium	SW-846 6010B	1	120801848006	03/21/2012	22:46	John W Yanzuk II	1
01750	Calcium	SW-846 6010B	1	120801848006	03/21/2012	22:46	John W Yanzuk II	1

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Analysis Report

Sample Description: HUMT-P6-SW(031812)1-A-DUP Surface Water
S20113949 Laurel, MT

LLI Sample # WW 6584715
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:50 by GL

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

6SWFD SDG#: ESM02-15FD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07051	Chromium	SW-846 6010B	1	120801848006	03/21/2012 22:46	John W Yanzuk II	1
07052	Cobalt	SW-846 6010B	1	120801848006	03/21/2012 22:46	John W Yanzuk II	1
07053	Copper	SW-846 6010B	1	120801848006	03/21/2012 22:46	John W Yanzuk II	1
01754	Iron	SW-846 6010B	1	120801848006	03/21/2012 22:46	John W Yanzuk II	1
07055	Lead	SW-846 6010B	1	120801848006	03/21/2012 22:46	John W Yanzuk II	1
01757	Magnesium	SW-846 6010B	1	120801848006	03/21/2012 22:46	John W Yanzuk II	1
07058	Manganese	SW-846 6010B	1	120801848006	03/21/2012 22:46	John W Yanzuk II	1
07061	Nickel	SW-846 6010B	1	120801848006	03/21/2012 22:46	John W Yanzuk II	1
01762	Potassium	SW-846 6010B	1	120801848006	03/22/2012 12:22	Joanne M Gates	1
07036	Selenium	SW-846 6010B	1	120801848006	03/21/2012 22:46	John W Yanzuk II	1
07066	Silver	SW-846 6010B	1	120801848006	03/22/2012 12:22	Joanne M Gates	1
01767	Sodium	SW-846 6010B	1	120801848006	03/22/2012 12:22	Joanne M Gates	1
07022	Thallium	SW-846 6010B	1	120801848006	03/21/2012 22:46	John W Yanzuk II	1
07071	Vanadium	SW-846 6010B	1	120801848006	03/21/2012 22:46	John W Yanzuk II	1
07072	Zinc	SW-846 6010B	1	120801848006	03/21/2012 22:46	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	120815713002	03/22/2012 10:25	Damary Valentin	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	120801848006	03/21/2012 09:47	Denise K Conners	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	120815713002	03/21/2012 15:25	Nelli S Markaryan	1

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Analysis Report

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Sample Description: TripBlank-1 Water
S20113949 Laurel, MT

LLI Sample # WW 6584716
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/19/2012

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

TBW1- SDG#: ESM02-16TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: TripBlank-1 Water
S20113949 Laurel, MT

LLI Sample # WW 6584716
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/19/2012

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

TBW1- SDG#: ESM02-16TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012 16:24	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012 16:24	Jason M Long	1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: TripBlank-2 Water
S20113949 Laurel, MT

LLI Sample # WW 6584717
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/19/2012

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

TBW2- SDG#: ESM02-17TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: TripBlank-2 Water
S20113949 Laurel, MT

LLI Sample # WW 6584717
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/19/2012

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

TBW2- SDG#: ESM02-17TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012 22:16	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012 22:16	Jason M Long	1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: TripBlank-3 Water
S20113949 Laurel, MT

LLI Sample # WW 6584718
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/19/2012

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

TBW3- SDG#: ESM02-18TB*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: TripBlank-3 Water
S20113949 Laurel, MT

LLI Sample # WW 6584718
LLI Group # 1296417
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/19/2012

Submitted: 03/20/2012 09:30
Reported: 03/23/2012 15:26

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

TBW3- SDG#: ESM02-18TB*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012 22:38	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012 22:38	Jason M Long	1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

Imagine the result

ExxonMobil- Silvertip
Huntley Channel

Data Verification/Validation Report

BILLINGS, MONTANA

Volatile, Semivolatile, Pesticide, Herbicide, MADEP
VPH/EPH, TOC and Metals Analyses

SDG #ESM01 (1296396)

Analyses Performed By:
Lancaster Laboratories
Lancaster, Pennsylvania

Report #16064R
Review Level: Tier III
Project: B0085904.1205.00011

TIER 3 DATA VERIFICATION/VALIDATION REPORT

Project Name: Silvertip Huntley Channel
QAPP: Draft Quality Assurance Project Plan Silvertip Pipeline Incident, Laurel, Montana, March 2012
SDG: ESM01 (1296396)
Analytical Laboratory: Lancaster Laboratories
Analytical Parameters/Method: VOC-8260, SVOC-8270, PAH-8270-SIM, PEST-8081, HERB-8051, MADEP VPH/EPH, TOC-9060 and MET-6010B/7141
Data Reviewer/Affiliation: Lyndi Mott/ARCADIS
Date Completed: April 17, 2012

This review was conducted as a Tier III evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis					
					VOC	SVOC	PEST/ HERB	VPH/EPH	MET	TOC
HUMT-P0-SE(0.0-0.3)1-A	6584651	Sediment	3/17/2012		X	X	X	X	X	X
HUMT-P1-SE(0.0-0.5)1-A	6584652	Sediment	3/17/2012		X	X	X	X	X	X
HUMT-P1-SE(0.0-0.5)2-A	6584653	Sediment	3/17/2012		X	X	X	X	X	X
HUMT-P1-SE(0.0-0.2)3-A	6584654	Sediment	3/18/2012		X	X	X	X	X	X
HUMT-P3-SE(0.0-0.2)1-A	6584655	Sediment	3/18/2012		X	X	X	X	X	X
HUMT-P3-SE(0.0-0.5)2-A	6584656	Sediment	3/18/2012		X	X	X	X	X	X
HUMT-P3-SE(0.0-0.5)2-A-FD	6584660	Sediment	3/18/2012	HUMT-P3-SE (0.0-0.5)2-A	X	X	X	X	X	X
HUMT-P5-SE(0.0-0.2)1-A	6584661	Sediment	3/18/2012		X	X	X	X	X	X
HUMT-P6-SE(0.0-0.3)1-A	6584662	Sediment	3/18/2012		X	X	X	X	X	X
TRIPBLANK_20120318	6584663	Water	3/18/2012		X					

Note:
1. Volatile Petroleum Hydrocarbons/ Extractable Petroleum Hydrocarbons – Massachusetts Department of Environmental Protection (MADEP) method VPH/EPH
2. Total Organic Carbon – TOC
3. Matrix spike/matrix spike duplicate (MS/MSD) analysis was performed on sample location HUMT-P3-SE(0.0-0.5)2-A.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260 8270, 8270-SIM, 8081, 8151, 9060, and Massachusetts Department of Environmental Protection (MADEP) Volatile Petroleum Hydrocarbons (VPH) and Extractable Petroleum Hydrocarbons (EPH). Data were reviewed based on laboratory method criteria and/or USEPA's National Functional Guidelines for Organics Data Review (October 1999), and Montana Department of Environmental Quality Data Validation Guideline for Evaluating Analytical Data (updated August 5, 2010).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  + Result may be biased high

  - Result may be biased low

  U Compound considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260	Water	14 days from collection to analysis	Cool to 4°C±2°C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to 4°C±2°C.

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (15%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compound	Criteria
Trip Blank	CCV %D	Dichlorodifluoromethane	-25%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J-
	RRF <0.01[1]	Non-detect	R
		Detect	J-
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 15% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J+
	%D >20% (decrease in sensitivity)	Non-detect	UJ-
		Detect	J-

[1] RRF of 0.01 only applies to compounds which are typically poor responding compounds (i.e., ketones, 1,4-dioxane, etc.)

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

Sample locations associated with internal standards exhibiting responses outside of the control limits are presented in the following table.

Sample Locations	Internal Standard	Response
HUMT-P0-SE(0.0-0.3)1-A	Fluorobenzene	AC
	Chlorobenzene-d5	< LL but > 25%
	1,4-Dichlorobenzene-d4	AC

AC Acceptable

The criteria used to evaluate the internal standard responses are presented in the following table. In the case of an internal standard deviation, the compounds quantitated under the deviant internal standard are qualified as documented in the table below.

Control limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No action
	Detect	J+
< the lower control limit (LL) but > 25%	Non-detect	UJ-
	Detect	J-
< 25%	Non-detect	R
	Detect	J-

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
HUMT-P3-SE(0.0-0.5)2-A	Acetone	AC	>UL

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J+
< the lower control limit (LL) but > 10%	Non-detect	UJ-
	Detect	J-
< 10%	Non-detect	R
	Detect	J-
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
HUMT-P3-SE(0.0-0.5)2-A	Acetone
	2-Butanone
	Hexachlorobutdiene

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

8. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
Trip Blank	Vinyl chloride	> UL

The criteria used to evaluate the LCS recoveries are presented in the following table. In the case of an LCS deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J+
< the lower control limit (LL) but > 10%	Non-detect	UJ-
	Detect	J-
< 10%	Non-detect	R
	Detect	J-

9. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
HUMT-P3-SE(0.0-0.5)2-A/ HUMT-P3-SE(0.0-0.5)2-A-FD	Acetone	26 J	38	AC
	2-Butanone	15 U	7 J	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
C. Trip blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X	X		
MS/MSD Precision (RPD)		X	X		
Field Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X	X		
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present				X	

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
E. Reporting limits adjusted to reflect sample dilutions		X		X	

%RSD Relative standard deviation
%R Percent recovery
RPD Relative percent difference
%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270/ 8270 SIM	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4°C ± 2°
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4°C ± 2°

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (15%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
HUMT-P3-SE(0.0-0.5)2-A SIM	Fluorene	<LL but >10%	<LL but >10%
	2-Methylnapthalene	AC	<LL but >10%

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J+
< the lower control limit (LL) but > 10%	Non-detect	UJ-
	Detect	J-
< 10%	Non-detect	R
	Detect	J-
Parent sample concentration > four times the MS/MSD spiking solution concentration (D).	Detect	No Action
	Non-detect	

8. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

9. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
HUMT-P3-SE(0.0-0.5)2-A/ HUMT-P3-SE(0.0-0.5)2-A-FD	3&4-Methylphenol	58	41 J	AC
	Benzo(a)anthracene	2.4 J	2.6 J	AC
	Benzo(a)pyrene	2.7 J	2.7 J	AC
	Benzo(b)fluoranthene	4.1 J	4.7 J	AC
	Benzo(g,h,i)perylene	5.7	5.3	AC
	Chrysene	5.0	5.2	AC
	Fluoranthene	5.0	5.4	AC
	Fluorene	2.5 J	2.1 J	AC
	1-Methylnaphthalene	16	9.5	AC
	2-Methylnaphthalene	14	12	AC
	Naphthalene	12	10	AC
	Phenanthrene	11	11	AC

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Pyrene	6.4	6.6	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present				X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

%RSD Relative standard deviation
%R Percent recovery
RPD Relative percent difference
%D Percent difference

PESTICIDES AND HERBICIDES ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8081/8051	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to 4°C±2°C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to 4°C±2°C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. System Performance

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

A maximum RSD of 20% is allowed or a correlation coefficient greater than 0.99 is allowed.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (15%).

All pesticides and herbicides associated with calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compound	Criteria
HUMT-P0-SE(0.0-0.3)1-A HUMT-P1-SE(0.0-0.5)1-A HUMT-P1-SE(0.0-0.5)2-A HUMT-P1-SE(0.0-0.2)3-A HUMT-P3-SE(0.0-0.2)1-A HUMT-P3-SE(0.0-0.5)2-A HUMT-P3-SE(0.0-0.5)2-A-FD HUMT-P5-SE(0.0-0.2)1-A HUMT-P6-SE(0.0-0.3)1-A	CCV %D	4,4'-DDD	16.0%
		Endosulfan sulfate	19.7%
		Endrin ketone	16.4%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20%or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
Continuing Calibration	%D >15% (increase in sensitivity)	Non-detect	No Action
		Detect	J+
	%D >15% (decrease in sensitivity)	Non-detect	UJ-
		Detect	J-

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. Pesticide and herbicide analysis requires that one of the two surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries reported were within control limits.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD analysis for herbicides exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
HUMT-P3-SE(0.0-0.5)2-A	Aldrin	AC	<10%
	Alpha-BHC	AC	<10%
	Beta-BHC	>UL	AC
	Gamma-BHC	>UL	AC
	Delta BHC	<10%	<LL but >10%
	Endosulfan I	AC	<10%
	Heptachlor epoxide	>UL	AC
	Methoxychlor	AC	<LL but >10%

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J+
< the lower control limit (LL) but > 10%	Non-detect	UJ-
	Detect	J-
< 10%	Non-detect	R
	Detect	J-
Parent sample concentration > four times the MS/MSD spiking solution concentration (D).	Detect	No Action
	Non-detect	

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
HUMT-P3-SE(0.0-0.5)2-A	Aldrin
	Alpha-BHC
	Gamma-BHC
	Alpha Chlordane
	Gamma Chlordane
	4,4'-DDD
	4,4'-DDE
	4,4'-DDT
	Delta BHC
	Dieldrin
	Endosulfan I
	Endosulfan II

Sample Locations	Compound
HUMT-P3-SE(0.0-0.5)2-A	Endosulfan sulfate
	Endrin
	Endrin aldehyde
	Endrin ketone
	Heptachlor
	Heptachlor epoxide
	Methoxychlor

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

7. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

8. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
HUMT-P3-SE(0.0-0.5)2-A/ HUMT-P3-SE(0.0-0.5)2-A-FD	Aldrin	2.3	0.51 J	AC
	Gamma Chlordane	0.52 J	1.2 U	AC
	4,4'-DDT	0.59 J	2.4 U	AC
	Endosulfan I	4.4	0.59 J	AC
	Endrin	1.5 J	2.4 U	AC
	Heptachlor	1.9 U	0.88 J	AC
	Heptachlor epoxide	26 U	2.5	AC
	Methoxychlor	3.0 J	12 U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

9. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the percent difference (%D) of detected sample results must be less than 40%.

The dual column analysis exhibited acceptable %D between columns.

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PESTICIDES & HERBICIDES

Pesticides & Herbicides; SW-846 8081/8151	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS)		X	X		
Matrix Spike Duplicate(MSD)		X	X		
MS/MSD Precision (RPD)		X	X		
Field Duplicate (RPD)		X	?	X	
Surrogate Spike Recoveries		X		X	
Column %D $\leq$ 40%		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSDs		X		X	
Continuing calibration %Ds		X	X		
System performance and column resolution		X		X	
Compound identification and quantitation					
A. Quantitation Reports		X		X	
B. RT of sample compounds within the established RT windows		X		X	
C. Identification/confirmation		X		X	
D. Transcription/calculation errors present				X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference.

VOLATILE PETROLEUM HYDROCARBON (VPH) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
MADEP VPH	Water	14 days from collection to analysis	Cooled @ 4°C ± 2°; preserved to a pH of less than 2.
	Soil	14 days from collection to analysis	Cooled @ 4°C ± 2°.

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

A maximum RSD of 25% is allowed.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (25%).

All calibration criteria were within the control limits.

4. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The VPH analysis requires the surrogate compounds exhibit recoveries within the recovery range of 70 to 130%.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	PID Recovery	FID Recovery
HUMT-P5-SE(0.0-0.2)1-A	a,a,a-Trifluorotoluene	< LL but > 10%	AC
HUMT-P6-SE(0.0-0.3)1-A		< LL but > 10%	AC

Acceptable (AC)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with deviant recovery are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> upper control limit (UL) of 130%	Non-detect	No Action
	Detect	J+
< lower control limit (LL) of 70% but > 10%	Non-detect	UJ-
	Detect	J-
< 10%	Non-detect	R
	Detect	J-

5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the method-established acceptance limits of 70 to 130%. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within 30%.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
HUMT-P3-SE(0.0-0.5)2-A	C9-C10 Aromatic Hydrocarbons	>UL	>UL

AC = Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL) of 130%	Non-detect	No Action
	Detect	J+
< the lower control limit (LL) of 70% but > 10%	Non-detect	UJ-
	Detect	J-
< 10%	Non-detect	R
	Detect	J-
Parent sample concentration > four times the MS/MSD spiking solution concentration (D).	Detect	No Action
	Non-detect	

6. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the acceptance limits of 70 to 130%.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

7. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
HUMT-P3-SE(0.0-0.5)2-A/ HUMT-P3-SE(0.0-0.5)2-A-FD	All Compounds	6.8 U	6.68 U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VPH ANALYSIS

VPH; MADEP VPH	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID/PID)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Field blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSDs		X		X	
Continuing calibration %Ds		X		X	
System performance and column resolution		X		X	
Compound identification and quantitation					
A. Quantitation Reports		X		X	
B. RT of sample compounds within the established RT windows		X		X	
C. Pattern identification					X
D. Transcription/calculation errors present				X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

EXTRACTABLE PETROLEUM HYDROCARBON (EPH) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
MADEP EPH	Water	14 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4°C ± 2°; preserved to a pH of less than 2.
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4°C ± 2°.

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

A maximum RSD of 25% is allowed.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (25%).

All calibration criteria were within the control limits.

4. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The EPH analysis requires surrogate compounds exhibit recoveries within the acceptance limits of 40 to 140%.

All surrogate recoveries were within control limits.

5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the method specified acceptance limits of 40 to 140%. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within 50%.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not performed on a sample location associated with the SDG.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the acceptance limits of 40 to 140%.

The LCS analysis is not performed for an EPH Screen analysis.

7. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
HUMT-P3-SE(0.0-0.5)2-A/ HUMT-P3-SE(0.0-0.5)2-A-FD	EPH Screen	220 U	210 U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR EPH ANALYSIS

EPH; MADEP EPH	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R					X
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSDs		X		X	
Continuing calibration %Ds		X		X	
System performance and column resolution		X		X	
Compound identification and quantitation					
A. Quantitation Reports		X		X	
B. RT of sample compounds within the established RT windows		X		X	
C. Pattern identification					X
D. Transcription/calculation errors present				X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

TOTAL ORGANIC CARBON (TOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Total Organic Carbon by SW-846 9060	Water	28 days from collection to analysis	Cooled to 4°C ± 2°.; preserved to a pH of less than 2.
	Soil	28 days from collection to analysis	Cooled to 4°C ± 2°.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

TOC was not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All continuing calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 Matrix Spike (MS) Analysis

TOC must exhibit a percent recovery within the laboratory established acceptance limits. The MS recovery control limits do not apply for MS performed on sample locations where the TOC concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater.

The MS analysis performed on sample location HUMT-P3-SE(0.0-0.5)2-A exhibited a recovery within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

The laboratory duplicate sample results exhibited RPD within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for field duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
HUMT-P3-SE(0.0-0.5)2-A/ HUMT-P3-SE(0.0-0.5)2-A-FD	TOC	8460	3850	74.9%

TOC associated with samples locations HUMT-P3-SE(0.0-0.5)2-A and HUMT-P3-SE(0.0-0.5)2-A-FD exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR TOC

General Chemistry: SW-846 9060	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
TOC Analyzer					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R					X
Lab Duplicate Precision (RPD)		X		X	
Field Duplicate (RPD)		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Transcription/calculation errors present				X	
Reporting limits adjusted to reflect sample dilutions		X		X	

%R - percent recovery, RPD - relative percent difference,

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 6010 and 7471. Data were reviewed based on laboratory method criteria and/or USEPA's National Functional Guidelines for Inorganic Data Review, October 2004, where applicable, and Montana Department of Environmental Quality Data Validation Guideline for Evaluating Analytical Data (updated August 5, 2010).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

  B The reported value was obtained from a reading less than the contract-required detection limit (CRDL), but greater than or equal to the instrument detection limit (IDL).

- Quantitation (Q) Qualifiers

  E The reported value is estimated due to the presence of interference.

  N Spiked sample recovery is not within control limits.

  * Duplicate analysis is not within control limits.

- Validation Qualifiers

  J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

  + Result may be biased high

  - Result may be biased low

  U Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010B	Water	180 days from collection to analysis	Cool to 4°C±2°C; preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to 4°C±2°C.
SW-846 7470	Water	28 days from collection to analysis	Cool to 4°C±2°C; preserved to a pH of less than 2.
SW-846 7471	Soil	28 days from collection to analysis	Cool to 4°C±2°C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL. No other qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All continuing calibration verification standard recoveries were within the control limit.

3.2 CRDL Check Standard

The CRDL check standard serves to verify the linearity of calibration of the analysis at the CRDL. The CRDL standard is not required for the analysis of aluminum (Al), barium (Ba), calcium (Ca), iron (Fe), magnesium (Mg), sodium (Na), and potassium (K). The criteria used to evaluate the CRDL standard analysis are presented below in the CRDL standards evaluation table.

All CRDL standard recoveries were within control limits.

3.3 ICP Interference Control Sample (ICS)

The ICS verifies the laboratories interelement and background correction factors.

All ICS exhibited recoveries within the control limits.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
HUMT-P3-SE(0.0-0.5)2-A	Antimony	72%	73%
	Potassium	161%	167%
	Mercury	51%	50%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ-
	Detect	J-
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J-
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J+

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD recoveries exhibited acceptable RPD.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
HUMT-P3-SE(0.0-0.5)2-A/ HUMT-P3-SE(0.0-0.5)2-A-FD	Aluminum	13700	11600	16.6%
	Arsenic	17.2	15.9	7.9%
	Barium	191	166	14%
	Beryllium	0.611 J	0.551 J	AC
	Cadmium	0.614 J	0.596 J	AC
	Calcium	13100	13300	1.5%
	Chromium	30.0	26.7	11.6%
	Cobalt	8.95	7.89	12.6%
	Copper	17.3	16.1	7.2%
	Iron	22200	19100	15%
	Lead	10.7	9.23	14.8%
	Magnesium	7700	6880	11.2%
	Manganese	351	317	10.2%
	Nickel	21.4	19.4	9.8%
	Potassium	2080	1840	12.2%
	Sodium	685	542	23.3%
	Thallium	1.34 J	0.727 J	AC
	Vanadium	52.1	44.4	16%
	Zinc	51.4	47.4	8.1%

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix

interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

The serial dilution performed on sample location HUMT-P3-SE(0.0-0.5)2-A exhibited %D within the control limit.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW-846 6010/7471	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP) Atomic Absorption – Manual Cold Vapor (CV)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks					X
Laboratory Control Sample (LCS)		X	X		
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field Duplicate (RPD)		X		X	
ICP Serial Dilution		X		X	
Reporting Limit Verification		X		X	
Raw Data		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
CRDL Standard		X		X	
ICP Interference Check		X		X	
Transcription/calculation errors present				X	
Reporting limits adjusted to reflect sample dilutions		X		X	

%R Percent recovery
RPD Relative percent difference

VALIDATION PERFORMED BY: Lyndi Mott

SIGNATURE:

DATE: April 17, 2012

PEER REVIEW: Dennis Capria

DATE: April 23, 2012

CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS

13509/1296396/6584651-63

Chain of Custody and Analytical Request Record

Page _____ of _____

PLEASE PRINT (Provide as much information as possible.)

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
ARCADIS US Inc.	Silvertip Project - Huntley Channel	State: MT	Yes ☒ No ☐
Report Mail Address:	**Contact Name:**	**Phone/Fax:**	**Email:** / **Sampler: (Please Print)**
6723 Towpath Rd. Syracuse, NY 13214-0066	Mike Jones	315-671-9211	
Invoice Address:	**Invoice Contact & Phone:**	**Purchase Order:**	**Quote/Bottle Order:**

Special Report/Formats:

- ☐ DW
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Standard Turnaround (TAT) → RUSH: Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Report Sample IDs As:

Shipped by:

Cooler ID(s):

Receipt Temp 1.0-3.9 °C

On Ice: (Y) N

Custody Seal: On Bottle (Y) N; On Cooler (Y) N; Intact (Y) N; Signature Match (Y) N

ANALYSIS REQUESTED

#	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX (Number of Containers; Sample Type: A W S V B O DW; Air Water Soils/Solids; Vegetation Bioassay Other; DW - Drinking Water)	SVOC 8270 SIM	VPH, Ep Hexane → Fractions	TAL Metals except Hg 6010	Mercury 7470/7471	TOC 9060	VOC 8260	Pesticides 8081	Herbicides 8151	Forensic VPH 8260 Mod	~~MTBE~~ SEE ATTACHED	Comments
1	Hunt-P0-SE(0.0-0.3)1-A	3/17/12	1530	S	X	X	X	X	X	X	X	X	X		Correct as listed
2	Hunt-P1-SE(0.0-0.5)1-A	3/17/12	1645												Correct as listed
3	Hunt-P1-SE(0.0-0.5)2-A	3/17/12	1715												Correct as listed
4	Hunt-P1(0.0-0.2)3-A	3/13/12	0930												Hunt-P1-SE(0.0-0.2)3-A
5	Hunt-SE-P3(0.0-0.2)1-A	3/13/12	1315												Hunt-P3-SE(0.0-0.2)1-A
6	Hunt-SE-P3(0.0-0.5)2-A	3/13/12	1500											X	Hunt-P3-SE(0.0-0.5)2-A
7	Hunt-SE-P3(0.0-0.5)2-A-Dup	3/13/12	1505												Hunt-P3-SE(0.0-0.5)2-A-Dup
8	Hunt-SE-P5(0.0-0.2)1-A	3/13/12	1625												Hunt-P5-SE(0.0-0.2)1-A
9	Hunt-SE-P6(0.0-0.3)1-A	3/13/12	1745												Hunt-P6-SE(0.0-0.3)1-A
10	~~Hunt-P5-TA(0.0-0.2)1-A~~	~~3/13/12~~	~~1600~~	GL W						X	Trip Blank				

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Gordon Levin	3/19/12 1530				
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:

Received by Laboratory: Carolyn M Clas 3/20/12 0930 Carolyn M Clas

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P0-SE(0.0-0.3)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584651
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 15:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P0E1A SDG#: ESM01-01

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B		ug/kg	ug/kg	ug/kg	ug/kg	
10237	Acetone	67-64-1	46	11	32		1
10237	Allyl Chloride	107-05-1	N.D.	2	8		1
10237	Benzene	71-43-2	N.D.	0.8	8		1
10237	Bromobenzene	108-86-1	N.D.	2	8		1
10237	Bromochloromethane	74-97-5	N.D.	2	8		1
10237	Bromodichloromethane	75-27-4	N.D.	2	8		1
10237	Bromoform	75-25-2	N.D. UJ-	2	8		1
10237	Bromomethane	74-83-9	N.D.	3	8		1
10237	2-Butanone	78-93-3	8 J	6	16		1
10237	n-Butylbenzene	104-51-8	N.D.	2	8		1
10237	sec-Butylbenzene	135-98-8	N.D.	2	8		1
10237	tert-Butylbenzene	98-06-6	N.D.	2	8		1
10237	Carbon Tetrachloride	56-23-5	N.D.	2	8		1
10237	Chlorobenzene	108-90-7	N.D. UJ-	2	8		1
10237	Chloroethane	75-00-3	N.D.	3	8		1
10237	Chloroform	67-66-3	N.D.	2	8		1
10237	Chloromethane	74-87-3	N.D.	3	8		1
10237	4-Chlorotoluene	106-43-4	N.D.	2	8		1
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	3	8		1
10237	Dibromochloromethane	124-48-1	N.D. UJ-	2	8		1
10237	1,2-Dibromoethane	106-93-4	N.D.	2	8		1
10237	Dibromomethane	74-95-3	N.D.	2	8		1
10237	1,2-Dichlorobenzene	95-50-1	N.D.	2	8		1
10237	1,3-Dichlorobenzene	541-73-1	N.D.	2	8		1
10237	1,4-Dichlorobenzene	106-46-7	N.D.	2	8		1
10237	Dichlorodifluoromethane	75-71-8	N.D.	3	8		1
10237	1,1-Dichloroethane	75-34-3	N.D.	2	8		1
10237	1,2-Dichloroethane	107-06-2	N.D.	2	8		1
10237	1,1-Dichloroethene	75-35-4	N.D.	2	8		1
10237	cis-1,2-Dichloroethene	156-59-2	N.D.	2	8		1
10237	trans-1,2-Dichloroethene	156-60-5	N.D.	2	8		1
10237	Dichlorofluoromethane	75-43-4	N.D.	3	8		1
10237	1,2-Dichloropropane	78-87-5	N.D.	2	8		1
10237	1,3-Dichloropropane	142-28-9	N.D. UJ-	2	8		1
10237	2,2-Dichloropropane	594-20-7	N.D.	2	8		1
10237	1,1-Dichloropropene	563-58-6	N.D.	2	8		1
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.	2	8		1
10237	trans-1,3-Dichloropropene	10061-02-6	N.D. UJ-	2	8		1
10237	Ethyl Ether	60-29-7	N.D.	2	8		1
10237	Ethylbenzene	100-41-4	N.D. UJ-	2	8		1
10237	Freon 113	76-13-1	N.D.	3	16		1
10237	Hexachlorobutadiene	87-68-3	N.D.	3	8		1
10237	Isopropylbenzene	98-82-8	N.D. UJ-	2	8		1
10237	p-Isopropyltoluene	99-87-6	N.D.	2	8		1
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.8	8		1
10237	4-Methyl-2-pentanone	108-10-1	N.D.	5	16		1
10237	Methylene Chloride	75-09-2	N.D.	3	8		1
10237	Naphthalene	91-20-3	N.D.	2	8		1
10237	n-Propylbenzene	103-65-1	N.D.	2	8		1
10237	Styrene	100-42-5	N.D. UJ-	2	8		1
10237	1,1,1,2-Tetrachloroethane	630-20-6	N.D. UJ-	2	8		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P0-SE(0.0-0.3)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584651
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 15:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P0E1A SDG#: ESM01-01

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B		ug/kg	ug/kg	ug/kg	ug/kg	
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	2	8		1
10237	Tetrachloroethene	127-18-4	N.D. UJ	2	8		1
10237	Tetrahydrofuran	109-99-9	N.D.	6	8		1
10237	Toluene	108-88-3	5 J	2	8		1
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	2	8		1
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	2	8		1
10237	1,3,5-Trichlorobenzene	108-70-3	N.D.	2	8		1
10237	1,1,1-Trichloroethane	71-55-6	N.D.	2	8		1
10237	1,1,2-Trichloroethane	79-00-5	N.D. UJ	2	8		1
10237	Trichloroethene	79-01-6	N.D.	2	8		1
10237	Trichlorofluoromethane	75-69-4	N.D.	3	8		1
10237	1,2,3-Trichloropropane	96-18-4	N.D.	2	8		1
10237	1,2,4-Trimethylbenzene	95-63-6	N.D.	2	8		1
10237	Vinyl Chloride	75-01-4	N.D.	2	8		1
10237	Xylene (Total)	1330-20-7	N.D. UJ	2	8		1
The GC/MS volatile internal standard peak areas were outside the QC limits. A re-analysis was performed, and the matrix effect was confirmed.							
GC/MS Semivolatiles	SW-846 8270C		ug/kg	ug/kg	ug/kg	ug/kg	
10727	4-Bromophenyl-phenylether	101-55-3	N.D.	26	53		1
10727	Butylbenzylphthalate	85-68-7	N.D.	110	260		1
10727	Di-n-butylphthalate	84-74-2	N.D.	110	260		1
10727	Carbazole	86-74-8	N.D.	26	53		1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.	26	53		1
10727	4-Chloroaniline	106-47-8	N.D.	26	53		1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.	26	53		1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.	26	53		1
10727	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	26	53		1
10727	2-Chloronaphthalene	91-58-7	N.D.	11	52		1
10727	2-Chlorophenol	95-57-8	N.D.	26	53		1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.	26	53		1
10727	Dibenzofuran	132-64-9	N.D.	26	53		1
10727	1,2-Dichlorobenzene	95-50-1	N.D.	26	53		1
10727	1,3-Dichlorobenzene	541-73-1	N.D.	26	53		1
10727	1,4-Dichlorobenzene	106-46-7	N.D.	26	53		1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.	160	530		1
10727	2,4-Dichlorophenol	120-83-2	N.D.	26	53		1
10727	Diethylphthalate	84-66-2	N.D.	110	260		1
10727	2,4-Dimethylphenol	105-67-9	N.D.	26	53		1
10727	Dimethylphthalate	131-11-3	N.D.	110	260		1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	260	790		1
10727	2,4-Dinitrophenol	51-28-5	N.D.	470	1,600		1
10727	2,4-Dinitrotoluene	121-14-2	N.D.	110	260		1
10727	2,6-Dinitrotoluene	606-20-2	N.D.	26	53		1
10727	1,2-Diphenylhydrazine	122-66-7	N.D.	26	53		1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	110	270		1
10727	Hexachlorobenzene	118-74-1	N.D.	5	27		1
10727	Hexachlorobutadiene	87-68-3	N.D.	26	53		1
10727	Hexachloroethane	67-72-1	N.D.	53	260		1
10727	Isophorone	78-59-1	N.D.	26	53		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P0-SE(0.0-0.3)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584651
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 15:30 by GL

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ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P0E1A SDG#: ESM01-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10727	2-Methylphenol	95-48-7	N.D.		26	53		1
10727	4-Methylphenol	106-44-5	43	J	26	53		1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.							
10727	2-Nitroaniline	88-74-4	N.D.		26	53		1
10727	3-Nitroaniline	99-09-2	N.D.		110	260		1
10727	4-Nitroaniline	100-01-6	N.D.		110	260		1
10727	Nitrobenzene	98-95-3	N.D.		26	53		1
10727	2-Nitrophenol	88-75-5	N.D.		26	53		1
10727	4-Nitrophenol	100-02-7	N.D.		260	790		1
10727	N-Nitrosodimethylamine	62-75-9	N.D.		110	260		1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		26	53		1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		26	53		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.							
10727	Di-n-octylphthalate	117-84-0	N.D.		110	260		1
10727	Pentachlorophenol	87-86-5	N.D.		53	270		1
10727	Phenol	108-95-2	N.D.		26	53		1
10727	1,2,4-Trichlorobenzene	120-82-1	N.D.		26	53		1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		26	53		1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		26	53		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10722	Acenaphthene	83-32-9	N.D.		2.1	5.3		1
10722	Acenaphthylene	208-96-8	N.D.		1.1	5.3		1
10722	Anthracene	120-12-7	N.D.		1.1	5.3		1
10722	Benzo(a)anthracene	56-55-3	N.D.		2.1	5.3		1
10722	Benzo(a)pyrene	50-32-8	3.0	J	2.1	5.3		1
10722	Benzo(b)fluoranthene	205-99-2	4.7	J	2.1	5.3		1
10722	Benzo(g,h,i)perylene	191-24-2	5.8		2.1	5.3		1
10722	Benzo(k)fluoranthene	207-08-9	N.D.		2.1	5.3		1
10722	Chrysene	218-01-9	5.5		1.1	5.3		1
10722	Dibenz(a,h)anthracene	53-70-3	N.D.		2.1	5.3		1
10722	Fluoranthene	206-44-0	4.6	J	2.1	5.3		1
10722	Fluorene	86-73-7	2.9	J	2.1	5.3		1
10722	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		2.1	5.3		1
10722	1-Methylnaphthalene	90-12-0	18		2.1	5.3		1
10722	2-Methylnaphthalene	91-57-6	21		2.1	5.3		1
10722	Naphthalene	91-20-3	14		2.1	5.3		1
10722	Phenanthrene	85-01-8	11		2.1	5.3		1
10722	Pyrene	129-00-0	5.5		2.1	5.3		1
	Reporting limits were raised due to interference from the sample matrix.							
Herbicides	**SW-846 8151A**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10401	2,4-D	94-75-7	N.D.		19	57		1
10401	Dinoseb	88-85-7	N.D.		13	38		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.							

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P0-SE(0.0-0.3)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584651
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 15:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P0E1A SDG#: ESM01-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Herbicides	**SW-846 8151A**		ug/kg		ug/kg	ug/kg	ug/kg	
10401	2,4,5-T	93-76-5	N.D.		1.3	2.7		1
10401	2,4,5-TP	93-72-1	N.D.		1.2	2.7		1
Pesticides/PCBs	**SW-846 8081A**		ug/kg		ug/kg	ug/kg	ug/kg	
10738	Aldrin	309-00-2	0.68	J	0.27	1.3		1
10738	Alpha BHC	319-84-6	N.D.		0.27	1.3		1
10738	Beta BHC	319-85-7	N.D.		2.4	3.0		1
10738	Gamma BHC - Lindane	58-89-9	N.D.		0.27	1.3		1
10738	Alpha Chlordane	5103-71-9	N.D.		0.27	1.3		1
10738	Gamma Chlordane	5103-74-2	N.D.		0.27	1.3		1
10738	p,p-DDD	72-54-8	N.D.		0.53	2.7		1
10738	p,p-DDE	72-55-9	N.D.		0.53	2.7		1
10738	p,p-DDT	50-29-3	N.D.		0.53	2.7		1
10738	Delta BHC	319-86-8	N.D.		0.72	1.3		1
10738	Dieldrin	60-57-1	N.D.		0.53	2.7		1
10738	Endosulfan I	959-98-8	N.D.		0.35	1.3		1
10738	Endosulfan II	33213-65-9	N.D.		0.53	2.7		1
10738	Endosulfan Sulfate	1031-07-8	N.D.		1.3	2.7		1
10738	Endrin	72-20-8	N.D.		0.53	2.7		1
10738	Endrin Aldehyde	7421-93-4	N.D.		0.53	2.7		1
10738	Endrin Ketone	53494-70-5	N.D.		0.96	2.9		1
10738	Heptachlor	76-44-8	0.97	J	0.27	1.3		1
10738	Heptachlor Epoxide	1024-57-3	0.28	J	0.27	1.3		1
10738	Methoxychlor	72-43-5	N.D.		2.7	13		1
10738	Toxaphene	8001-35-2	N.D.		19	53		1
Reporting limits were raised due to interference from the sample matrix.								
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		mg/kg		mg/kg	mg/kg	mg/kg	
05988	Unadjusted C5-C8 Aliphatics	n.a.	N.D.		4.00	8.01		50.13
05988	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.		4.00	8.01		50.13
05988	Unadjusted C9-C12 Aliphatics	n.a.	N.D.		4.00	8.01		50.13
05988	Total Purgeable Hydrocarbons	n.a.	N.D.		4.00	8.01		50.13
GC Petroleum Hydrocarbons	**MT DEQ**		mg/kg		mg/kg	mg/kg	mg/kg	
05969	MT EPH Screen Soil	n.a.	N.D.		240	240	200	1
Metals	**SW-846 6010B**		mg/kg		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	14,700		9.48	31.3		1
06944	Antimony	7440-36-0	N.D. UJ-		1.03	3.13		1
06935	Arsenic	7440-38-2	12.4		0.861	3.13		1
06946	Barium	7440-39-3	190		0.0282	0.783		1
06947	Beryllium	7440-41-7	0.652	J	0.0219	0.783		1
06949	Cadmium	7440-43-9	0.714	J	0.0313	0.783		1
01650	Calcium	7440-70-2	11,600		3.92	31.3		1
06951	Chromium	7440-47-3	37.8		0.219	2.35		1
06952	Cobalt	7440-48-4	9.97		0.114	0.783		1
06953	Copper	7440-50-8	21.5		0.150	1.57		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P0-SE(0.0-0.3)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584651
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 15:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P0E1A SDG#: ESM01-01

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Metals	SW-846 6010B		mg/kg	mg/kg	mg/kg	mg/kg	
01654	Iron	7439-89-6	24,900	4.09	31.3		1
06955	Lead	7439-92-1	10.8	0.345	2.35		1
01657	Magnesium	7439-95-4	8,450	0.689	15.7		1
06958	Manganese	7439-96-5	375	0.0564	0.783		1
06961	Nickel	7440-02-0	24.1	0.155	1.57		1
01662	Potassium	7440-09-7	2,200 J+	17.7	78.3		1
06936	Selenium	7782-49-2	N.D.	1.06	3.13		1
06966	Silver	7440-22-4	0.149 J	0.130	0.783		1
01667	Sodium	7440-23-5	697	9.32	157		1
06925	Thallium	7440-28-0	0.656 J	0.564	4.70		1
06971	Vanadium	7440-62-2	64.2	0.219	0.783		1
06972	Zinc	7440-66-6	57.0	0.517	3.13		1
	SW-846 7471A		mg/kg	mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0192 J	0.0104	0.148		1
Wet Chemistry	SW-846 9060 modified		mg/kg	mg/kg	mg/kg	mg/kg	
02079	TOC Solids/Sludges Combustion	n.a.	8,100	673	2,020		1
Wet Chemistry	SM20 2540 G		%	%	%	%	
00111	Moisture	n.a.	37.4	0.50	0.50		1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	8260 Ext. Soil Master w/GRO	SW-846 8260B	1	B120811AA	03/21/2012 15:50	Chelsea B Eastep	1
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201208027098	03/20/2012 13:10	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201208027098	03/20/2012 13:10	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	3	201208027098	03/20/2012 13:10	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201208027098	03/20/2012 13:09	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	2	201208027098	03/20/2012 13:09	Larry E Bevins	n.a.
10727	TCL 8270 (microwave)	SW-846 8270C	1	12080SLF026	03/21/2012 10:20	Joseph M Gambler	1
10722	SIM PAH 8270 (microwave)	SW-846 8270C SIM	1	12080SLE026	03/21/2012 03:25	Mark A Clark	1
10809	BNA Soil Microwave	SW-846 3546	1	12080SLF026	03/21/2012 02:30	David V Hershey Jr	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P0-SE(0.0-0.3)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584651
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 15:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P0E1A SDG#: ESM01-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10810	BNA Soil Microwave SIM PAH	SW-846 3546	1	12080SLE026	03/20/2012 16:50	JoElla L Rice	1
10401	Herbicide soils 8151A Master	SW-846 8151A	1	120800026A	03/21/2012 17:23	John W Perkins	1
10738	TCL Pesticides 8081A Soil	SW-846 8081A	1	120820003A	03/24/2012 17:51	Jamie L Brillhart	1
10496	PPL Pest. Microwave Extraction	SW-846 3546	2	120820003A	03/22/2012 19:30	Sally L Appleyard	1
04181	Herbicide Soil Extraction	SW-846 3550B/SW-846 8151A	1	120800026A	03/20/2012 21:00	Karen L Beyer	1
05988	MT - VPH Soils	MA DEP VPH 5/04	1	12081A08B	03/22/2012 09:59	Nicholas R Rossi	50.13
05969	MT EPH Screen Soil	MT DEQ	1	120800024A	03/21/2012 06:24	Heather E Williams	1
11212	MT EPH Soils Extraction	SW-846 3546	1	120800024A	03/20/2012 16:50	JoElla L Rice	1
12136	VPH soils - Encore Prep	SW-846 5030A	1	201208027098	03/20/2012 13:11	Larry E Bevins	n.a.
01643	Aluminum	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06944	Antimony	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06935	Arsenic	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06946	Barium	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06947	Beryllium	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06949	Cadmium	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
01650	Calcium	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06951	Chromium	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06952	Cobalt	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06953	Copper	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
01654	Iron	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06955	Lead	SW-846 6010B	1	120805708001	03/21/2012 16:55	Eric L Eby	1
01657	Magnesium	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06958	Manganese	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06961	Nickel	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
01662	Potassium	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06936	Selenium	SW-846 6010B	1	120805708001	03/21/2012 16:55	Eric L Eby	1
06966	Silver	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
01667	Sodium	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06925	Thallium	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06971	Vanadium	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
06972	Zinc	SW-846 6010B	1	120805708001	03/21/2012 10:25	Joanne M Gates	1
00159	Mercury	SW-846 7471A	1	120805711001	03/21/2012 08:41	Damary Valentin	1
05708	SW SW846 ICP Digest	SW-846 3050B	1	120805708001	03/20/2012 21:57	Annamaria Stipkovits	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	120805711001	03/20/2012 22:45	Annamaria Stipkovits	1
02079	TOC Solids/Sludges Combustion	SW-846 9060 modified	1	12080049531A	03/21/2012 00:46	James S Mathiot	1
00111	Moisture	SM20 2540 G	1	12080820004B	03/20/2012 17:49	Scott W Freisher	1

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2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Sample Description: HUMT-P1-SE(0.0-0.5)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584652
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 16:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E1A SDG#: ESM01-02

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	17	J	9	24		0.93
10237	Allyl Chloride	107-05-1	N.D.		1	6		0.93
10237	Benzene	71-43-2	N.D.		0.6	6		0.93
10237	Bromobenzene	108-86-1	N.D.		1	6		0.93
10237	Bromochloromethane	74-97-5	N.D.		1	6		0.93
10237	Bromodichloromethane	75-27-4	N.D.		1	6		0.93
10237	Bromoform	75-25-2	N.D.		1	6		0.93
10237	Bromomethane	74-83-9	N.D.		2	6		0.93
10237	2-Butanone	78-93-3	N.D.		5	12		0.93
10237	n-Butylbenzene	104-51-8	N.D.		1	6		0.93
10237	sec-Butylbenzene	135-98-8	N.D.		1	6		0.93
10237	tert-Butylbenzene	98-06-6	N.D.		1	6		0.93
10237	Carbon Tetrachloride	56-23-5	N.D.		1	6		0.93
10237	Chlorobenzene	108-90-7	N.D.		1	6		0.93
10237	Chloroethane	75-00-3	N.D.		2	6		0.93
10237	Chloroform	67-66-3	N.D.		1	6		0.93
10237	Chloromethane	74-87-3	N.D.		2	6		0.93
10237	4-Chlorotoluene	106-43-4	N.D.		1	6		0.93
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2	6		0.93
10237	Dibromochloromethane	124-48-1	N.D.		1	6		0.93
10237	1,2-Dibromoethane	106-93-4	N.D.		1	6		0.93
10237	Dibromomethane	74-95-3	N.D.		1	6		0.93
10237	1,2-Dichlorobenzene	95-50-1	N.D.		1	6		0.93
10237	1,3-Dichlorobenzene	541-73-1	N.D.		1	6		0.93
10237	1,4-Dichlorobenzene	106-46-7	N.D.		1	6		0.93
10237	Dichlorodifluoromethane	75-71-8	N.D.		2	6		0.93
10237	1,1-Dichloroethane	75-34-3	N.D.		1	6		0.93
10237	1,2-Dichloroethane	107-06-2	N.D.		1	6		0.93
10237	1,1-Dichloroethene	75-35-4	N.D.		1	6		0.93
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		1	6		0.93
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		1	6		0.93
10237	Dichlorofluoromethane	75-43-4	N.D.		2	6		0.93
10237	1,2-Dichloropropane	78-87-5	N.D.		1	6		0.93
10237	1,3-Dichloropropane	142-28-9	N.D.		1	6		0.93
10237	2,2-Dichloropropane	594-20-7	N.D.		1	6		0.93
10237	1,1-Dichloropropene	563-58-6	N.D.		1	6		0.93
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		1	6		0.93
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		1	6		0.93
10237	Ethyl Ether	60-29-7	N.D.		1	6		0.93
10237	Ethylbenzene	100-41-4	N.D.		1	6		0.93
10237	Freon 113	76-13-1	N.D.		2	12		0.93
10237	Hexachlorobutadiene	87-68-3	N.D.		2	6		0.93
10237	Isopropylbenzene	98-82-8	N.D.		1	6		0.93
10237	p-Isopropyltoluene	99-87-6	N.D.		1	6		0.93
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.6	6		0.93
10237	4-Methyl-2-pentanone	108-10-1	N.D.		4	12		0.93
10237	Methylene Chloride	75-09-2	N.D.		2	6		0.93
10237	Naphthalene	91-20-3	N.D.		1	6		0.93
10237	n-Propylbenzene	103-65-1	N.D.		1	6		0.93
10237	Styrene	100-42-5	N.D.		1	6		0.93
10237	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		1	6		0.93

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Sample Description: HUMT-P1-SE(0.0-0.5)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584652
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 16:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E1A SDG#: ESM01-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1	6		0.93
10237	Tetrachloroethene	127-18-4	N.D.	1	6		0.93
10237	Tetrahydrofuran	109-99-9	N.D.	5	6		0.93
10237	Toluene	108-88-3	N.D.	1	6		0.93
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	1	6		0.93
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	1	6		0.93
10237	1,3,5-Trichlorobenzene	108-70-3	N.D.	1	6		0.93
10237	1,1,1-Trichloroethane	71-55-6	N.D.	1	6		0.93
10237	1,1,2-Trichloroethane	79-00-5	N.D.	1	6		0.93
10237	Trichloroethene	79-01-6	N.D.	1	6		0.93
10237	Trichlorofluoromethane	75-69-4	N.D.	2	6		0.93
10237	1,2,3-Trichloropropane	96-18-4	N.D.	1	6		0.93
10237	1,2,4-Trimethylbenzene	95-63-6	N.D.	1	6		0.93
10237	Vinyl Chloride	75-01-4	N.D.	1	6		0.93
10237	Xylene (Total)	1330-20-7	N.D.	1	6		0.93
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10727	4-Bromophenyl-phenylether	101-55-3	N.D.	21	43		1
10727	Butylbenzylphthalate	85-68-7	N.D.	86	210		1
10727	Di-n-butylphthalate	84-74-2	N.D.	86	210		1
10727	Carbazole	86-74-8	N.D.	21	43		1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.	21	43		1
10727	4-Chloroaniline	106-47-8	N.D.	21	43		1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.	21	43		1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.	21	43		1
10727	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	21	43		1
10727	2-Chloronaphthalene	91-58-7	N.D.	9	42		1
10727	2-Chlorophenol	95-57-8	N.D.	21	43		1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.	21	43		1
10727	Dibenzofuran	132-64-9	N.D.	21	43		1
10727	1,2-Dichlorobenzene	95-50-1	N.D.	21	43		1
10727	1,3-Dichlorobenzene	541-73-1	N.D.	21	43		1
10727	1,4-Dichlorobenzene	106-46-7	N.D.	21	43		1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.	130	430		1
10727	2,4-Dichlorophenol	120-83-2	N.D.	21	43		1
10727	Diethylphthalate	84-66-2	N.D.	86	210		1
10727	2,4-Dimethylphenol	105-67-9	N.D.	21	43		1
10727	Dimethylphthalate	131-11-3	N.D.	86	210		1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	210	640		1
10727	2,4-Dinitrophenol	51-28-5	N.D.	390	1,300		1
10727	2,4-Dinitrotoluene	121-14-2	N.D.	86	210		1
10727	2,6-Dinitrotoluene	606-20-2	N.D.	21	43		1
10727	1,2-Diphenylhydrazine	122-66-7	N.D.	21	43		1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	86	220		1
10727	Hexachlorobenzene	118-74-1	N.D.	4	22		1
10727	Hexachlorobutadiene	87-68-3	N.D.	21	43		1
10727	Hexachloroethane	67-72-1	N.D.	43	210		1
10727	Isophorone	78-59-1	N.D.	21	43		1
10727	2-Methylphenol	95-48-7	N.D.	21	43		1
10727	4-Methylphenol	106-44-5	N.D.	21	43		1

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Sample Description: HUMT-P1-SE(0.0-0.5)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584652
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 16:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E1A SDG#: ESM01-02

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.							
10727	2-Nitroaniline	88-74-4	N.D.		21	43		1
10727	3-Nitroaniline	99-09-2	N.D.		86	210		1
10727	4-Nitroaniline	100-01-6	N.D.		86	210		1
10727	Nitrobenzene	98-95-3	N.D.		21	43		1
10727	2-Nitrophenol	88-75-5	N.D.		21	43		1
10727	4-Nitrophenol	100-02-7	N.D.		210	640		1
10727	N-Nitrosodimethylamine	62-75-9	N.D.		86	210		1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		21	43		1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		21	43		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.							
10727	Di-n-octylphthalate	117-84-0	N.D.		86	210		1
10727	Pentachlorophenol	87-86-5	N.D.		43	220		1
10727	Phenol	108-95-2	N.D.		21	43		1
10727	1,2,4-Trichlorobenzene	120-82-1	N.D.		21	43		1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		21	43		1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		21	43		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10722	Acenaphthene	83-32-9	N.D.		1.7	4.3		1
10722	Acenaphthylene	208-96-8	N.D.		0.87	4.3		1
10722	Anthracene	120-12-7	N.D.		0.87	4.3		1
10722	Benzo(a)anthracene	56-55-3	N.D.		1.7	4.3		1
10722	Benzo(a)pyrene	50-32-8	N.D.		1.7	4.3		1
10722	Benzo(b)fluoranthene	205-99-2	2.6	J	1.7	4.3		1
10722	Benzo(g,h,i)perylene	191-24-2	3.0	J	1.7	4.3		1
10722	Benzo(k)fluoranthene	207-08-9	N.D.		1.7	4.3		1
10722	Chrysene	218-01-9	2.7	J	0.87	4.3		1
10722	Dibenz(a,h)anthracene	53-70-3	N.D.		1.7	4.3		1
10722	Fluoranthene	206-44-0	2.8	J	1.7	4.3		1
10722	Fluorene	86-73-7	N.D.		1.7	4.3		1
10722	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		1.7	4.3		1
10722	1-Methylnaphthalene	90-12-0	5.0		1.7	4.3		1
10722	2-Methylnaphthalene	91-57-6	6.6		1.7	4.3		1
10722	Naphthalene	91-20-3	71		1.7	4.3		1
10722	Phenanthrene	85-01-8	6.2		1.7	4.3		1
10722	Pyrene	129-00-0	3.4	J	1.7	4.3		1
	Reporting limits were raised due to interference from the sample matrix.							
Herbicides	**SW-846 8151A**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10401	2,4-D	94-75-7	N.D.		16	47		1
10401	Dinoseb	88-85-7	N.D.		10	31		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.							
10401	2,4,5-T	93-76-5	N.D.		1.1	2.2		1
10401	2,4,5-TP	93-72-1	N.D.		0.98	2.2		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SE(0.0-0.5)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584652
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 16:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E1A SDG#: ESM01-02

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Pesticides/PCBs	**SW-846 8081A**		ug/kg		ug/kg	ug/kg	ug/kg	
10738	Aldrin	309-00-2	0.84	J	0.22	1.1		1
10738	Alpha BHC	319-84-6	N.D.		0.22	1.1		1
10738	Beta BHC	319-85-7	N.D.		3.3	3.3		1
10738	Gamma BHC - Lindane	58-89-9	N.D.		1.1	1.1		1
10738	Alpha Chlordane	5103-71-9	N.D.		3.5	3.5		1
10738	Gamma Chlordane	5103-74-2	N.D.		0.22	1.1		1
10738	p,p-DDD	72-54-8	N.D.		0.43	2.2		1
10738	p,p-DDE	72-55-9	0.78	J	0.43	2.2		1
10738	p,p-DDT	50-29-3	N.D.		0.43	2.2		1
10738	Delta BHC	319-86-8	9.1		0.59	1.1		1
10738	Dieldrin	60-57-1	N.D.		0.76	2.2		1
10738	Endosulfan I	959-98-8	1.1	J	0.29	1.1		1
10738	Endosulfan II	33213-65-9	N.D.		0.43	2.2		1
10738	Endosulfan Sulfate	1031-07-8	N.D.		0.48	2.2		1
10738	Endrin	72-20-8	N.D.		0.43	2.2		1
10738	Endrin Aldehyde	7421-93-4	N.D.		0.43	2.2		1
10738	Endrin Ketone	53494-70-5	N.D.		0.78	2.3		1
10738	Heptachlor	76-44-8	1.3		0.22	1.1		1
10738	Heptachlor Epoxide	1024-57-3	N.D.		5.2	5.2		1
10738	Methoxychlor	72-43-5	N.D.		2.2	11		1
10738	Toxaphene	8001-35-2	N.D.		16	43		1
Reporting limits were raised due to interference from the sample matrix.								
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		mg/kg		mg/kg	mg/kg	mg/kg	
05988	Unadjusted C5-C8 Aliphatics	n.a.	N.D.		3.16	6.32		48.54
05988	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.		3.16	6.32		48.54
05988	Unadjusted C9-C12 Aliphatics	n.a.	N.D.		3.16	6.32		48.54
05988	Total Purgeable Hydrocarbons	n.a.	N.D.		3.16	6.32		48.54
GC Petroleum Hydrocarbons	**MT DEQ**		mg/kg		mg/kg	mg/kg	mg/kg	
05969	MT EPH Screen Soil	n.a.	N.D.		200	200	200	1
Metals	**SW-846 6010B**		mg/kg		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	9,040		7.65	25.3		1
06944	Antimony	7440-36-0	N.D. UJ-		0.834	2.53		1
06935	Arsenic	7440-38-2	11.1		0.695	2.53		1
06946	Barium	7440-39-3	132		0.0228	0.632		1
06947	Beryllium	7440-41-7	0.384	J	0.0177	0.632		1
06949	Cadmium	7440-43-9	0.461	J	0.0253	0.632		1
01650	Calcium	7440-70-2	8,470		3.16	25.3		1
06951	Chromium	7440-47-3	21.1		0.177	1.90		1
06952	Cobalt	7440-48-4	6.18		0.0923	0.632		1
06953	Copper	7440-50-8	10.4		0.121	1.26		1
01654	Iron	7439-89-6	16,100		3.30	25.3		1
06955	Lead	7439-92-1	7.18		0.278	1.90		1
01657	Magnesium	7439-95-4	4,850		0.556	12.6		1
06958	Manganese	7439-96-5	268		0.0455	0.632		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SE(0.0-0.5)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584652
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 16:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E1A SDG#: ESM01-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Metals	SW-846 6010B		mg/kg	mg/kg	mg/kg	mg/kg	
06961	Nickel	7440-02-0	14.2	0.125	1.26		1
01662	Potassium	7440-09-7	1,260 J+	14.3	63.2		1
06936	Selenium	7782-49-2	N.D.	0.860	2.53		1
06966	Silver	7440-22-4	N.D.	0.105	0.632		1
01667	Sodium	7440-23-5	577	7.52	126		1
06925	Thallium	7440-28-0	0.908 J	0.455	3.79		1
06971	Vanadium	7440-62-2	39.5	0.177	0.632		1
06972	Zinc	7440-66-6	35.2	0.417	2.53		1
	SW-846 7471A		mg/kg	mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0137 J	0.0090	0.128		1
Wet Chemistry	SW-846 9060 modified		mg/kg	mg/kg	mg/kg	mg/kg	
02079	TOC Solids/Sludges Combustion	n.a.	11,400	516	1,550		1
Wet Chemistry	SM20 2540 G		%	%	%	%	
00111	Moisture	n.a.	23.2	0.50	0.50		1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	8260 Ext. Soil Master w/GRO	SW-846 8260B	1	B120811AA	03/21/2012 16:12	Chelsea B Eastep	0.93
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201208027098	03/20/2012 12:59	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201208027098	03/20/2012 12:59	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	3	201208027098	03/20/2012 12:59	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201208027098	03/20/2012 13:05	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	2	201208027098	03/20/2012 13:05	Larry E Bevins	n.a.
10727	TCL 8270 (microwave)	SW-846 8270C	1	12080SLF026	03/21/2012 10:42	Joseph M Gambler	1
10722	SIM PAH 8270 (microwave)	SW-846 8270C SIM	1	12080SLE026	03/21/2012 03:56	Mark A Clark	1
10809	BNA Soil Microwave	SW-846 3546	1	12080SLF026	03/21/2012 02:30	David V Hershey Jr	1
10810	BNA Soil Microwave SIM PAH	SW-846 3546	1	12080SLE026	03/20/2012 16:50	JoElla L Rice	1
10401	Herbicide soils 8151A Master	SW-846 8151A	1	120800026A	03/21/2012 17:51	John W Perkins	1
10738	TCL Pesticides 8081A Soil	SW-846 8081A	1	120820003A	03/24/2012 18:05	Jamie L Brillhart	1

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Analysis Report

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Sample Description: HUMT-P1-SE(0.0-0.5)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584652
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 16:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E1A SDG#: ESM01-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10496	PPL Pest. Microwave Extraction	SW-846 3546	2	120820003A	03/22/2012 19:30	Sally L Appleyard	1
04181	Herbicide Soil Extraction	SW-846 3550B/SW-846 8151A	1	120800026A	03/20/2012 21:00	Karen L Beyer	1
05988	MT - VPH Soils	MA DEP VPH 5/04	1	12081A08A	03/21/2012 14:59	Nicholas R Rossi	48.54
05969	MT EPH Screen Soil	MT DEQ	1	120800024A	03/21/2012 06:50	Heather E Williams	1
11212	MT EPH Soils Extraction	SW-846 3546	1	120800024A	03/20/2012 16:50	JoElla L Rice	1
12136	VPH soils - Encore Prep	SW-846 5030A	1	201208027098	03/20/2012 13:06	Larry E Bevins	n.a.
01643	Aluminum	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06944	Antimony	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06935	Arsenic	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06946	Barium	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06947	Beryllium	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06949	Cadmium	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
01650	Calcium	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06951	Chromium	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06952	Cobalt	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06953	Copper	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
01654	Iron	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06955	Lead	SW-846 6010B	1	120805708001	03/21/2012 16:59	Eric L Eby	1
01657	Magnesium	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06958	Manganese	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06961	Nickel	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
01662	Potassium	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06936	Selenium	SW-846 6010B	1	120805708001	03/21/2012 16:59	Eric L Eby	1
06966	Silver	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
01667	Sodium	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06925	Thallium	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06971	Vanadium	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
06972	Zinc	SW-846 6010B	1	120805708001	03/21/2012 10:30	Joanne M Gates	1
00159	Mercury	SW-846 7471A	1	120805711001	03/21/2012 08:42	Damary Valentin	1
05708	SW SW846 ICP Digest	SW-846 3050B	1	120805708001	03/20/2012 21:57	Annamaria Stipkovits	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	120805711001	03/20/2012 22:45	Annamaria Stipkovits	1
02079	TOC Solids/Sludges Combustion	SW-846 9060 modified	1	12080049531A	03/20/2012 22:31	James S Mathiot	1
00111	Moisture	SM20 2540 G	1	12080820004B	03/20/2012 17:49	Scott W Freisher	1

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Analysis Report

Sample Description: HUMT-P1-SE(0.0-0.5)2-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584653
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 17:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E2A SDG#: ESM01-03

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	26	J	9	27		0.97
10237	Allyl Chloride	107-05-1	N.D.		1	7		0.97
10237	Benzene	71-43-2	N.D.		0.7	7		0.97
10237	Bromobenzene	108-86-1	N.D.		1	7		0.97
10237	Bromochloromethane	74-97-5	N.D.		1	7		0.97
10237	Bromodichloromethane	75-27-4	N.D.		1	7		0.97
10237	Bromoform	75-25-2	N.D.		1	7		0.97
10237	Bromomethane	74-83-9	N.D.		3	7		0.97
10237	2-Butanone	78-93-3	N.D.		5	13		0.97
10237	n-Butylbenzene	104-51-8	N.D.		1	7		0.97
10237	sec-Butylbenzene	135-98-8	N.D.		1	7		0.97
10237	tert-Butylbenzene	98-06-6	N.D.		1	7		0.97
10237	Carbon Tetrachloride	56-23-5	N.D.		1	7		0.97
10237	Chlorobenzene	108-90-7	N.D.		1	7		0.97
10237	Chloroethane	75-00-3	N.D.		3	7		0.97
10237	Chloroform	67-66-3	N.D.		1	7		0.97
10237	Chloromethane	74-87-3	N.D.		3	7		0.97
10237	4-Chlorotoluene	106-43-4	N.D.		1	7		0.97
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		3	7		0.97
10237	Dibromochloromethane	124-48-1	N.D.		1	7		0.97
10237	1,2-Dibromoethane	106-93-4	N.D.		1	7		0.97
10237	Dibromomethane	74-95-3	N.D.		1	7		0.97
10237	1,2-Dichlorobenzene	95-50-1	N.D.		1	7		0.97
10237	1,3-Dichlorobenzene	541-73-1	N.D.		1	7		0.97
10237	1,4-Dichlorobenzene	106-46-7	N.D.		1	7		0.97
10237	Dichlorodifluoromethane	75-71-8	N.D.		3	7		0.97
10237	1,1-Dichloroethane	75-34-3	N.D.		1	7		0.97
10237	1,2-Dichloroethane	107-06-2	N.D.		1	7		0.97
10237	1,1-Dichloroethene	75-35-4	N.D.		1	7		0.97
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		1	7		0.97
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		1	7		0.97
10237	Dichlorofluoromethane	75-43-4	N.D.		3	7		0.97
10237	1,2-Dichloropropane	78-87-5	N.D.		1	7		0.97
10237	1,3-Dichloropropane	142-28-9	N.D.		1	7		0.97
10237	2,2-Dichloropropane	594-20-7	N.D.		1	7		0.97
10237	1,1-Dichloropropene	563-58-6	N.D.		1	7		0.97
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		1	7		0.97
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		1	7		0.97
10237	Ethyl Ether	60-29-7	N.D.		1	7		0.97
10237	Ethylbenzene	100-41-4	N.D.		1	7		0.97
10237	Freon 113	76-13-1	N.D.		3	13		0.97
10237	Hexachlorobutadiene	87-68-3	N.D.		3	7		0.97
10237	Isopropylbenzene	98-82-8	N.D.		1	7		0.97
10237	p-Isopropyltoluene	99-87-6	N.D.		1	7		0.97
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.7	7		0.97
10237	4-Methyl-2-pentanone	108-10-1	N.D.		4	13		0.97
10237	Methylene Chloride	75-09-2	N.D.		3	7		0.97
10237	Naphthalene	91-20-3	N.D.		1	7		0.97
10237	n-Propylbenzene	103-65-1	N.D.		1	7		0.97
10237	Styrene	100-42-5	N.D.		1	7		0.97
10237	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		1	7		0.97

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SE(0.0-0.5)2-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584653
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 17:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E2A SDG#: ESM01-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1	7		0.97
10237	Tetrachloroethene	127-18-4	N.D.	1	7		0.97
10237	Tetrahydrofuran	109-99-9	N.D.	5	7		0.97
10237	Toluene	108-88-3	N.D.	1	7		0.97
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	1	7		0.97
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	1	7		0.97
10237	1,3,5-Trichlorobenzene	108-70-3	N.D.	1	7		0.97
10237	1,1,1-Trichloroethane	71-55-6	N.D.	1	7		0.97
10237	1,1,2-Trichloroethane	79-00-5	N.D.	1	7		0.97
10237	Trichloroethene	79-01-6	N.D.	1	7		0.97
10237	Trichlorofluoromethane	75-69-4	N.D.	3	7		0.97
10237	1,2,3-Trichloropropane	96-18-4	N.D.	1	7		0.97
10237	1,2,4-Trimethylbenzene	95-63-6	N.D.	1	7		0.97
10237	Vinyl Chloride	75-01-4	N.D.	1	7		0.97
10237	Xylene (Total)	1330-20-7	N.D.	1	7		0.97
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10727	4-Bromophenyl-phenylether	101-55-3	N.D.	23	46		1
10727	Butylbenzylphthalate	85-68-7	N.D.	91	230		1
10727	Di-n-butylphthalate	84-74-2	N.D.	91	230		1
10727	Carbazole	86-74-8	N.D.	23	46		1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.	23	46		1
10727	4-Chloroaniline	106-47-8	N.D.	23	46		1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.	23	46		1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.	23	46		1
10727	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	23	46		1
10727	2-Chloronaphthalene	91-58-7	N.D.	10	45		1
10727	2-Chlorophenol	95-57-8	N.D.	23	46		1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.	23	46		1
10727	Dibenzofuran	132-64-9	N.D.	23	46		1
10727	1,2-Dichlorobenzene	95-50-1	N.D.	23	46		1
10727	1,3-Dichlorobenzene	541-73-1	N.D.	23	46		1
10727	1,4-Dichlorobenzene	106-46-7	N.D.	23	46		1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.	140	460		1
10727	2,4-Dichlorophenol	120-83-2	N.D.	23	46		1
10727	Diethylphthalate	84-66-2	N.D.	91	230		1
10727	2,4-Dimethylphenol	105-67-9	N.D.	23	46		1
10727	Dimethylphthalate	131-11-3	N.D.	91	230		1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	230	690		1
10727	2,4-Dinitrophenol	51-28-5	N.D.	410	1,400		1
10727	2,4-Dinitrotoluene	121-14-2	N.D.	91	230		1
10727	2,6-Dinitrotoluene	606-20-2	N.D.	23	46		1
10727	1,2-Diphenylhydrazine	122-66-7	N.D.	23	46		1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	91	230		1
10727	Hexachlorobenzene	118-74-1	N.D.	5	23		1
10727	Hexachlorobutadiene	87-68-3	N.D.	23	46		1
10727	Hexachloroethane	67-72-1	N.D.	46	230		1
10727	Isophorone	78-59-1	N.D.	23	46		1
10727	2-Methylphenol	95-48-7	N.D.	23	46		1
10727	4-Methylphenol	106-44-5	36 J	23	46		1

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S20113949 Laurel, MT

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P1E2A SDG#: ESM01-03

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.							
10727	2-Nitroaniline	88-74-4	N.D.		23	46		1
10727	3-Nitroaniline	99-09-2	N.D.		91	230		1
10727	4-Nitroaniline	100-01-6	N.D.		91	230		1
10727	Nitrobenzene	98-95-3	N.D.		23	46		1
10727	2-Nitrophenol	88-75-5	N.D.		23	46		1
10727	4-Nitrophenol	100-02-7	N.D.		230	690		1
10727	N-Nitrosodimethylamine	62-75-9	N.D.		91	230		1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		23	46		1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		23	46		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.							
10727	Di-n-octylphthalate	117-84-0	N.D.		91	230		1
10727	Pentachlorophenol	87-86-5	N.D.		46	230		1
10727	Phenol	108-95-2	N.D.		23	46		1
10727	1,2,4-Trichlorobenzene	120-82-1	N.D.		23	46		1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		23	46		1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		23	46		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10722	Acenaphthene	83-32-9	N.D.		1.9	4.6		1
10722	Acenaphthylene	208-96-8	N.D.		0.93	4.6		1
10722	Anthracene	120-12-7	N.D.		0.93	4.6		1
10722	Benzo(a)anthracene	56-55-3	N.D.		1.9	4.6		1
10722	Benzo(a)pyrene	50-32-8	N.D.		1.9	4.6		1
10722	Benzo(b)fluoranthene	205-99-2	N.D.		1.9	4.6		1
10722	Benzo(g,h,i)perylene	191-24-2	1.9	J	1.9	4.6		1
10722	Benzo(k)fluoranthene	207-08-9	N.D.		1.9	4.6		1
10722	Chrysene	218-01-9	1.9	J	0.93	4.6		1
10722	Dibenz(a,h)anthracene	53-70-3	N.D.		1.9	4.6		1
10722	Fluoranthene	206-44-0	N.D.		1.9	4.6		1
10722	Fluorene	86-73-7	N.D.		1.9	4.6		1
10722	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		1.9	4.6		1
10722	1-Methylnaphthalene	90-12-0	3.6	J	1.9	4.6		1
10722	2-Methylnaphthalene	91-57-6	4.5	J	1.9	4.6		1
10722	Naphthalene	91-20-3	6.3		1.9	4.6		1
10722	Phenanthrene	85-01-8	5.6		1.9	4.6		1
10722	Pyrene	129-00-0	1.9	J	1.9	4.6		1
	Reporting limits were raised due to interference from the sample matrix.							
Herbicides	**SW-846 8151A**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10401	2,4-D	94-75-7	N.D.		17	50		1
10401	Dinoseb	88-85-7	N.D.		11	33		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.							
10401	2,4,5-T	93-76-5	N.D.		1.1	2.4		1
10401	2,4,5-TP	93-72-1	N.D.		1.0	2.4		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 •717-656-2300 Fax:717-656-2681• www.lancasterlabs.com

Sample Description: HUMT-P1-SE(0.0-0.5)2-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584653
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 17:15 by GL

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CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Pesticides/PCBs	**SW-846 8081A**		ug/kg		ug/kg	ug/kg	ug/kg	
10738	Aldrin	309-00-2	N.D.		0.24	1.2		1
10738	Alpha BHC	319-84-6	N.D.		0.24	1.2		1
10738	Beta BHC	319-85-7	N.D.		2.9	2.9		1
10738	Gamma BHC - Lindane	58-89-9	N.D.		0.36	1.2		1
10738	Alpha Chlordane	5103-71-9	N.D.		0.43	1.2		1
10738	Gamma Chlordane	5103-74-2	N.D.		0.24	1.2		1
10738	p,p-DDD	72-54-8	N.D.		0.46	2.4		1
10738	p,p-DDE	72-55-9	N.D.		0.46	2.4		1
10738	p,p-DDT	50-29-3	N.D.		0.46	2.4		1
10738	Delta BHC	319-86-8	3.4		0.63	1.2		1
10738	Dieldrin	60-57-1	0.90	J	0.46	2.4		1
10738	Endosulfan I	959-98-8	0.59	J	0.31	1.2		1
10738	Endosulfan II	33213-65-9	N.D.		0.46	2.4		1
10738	Endosulfan Sulfate	1031-07-8	0.63	J+	0.46	2.4		1
10738	Endrin	72-20-8	N.D.		0.46	2.4		1
10738	Endrin Aldehyde	7421-93-4	0.66	J	0.46	2.4		1
10738	Endrin Ketone	53494-70-5	N.D.		0.84	2.5		1
10738	Heptachlor	76-44-8	0.55	J	0.24	1.2		1
10738	Heptachlor Epoxide	1024-57-3	3.0		0.24	1.2		1
10738	Methoxychlor	72-43-5	N.D.		2.4	12		1
10738	Toxaphene	8001-35-2	N.D.		17	46		1
Reporting limits were raised due to interference from the sample matrix.								
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		mg/kg		mg/kg	mg/kg	mg/kg	
05988	Unadjusted C5-C8 Aliphatics	n.a.	N.D.		3.35	6.69		47.98
05988	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.		3.35	6.69		47.98
05988	Unadjusted C9-C12 Aliphatics	n.a.	N.D.		3.35	6.69		47.98
05988	Total Purgeable Hydrocarbons	n.a.	N.D.		3.35	6.69		47.98
GC Petroleum Hydrocarbons	**MT DEQ**		mg/kg		mg/kg	mg/kg	mg/kg	
05969	MT EPH Screen Soil	n.a.	N.D.		210	210	200	1
Metals	**SW-846 6010B**		mg/kg		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	8,420		8.11	26.8		1
06944	Antimony	7440-36-0	N.D. UJ-		0.885	2.68		1
06935	Arsenic	7440-38-2	10.8		0.738	2.68		1
06946	Barium	7440-39-3	124		0.0241	0.671		1
06947	Beryllium	7440-41-7	0.366	J	0.0188	0.671		1
06949	Cadmium	7440-43-9	0.483	J	0.0268	0.671		1
01650	Calcium	7440-70-2	7,660		3.35	26.8		1
06951	Chromium	7440-47-3	20.0		0.188	2.01		1
06952	Cobalt	7440-48-4	5.91		0.0979	0.671		1
06953	Copper	7440-50-8	10.7		0.129	1.34		1
01654	Iron	7439-89-6	16,100		3.50	26.8		1
06955	Lead	7439-92-1	7.92		0.295	2.01		1
01657	Magnesium	7439-95-4	4,250		0.590	13.4		1
06958	Manganese	7439-96-5	387		0.0483	0.671		1

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Analysis Report

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S20113949 Laurel, MT

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P1E2A SDG#: ESM01-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Metals	SW-846 6010B		mg/kg	mg/kg	mg/kg	mg/kg	
06961	Nickel	7440-02-0	12.9	0.133	1.34		1
01662	Potassium	7440-09-7	1,140 J+	15.2	67.1		1
06936	Selenium	7782-49-2	N.D.	0.912	2.68		1
06966	Silver	7440-22-4	N.D.	0.111	0.671		1
01667	Sodium	7440-23-5	606	7.98	134		1
06925	Thallium	7440-28-0	N.D.	0.483	4.02		1
06971	Vanadium	7440-62-2	39.7	0.188	0.671		1
06972	Zinc	7440-66-6	34.8	0.443	2.68		1
	SW-846 7471A		mg/kg	mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-6	N.D. UJ-	0.0093	0.133		1
Wet Chemistry	SW-846 9060 modified		mg/kg	mg/kg	mg/kg	mg/kg	
02079	TOC Solids/Sludges Combustion	n.a.	2,010	280	841		1
Wet Chemistry	SM20 2540 G		%	%	%	%	
00111	Moisture	n.a.	28.3	0.50	0.50		1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10237	8260 Ext. Soil Master w/GRO	SW-846 8260B	1	B120811AA	03/21/2012	20:39	Chelsea B Eastep	0.97
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201208027098	03/20/2012	12:56	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201208027098	03/20/2012	12:56	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	3	201208027098	03/20/2012	12:56	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201208027098	03/20/2012	13:03	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	2	201208027098	03/20/2012	13:02	Larry E Bevins	n.a.
10727	TCL 8270 (microwave)	SW-846 8270C	1	12080SLF026	03/21/2012	11:03	Joseph M Gambler	1
10722	SIM PAH 8270 (microwave)	SW-846 8270C SIM	1	12080SLE026	03/21/2012	04:26	Mark A Clark	1
10809	BNA Soil Microwave	SW-846 3546	1	12080SLF026	03/21/2012	02:30	David V Hershey Jr	1
10810	BNA Soil Microwave SIM PAH	SW-846 3546	1	12080SLE026	03/20/2012	16:50	JoElla L Rice	1
10401	Herbicide soils 8151A Master	SW-846 8151A	1	120800026A	03/21/2012	18:18	John W Perkins	1
10738	TCL Pesticides 8081A Soil	SW-846 8081A	1	120820003A	03/24/2012	18:18	Jamie L Brillhart	1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SE(0.0-0.5)2-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584653
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/17/2012 17:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E2A SDG#: ESM01-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10496	PPL Pest. Microwave Extraction	SW-846 3546	2	120820003A	03/22/2012 19:30	Sally L Appleyard	1
04181	Herbicide Soil Extraction	SW-846 3550B/SW-846 8151A	1	120800026A	03/20/2012 21:00	Karen L Beyer	1
05988	MT - VPH Soils	MA DEP VPH 5/04	1	12081A08A	03/21/2012 16:04	Nicholas R Rossi	47.98
05969	MT EPH Screen Soil	MT DEQ	1	120800024A	03/21/2012 07:16	Heather E Williams	1
11212	MT EPH Soils Extraction	SW-846 3546	1	120800024A	03/20/2012 16:50	JoElla L Rice	1
12136	VPH soils - Encore Prep	SW-846 5030A	1	201208027098	03/20/2012 13:04	Larry E Bevins	n.a.
01643	Aluminum	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06944	Antimony	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06935	Arsenic	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06946	Barium	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06947	Beryllium	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06949	Cadmium	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
01650	Calcium	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06951	Chromium	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06952	Cobalt	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06953	Copper	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
01654	Iron	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06955	Lead	SW-846 6010B	1	120805708001	03/21/2012 17:10	Eric L Eby	1
01657	Magnesium	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06958	Manganese	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06961	Nickel	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
01662	Potassium	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06936	Selenium	SW-846 6010B	1	120805708001	03/21/2012 17:10	Eric L Eby	1
06966	Silver	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
01667	Sodium	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06925	Thallium	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06971	Vanadium	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
06972	Zinc	SW-846 6010B	1	120805708001	03/21/2012 10:41	Joanne M Gates	1
00159	Mercury	SW-846 7471A	1	120805711001	03/21/2012 08:43	Damary Valentin	1
05708	SW SW846 ICP Digest	SW-846 3050B	1	120805708001	03/20/2012 21:57	Annamaria Stipkovits	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	120805711001	03/20/2012 22:45	Annamaria Stipkovits	1
02079	TOC Solids/Sludges Combustion	SW-846 9060 modified	1	12080049531A	03/21/2012 00:54	James S Mathiot	1
00111	Moisture	SM20 2540 G	1	12080820004B	03/20/2012 17:49	Scott W Freisher	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SE(0.0-0.2)3-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584654
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 09:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E3A SDG#: ESM01-04

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	15	J	9	25		0.85
10237	Allyl Chloride	107-05-1	N.D.		1	6		0.85
10237	Benzene	71-43-2	N.D.		0.6	6		0.85
10237	Bromobenzene	108-86-1	N.D.		1	6		0.85
10237	Bromochloromethane	74-97-5	N.D.		1	6		0.85
10237	Bromodichloromethane	75-27-4	N.D.		1	6		0.85
10237	Bromoform	75-25-2	N.D.		1	6		0.85
10237	Bromomethane	74-83-9	N.D.		3	6		0.85
10237	2-Butanone	78-93-3	N.D.		5	13		0.85
10237	n-Butylbenzene	104-51-8	N.D.		1	6		0.85
10237	sec-Butylbenzene	135-98-8	N.D.		1	6		0.85
10237	tert-Butylbenzene	98-06-6	N.D.		1	6		0.85
10237	Carbon Tetrachloride	56-23-5	N.D.		1	6		0.85
10237	Chlorobenzene	108-90-7	N.D.		1	6		0.85
10237	Chloroethane	75-00-3	N.D.		3	6		0.85
10237	Chloroform	67-66-3	N.D.		1	6		0.85
10237	Chloromethane	74-87-3	N.D.		3	6		0.85
10237	4-Chlorotoluene	106-43-4	N.D.		1	6		0.85
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		3	6		0.85
10237	Dibromochloromethane	124-48-1	N.D.		1	6		0.85
10237	1,2-Dibromoethane	106-93-4	N.D.		1	6		0.85
10237	Dibromomethane	74-95-3	N.D.		1	6		0.85
10237	1,2-Dichlorobenzene	95-50-1	N.D.		1	6		0.85
10237	1,3-Dichlorobenzene	541-73-1	N.D.		1	6		0.85
10237	1,4-Dichlorobenzene	106-46-7	N.D.		1	6		0.85
10237	Dichlorodifluoromethane	75-71-8	N.D.		3	6		0.85
10237	1,1-Dichloroethane	75-34-3	N.D.		1	6		0.85
10237	1,2-Dichloroethane	107-06-2	N.D.		1	6		0.85
10237	1,1-Dichloroethene	75-35-4	N.D.		1	6		0.85
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		1	6		0.85
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		1	6		0.85
10237	Dichlorofluoromethane	75-43-4	N.D.		3	6		0.85
10237	1,2-Dichloropropane	78-87-5	N.D.		1	6		0.85
10237	1,3-Dichloropropane	142-28-9	N.D.		1	6		0.85
10237	2,2-Dichloropropane	594-20-7	N.D.		1	6		0.85
10237	1,1-Dichloropropene	563-58-6	N.D.		1	6		0.85
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		1	6		0.85
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		1	6		0.85
10237	Ethyl Ether	60-29-7	N.D.		1	6		0.85
10237	Ethylbenzene	100-41-4	N.D.		1	6		0.85
10237	Freon 113	76-13-1	N.D.		3	13		0.85
10237	Hexachlorobutadiene	87-68-3	N.D.		3	6		0.85
10237	Isopropylbenzene	98-82-8	N.D.		1	6		0.85
10237	p-Isopropyltoluene	99-87-6	N.D.		1	6		0.85
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.6	6		0.85
10237	4-Methyl-2-pentanone	108-10-1	N.D.		4	13		0.85
10237	Methylene Chloride	75-09-2	N.D.		3	6		0.85
10237	Naphthalene	91-20-3	N.D.		1	6		0.85
10237	n-Propylbenzene	103-65-1	N.D.		1	6		0.85
10237	Styrene	100-42-5	N.D.		1	6		0.85
10237	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		1	6		0.85

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Sample Description: HUMT-P1-SE(0.0-0.2)3-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584654
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 09:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E3A SDG#: ESM01-04

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1	6		0.85
10237	Tetrachloroethene	127-18-4	N.D.	1	6		0.85
10237	Tetrahydrofuran	109-99-9	N.D.	5	6		0.85
10237	Toluene	108-88-3	N.D.	1	6		0.85
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	1	6		0.85
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	1	6		0.85
10237	1,3,5-Trichlorobenzene	108-70-3	N.D.	1	6		0.85
10237	1,1,1-Trichloroethane	71-55-6	N.D.	1	6		0.85
10237	1,1,2-Trichloroethane	79-00-5	N.D.	1	6		0.85
10237	Trichloroethene	79-01-6	N.D.	1	6		0.85
10237	Trichlorofluoromethane	75-69-4	N.D.	3	6		0.85
10237	1,2,3-Trichloropropane	96-18-4	N.D.	1	6		0.85
10237	1,2,4-Trimethylbenzene	95-63-6	N.D.	1	6		0.85
10237	Vinyl Chloride	75-01-4	N.D.	1	6		0.85
10237	Xylene (Total)	1330-20-7	N.D.	1	6		0.85
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10727	4-Bromophenyl-phenylether	101-55-3	N.D.	24	49		1
10727	Butylbenzylphthalate	85-68-7	N.D.	97	240		1
10727	Di-n-butylphthalate	84-74-2	N.D.	97	240		1
10727	Carbazole	86-74-8	N.D.	24	49		1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.	24	49		1
10727	4-Chloroaniline	106-47-8	N.D.	24	49		1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.	24	49		1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.	24	49		1
10727	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	24	49		1
10727	2-Chloronaphthalene	91-58-7	N.D.	10	48		1
10727	2-Chlorophenol	95-57-8	N.D.	24	49		1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.	24	49		1
10727	Dibenzofuran	132-64-9	N.D.	24	49		1
10727	1,2-Dichlorobenzene	95-50-1	N.D.	24	49		1
10727	1,3-Dichlorobenzene	541-73-1	N.D.	24	49		1
10727	1,4-Dichlorobenzene	106-46-7	N.D.	24	49		1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.	150	490		1
10727	2,4-Dichlorophenol	120-83-2	N.D.	24	49		1
10727	Diethylphthalate	84-66-2	N.D.	97	240		1
10727	2,4-Dimethylphenol	105-67-9	N.D.	24	49		1
10727	Dimethylphthalate	131-11-3	N.D.	97	240		1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	240	730		1
10727	2,4-Dinitrophenol	51-28-5	N.D.	440	1,500		1
10727	2,4-Dinitrotoluene	121-14-2	N.D.	97	240		1
10727	2,6-Dinitrotoluene	606-20-2	N.D.	24	49		1
10727	1,2-Diphenylhydrazine	122-66-7	N.D.	24	49		1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	97	250		1
10727	Hexachlorobenzene	118-74-1	N.D.	5	25		1
10727	Hexachlorobutadiene	87-68-3	N.D.	24	49		1
10727	Hexachloroethane	67-72-1	N.D.	49	240		1
10727	Isophorone	78-59-1	N.D.	24	49		1
10727	2-Methylphenol	95-48-7	N.D.	24	49		1
10727	4-Methylphenol	106-44-5	N.D.	24	49		1

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Sample Description: HUMT-P1-SE(0.0-0.2)3-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584654
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 09:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E3A SDG#: ESM01-04

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.							
10727	2-Nitroaniline	88-74-4	N.D.		24	49		1
10727	3-Nitroaniline	99-09-2	N.D.		97	240		1
10727	4-Nitroaniline	100-01-6	N.D.		97	240		1
10727	Nitrobenzene	98-95-3	N.D.		24	49		1
10727	2-Nitrophenol	88-75-5	N.D.		24	49		1
10727	4-Nitrophenol	100-02-7	N.D.		240	730		1
10727	N-Nitrosodimethylamine	62-75-9	N.D.		97	240		1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		24	49		1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		24	49		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.							
10727	Di-n-octylphthalate	117-84-0	N.D.		97	240		1
10727	Pentachlorophenol	87-86-5	N.D.		49	250		1
10727	Phenol	108-95-2	N.D.		24	49		1
10727	1,2,4-Trichlorobenzene	120-82-1	N.D.		24	49		1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		24	49		1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		24	49		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10722	Acenaphthene	83-32-9	N.D.		2.0	4.9		1
10722	Acenaphthylene	208-96-8	N.D.		0.98	4.9		1
10722	Anthracene	120-12-7	N.D.		0.98	4.9		1
10722	Benzo(a)anthracene	56-55-3	N.D.		2.0	4.9		1
10722	Benzo(a)pyrene	50-32-8	N.D.		2.0	4.9		1
10722	Benzo(b)fluoranthene	205-99-2	2.8	J	2.0	4.9		1
10722	Benzo(g,h,i)perylene	191-24-2	3.1	J	2.0	4.9		1
10722	Benzo(k)fluoranthene	207-08-9	N.D.		2.0	4.9		1
10722	Chrysene	218-01-9	3.1	J	0.98	4.9		1
10722	Dibenz(a,h)anthracene	53-70-3	N.D.		2.0	4.9		1
10722	Fluoranthene	206-44-0	3.3	J	2.0	4.9		1
10722	Fluorene	86-73-7	N.D.		2.0	4.9		1
10722	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		2.0	4.9		1
10722	1-Methylnaphthalene	90-12-0	6.7		2.0	4.9		1
10722	2-Methylnaphthalene	91-57-6	8.9		2.0	4.9		1
10722	Naphthalene	91-20-3	8.1		2.0	4.9		1
10722	Phenanthrene	85-01-8	6.4		2.0	4.9		1
10722	Pyrene	129-00-0	3.5	J	2.0	4.9		1
	Reporting limits were raised due to interference from the sample matrix.							
Herbicides	**SW-846 8151A**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10401	2,4-D	94-75-7	N.D.		18	53		1
10401	Dinoseb	88-85-7	N.D.		12	35		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.							
10401	2,4,5-T	93-76-5	N.D.		1.2	2.5		1
10401	2,4,5-TP	93-72-1	N.D.		1.1	2.5		1

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Analysis Report

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Sample Description: HUMT-P1-SE(0.0-0.2)3-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584654
LLI Group # 1296396
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Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 09:30 by GL

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801 Corporate Center Dr # 300
Raleigh NC 27607

P1E3A SDG#: ESM01-04

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Pesticides/PCBs	**SW-846 8081A**		ug/kg		ug/kg	ug/kg	ug/kg	
10738	Aldrin	309-00-2	1.5		0.25	1.2		1
10738	Alpha BHC	319-84-6	N.D.		0.25	1.2		1
10738	Beta BHC	319-85-7	N.D.		3.7	3.7		1
10738	Gamma BHC - Lindane	58-89-9	N.D.		1.2	1.2		1
10738	Alpha Chlordane	5103-71-9	N.D.		1.3	1.3		1
10738	Gamma Chlordane	5103-74-2	N.D.		0.25	1.2		1
10738	p,p-DDD	72-54-8	N.D.		0.49	2.5		1
10738	p,p-DDE	72-55-9	N.D.		0.49	2.5		1
10738	p,p-DDT	50-29-3	N.D.		0.49	2.5		1
10738	Delta BHC	319-86-8	9.6		3.3	6.1		5
10738	Dieldrin	60-57-1	2.2	J	0.49	2.5		1
10738	Endosulfan I	959-98-8	1.3		0.32	1.2		1
10738	Endosulfan II	33213-65-9	N.D.		0.49	2.5		1
10738	Endosulfan Sulfate	1031-07-8	N.D.		0.49	2.5		1
10738	Endrin	72-20-8	N.D.		0.49	2.5		1
10738	Endrin Aldehyde	7421-93-4	0.94	J	0.49	2.5		1
10738	Endrin Ketone	53494-70-5	N.D.		0.88	2.7		1
10738	Heptachlor	76-44-8	3.5		0.25	1.2		1
10738	Heptachlor Epoxide	1024-57-3	N.D.		8.5	8.5		1
10738	Methoxychlor	72-43-5	N.D.		2.5	12		1
10738	Toxaphene	8001-35-2	N.D.		18	49		1
Reporting limits were raised due to interference from the sample matrix.								
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		mg/kg		mg/kg	mg/kg	mg/kg	
05988	Unadjusted C5-C8 Aliphatics	n.a.	N.D.		3.22	6.43		43.66
05988	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.		3.22	6.43		43.66
05988	Unadjusted C9-C12 Aliphatics	n.a.	N.D.		3.22	6.43		43.66
05988	Total Purgeable Hydrocarbons	n.a.	N.D.		3.22	6.43		43.66
GC Petroleum Hydrocarbons	**MT DEQ**		mg/kg		mg/kg	mg/kg	mg/kg	
05969	MT EPH Screen Soil	n.a.	N.D.		220	220	200	1
Metals	**SW-846 6010B**		mg/kg		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	11,200		8.82	29.2		1
06944	Antimony	7440-36-0	N.D. UJ		0.962	2.92		1
06935	Arsenic	7440-38-2	12.1		0.802	2.92		1
06946	Barium	7440-39-3	153		0.0262	0.729		1
06947	Beryllium	7440-41-7	0.506	J	0.0204	0.729		1
06949	Cadmium	7440-43-9	0.553	J	0.0292	0.729		1
01650	Calcium	7440-70-2	11,300		3.65	29.2		1
06951	Chromium	7440-47-3	26.4		0.204	2.19		1
06952	Cobalt	7440-48-4	7.54		0.106	0.729		1
06953	Copper	7440-50-8	13.7		0.140	1.46		1
01654	Iron	7439-89-6	19,000		3.81	29.2		1
06955	Lead	7439-92-1	8.82		0.321	2.19		1
01657	Magnesium	7439-95-4	6,370		0.642	14.6		1
06958	Manganese	7439-96-5	292		0.0525	0.729		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SE(0.0-0.2)3-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584654
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 09:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E3A SDG#: ESM01-04

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Metals	SW-846 6010B		mg/kg	mg/kg	mg/kg	mg/kg	
06961	Nickel	7440-02-0	17.8	0.144	1.46		1
01662	Potassium	7440-09-7	1,700 J+	16.5	72.9		1
06936	Selenium	7782-49-2	N.D.	0.992	2.92		1
06966	Silver	7440-22-4	N.D.	0.121	0.729		1
01667	Sodium	7440-23-5	585	8.68	146		1
06925	Thallium	7440-28-0	1.24 J	0.525	4.37		1
06971	Vanadium	7440-62-2	46.4	0.204	0.729		1
06972	Zinc	7440-66-6	45.8	0.481	2.92		1
	SW-846 7471A		mg/kg	mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0118 J	0.0101	0.144		1
Wet Chemistry	SW-846 9060 modified		mg/kg	mg/kg	mg/kg	mg/kg	
02079	TOC Solids/Sludges Combustion	n.a.	4,860	412	1,240		1
Wet Chemistry	SM20 2540 G		%	%	%	%	
00111	Moisture	n.a.	32.1	0.50	0.50		1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	8260 Ext. Soil Master w/GRO	SW-846 8260B	1	B120811AA	03/21/2012 21:01	Chelsea B Eastep	0.85
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201208027098	03/20/2012 12:50	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201208027098	03/20/2012 12:50	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	3	201208027098	03/20/2012 12:50	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201208027098	03/20/2012 12:44	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	2	201208027098	03/20/2012 12:44	Larry E Bevins	n.a.
10727	TCL 8270 (microwave)	SW-846 8270C	1	12080SLF026	03/21/2012 11:25	Joseph M Gambler	1
10722	SIM PAH 8270 (microwave)	SW-846 8270C SIM	1	12080SLE026	03/21/2012 04:56	Mark A Clark	1
10809	BNA Soil Microwave	SW-846 3546	1	12080SLF026	03/21/2012 02:30	David V Hershey Jr	1
10810	BNA Soil Microwave SIM PAH	SW-846 3546	1	12080SLE026	03/20/2012 16:50	JoElla L Rice	1
10401	Herbicide soils 8151A Master	SW-846 8151A	1	120800026A	03/21/2012 18:46	John W Perkins	1
10738	TCL Pesticides 8081A Soil	SW-846 8081A	1	120820003A	03/24/2012 18:31	Jamie L Brillhart	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P1-SE(0.0-0.2)3-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584654
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 09:30 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P1E3A SDG#: ESM01-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10738	TCL Pesticides 8081A Soil	SW-846 8081A	1	120820003A	03/24/2012 18:44	Jamie L Brillhart	5
10496	PPL Pest. Microwave Extraction	SW-846 3546	2	120820003A	03/22/2012 19:30	Sally L Appleyard	1
04181	Herbicide Soil Extraction	SW-846 3550B/SW-846 8151A	1	120800026A	03/20/2012 21:00	Karen L Beyer	1
05988	MT - VPH Soils	MA DEP VPH 5/04	1	12081A08A	03/21/2012 16:45	Nicholas R Rossi	43.66
05969	MT EPH Screen Soil	MT DEQ	1	120800024A	03/21/2012 07:43	Heather E Williams	1
11212	MT EPH Soils Extraction	SW-846 3546	1	120800024A	03/20/2012 16:50	JoElla L Rice	1
12136	VPH soils - Encore Prep	SW-846 5030A	1	201208027098	03/20/2012 12:52	Larry E Bevins	n.a.
01643	Aluminum	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06944	Antimony	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06935	Arsenic	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06946	Barium	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06947	Beryllium	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06949	Cadmium	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
01650	Calcium	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06951	Chromium	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06952	Cobalt	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06953	Copper	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
01654	Iron	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06955	Lead	SW-846 6010B	1	120805708001	03/21/2012 17:14	Eric L Eby	1
01657	Magnesium	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06958	Manganese	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06961	Nickel	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
01662	Potassium	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06936	Selenium	SW-846 6010B	1	120805708001	03/21/2012 17:14	Eric L Eby	1
06966	Silver	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
01667	Sodium	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06925	Thallium	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06971	Vanadium	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
06972	Zinc	SW-846 6010B	1	120805708001	03/21/2012 10:46	Joanne M Gates	1
00159	Mercury	SW-846 7471A	1	120805711001	03/21/2012 08:44	Damary Valentin	1
05708	SW SW846 ICP Digest	SW-846 3050B	1	120805708001	03/20/2012 21:57	Annamaria Stipkovits	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	120805711001	03/20/2012 22:45	Annamaria Stipkovits	1
02079	TOC Solids/Sludges Combustion	SW-846 9060 modified	1	12080049531A	03/21/2012 01:02	James S Mathiot	1
00111	Moisture	SM20 2540 G	1	12080820004B	03/20/2012 17:49	Scott W Freisher	1

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2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Sample Description: HUMT-P3-SE(0.0-0.2)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584655
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 13:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3E1A SDG#: ESM01-05

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	12	J	10	30		0.96
10237	Allyl Chloride	107-05-1	N.D.		1	7		0.96
10237	Benzene	71-43-2	N.D.		0.7	7		0.96
10237	Bromobenzene	108-86-1	N.D.		1	7		0.96
10237	Bromochloromethane	74-97-5	N.D.		1	7		0.96
10237	Bromodichloromethane	75-27-4	N.D.		1	7		0.96
10237	Bromoform	75-25-2	N.D.		1	7		0.96
10237	Bromomethane	74-83-9	N.D.		3	7		0.96
10237	2-Butanone	78-93-3	N.D.		6	15		0.96
10237	n-Butylbenzene	104-51-8	N.D.		1	7		0.96
10237	sec-Butylbenzene	135-98-8	N.D.		1	7		0.96
10237	tert-Butylbenzene	98-06-6	N.D.		1	7		0.96
10237	Carbon Tetrachloride	56-23-5	N.D.		1	7		0.96
10237	Chlorobenzene	108-90-7	N.D.		1	7		0.96
10237	Chloroethane	75-00-3	N.D.		3	7		0.96
10237	Chloroform	67-66-3	N.D.		1	7		0.96
10237	Chloromethane	74-87-3	N.D.		3	7		0.96
10237	4-Chlorotoluene	106-43-4	N.D.		1	7		0.96
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		3	7		0.96
10237	Dibromochloromethane	124-48-1	N.D.		1	7		0.96
10237	1,2-Dibromoethane	106-93-4	N.D.		1	7		0.96
10237	Dibromomethane	74-95-3	N.D.		1	7		0.96
10237	1,2-Dichlorobenzene	95-50-1	N.D.		1	7		0.96
10237	1,3-Dichlorobenzene	541-73-1	N.D.		1	7		0.96
10237	1,4-Dichlorobenzene	106-46-7	N.D.		1	7		0.96
10237	Dichlorodifluoromethane	75-71-8	N.D.		3	7		0.96
10237	1,1-Dichloroethane	75-34-3	N.D.		1	7		0.96
10237	1,2-Dichloroethane	107-06-2	N.D.		1	7		0.96
10237	1,1-Dichloroethene	75-35-4	N.D.		1	7		0.96
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		1	7		0.96
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		1	7		0.96
10237	Dichlorofluoromethane	75-43-4	N.D.		3	7		0.96
10237	1,2-Dichloropropane	78-87-5	N.D.		1	7		0.96
10237	1,3-Dichloropropane	142-28-9	N.D.		1	7		0.96
10237	2,2-Dichloropropane	594-20-7	N.D.		1	7		0.96
10237	1,1-Dichloropropene	563-58-6	N.D.		1	7		0.96
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		1	7		0.96
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		1	7		0.96
10237	Ethyl Ether	60-29-7	N.D.		1	7		0.96
10237	Ethylbenzene	100-41-4	N.D.		1	7		0.96
10237	Freon 113	76-13-1	N.D.		3	15		0.96
10237	Hexachlorobutadiene	87-68-3	N.D.		3	7		0.96
10237	Isopropylbenzene	98-82-8	N.D.		1	7		0.96
10237	p-Isopropyltoluene	99-87-6	N.D.		1	7		0.96
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.7	7		0.96
10237	4-Methyl-2-pentanone	108-10-1	N.D.		4	15		0.96
10237	Methylene Chloride	75-09-2	N.D.		3	7		0.96
10237	Naphthalene	91-20-3	N.D.		1	7		0.96
10237	n-Propylbenzene	103-65-1	N.D.		1	7		0.96
10237	Styrene	100-42-5	N.D.		1	7		0.96
10237	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		1	7		0.96

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SE(0.0-0.2)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584655
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 13:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3E1A SDG#: ESM01-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1	7		0.96
10237	Tetrachloroethene	127-18-4	N.D.	1	7		0.96
10237	Tetrahydrofuran	109-99-9	N.D.	6	7		0.96
10237	Toluene	108-88-3	N.D.	1	7		0.96
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	1	7		0.96
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	1	7		0.96
10237	1,3,5-Trichlorobenzene	108-70-3	N.D.	1	7		0.96
10237	1,1,1-Trichloroethane	71-55-6	N.D.	1	7		0.96
10237	1,1,2-Trichloroethane	79-00-5	N.D.	1	7		0.96
10237	Trichloroethene	79-01-6	N.D.	1	7		0.96
10237	Trichlorofluoromethane	75-69-4	N.D.	3	7		0.96
10237	1,2,3-Trichloropropane	96-18-4	N.D.	1	7		0.96
10237	1,2,4-Trimethylbenzene	95-63-6	N.D.	1	7		0.96
10237	Vinyl Chloride	75-01-4	N.D.	1	7		0.96
10237	Xylene (Total)	1330-20-7	N.D.	1	7		0.96
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10727	4-Bromophenyl-phenylether	101-55-3	N.D.	26	51		1
10727	Butylbenzylphthalate	85-68-7	N.D.	100	250		1
10727	Di-n-butylphthalate	84-74-2	N.D.	100	250		1
10727	Carbazole	86-74-8	N.D.	26	51		1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.	26	51		1
10727	4-Chloroaniline	106-47-8	N.D.	26	51		1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.	26	51		1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.	26	51		1
10727	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	26	51		1
10727	2-Chloronaphthalene	91-58-7	N.D.	11	50		1
10727	2-Chlorophenol	95-57-8	N.D.	26	51		1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.	26	51		1
10727	Dibenzofuran	132-64-9	N.D.	26	51		1
10727	1,2-Dichlorobenzene	95-50-1	N.D.	26	51		1
10727	1,3-Dichlorobenzene	541-73-1	N.D.	26	51		1
10727	1,4-Dichlorobenzene	106-46-7	N.D.	26	51		1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.	150	510		1
10727	2,4-Dichlorophenol	120-83-2	N.D.	26	51		1
10727	Diethylphthalate	84-66-2	N.D.	100	250		1
10727	2,4-Dimethylphenol	105-67-9	N.D.	26	51		1
10727	Dimethylphthalate	131-11-3	N.D.	100	250		1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	250	760		1
10727	2,4-Dinitrophenol	51-28-5	N.D.	460	1,500		1
10727	2,4-Dinitrotoluene	121-14-2	N.D.	100	250		1
10727	2,6-Dinitrotoluene	606-20-2	N.D.	26	51		1
10727	1,2-Diphenylhydrazine	122-66-7	N.D.	26	51		1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	100	260		1
10727	Hexachlorobenzene	118-74-1	N.D.	5	26		1
10727	Hexachlorobutadiene	87-68-3	N.D.	26	51		1
10727	Hexachloroethane	67-72-1	N.D.	51	250		1
10727	Isophorone	78-59-1	N.D.	26	51		1
10727	2-Methylphenol	95-48-7	N.D.	26	51		1
10727	4-Methylphenol	106-44-5	N.D.	26	51		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P3-SE(0.0-0.2)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584655
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 13:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3E1A SDG#: ESM01-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.						
10727	2-Nitroaniline	88-74-4	N.D.	26	51		1
10727	3-Nitroaniline	99-09-2	N.D.	100	250		1
10727	4-Nitroaniline	100-01-6	N.D.	100	250		1
10727	Nitrobenzene	98-95-3	N.D.	26	51		1
10727	2-Nitrophenol	88-75-5	N.D.	26	51		1
10727	4-Nitrophenol	100-02-7	N.D.	250	760		1
10727	N-Nitrosodimethylamine	62-75-9	N.D.	100	250		1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.	26	51		1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.	26	51		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.						
10727	Di-n-octylphthalate	117-84-0	N.D.	100	250		1
10727	Pentachlorophenol	87-86-5	N.D.	51	260		1
10727	Phenol	108-95-2	N.D.	26	51		1
10727	1,2,4-Trichlorobenzene	120-82-1	N.D.	26	51		1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.	26	51		1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.	26	51		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10722	Acenaphthene	83-32-9	N.D.	21	52		10
10722	Acenaphthylene	208-96-8	N.D.	10	52		10
10722	Anthracene	120-12-7	N.D.	10	52		10
10722	Benzo(a)anthracene	56-55-3	N.D.	21	52		10
10722	Benzo(a)pyrene	50-32-8	N.D.	21	52		10
10722	Benzo(b)fluoranthene	205-99-2	N.D.	21	52		10
10722	Benzo(g,h,i)perylene	191-24-2	N.D.	21	52		10
10722	Benzo(k)fluoranthene	207-08-9	N.D.	21	52		10
10722	Chrysene	218-01-9	N.D.	10	52		10
10722	Dibenz(a,h)anthracene	53-70-3	N.D.	21	52		10
10722	Fluoranthene	206-44-0	N.D.	21	52		10
10722	Fluorene	86-73-7	N.D.	21	52		10
10722	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	21	52		10
10722	1-Methylnaphthalene	90-12-0	N.D.	21	52		10
10722	2-Methylnaphthalene	91-57-6	22 J	21	52		10
10722	Naphthalene	91-20-3	N.D.	21	52		10
10722	Phenanthrene	85-01-8	N.D.	21	52		10
10722	Pyrene	129-00-0	N.D.	21	52		10
	Reporting limits were raised due to interference from the sample matrix.						
Herbicides	**SW-846 8151A**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10401	2,4-D	94-75-7	N.D.	18	55		1
10401	Dinoseb	88-85-7	N.D.	12	37		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.						
10401	2,4,5-T	93-76-5	N.D.	1.3	2.6		1
10401	2,4,5-TP	93-72-1	N.D.	1.2	2.6		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SE(0.0-0.2)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584655
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 13:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3E1A SDG#: ESM01-05

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Pesticides/PCBs	**SW-846 8081A**		ug/kg		ug/kg	ug/kg	ug/kg	
10738	Aldrin	309-00-2	2.3		0.26	1.3		1
10738	Alpha BHC	319-84-6	N.D.		0.26	1.3		1
10738	Beta BHC	319-85-7	N.D.		4.0	4.0		1
10738	Gamma BHC - Lindane	58-89-9	N.D.		2.0	2.0		1
10738	Alpha Chlordane	5103-71-9	N.D.		0.26	1.3		1
10738	Gamma Chlordane	5103-74-2	N.D.		0.26	1.3		1
10738	p,p-DDD	72-54-8	N.D.		1.9	2.6		1
10738	p,p-DDE	72-55-9	N.D.		0.51	2.6		1
10738	p,p-DDT	50-29-3	N.D.		0.51	2.6		1
10738	Delta BHC	319-86-8	12		3.5	6.4		5
10738	Dieldrin	60-57-1	1.8	J	0.51	2.6		1
10738	Endosulfan I	959-98-8	2.0		0.34	1.3		1
10738	Endosulfan II	33213-65-9	N.D.		0.51	2.6		1
10738	Endosulfan Sulfate	1031-07-8	N.D.		0.84	2.6		1
10738	Endrin	72-20-8	N.D.		0.51	2.6		1
10738	Endrin Aldehyde	7421-93-4	0.94	J	0.51	2.6		1
10738	Endrin Ketone	53494-70-5	N.D.		0.93	2.8		1
10738	Heptachlor	76-44-8	5.1	J	1.3	6.4		5
10738	Heptachlor Epoxide	1024-57-3	15		1.3	6.4		5
10738	Methoxychlor	72-43-5	N.D.		2.6	13		1
10738	Toxaphene	8001-35-2	N.D.		19	51		1
Reporting limits were raised due to interference from the sample matrix.								
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		mg/kg		mg/kg	mg/kg	mg/kg	
05988	Unadjusted C5-C8 Aliphatics	n.a.	N.D.		3.70	7.40		47.74
05988	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.		3.70	7.40		47.74
05988	Unadjusted C9-C12 Aliphatics	n.a.	N.D.		3.70	7.40		47.74
05988	Total Purgeable Hydrocarbons	n.a.	N.D.		3.70	7.40		47.74
GC Petroleum Hydrocarbons	**MT DEQ**		mg/kg		mg/kg	mg/kg	mg/kg	
05969	MT EPH Screen Soil	n.a.	N.D.		230	230	200	1
Metals	**SW-846 6010B**		mg/kg		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	12,800		9.20	30.4		1
06944	Antimony	7440-36-0	N.D. UJ-		1.00	3.04		1
06935	Arsenic	7440-38-2	19.6		0.836	3.04		1
06946	Barium	7440-39-3	189		0.0274	0.760		1
06947	Beryllium	7440-41-7	0.608	J	0.0213	0.760		1
06949	Cadmium	7440-43-9	0.663	J	0.0304	0.760		1
01650	Calcium	7440-70-2	14,600		3.80	30.4		1
06951	Chromium	7440-47-3	29.6		0.213	2.28		1
06952	Cobalt	7440-48-4	8.83		0.111	0.760		1
06953	Copper	7440-50-8	17.6		0.146	1.52		1
01654	Iron	7439-89-6	21,000		3.97	30.4		1
06955	Lead	7439-92-1	10.3		0.334	2.28		1
01657	Magnesium	7439-95-4	7,690		0.669	15.2		1
06958	Manganese	7439-96-5	691		0.0547	0.760		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax:717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SE(0.0-0.2)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584655
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 13:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3E1A SDG#: ESM01-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Metals	SW-846 6010B		mg/kg	mg/kg	mg/kg	mg/kg	
06961	Nickel	7440-02-0	20.8	0.150	1.52		1
01662	Potassium	7440-09-7	2,090 J+	17.2	76.0		1
06936	Selenium	7782-49-2	N.D.	1.03	3.04		1
06966	Silver	7440-22-4	0.199 J	0.126	0.760		1
01667	Sodium	7440-23-5	537	9.04	152		1
06925	Thallium	7440-28-0	N.D.	0.547	4.56		1
06971	Vanadium	7440-62-2	48.4	0.213	0.760		1
06972	Zinc	7440-66-6	50.7	0.502	3.04		1
	SW-846 7471A		mg/kg	mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0233 J	0.0105	0.149		1
Wet Chemistry	SW-846 9060 modified		mg/kg	mg/kg	mg/kg	mg/kg	
02079	TOC Solids/Sludges Combustion	n.a.	5,310	1,140	3,410		1
Wet Chemistry	SM20 2540 G		%	%	%	%	
00111	Moisture	n.a.	35.5	0.50	0.50		1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	8260 Ext. Soil Master w/GRO	SW-846 8260B	1	B120811AA	03/21/2012 17:19	Chelsea B Eastep	0.96
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201208027098	03/20/2012 12:35	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201208027098	03/20/2012 12:35	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	3	201208027098	03/20/2012 12:35	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201208027098	03/20/2012 12:38	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	2	201208027098	03/20/2012 12:37	Larry E Bevins	n.a.
10727	TCL 8270 (microwave)	SW-846 8270C	1	12080SLF026	03/21/2012 11:47	Joseph M Gambler	1
10722	SIM PAH 8270 (microwave)	SW-846 8270C SIM	1	12080SLE026	03/21/2012 05:26	Mark A Clark	10
10809	BNA Soil Microwave	SW-846 3546	1	12080SLF026	03/21/2012 02:30	David V Hershey Jr	1
10810	BNA Soil Microwave SIM PAH	SW-846 3546	1	12080SLE026	03/20/2012 16:50	JoElla L Rice	1
10401	Herbicide soils 8151A Master	SW-846 8151A	1	120800026A	03/21/2012 19:14	John W Perkins	1
10738	TCL Pesticides 8081A Soil	SW-846 8081A	1	120820003A	03/24/2012 19:11	Jamie L Brillhart	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SE(0.0-0.2)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584655
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 13:15 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3E1A SDG#: ESM01-05

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10738	TCL Pesticides 8081A Soil	SW-846 8081A	1	120820003A	03/24/2012 19:24	Jamie L Brillhart	5
10496	PPL Pest. Microwave Extraction	SW-846 3546	2	120820003A	03/22/2012 19:30	Sally L Appleyard	1
04181	Herbicide Soil Extraction	SW-846 3550B/SW-846 8151A	1	120800026A	03/20/2012 21:00	Karen L Beyer	1
05988	MT - VPH Soils	MA DEP VPH 5/04	1	12081A08A	03/21/2012 17:26	Nicholas R Rossi	47.74
05969	MT EPH Screen Soil	MT DEQ	1	120800024A	03/21/2012 08:09	Heather E Williams	1
11212	MT EPH Soils Extraction	SW-846 3546	1	120800024A	03/20/2012 16:50	JoElla L Rice	1
12136	VPH soils - Encore Prep	SW-846 5030A	1	201208027098	03/20/2012 12:51	Larry E Bevins	n.a.
01643	Aluminum	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06944	Antimony	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06935	Arsenic	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06946	Barium	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06947	Beryllium	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06949	Cadmium	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
01650	Calcium	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06951	Chromium	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06952	Cobalt	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06953	Copper	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
01654	Iron	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06955	Lead	SW-846 6010B	1	120805708001	03/21/2012 17:18	Eric L Eby	1
01657	Magnesium	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06958	Manganese	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06961	Nickel	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
01662	Potassium	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06936	Selenium	SW-846 6010B	1	120805708001	03/21/2012 17:18	Eric L Eby	1
06966	Silver	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
01667	Sodium	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06925	Thallium	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06971	Vanadium	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
06972	Zinc	SW-846 6010B	1	120805708001	03/21/2012 10:50	Joanne M Gates	1
00159	Mercury	SW-846 7471A	1	120805711001	03/21/2012 08:45	Damary Valentin	1
05708	SW SW846 ICP Digest	SW-846 3050B	1	120805708001	03/20/2012 21:57	Annamaria Stipkovits	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	120805711001	03/20/2012 22:45	Annamaria Stipkovits	1
02079	TOC Solids/Sludges Combustion	SW-846 9060 modified	1	12080049531A	03/20/2012 23:01	James S Mathiot	1
00111	Moisture	SM20 2540 G	1	12080820004B	03/20/2012 17:49	Scott W Freisher	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SE(0.0-0.5)2-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584656
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:00 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3E2A SDG#: ESM01-06BKG

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B		ug/kg		ug/kg	ug/kg	ug/kg	
10237	Acetone	67-64-1	26	J+	10	30		1.01
10237	Allyl Chloride	107-05-1	N.D.		1	7		1.01
10237	Benzene	71-43-2	N.D.		0.7	7		1.01
10237	Bromobenzene	108-86-1	N.D.		1	7		1.01
10237	Bromochloromethane	74-97-5	N.D.		1	7		1.01
10237	Bromodichloromethane	75-27-4	N.D.		1	7		1.01
10237	Bromoform	75-25-2	N.D.		1	7		1.01
10237	Bromomethane	74-83-9	N.D.		3	7		1.01
10237	2-Butanone	78-93-3	N.D.	UJ	6	15		1.01
10237	n-Butylbenzene	104-51-8	N.D.		1	7		1.01
10237	sec-Butylbenzene	135-98-8	N.D.		1	7		1.01
10237	tert-Butylbenzene	98-06-6	N.D.		1	7		1.01
10237	Carbon Tetrachloride	56-23-5	N.D.		1	7		1.01
10237	Chlorobenzene	108-90-7	N.D.		1	7		1.01
10237	Chloroethane	75-00-3	N.D.		3	7		1.01
10237	Chloroform	67-66-3	N.D.		1	7		1.01
10237	Chloromethane	74-87-3	N.D.		3	7		1.01
10237	4-Chlorotoluene	106-43-4	N.D.		1	7		1.01
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		3	7		1.01
10237	Dibromochloromethane	124-48-1	N.D.		1	7		1.01
10237	1,2-Dibromoethane	106-93-4	N.D.		1	7		1.01
10237	Dibromomethane	74-95-3	N.D.		1	7		1.01
10237	1,2-Dichlorobenzene	95-50-1	N.D.		1	7		1.01
10237	1,3-Dichlorobenzene	541-73-1	N.D.		1	7		1.01
10237	1,4-Dichlorobenzene	106-46-7	N.D.		1	7		1.01
10237	Dichlorodifluoromethane	75-71-8	N.D.		3	7		1.01
10237	1,1-Dichloroethane	75-34-3	N.D.		1	7		1.01
10237	1,2-Dichloroethane	107-06-2	N.D.		1	7		1.01
10237	1,1-Dichloroethene	75-35-4	N.D.		1	7		1.01
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		1	7		1.01
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		1	7		1.01
10237	Dichlorofluoromethane	75-43-4	N.D.		3	7		1.01
10237	1,2-Dichloropropane	78-87-5	N.D.		1	7		1.01
10237	1,3-Dichloropropane	142-28-9	N.D.		1	7		1.01
10237	2,2-Dichloropropane	594-20-7	N.D.		1	7		1.01
10237	1,1-Dichloropropene	563-58-6	N.D.		1	7		1.01
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		1	7		1.01
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		1	7		1.01
10237	Ethyl Ether	60-29-7	N.D.		1	7		1.01
10237	Ethylbenzene	100-41-4	N.D.		1	7		1.01
10237	Freon 113	76-13-1	N.D.		3	15		1.01
10237	Hexachlorobutadiene	87-68-3	N.D.	UJ	3	7		1.01
10237	Isopropylbenzene	98-82-8	N.D.		1	7		1.01
10237	p-Isopropyltoluene	99-87-6	N.D.		1	7		1.01
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.7	7		1.01
10237	4-Methyl-2-pentanone	108-10-1	N.D.		4	15		1.01
10237	Methylene Chloride	75-09-2	N.D.		3	7		1.01
10237	Naphthalene	91-20-3	N.D.		1	7		1.01
10237	n-Propylbenzene	103-65-1	N.D.		1	7		1.01
10237	Styrene	100-42-5	N.D.		1	7		1.01
10237	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		1	7		1.01

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SE(0.0-0.5)2-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584656
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:00 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3E2A SDG#: ESM01-06BKG

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B		ug/kg	ug/kg	ug/kg	ug/kg	
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1	7		1.01
10237	Tetrachloroethene	127-18-4	N.D.	1	7		1.01
10237	Tetrahydrofuran	109-99-9	N.D.	6	7		1.01
10237	Toluene	108-88-3	N.D.	1	7		1.01
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	1	7		1.01
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	1	7		1.01
10237	1,3,5-Trichlorobenzene	108-70-3	N.D.	1	7		1.01
10237	1,1,1-Trichloroethane	71-55-6	N.D.	1	7		1.01
10237	1,1,2-Trichloroethane	79-00-5	N.D.	1	7		1.01
10237	Trichloroethene	79-01-6	N.D.	1	7		1.01
10237	Trichlorofluoromethane	75-69-4	N.D.	3	7		1.01
10237	1,2,3-Trichloropropane	96-18-4	N.D.	1	7		1.01
10237	1,2,4-Trimethylbenzene	95-63-6	N.D.	1	7		1.01
10237	Vinyl Chloride	75-01-4	N.D.	1	7		1.01
10237	Xylene (Total)	1330-20-7	N.D.	1	7		1.01
GC/MS Semivolatiles	SW-846 8270C		ug/kg	ug/kg	ug/kg	ug/kg	
10727	4-Bromophenyl-phenylether	101-55-3	N.D.	24	49		1
10727	Butylbenzylphthalate	85-68-7	N.D.	98	240		1
10727	Di-n-butylphthalate	84-74-2	N.D.	98	240		1
10727	Carbazole	86-74-8	N.D.	24	49		1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.	24	49		1
10727	4-Chloroaniline	106-47-8	N.D.	24	49		1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.	24	49		1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.	24	49		1
10727	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	24	49		1
10727	2-Chloronaphthalene	91-58-7	N.D.	10	48		1
10727	2-Chlorophenol	95-57-8	N.D.	24	49		1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.	24	49		1
10727	Dibenzofuran	132-64-9	N.D.	24	49		1
10727	1,2-Dichlorobenzene	95-50-1	N.D.	24	49		1
10727	1,3-Dichlorobenzene	541-73-1	N.D.	24	49		1
10727	1,4-Dichlorobenzene	106-46-7	N.D.	24	49		1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.	150	490		1
10727	2,4-Dichlorophenol	120-83-2	N.D.	24	49		1
10727	Diethylphthalate	84-66-2	N.D.	98	240		1
10727	2,4-Dimethylphenol	105-67-9	N.D.	24	49		1
10727	Dimethylphthalate	131-11-3	N.D.	98	240		1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	240	730		1
10727	2,4-Dinitrophenol	51-28-5	N.D.	440	1,500		1
10727	2,4-Dinitrotoluene	121-14-2	N.D.	98	240		1
10727	2,6-Dinitrotoluene	606-20-2	N.D.	24	49		1
10727	1,2-Diphenylhydrazine	122-66-7	N.D.	24	49		1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	98	250		1
10727	Hexachlorobenzene	118-74-1	N.D.	5	25		1
10727	Hexachlorobutadiene	87-68-3	N.D.	24	49		1
10727	Hexachloroethane	67-72-1	N.D.	49	240		1
10727	Isophorone	78-59-1	N.D.	24	49		1
10727	2-Methylphenol	95-48-7	N.D.	24	49		1
10727	4-Methylphenol	106-44-5	58	24	49		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SE(0.0-0.5)2-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584656
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:00 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3E2A SDG#: ESM01-06BKG

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles		**SW-846 8270C**	ug/kg		ug/kg	ug/kg	ug/kg	
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.							
10727	2-Nitroaniline	88-74-4	N.D.		24	49		1
10727	3-Nitroaniline	99-09-2	N.D.		98	240		1
10727	4-Nitroaniline	100-01-6	N.D.		98	240		1
10727	Nitrobenzene	98-95-3	N.D.		24	49		1
10727	2-Nitrophenol	88-75-5	N.D.		24	49		1
10727	4-Nitrophenol	100-02-7	N.D.		240	730		1
10727	N-Nitrosodimethylamine	62-75-9	N.D.		98	240		1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		24	49		1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		24	49		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.							
10727	Di-n-octylphthalate	117-84-0	N.D.		98	240		1
10727	Pentachlorophenol	87-86-5	N.D.		49	250		1
10727	Phenol	108-95-2	N.D.		24	49		1
10727	1,2,4-Trichlorobenzene	120-82-1	N.D.		24	49		1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		24	49		1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		24	49		1
GC/MS Semivolatiles		**SW-846 8270C SIM**	ug/kg		ug/kg	ug/kg	ug/kg	
10722	Acenaphthene	83-32-9	N.D.		2.0	4.9		1
10722	Acenaphthylene	208-96-8	N.D.		0.98	4.9		1
10722	Anthracene	120-12-7	N.D.		0.98	4.9		1
10722	Benzo(a)anthracene	56-55-3	2.4	J	2.0	4.9		1
10722	Benzo(a)pyrene	50-32-8	2.7	J	2.0	4.9		1
10722	Benzo(b)fluoranthene	205-99-2	4.1	J	2.0	4.9		1
10722	Benzo(g,h,i)perylene	191-24-2	5.7		2.0	4.9		1
10722	Benzo(k)fluoranthene	207-08-9	N.D.		2.0	4.9		1
10722	Chrysene	218-01-9	5.0		0.98	4.9		1
10722	Dibenz(a,h)anthracene	53-70-3	N.D.		2.0	4.9		1
10722	Fluoranthene	206-44-0	5.0		2.0	4.9		1
10722	Fluorene	86-73-7	2.5	J	2.0	4.9		1
10722	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		2.0	4.9		1
10722	1-Methylnaphthalene	90-12-0	16		2.0	4.9		1
10722	2-Methylnaphthalene	91-57-6	14	J	2.0	4.9		1
10722	Naphthalene	91-20-3	12		2.0	4.9		1
10722	Phenanthrene	85-01-8	11		2.0	4.9		1
10722	Pyrene	129-00-0	6.4		2.0	4.9		1
	Reporting limits were raised due to interference from the sample matrix.							
Herbicides		**SW-846 8151A**	ug/kg		ug/kg	ug/kg	ug/kg	
10401	2,4-D	94-75-7	N.D.		18	53		1
10401	Dinoseb	88-85-7	N.D.		12	35		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.							
10401	2,4,5-T	93-76-5	N.D.		1.2	2.5		1
10401	2,4,5-TP	93-72-1	N.D.		1.1	2.5		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SE(0.0-0.5)2-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584656
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:00 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3E2A SDG#: ESM01-06BKG

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Pesticides/PCBs	**SW-846 8081A**		ug/kg	ug/kg	ug/kg	ug/kg	
10738	Aldrin	309-00-2	2.3 J-	0.25	1.2		1
10738	Alpha BHC	319-84-6	~~N.D.~~ R	~~0.25~~	~~1.2~~		1
10738	Beta BHC	319-85-7	N.D.	4.7	4.7		1
10738	Gamma BHC - Lindane	58-89-9	N.D. UJ	4.7	4.7		1
10738	Alpha Chlordane	5103-71-9	N.D.	22	22		5
10738	Gamma Chlordane	5103-74-2	0.52 J	0.25	1.2		1
10738	p,p-DDD	72-54-8	N.D. UJ	1.6	2.5		1
10738	p,p-DDE	72-55-9	N.D.	0.53	2.5		1
10738	p,p-DDT	50-29-3	0.59 J	0.48	2.5		1
10738	Delta BHC	319-86-8	~~N.D.~~ R	~~0.66~~	~~1.2~~		1
10738	Dieldrin	60-57-1	N.D. UJ	2.5	2.5		1
10738	Endosulfan I	959-98-8	4.4 J-	0.32	1.2		1
10738	Endosulfan II	33213-65-9	N.D. UJ	0.48	2.5		1
10738	Endosulfan Sulfate	1031-07-8	N.D.	0.48	2.5		1
10738	Endrin	72-20-8	1.5 J	0.48	2.5		1
10738	Endrin Aldehyde	7421-93-4	N.D. UJ	0.48	2.5		1
10738	Endrin Ketone	53494-70-5	N.D.	0.88	2.6		1
10738	Heptachlor	76-44-8	N.D.	1.9	1.9		1
10738	Heptachlor Epoxide	1024-57-3	N.D.	26	26		5
10738	Methoxychlor	72-43-5	3.0 J-	2.5	12		1
10738	Toxaphene	8001-35-2	N.D.	18	48		1
Reporting limits were raised due to interference from the sample matrix.							
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		mg/kg	mg/kg	mg/kg	mg/kg	
05988	Unadjusted C5-C8 Aliphatics	n.a.	N.D.	3.40	6.80		46.47
05988	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.	3.40	6.80		46.47
05988	Unadjusted C9-C12 Aliphatics	n.a.	N.D.	3.40	6.80		46.47
05988	Total Purgeable Hydrocarbons	n.a.	N.D.	3.40	6.80		46.47
GC Petroleum Hydrocarbons	**MT DEQ**		mg/kg	mg/kg	mg/kg	mg/kg	
05969	MT EPH Screen Soil	n.a.	N.D.	220	220	200	1
Metals	**SW-846 6010B**		mg/kg	mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	13,700	8.52	28.2		1
06944	Antimony	7440-36-0	N.D. UJ-	0.929	2.82		1
06935	Arsenic	7440-38-2	17.2	0.774	2.82		1
06946	Barium	7440-39-3	191	0.0253	0.704		1
06947	Beryllium	7440-41-7	0.611 J	0.0197	0.704		1
06949	Cadmium	7440-43-9	0.614 J	0.0282	0.704		1
01650	Calcium	7440-70-2	13,100	3.52	28.2		1
06951	Chromium	7440-47-3	30.0	0.197	2.11		1
06952	Cobalt	7440-48-4	8.95	0.103	0.704		1
06953	Copper	7440-50-8	17.3	0.135	1.41		1
01654	Iron	7439-89-6	22,200	3.67	28.2		1
06955	Lead	7439-92-1	10.7	0.310	2.11		1
01657	Magnesium	7439-95-4	7,700	0.619	14.1		1
06958	Manganese	7439-96-5	351	0.0507	0.704		1

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Analysis Report

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Sample Description: HUMT-P3-SE(0.0-0.5)2-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584656
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

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ExxonMobil
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801 Corporate Center Dr # 300
Raleigh NC 27607

P3E2A SDG#: ESM01-06BKG

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Metals	SW-846 6010B		mg/kg	mg/kg	mg/kg	mg/kg	
06961	Nickel	7440-02-0	21.4	0.139	1.41		1
01662	Potassium	7440-09-7	2,080 J+	15.9	70.4		1
06936	Selenium	7782-49-2	N.D.	0.957	2.82		1
06966	Silver	7440-22-4	N.D.	0.117	0.704		1
01667	Sodium	7440-23-5	685	8.38	141		1
06925	Thallium	7440-28-0	1.34 J	0.507	4.22		1
06971	Vanadium	7440-62-2	52.1	0.197	0.704		1
06972	Zinc	7440-66-6	51.4	0.465	2.82		1
	SW-846 7471A		mg/kg	mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.137 J-	0.0099	0.141		1
Wet Chemistry	SW-846 9060 modified		mg/kg	mg/kg	mg/kg	mg/kg	
02079	TOC Solids/Sludges Combustion	n.a.	8,460 J	654	1,960		1
Wet Chemistry	SM20 2540 G		%	%	%	%	
00111	Moisture	n.a.	31.7	0.50	0.50		1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	8260 Ext. Soil Master w/GRO	SW-846 8260B	1	B120811AA	03/21/2012 17:41	Chelsea B Eastep	1.01
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201208027098	03/20/2012 13:15	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201208027098	03/20/2012 13:15	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201208027098	03/20/2012 13:15	Larry E Bevins	n.a.
10727	TCL 8270 (microwave)	SW-846 8270C	1	12080SLF026	03/21/2012 09:14	Joseph M Gambler	1
10722	SIM PAH 8270 (microwave)	SW-846 8270C SIM	1	12080SLE026	03/21/2012 01:55	Mark A Clark	1
10809	BNA Soil Microwave	SW-846 3546	1	12080SLF026	03/21/2012 02:30	David V Hershey Jr	1
10810	BNA Soil Microwave SIM PAH	SW-846 3546	1	12080SLE026	03/20/2012 16:50	JoElla L Rice	1
10401	Herbicide soils 8151A Master	SW-846 8151A	1	120800026A	03/21/2012 16:00	John W Perkins	1
10738	TCL Pesticides 8081A Soil	SW-846 8081A	1	120820003A	03/24/2012 19:37	Jamie L Brillhart	1
10738	TCL Pesticides 8081A Soil	SW-846 8081A	1	120820003A	03/25/2012 13:08	Jamie L Brillhart	5
10496	PPL Pest. Microwave Extraction	SW-846 3546	2	120820003A	03/22/2012 19:30	Sally L Appleyard	1

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Analysis Report

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Raleigh NC 27607

P3E2A SDG#: ESM01-06BKG

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
04181	Herbicide Soil Extraction	SW-846 3550B/SW-846 8151A	1	120800026A	03/20/2012 21:00	Karen L Beyer	1
05988	MT - VPH Soils	MA DEP VPH 5/04	1	12081A08A	03/21/2012 18:08	Nicholas R Rossi	46.47
05969	MT EPH Screen Soil	MT DEQ	1	120800024A	03/21/2012 08:35	Heather E Williams	1
11212	MT EPH Soils Extraction	SW-846 3546	1	120800024A	03/20/2012 16:50	JoElla L Rice	1
12136	VPH soils - Encore Prep	SW-846 5030A	1	201208027098	03/20/2012 13:19	Larry E Bevins	n.a.
01643	Aluminum	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06944	Antimony	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06935	Arsenic	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06946	Barium	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06947	Beryllium	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06949	Cadmium	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
01650	Calcium	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06951	Chromium	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06952	Cobalt	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06953	Copper	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
01654	Iron	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06955	Lead	SW-846 6010B	1	120805708001	03/21/2012 16:31	Eric L Eby	1
01657	Magnesium	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06958	Manganese	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06961	Nickel	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
01662	Potassium	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06936	Selenium	SW-846 6010B	1	120805708001	03/21/2012 16:31	Eric L Eby	1
06966	Silver	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
01667	Sodium	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06925	Thallium	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06971	Vanadium	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
06972	Zinc	SW-846 6010B	1	120805708001	03/21/2012 10:01	Joanne M Gates	1
00159	Mercury	SW-846 7471A	1	120805711001	03/21/2012 08:46	Damary Valentin	1
05708	SW SW846 ICP Digest	SW-846 3050B	1	120805708001	03/20/2012 21:57	Annamaria Stipkovits	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	120805711001	03/20/2012 22:45	Annamaria Stipkovits	1
02079	TOC Solids/Sludges Combustion	SW-846 9060 modified	1	12080049531A	03/20/2012 23:09	James S Mathiot	1
00111	Moisture	SM20 2540 G	1	12080820004B	03/20/2012 17:49	Scott W Freisher	1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

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Sample Description: HUMT-P3-SE(0.0-0.5)2-A-DUP Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584660
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:05 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3EFD SDG#: ESM01-07FD

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/kg		ug/kg	ug/kg	ug/kg	
10237	Acetone	67-64-1	38		9	26		0.91
10237	Allyl Chloride	107-05-1	N.D.		1	6		0.91
10237	Benzene	71-43-2	N.D.		0.6	6		0.91
10237	Bromobenzene	108-86-1	N.D.		1	6		0.91
10237	Bromochloromethane	74-97-5	N.D.		1	6		0.91
10237	Bromodichloromethane	75-27-4	N.D.		1	6		0.91
10237	Bromoform	75-25-2	N.D.		1	6		0.91
10237	Bromomethane	74-83-9	N.D.		3	6		0.91
10237	2-Butanone	78-93-3	7	J	5	13		0.91
10237	n-Butylbenzene	104-51-8	N.D.		1	6		0.91
10237	sec-Butylbenzene	135-98-8	N.D.		1	6		0.91
10237	tert-Butylbenzene	98-06-6	N.D.		1	6		0.91
10237	Carbon Tetrachloride	56-23-5	N.D.		1	6		0.91
10237	Chlorobenzene	108-90-7	N.D.		1	6		0.91
10237	Chloroethane	75-00-3	N.D.		3	6		0.91
10237	Chloroform	67-66-3	N.D.		1	6		0.91
10237	Chloromethane	74-87-3	N.D.		3	6		0.91
10237	4-Chlorotoluene	106-43-4	N.D.		1	6		0.91
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		3	6		0.91
10237	Dibromochloromethane	124-48-1	N.D.		1	6		0.91
10237	1,2-Dibromoethane	106-93-4	N.D.		1	6		0.91
10237	Dibromomethane	74-95-3	N.D.		1	6		0.91
10237	1,2-Dichlorobenzene	95-50-1	N.D.		1	6		0.91
10237	1,3-Dichlorobenzene	541-73-1	N.D.		1	6		0.91
10237	1,4-Dichlorobenzene	106-46-7	N.D.		1	6		0.91
10237	Dichlorodifluoromethane	75-71-8	N.D.		3	6		0.91
10237	1,1-Dichloroethane	75-34-3	N.D.		1	6		0.91
10237	1,2-Dichloroethane	107-06-2	N.D.		1	6		0.91
10237	1,1-Dichloroethene	75-35-4	N.D.		1	6		0.91
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		1	6		0.91
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		1	6		0.91
10237	Dichlorofluoromethane	75-43-4	N.D.		3	6		0.91
10237	1,2-Dichloropropane	78-87-5	N.D.		1	6		0.91
10237	1,3-Dichloropropane	142-28-9	N.D.		1	6		0.91
10237	2,2-Dichloropropane	594-20-7	N.D.		1	6		0.91
10237	1,1-Dichloropropene	563-58-6	N.D.		1	6		0.91
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		1	6		0.91
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		1	6		0.91
10237	Ethyl Ether	60-29-7	N.D.		1	6		0.91
10237	Ethylbenzene	100-41-4	N.D.		1	6		0.91
10237	Freon 113	76-13-1	N.D.		3	13		0.91
10237	Hexachlorobutadiene	87-68-3	N.D.		3	6		0.91
10237	Isopropylbenzene	98-82-8	N.D.		1	6		0.91
10237	p-Isopropyltoluene	99-87-6	N.D.		1	6		0.91
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.6	6		0.91
10237	4-Methyl-2-pentanone	108-10-1	N.D.		4	13		0.91
10237	Methylene Chloride	75-09-2	N.D.		3	6		0.91
10237	Naphthalene	91-20-3	N.D.		1	6		0.91
10237	n-Propylbenzene	103-65-1	N.D.		1	6		0.91
10237	Styrene	100-42-5	N.D.		1	6		0.91
10237	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		1	6		0.91

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Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P3-SE(0.0-0.5)2-A-DUP Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584660
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:05 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3EFD SDG#: ESM01-07FD

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		1	6		0.91
10237	Tetrachloroethene	127-18-4	N.D.		1	6		0.91
10237	Tetrahydrofuran	109-99-9	N.D.		5	6		0.91
10237	Toluene	108-88-3	N.D.		1	6		0.91
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.		1	6		0.91
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.		1	6		0.91
10237	1,3,5-Trichlorobenzene	108-70-3	N.D.		1	6		0.91
10237	1,1,1-Trichloroethane	71-55-6	N.D.		1	6		0.91
10237	1,1,2-Trichloroethane	79-00-5	N.D.		1	6		0.91
10237	Trichloroethene	79-01-6	N.D.		1	6		0.91
10237	Trichlorofluoromethane	75-69-4	N.D.		3	6		0.91
10237	1,2,3-Trichloropropane	96-18-4	N.D.		1	6		0.91
10237	1,2,4-Trimethylbenzene	95-63-6	N.D.		1	6		0.91
10237	Vinyl Chloride	75-01-4	N.D.		1	6		0.91
10237	Xylene (Total)	1330-20-7	N.D.		1	6		0.91
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10727	4-Bromophenyl-phenylether	101-55-3	N.D.		24	47		1
10727	Butylbenzylphthalate	85-68-7	N.D.		95	240		1
10727	Di-n-butylphthalate	84-74-2	N.D.		95	240		1
10727	Carbazole	86-74-8	N.D.		24	47		1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.		24	47		1
10727	4-Chloroaniline	106-47-8	N.D.		24	47		1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.		24	47		1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.		24	47		1
10727	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.		24	47		1
10727	2-Chloronaphthalene	91-58-7	N.D.		10	47		1
10727	2-Chlorophenol	95-57-8	N.D.		24	47		1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.		24	47		1
10727	Dibenzofuran	132-64-9	N.D.		24	47		1
10727	1,2-Dichlorobenzene	95-50-1	N.D.		24	47		1
10727	1,3-Dichlorobenzene	541-73-1	N.D.		24	47		1
10727	1,4-Dichlorobenzene	106-46-7	N.D.		24	47		1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.		140	470		1
10727	2,4-Dichlorophenol	120-83-2	N.D.		24	47		1
10727	Diethylphthalate	84-66-2	N.D.		95	240		1
10727	2,4-Dimethylphenol	105-67-9	N.D.		24	47		1
10727	Dimethylphthalate	131-11-3	N.D.		95	240		1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.		240	710		1
10727	2,4-Dinitrophenol	51-28-5	N.D.		430	1,400		1
10727	2,4-Dinitrotoluene	121-14-2	N.D.		95	240		1
10727	2,6-Dinitrotoluene	606-20-2	N.D.		24	47		1
10727	1,2-Diphenylhydrazine	122-66-7	N.D.		24	47		1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.		95	240		1
10727	Hexachlorobenzene	118-74-1	N.D.		5	24		1
10727	Hexachlorobutadiene	87-68-3	N.D.		24	47		1
10727	Hexachloroethane	67-72-1	N.D.		47	240		1
10727	Isophorone	78-59-1	N.D.		24	47		1
10727	2-Methylphenol	95-48-7	N.D.		24	47		1
10727	4-Methylphenol	106-44-5	41	J	24	47		1

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Sample Description: HUMT-P3-SE(0.0-0.5)2-A-DUP Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584660
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:05 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3EFD SDG#: ESM01-07FD

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.							
10727	2-Nitroaniline	88-74-4	N.D.		24	47		1
10727	3-Nitroaniline	99-09-2	N.D.		95	240		1
10727	4-Nitroaniline	100-01-6	N.D.		95	240		1
10727	Nitrobenzene	98-95-3	N.D.		24	47		1
10727	2-Nitrophenol	88-75-5	N.D.		24	47		1
10727	4-Nitrophenol	100-02-7	N.D.		240	710		1
10727	N-Nitrosodimethylamine	62-75-9	N.D.		95	240		1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		24	47		1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		24	47		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.							
10727	Di-n-octylphthalate	117-84-0	N.D.		95	240		1
10727	Pentachlorophenol	87-86-5	N.D.		47	240		1
10727	Phenol	108-95-2	N.D.		24	47		1
10727	1,2,4-Trichlorobenzene	120-82-1	N.D.		24	47		1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		24	47		1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		24	47		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10722	Acenaphthene	83-32-9	N.D.		1.9	4.7		1
10722	Acenaphthylene	208-96-8	N.D.		0.95	4.7		1
10722	Anthracene	120-12-7	N.D.		0.95	4.7		1
10722	Benzo(a)anthracene	56-55-3	2.6	J	1.9	4.7		1
10722	Benzo(a)pyrene	50-32-8	2.7	J	1.9	4.7		1
10722	Benzo(b)fluoranthene	205-99-2	4.7	J	1.9	4.7		1
10722	Benzo(g,h,i)perylene	191-24-2	5.3		1.9	4.7		1
10722	Benzo(k)fluoranthene	207-08-9	N.D.		1.9	4.7		1
10722	Chrysene	218-01-9	5.2		0.95	4.7		1
10722	Dibenz(a,h)anthracene	53-70-3	N.D.		1.9	4.7		1
10722	Fluoranthene	206-44-0	5.4		1.9	4.7		1
10722	Fluorene	86-73-7	2.1	J	1.9	4.7		1
10722	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		1.9	4.7		1
10722	1-Methylnaphthalene	90-12-0	9.5		1.9	4.7		1
10722	2-Methylnaphthalene	91-57-6	12		1.9	4.7		1
10722	Naphthalene	91-20-3	10		1.9	4.7		1
10722	Phenanthrene	85-01-8	11		1.9	4.7		1
10722	Pyrene	129-00-0	6.6		1.9	4.7		1
	Reporting limits were raised due to interference from the sample matrix.							
Herbicides	**SW-846 8151A**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10401	2,4-D	94-75-7	N.D.		17	51		1
10401	Dinoseb	88-85-7	N.D.		11	34		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.							
10401	2,4,5-T	93-76-5	N.D.		1.2	2.4		1
10401	2,4,5-TP	93-72-1	N.D.		1.1	2.4		1

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Analysis Report

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Sample Description: HUMT-P3-SE(0.0-0.5)2-A-DUP Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584660
LLI Group # 1296396
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Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:05 by GL

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ExxonMobil
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801 Corporate Center Dr # 300
Raleigh NC 27607

P3EFD SDG#: ESM01-07FD

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Pesticides/PCBs	**SW-846 8081A**		ug/kg		ug/kg	ug/kg	ug/kg	
10738	Aldrin	309-00-2	0.51	J	0.24	1.2		1
10738	Alpha BHC	319-84-6	N.D.		0.24	1.2		1
10738	Beta BHC	319-85-7	N.D.		5.5	5.5		1
10738	Gamma BHC - Lindane	58-89-9	N.D.		0.37	1.2		1
10738	Alpha Chlordane	5103-71-9	N.D.		0.34	1.2		1
10738	Gamma Chlordane	5103-74-2	N.D.		0.24	1.2		1
10738	p,p-DDD	72-54-8	N.D.		0.47	2.4		1
10738	p,p-DDE	72-55-9	N.D.		0.47	2.4		1
10738	p,p-DDT	50-29-3	N.D.		0.47	2.4		1
10738	Delta BHC	319-86-8	N.D.		0.64	1.2		1
10738	Dieldrin	60-57-1	N.D.		0.47	2.4		1
10738	Endosulfan I	959-98-8	0.59	J	0.31	1.2		1
10738	Endosulfan II	33213-65-9	N.D.		0.47	2.4		1
10738	Endosulfan Sulfate	1031-07-8	N.D.		0.47	2.4		1
10738	Endrin	72-20-8	N.D.		0.47	2.4		1
10738	Endrin Aldehyde	7421-93-4	N.D.		0.47	2.4		1
10738	Endrin Ketone	53494-70-5	N.D.		0.85	2.6		1
10738	Heptachlor	76-44-8	0.88	J	0.24	1.2		1
10738	Heptachlor Epoxide	1024-57-3	2.5		0.24	1.2		1
10738	Methoxychlor	72-43-5	N.D.		2.4	12		1
10738	Toxaphene	8001-35-2	N.D.		17	47		1
Reporting limits were raised due to interference from the sample matrix.								
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		mg/kg		mg/kg	mg/kg	mg/kg	
05988	Unadjusted C5-C8 Aliphatics	n.a.	N.D.		3.34	6.68		47.02
05988	C9-C10 Aromatic Hydrocarbons	n.a.	N.D.		3.34	6.68		47.02
05988	Unadjusted C9-C12 Aliphatics	n.a.	N.D.		3.34	6.68		47.02
05988	Total Purgeable Hydrocarbons	n.a.	N.D.		3.34	6.68		47.02
GC Petroleum Hydrocarbons	**MT DEQ**		mg/kg		mg/kg	mg/kg	mg/kg	
05969	MT EPH Screen Soil	n.a.	N.D.		210	210	200	1
Metals	**SW-846 6010B**		mg/kg		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	11,600		8.51	28.1		1
06944	Antimony	7440-36-0	N.D. UJ-		0.928	2.81		1
06935	Arsenic	7440-38-2	15.9		0.774	2.81		1
06946	Barium	7440-39-3	166		0.0253	0.703		1
06947	Beryllium	7440-41-7	0.551	J	0.0197	0.703		1
06949	Cadmium	7440-43-9	0.596	J	0.0281	0.703		1
01650	Calcium	7440-70-2	13,300		3.52	28.1		1
06951	Chromium	7440-47-3	26.7		0.197	2.11		1
06952	Cobalt	7440-48-4	7.89		0.103	0.703		1
06953	Copper	7440-50-8	16.1		0.135	1.41		1
01654	Iron	7439-89-6	19,100		3.67	28.1		1
06955	Lead	7439-92-1	9.23		0.309	2.11		1
01657	Magnesium	7439-95-4	6,880		0.619	14.1		1
06958	Manganese	7439-96-5	317		0.0506	0.703		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SE(0.0-0.5)2-A-DUP Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584660
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:05 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3EFD SDG#: ESM01-07FD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Metals	SW-846 6010B		mg/kg	mg/kg	mg/kg	mg/kg	
06961	Nickel	7440-02-0	19.4	0.139	1.41		1
01662	Potassium	7440-09-7	1,840 J+	15.9	70.3		1
06936	Selenium	7782-49-2	N.D.	0.956	2.81		1
06966	Silver	7440-22-4	N.D.	0.117	0.703		1
01667	Sodium	7440-23-5	542	8.37	141		1
06925	Thallium	7440-28-0	0.727 J	0.506	4.22		1
06971	Vanadium	7440-62-2	44.4	0.197	0.703		1
06972	Zinc	7440-66-6	47.4	0.464	2.81		1
	SW-846 7471A		mg/kg	mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0118 J	0.0094	0.134		1
Wet Chemistry	SW-846 9060 modified		mg/kg	mg/kg	mg/kg	mg/kg	
02079	TOC Solids/Sludges Combustion	n.a.	3,850 J	739	2,220		1
Wet Chemistry	SM20 2540 G		%	%	%	%	
00111	Moisture	n.a.	29.6	0.50	0.50		1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10237	8260 Ext. Soil Master w/GRO	SW-846 8260B	1	B120811AA	03/21/2012	21:26	Chelsea B Eastep	0.91
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201208027098	03/20/2012	13:26	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201208027098	03/20/2012	13:26	Larry E Bevins	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	3	201208027098	03/20/2012	13:26	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201208027098	03/20/2012	13:22	Larry E Bevins	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	2	201208027098	03/20/2012	13:22	Larry E Bevins	n.a.
10727	TCL 8270 (microwave)	SW-846 8270C	1	12080SLF026	03/21/2012	12:09	Joseph M Gambler	1
10722	SIM PAH 8270 (microwave)	SW-846 8270C SIM	1	12080SLE026	03/21/2012	05:56	Mark A Clark	1
10809	BNA Soil Microwave	SW-846 3546	1	12080SLF026	03/21/2012	02:30	David V Hershey Jr	1
10810	BNA Soil Microwave SIM PAH	SW-846 3546	1	12080SLE026	03/20/2012	16:50	JoElla L Rice	1
10401	Herbicide soils 8151A Master	SW-846 8151A	1	120800026A	03/21/2012	20:36	John W Perkins	1
10738	TCL Pesticides 8081A Soil	SW-846 8081A	1	120820003A	03/24/2012	20:30	Jamie L Brillhart	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P3-SE(0.0-0.5)2-A-DUP Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584660
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 15:05 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P3EFD SDG#: ESM01-07FD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10496	PPL Pest. Microwave Extraction	SW-846 3546	2	120820003A	03/22/2012 19:30	Sally L Appleyard	1
04181	Herbicide Soil Extraction	SW-846 3550B/SW-846 8151A	1	120800026A	03/20/2012 21:00	Karen L Beyer	1
05988	MT - VPH Soils	MA DEP VPH 5/04	1	12081A08A	03/21/2012 20:11	Nicholas R Rossi	47.02
05969	MT EPH Screen Soil	MT DEQ	1	120800024A	03/21/2012 10:19	Heather E Williams	1
11212	MT EPH Soils Extraction	SW-846 3546	1	120800024A	03/20/2012 16:50	JoElla L Rice	1
12136	VPH soils - Encore Prep	SW-846 5030A	1	201208027098	03/20/2012 13:21	Larry E Bevins	n.a.
01643	Aluminum	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06944	Antimony	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06935	Arsenic	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06946	Barium	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06947	Beryllium	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06949	Cadmium	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
01650	Calcium	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06951	Chromium	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06952	Cobalt	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06953	Copper	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
01654	Iron	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06955	Lead	SW-846 6010B	1	120805708001	03/21/2012 17:23	Eric L Eby	1
01657	Magnesium	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06958	Manganese	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06961	Nickel	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
01662	Potassium	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06936	Selenium	SW-846 6010B	1	120805708001	03/21/2012 17:23	Eric L Eby	1
06966	Silver	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
01667	Sodium	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06925	Thallium	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06971	Vanadium	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
06972	Zinc	SW-846 6010B	1	120805708001	03/21/2012 10:54	Joanne M Gates	1
00159	Mercury	SW-846 7471A	1	120805711001	03/21/2012 08:55	Damary Valentin	1
05708	SW SW846 ICP Digest	SW-846 3050B	1	120805708001	03/20/2012 21:57	Annamaria Stipkovits	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	120805711001	03/20/2012 22:45	Annamaria Stipkovits	1
02079	TOC Solids/Sludges Combustion	SW-846 9060 modified	1	12080049531A	03/21/2012 00:01	James S Mathiot	1
00111	Moisture	SM20 2540 G	1	12080820004B	03/20/2012 17:49	Scott W Freisher	1

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2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Sample Description: HUMT-P5-SE(0.0-0.2)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584661
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:25 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P5E1A SDG#: ESM01-08

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/kg	ug/kg	ug/kg	ug/kg	
10237	Acetone	67-64-1	N.D.	10	27		0.98
10237	Allyl Chloride	107-05-1	N.D.	1	7		0.98
10237	Benzene	71-43-2	N.D.	0.7	7		0.98
10237	Bromobenzene	108-86-1	N.D.	1	7		0.98
10237	Bromochloromethane	74-97-5	N.D.	1	7		0.98
10237	Bromodichloromethane	75-27-4	N.D.	1	7		0.98
10237	Bromoform	75-25-2	N.D.	1	7		0.98
10237	Bromomethane	74-83-9	N.D.	3	7		0.98
10237	2-Butanone	78-93-3	N.D.	5	14		0.98
10237	n-Butylbenzene	104-51-8	N.D.	1	7		0.98
10237	sec-Butylbenzene	135-98-8	N.D.	1	7		0.98
10237	tert-Butylbenzene	98-06-6	N.D.	1	7		0.98
10237	Carbon Tetrachloride	56-23-5	N.D.	1	7		0.98
10237	Chlorobenzene	108-90-7	N.D.	1	7		0.98
10237	Chloroethane	75-00-3	N.D.	3	7		0.98
10237	Chloroform	67-66-3	N.D.	1	7		0.98
10237	Chloromethane	74-87-3	N.D.	3	7		0.98
10237	4-Chlorotoluene	106-43-4	N.D.	1	7		0.98
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	3	7		0.98
10237	Dibromochloromethane	124-48-1	N.D.	1	7		0.98
10237	1,2-Dibromoethane	106-93-4	N.D.	1	7		0.98
10237	Dibromomethane	74-95-3	N.D.	1	7		0.98
10237	1,2-Dichlorobenzene	95-50-1	N.D.	1	7		0.98
10237	1,3-Dichlorobenzene	541-73-1	N.D.	1	7		0.98
10237	1,4-Dichlorobenzene	106-46-7	N.D.	1	7		0.98
10237	Dichlorodifluoromethane	75-71-8	N.D.	3	7		0.98
10237	1,1-Dichloroethane	75-34-3	N.D.	1	7		0.98
10237	1,2-Dichloroethane	107-06-2	N.D.	1	7		0.98
10237	1,1-Dichloroethene	75-35-4	N.D.	1	7		0.98
10237	cis-1,2-Dichloroethene	156-59-2	N.D.	1	7		0.98
10237	trans-1,2-Dichloroethene	156-60-5	N.D.	1	7		0.98
10237	Dichlorofluoromethane	75-43-4	N.D.	3	7		0.98
10237	1,2-Dichloropropane	78-87-5	N.D.	1	7		0.98
10237	1,3-Dichloropropane	142-28-9	N.D.	1	7		0.98
10237	2,2-Dichloropropane	594-20-7	N.D.	1	7		0.98
10237	1,1-Dichloropropene	563-58-6	N.D.	1	7		0.98
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.	1	7		0.98
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.	1	7		0.98
10237	Ethyl Ether	60-29-7	N.D.	1	7		0.98
10237	Ethylbenzene	100-41-4	N.D.	1	7		0.98
10237	Freon 113	76-13-1	N.D.	3	14		0.98
10237	Hexachlorobutadiene	87-68-3	N.D.	3	7		0.98
10237	Isopropylbenzene	98-82-8	N.D.	1	7		0.98
10237	p-Isopropyltoluene	99-87-6	N.D.	1	7		0.98
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.7	7		0.98
10237	4-Methyl-2-pentanone	108-10-1	N.D.	4	14		0.98
10237	Methylene Chloride	75-09-2	N.D.	3	7		0.98
10237	Naphthalene	91-20-3	N.D.	1	7		0.98
10237	n-Propylbenzene	103-65-1	N.D.	1	7		0.98
10237	Styrene	100-42-5	N.D.	1	7		0.98
10237	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	1	7		0.98

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Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P5-SE(0.0-0.2)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584661
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:25 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P5E1A SDG#: ESM01-08

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1	7		0.98
10237	Tetrachloroethene	127-18-4	N.D.	1	7		0.98
10237	Tetrahydrofuran	109-99-9	N.D.	5	7		0.98
10237	Toluene	108-88-3	N.D.	1	7		0.98
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	1	7		0.98
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	1	7		0.98
10237	1,3,5-Trichlorobenzene	108-70-3	N.D.	1	7		0.98
10237	1,1,1-Trichloroethane	71-55-6	N.D.	1	7		0.98
10237	1,1,2-Trichloroethane	79-00-5	N.D.	1	7		0.98
10237	Trichloroethene	79-01-6	N.D.	1	7		0.98
10237	Trichlorofluoromethane	75-69-4	N.D.	3	7		0.98
10237	1,2,3-Trichloropropane	96-18-4	N.D.	1	7		0.98
10237	1,2,4-Trimethylbenzene	95-63-6	N.D.	1	7		0.98
10237	Vinyl Chloride	75-01-4	N.D.	1	7		0.98
10237	Xylene (Total)	1330-20-7	N.D.	1	7		0.98
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10727	4-Bromophenyl-phenylether	101-55-3	N.D.	23	46		1
10727	Butylbenzylphthalate	85-68-7	N.D.	92	230		1
10727	Di-n-butylphthalate	84-74-2	N.D.	92	230		1
10727	Carbazole	86-74-8	N.D.	23	46		1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.	23	46		1
10727	4-Chloroaniline	106-47-8	N.D.	23	46		1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.	23	46		1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.	23	46		1
10727	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	23	46		1
10727	2-Chloronaphthalene	91-58-7	N.D.	10	46		1
10727	2-Chlorophenol	95-57-8	N.D.	23	46		1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.	23	46		1
10727	Dibenzofuran	132-64-9	N.D.	23	46		1
10727	1,2-Dichlorobenzene	95-50-1	N.D.	23	46		1
10727	1,3-Dichlorobenzene	541-73-1	N.D.	23	46		1
10727	1,4-Dichlorobenzene	106-46-7	N.D.	23	46		1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.	140	460		1
10727	2,4-Dichlorophenol	120-83-2	N.D.	23	46		1
10727	Diethylphthalate	84-66-2	N.D.	92	230		1
10727	2,4-Dimethylphenol	105-67-9	N.D.	23	46		1
10727	Dimethylphthalate	131-11-3	N.D.	92	230		1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	230	690		1
10727	2,4-Dinitrophenol	51-28-5	N.D.	420	1,400		1
10727	2,4-Dinitrotoluene	121-14-2	N.D.	92	230		1
10727	2,6-Dinitrotoluene	606-20-2	N.D.	23	46		1
10727	1,2-Diphenylhydrazine	122-66-7	N.D.	23	46		1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	92	240		1
10727	Hexachlorobenzene	118-74-1	N.D.	5	24		1
10727	Hexachlorobutadiene	87-68-3	N.D.	23	46		1
10727	Hexachloroethane	67-72-1	N.D.	46	230		1
10727	Isophorone	78-59-1	N.D.	23	46		1
10727	2-Methylphenol	95-48-7	N.D.	23	46		1
10727	4-Methylphenol	106-44-5	N.D.	23	46		1

*=This limit was used in the evaluation of the final result
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Sample Description: HUMT-P5-SE(0.0-0.2)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584661
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:25 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P5E1A SDG#: ESM01-08

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.							
10727	2-Nitroaniline	88-74-4	N.D.		23	46		1
10727	3-Nitroaniline	99-09-2	N.D.		92	230		1
10727	4-Nitroaniline	100-01-6	N.D.		92	230		1
10727	Nitrobenzene	98-95-3	N.D.		23	46		1
10727	2-Nitrophenol	88-75-5	N.D.		23	46		1
10727	4-Nitrophenol	100-02-7	N.D.		230	690		1
10727	N-Nitrosodimethylamine	62-75-9	N.D.		92	230		1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		23	46		1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		23	46		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.							
10727	Di-n-octylphthalate	117-84-0	N.D.		92	230		1
10727	Pentachlorophenol	87-86-5	N.D.		46	240		1
10727	Phenol	108-95-2	N.D.		23	46		1
10727	1,2,4-Trichlorobenzene	120-82-1	N.D.		23	46		1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		23	46		1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		23	46		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10722	Acenaphthene	83-32-9	N.D.		1.9	4.7		1
10722	Acenaphthylene	208-96-8	N.D.		0.93	4.7		1
10722	Anthracene	120-12-7	N.D.		0.93	4.7		1
10722	Benzo(a)anthracene	56-55-3	N.D.		1.9	4.7		1
10722	Benzo(a)pyrene	50-32-8	N.D.		1.9	4.7		1
10722	Benzo(b)fluoranthene	205-99-2	2.3	J	1.9	4.7		1
10722	Benzo(g,h,i)perylene	191-24-2	N.D.		1.9	4.7		1
10722	Benzo(k)fluoranthene	207-08-9	N.D.		1.9	4.7		1
10722	Chrysene	218-01-9	2.2	J	0.93	4.7		1
10722	Dibenz(a,h)anthracene	53-70-3	N.D.		1.9	4.7		1
10722	Fluoranthene	206-44-0	3.2	J	1.9	4.7		1
10722	Fluorene	86-73-7	N.D.		1.9	4.7		1
10722	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		1.9	4.7		1
10722	1-Methylnaphthalene	90-12-0	3.0	J	1.9	4.7		1
10722	2-Methylnaphthalene	91-57-6	3.3	J	1.9	4.7		1
10722	Naphthalene	91-20-3	4.4	J	1.9	4.7		1
10722	Phenanthrene	85-01-8	4.1	J	1.9	4.7		1
10722	Pyrene	129-00-0	3.5	J	1.9	4.7		1
	Reporting limits were raised due to interference from the sample matrix.							
Herbicides	**SW-846 8151A**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10401	2,4-D	94-75-7	N.D.		17	50		1
10401	Dinoseb	88-85-7	N.D.		11	33		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.							
10401	2,4,5-T	93-76-5	N.D.		1.1	2.4		1
10401	2,4,5-TP	93-72-1	N.D.		1.0	2.4		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax:717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P5-SE(0.0-0.2)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584661
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:25 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P5E1A SDG#: ESM01-08

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Pesticides/PCBs	**SW-846 8081A**		ug/kg		ug/kg	ug/kg	ug/kg	
10738	Aldrin	309-00-2	N.D.		0.24	1.2		1
10738	Alpha BHC	319-84-6	N.D.		0.24	1.2		1
10738	Beta BHC	319-85-7	N.D.		3.2	3.2		1
10738	Gamma BHC - Lindane	58-89-9	N.D.		0.29	1.2		1
10738	Alpha Chlordane	5103-71-9	N.D.		0.35	1.2		1
10738	Gamma Chlordane	5103-74-2	N.D.		0.24	1.2		1
10738	p,p-DDD	72-54-8	N.D.		0.46	2.4		1
10738	p,p-DDE	72-55-9	N.D.		0.46	2.4		1
10738	p,p-DDT	50-29-3	N.D.		0.46	2.4		1
10738	Delta BHC	319-86-8	3.0		0.63	1.2		1
10738	Dieldrin	60-57-1	N.D.		0.46	2.4		1
10738	Endosulfan I	959-98-8	0.36	J	0.31	1.2		1
10738	Endosulfan II	33213-65-9	N.D.		0.46	2.4		1
10738	Endosulfan Sulfate	1031-07-8	N.D.		0.46	2.4		1
10738	Endrin	72-20-8	N.D.		0.46	2.4		1
10738	Endrin Aldehyde	7421-93-4	N.D.		0.46	2.4		1
10738	Endrin Ketone	53494-70-5	N.D.		0.84	2.5		1
10738	Heptachlor	76-44-8	N.D.		0.24	1.2		1
10738	Heptachlor Epoxide	1024-57-3	N.D.		2.1	2.1		1
10738	Methoxychlor	72-43-5	N.D.		2.4	12		1
10738	Toxaphene	8001-35-2	N.D.		17	46		1
Reporting limits were raised due to interference from the sample matrix.								
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		mg/kg		mg/kg	mg/kg	mg/kg	
05988	Unadjusted C5-C8 Aliphatics	n.a.	N.D.		3.44	6.88		49.18
05988	C9-C10 Aromatic Hydrocarbons	n.a.	N.D. UJ-		3.44	6.88		49.18
05988	Unadjusted C9-C12 Aliphatics	n.a.	N.D.		3.44	6.88		49.18
05988	Total Purgeable Hydrocarbons	n.a.	N.D.		3.44	6.88		49.18
GC Petroleum Hydrocarbons	**MT DEQ**		mg/kg		mg/kg	mg/kg	mg/kg	
05969	MT EPH Screen Soil	n.a.	N.D.		210	210	200	1
Metals	**SW-846 6010B**		mg/kg		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	6,960		8.30	27.4		1
06944	Antimony	7440-36-0	N.D. UJ-		0.905	2.74		1
06935	Arsenic	7440-38-2	10.8		0.754	2.74		1
06946	Barium	7440-39-3	104		0.0247	0.686		1
06947	Beryllium	7440-41-7	0.307	J	0.0192	0.686		1
06949	Cadmium	7440-43-9	0.422	J	0.0274	0.686		1
01650	Calcium	7440-70-2	6,050		3.43	27.4		1
06951	Chromium	7440-47-3	17.0		0.192	2.06		1
06952	Cobalt	7440-48-4	5.05		0.100	0.686		1
06953	Copper	7440-50-8	9.60		0.132	1.37		1
01654	Iron	7439-89-6	14,300		3.58	27.4		1
06955	Lead	7439-92-1	6.73		0.302	2.06		1
01657	Magnesium	7439-95-4	3,380		0.603	13.7		1
06958	Manganese	7439-96-5	495		0.0494	0.686		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P5-SE(0.0-0.2)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584661
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:25 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P5E1A SDG#: ESM01-08

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Metals	SW-846 6010B		mg/kg	mg/kg	mg/kg	mg/kg	
06961	Nickel	7440-02-0	10.7	0.136	1.37		1
01662	Potassium	7440-09-7	890 J+	15.5	68.6		1
06936	Selenium	7782-49-2	N.D.	0.932	2.74		1
06966	Silver	7440-22-4	N.D.	0.114	0.686		1
01667	Sodium	7440-23-5	533	8.16	137		1
06925	Thallium	7440-28-0	N.D.	0.494	4.11		1
06971	Vanadium	7440-62-2	35.7	0.192	0.686		1
06972	Zinc	7440-66-6	28.6	0.452	2.74		1
	SW-846 7471A		mg/kg	mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0109 J	0.0094	0.134		1
Wet Chemistry	SW-846 9060 modified		mg/kg	mg/kg	mg/kg	mg/kg	
02079	TOC Solids/Sludges Combustion	n.a.	3,790	253	759		1
Wet Chemistry	SM20 2540 G		%	%	%	%	
00111	Moisture	n.a.	28.5	0.50	0.50		1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	8260 Ext. Soil Master w/GRO	SW-846 8260B	1	B120811AA	03/21/2012 19:10	Chelsea B Eastep	0.98
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201208027098	03/20/2012 16:09	Lois E Hiltz	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201208027098	03/20/2012 16:09	Lois E Hiltz	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	3	201208027098	03/20/2012 16:09	Lois E Hiltz	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201208027098	03/20/2012 16:06	Lois E Hiltz	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	2	201208027098	03/20/2012 16:07	Lois E Hiltz	n.a.
10727	TCL 8270 (microwave)	SW-846 8270C	1	12080SLF026	03/21/2012 12:31	Joseph M Gambler	1
10722	SIM PAH 8270 (microwave)	SW-846 8270C SIM	1	12080SLE026	03/21/2012 06:26	Mark A Clark	1
10809	BNA Soil Microwave	SW-846 3546	1	12080SLF026	03/21/2012 02:30	David V Hershey Jr	1
10810	BNA Soil Microwave SIM PAH	SW-846 3546	1	12080SLE026	03/20/2012 16:50	JoElla L Rice	1
10401	Herbicide soils 8151A Master	SW-846 8151A	1	120800026A	03/21/2012 21:03	John W Perkins	1
10738	TCL Pesticides 8081A Soil	SW-846 8081A	1	120820003A	03/24/2012 20:43	Jamie L Brillhart	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P5-SE(0.0-0.2)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584661
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 16:25 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P5E1A SDG#: ESM01-08

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10496	PPL Pest. Microwave Extraction	SW-846 3546	2	120820003A	03/22/2012 19:30	Sally L Appleyard	1
04181	Herbicide Soil Extraction	SW-846 3550B/SW-846 8151A	1	120800026A	03/20/2012 21:00	Karen L Beyer	1
05988	MT - VPH Soils	MA DEP VPH 5/04	1	12081A08A	03/21/2012 20:52	Nicholas R Rossi	49.18
05969	MT EPH Screen Soil	MT DEQ	1	120800024A	03/21/2012 10:45	Heather E Williams	1
11212	MT EPH Soils Extraction	SW-846 3546	1	120800024A	03/20/2012 16:50	JoElla L Rice	1
12136	VPH soils - Encore Prep	SW-846 5030A	1	201208027098	03/20/2012 16:08	Lois E Hiltz	n.a.
01643	Aluminum	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06944	Antimony	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06935	Arsenic	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06946	Barium	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06947	Beryllium	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06949	Cadmium	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
01650	Calcium	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06951	Chromium	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06952	Cobalt	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06953	Copper	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
01654	Iron	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06955	Lead	SW-846 6010B	1	120805708001	03/21/2012 17:27	Eric L Eby	1
01657	Magnesium	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06958	Manganese	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06961	Nickel	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
01662	Potassium	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06936	Selenium	SW-846 6010B	1	120805708001	03/21/2012 17:27	Eric L Eby	1
06966	Silver	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
01667	Sodium	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06925	Thallium	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06971	Vanadium	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
06972	Zinc	SW-846 6010B	1	120805708001	03/21/2012 10:58	Joanne M Gates	1
00159	Mercury	SW-846 7471A	1	120805711001	03/21/2012 08:56	Damary Valentin	1
05708	SW SW846 ICP Digest	SW-846 3050B	1	120805708001	03/20/2012 21:57	Annamaria Stipkovits	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	120805711001	03/20/2012 22:45	Annamaria Stipkovits	1
02079	TOC Solids/Sludges Combustion	SW-846 9060 modified	1	12080049531A	03/21/2012 01:14	James S Mathiot	1
00111	Moisture	SM20 2540 G	1	12080820004B	03/20/2012 17:49	Scott W Freisher	1

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2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Sample Description: HUMT-P6-SE(0.0-0.3)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584662
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 17:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P6E1A SDG#: ESM01-09

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	Acetone	67-64-1	14	J	9	25		0.91
10237	Allyl Chloride	107-05-1	N.D.		1	6		0.91
10237	Benzene	71-43-2	N.D.		0.6	6		0.91
10237	Bromobenzene	108-86-1	N.D.		1	6		0.91
10237	Bromochloromethane	74-97-5	N.D.		1	6		0.91
10237	Bromodichloromethane	75-27-4	N.D.		1	6		0.91
10237	Bromoform	75-25-2	N.D.		1	6		0.91
10237	Bromomethane	74-83-9	N.D.		3	6		0.91
10237	2-Butanone	78-93-3	N.D.		5	13		0.91
10237	n-Butylbenzene	104-51-8	N.D.		1	6		0.91
10237	sec-Butylbenzene	135-98-8	N.D.		1	6		0.91
10237	tert-Butylbenzene	98-06-6	N.D.		1	6		0.91
10237	Carbon Tetrachloride	56-23-5	N.D.		1	6		0.91
10237	Chlorobenzene	108-90-7	N.D.		1	6		0.91
10237	Chloroethane	75-00-3	N.D.		3	6		0.91
10237	Chloroform	67-66-3	N.D.		1	6		0.91
10237	Chloromethane	74-87-3	N.D.		3	6		0.91
10237	4-Chlorotoluene	106-43-4	N.D.		1	6		0.91
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		3	6		0.91
10237	Dibromochloromethane	124-48-1	N.D.		1	6		0.91
10237	1,2-Dibromoethane	106-93-4	N.D.		1	6		0.91
10237	Dibromomethane	74-95-3	N.D.		1	6		0.91
10237	1,2-Dichlorobenzene	95-50-1	N.D.		1	6		0.91
10237	1,3-Dichlorobenzene	541-73-1	N.D.		1	6		0.91
10237	1,4-Dichlorobenzene	106-46-7	N.D.		1	6		0.91
10237	Dichlorodifluoromethane	75-71-8	N.D.		3	6		0.91
10237	1,1-Dichloroethane	75-34-3	N.D.		1	6		0.91
10237	1,2-Dichloroethane	107-06-2	N.D.		1	6		0.91
10237	1,1-Dichloroethene	75-35-4	N.D.		1	6		0.91
10237	cis-1,2-Dichloroethene	156-59-2	N.D.		1	6		0.91
10237	trans-1,2-Dichloroethene	156-60-5	N.D.		1	6		0.91
10237	Dichlorofluoromethane	75-43-4	N.D.		3	6		0.91
10237	1,2-Dichloropropane	78-87-5	N.D.		1	6		0.91
10237	1,3-Dichloropropane	142-28-9	N.D.		1	6		0.91
10237	2,2-Dichloropropane	594-20-7	N.D.		1	6		0.91
10237	1,1-Dichloropropene	563-58-6	N.D.		1	6		0.91
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.		1	6		0.91
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.		1	6		0.91
10237	Ethyl Ether	60-29-7	N.D.		1	6		0.91
10237	Ethylbenzene	100-41-4	N.D.		1	6		0.91
10237	Freon 113	76-13-1	N.D.		3	13		0.91
10237	Hexachlorobutadiene	87-68-3	N.D.		3	6		0.91
10237	Isopropylbenzene	98-82-8	N.D.		1	6		0.91
10237	p-Isopropyltoluene	99-87-6	N.D.		1	6		0.91
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.6	6		0.91
10237	4-Methyl-2-pentanone	108-10-1	N.D.		4	13		0.91
10237	Methylene Chloride	75-09-2	N.D.		3	6		0.91
10237	Naphthalene	91-20-3	N.D.		1	6		0.91
10237	n-Propylbenzene	103-65-1	N.D.		1	6		0.91
10237	Styrene	100-42-5	N.D.		1	6		0.91
10237	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		1	6		0.91

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Sample Description: HUMT-P6-SE(0.0-0.3)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584662
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 17:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P6E1A SDG#: ESM01-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1	6		0.91
10237	Tetrachloroethene	127-18-4	N.D.	1	6		0.91
10237	Tetrahydrofuran	109-99-9	N.D.	5	6		0.91
10237	Toluene	108-88-3	N.D.	1	6		0.91
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	1	6		0.91
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	1	6		0.91
10237	1,3,5-Trichlorobenzene	108-70-3	N.D.	1	6		0.91
10237	1,1,1-Trichloroethane	71-55-6	N.D.	1	6		0.91
10237	1,1,2-Trichloroethane	79-00-5	N.D.	1	6		0.91
10237	Trichloroethene	79-01-6	N.D.	1	6		0.91
10237	Trichlorofluoromethane	75-69-4	N.D.	3	6		0.91
10237	1,2,3-Trichloropropane	96-18-4	N.D.	1	6		0.91
10237	1,2,4-Trimethylbenzene	95-63-6	N.D.	1	6		0.91
10237	Vinyl Chloride	75-01-4	N.D.	1	6		0.91
10237	Xylene (Total)	1330-20-7	N.D.	1	6		0.91
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**	**ug/kg**	**ug/kg**	**ug/kg**	
10727	4-Bromophenyl-phenylether	101-55-3	N.D.	23	46		1
10727	Butylbenzylphthalate	85-68-7	N.D.	91	230		1
10727	Di-n-butylphthalate	84-74-2	N.D.	91	230		1
10727	Carbazole	86-74-8	N.D.	23	46		1
10727	4-Chloro-3-methylphenol	59-50-7	N.D.	23	46		1
10727	4-Chloroaniline	106-47-8	N.D.	23	46		1
10727	bis(2-Chloroethoxy)methane	111-91-1	N.D.	23	46		1
10727	bis(2-Chloroethyl)ether	111-44-4	N.D.	23	46		1
10727	bis(2-Chloroisopropyl)ether	39638-32-9	N.D.	23	46		1
10727	2-Chloronaphthalene	91-58-7	N.D.	10	45		1
10727	2-Chlorophenol	95-57-8	N.D.	23	46		1
10727	4-Chlorophenyl-phenylether	7005-72-3	N.D.	23	46		1
10727	Dibenzofuran	132-64-9	N.D.	23	46		1
10727	1,2-Dichlorobenzene	95-50-1	N.D.	23	46		1
10727	1,3-Dichlorobenzene	541-73-1	N.D.	23	46		1
10727	1,4-Dichlorobenzene	106-46-7	N.D.	23	46		1
10727	3,3'-Dichlorobenzidine	91-94-1	N.D.	140	460		1
10727	2,4-Dichlorophenol	120-83-2	N.D.	23	46		1
10727	Diethylphthalate	84-66-2	N.D.	91	230		1
10727	2,4-Dimethylphenol	105-67-9	N.D.	23	46		1
10727	Dimethylphthalate	131-11-3	N.D.	91	230		1
10727	4,6-Dinitro-2-methylphenol	534-52-1	N.D.	230	680		1
10727	2,4-Dinitrophenol	51-28-5	N.D.	410	1,400		1
10727	2,4-Dinitrotoluene	121-14-2	N.D.	91	230		1
10727	2,6-Dinitrotoluene	606-20-2	N.D.	23	46		1
10727	1,2-Diphenylhydrazine	122-66-7	N.D.	23	46		1
10727	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	91	230		1
10727	Hexachlorobenzene	118-74-1	N.D.	5	23		1
10727	Hexachlorobutadiene	87-68-3	N.D.	23	46		1
10727	Hexachloroethane	67-72-1	N.D.	46	230		1
10727	Isophorone	78-59-1	N.D.	23	46		1
10727	2-Methylphenol	95-48-7	N.D.	23	46		1
10727	4-Methylphenol	106-44-5	N.D.	23	46		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

Sample Description: HUMT-P6-SE(0.0-0.3)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584662
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 17:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P6E1A SDG#: ESM01-09

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.							
10727	2-Nitroaniline	88-74-4	N.D.		23	46		1
10727	3-Nitroaniline	99-09-2	N.D.		91	230		1
10727	4-Nitroaniline	100-01-6	N.D.		91	230		1
10727	Nitrobenzene	98-95-3	N.D.		23	46		1
10727	2-Nitrophenol	88-75-5	N.D.		23	46		1
10727	4-Nitrophenol	100-02-7	N.D.		230	680		1
10727	N-Nitrosodimethylamine	62-75-9	N.D.		91	230		1
10727	N-Nitroso-di-n-propylamine	621-64-7	N.D.		23	46		1
10727	N-Nitrosodiphenylamine	86-30-6	N.D.		23	46		1
	N-nitrosodiphenylamine decomposes in the GC inlet forming diphenylamine. The result reported for N-nitrosodiphenylamine represents the combined total of both compounds.							
10727	Di-n-octylphthalate	117-84-0	N.D.		91	230		1
10727	Pentachlorophenol	87-86-5	N.D.		46	230		1
10727	Phenol	108-95-2	N.D.		23	46		1
10727	1,2,4-Trichlorobenzene	120-82-1	N.D.		23	46		1
10727	2,4,5-Trichlorophenol	95-95-4	N.D.		23	46		1
10727	2,4,6-Trichlorophenol	88-06-2	N.D.		23	46		1
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10722	Acenaphthene	83-32-9	N.D.		1.9	4.6		1
10722	Acenaphthylene	208-96-8	N.D.		0.93	4.6		1
10722	Anthracene	120-12-7	N.D.		0.93	4.6		1
10722	Benzo(a)anthracene	56-55-3	N.D.		1.9	4.6		1
10722	Benzo(a)pyrene	50-32-8	N.D.		1.9	4.6		1
10722	Benzo(b)fluoranthene	205-99-2	N.D.		1.9	4.6		1
10722	Benzo(g,h,i)perylene	191-24-2	2.5	J	1.9	4.6		1
10722	Benzo(k)fluoranthene	207-08-9	N.D.		1.9	4.6		1
10722	Chrysene	218-01-9	2.3	J	0.93	4.6		1
10722	Dibenz(a,h)anthracene	53-70-3	N.D.		1.9	4.6		1
10722	Fluoranthene	206-44-0	2.4	J	1.9	4.6		1
10722	Fluorene	86-73-7	N.D.		1.9	4.6		1
10722	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		1.9	4.6		1
10722	1-Methylnaphthalene	90-12-0	5.1		1.9	4.6		1
10722	2-Methylnaphthalene	91-57-6	6.6		1.9	4.6		1
10722	Naphthalene	91-20-3	6.9		1.9	4.6		1
10722	Phenanthrene	85-01-8	5.6		1.9	4.6		1
10722	Pyrene	129-00-0	2.8	J	1.9	4.6		1
	Reporting limits were raised due to interference from the sample matrix.							
Herbicides	**SW-846 8151A**		**ug/kg**		**ug/kg**	**ug/kg**	**ug/kg**	
10401	2,4-D	94-75-7	N.D.		17	50		1
10401	Dinoseb	88-85-7	N.D.		11	33		1
	The QC window for dinoseb is advisory due to the erratic performance of the analyte using this method.							
10401	2,4,5-T	93-76-5	N.D.		1.1	2.4		1
10401	2,4,5-TP	93-72-1	N.D.		1.0	2.4		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P6-SE(0.0-0.3)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584662
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 17:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P6E1A SDG#: ESM01-09

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Pesticides/PCBs	**SW-846 8081A**		ug/kg		ug/kg	ug/kg	ug/kg	
10738	Aldrin	309-00-2	0.46	J	0.24	1.2		1
10738	Alpha BHC	319-84-6	N.D.		0.24	1.2		1
10738	Beta BHC	319-85-7	N.D.		6.4	6.4		1
10738	Gamma BHC - Lindane	58-89-9	N.D.		0.49	1.2		1
10738	Alpha Chlordane	5103-71-9	0.78	J	0.24	1.2		1
10738	Gamma Chlordane	5103-74-2	N.D.		0.24	1.2		1
10738	p,p-DDD	72-54-8	N.D.		0.46	2.4		1
10738	p,p-DDE	72-55-9	N.D.		0.46	2.4		1
10738	p,p-DDT	50-29-3	N.D.		0.46	2.4		1
10738	Delta BHC	319-86-8	N.D.		4.5	4.5		1
10738	Dieldrin	60-57-1	1.4	J	0.46	2.4		1
10738	Endosulfan I	959-98-8	1.3		0.31	1.2		1
10738	Endosulfan II	33213-65-9	N.D.		0.46	2.4		1
10738	Endosulfan Sulfate	1031-07-8	N.D.		0.46	2.4		1
10738	Endrin	72-20-8	N.D.		0.46	2.4		1
10738	Endrin Aldehyde	7421-93-4	N.D.		0.46	2.4		1
10738	Endrin Ketone	53494-70-5	N.D.		0.84	2.5		1
10738	Heptachlor	76-44-8	1.3		0.24	1.2		1
10738	Heptachlor Epoxide	1024-57-3	N.D.		4.5	4.5		1
10738	Methoxychlor	72-43-5	N.D.		2.4	12		1
10738	Toxaphene	8001-35-2	N.D.		17	46		1
Reporting limits were raised due to interference from the sample matrix.								
GC Petroleum Hydrocarbons	**MA DEP VPH 5/04**		mg/kg		mg/kg	mg/kg	mg/kg	
05988	Unadjusted C5-C8 Aliphatics	n.a.	N.D.		3.30	6.60		47.41
05988	C9-C10 Aromatic Hydrocarbons	n.a.	N.D. UJ		3.30	6.60		47.41
05988	Unadjusted C9-C12 Aliphatics	n.a.	N.D.		3.30	6.60		47.41
05988	Total Purgeable Hydrocarbons	n.a.	N.D.		3.30	6.60		47.41
GC Petroleum Hydrocarbons	**MT DEQ**		mg/kg		mg/kg	mg/kg	mg/kg	
05969	MT EPH Screen Soil	n.a.	N.D.		210	210	200	1
Metals	**SW-846 6010B**		mg/kg		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	11,300		8.26	27.3		1
06944	Antimony	7440-36-0	N.D. UJ		0.901	2.73		1
06935	Arsenic	7440-38-2	16.2		0.751	2.73		1
06946	Barium	7440-39-3	158		0.0246	0.683		1
06947	Beryllium	7440-41-7	0.511	J	0.0191	0.683		1
06949	Cadmium	7440-43-9	0.552	J	0.0273	0.683		1
01650	Calcium	7440-70-2	10,600		3.41	27.3		1
06951	Chromium	7440-47-3	24.9		0.191	2.05		1
06952	Cobalt	7440-48-4	8.00		0.0997	0.683		1
06953	Copper	7440-50-8	27.1		0.131	1.37		1
01654	Iron	7439-89-6	19,300		3.56	27.3		1
06955	Lead	7439-92-1	9.39		0.300	2.05		1
01657	Magnesium	7439-95-4	6,120		0.601	13.7		1
06958	Manganese	7439-96-5	448		0.0492	0.683		1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P6-SE(0.0-0.3)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584662
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 17:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P6E1A SDG#: ESM01-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Action Limit	Dilution Factor
Metals	SW-846 6010B		mg/kg	mg/kg	mg/kg	mg/kg	
06961	Nickel	7440-02-0	18.5	0.135	1.37		1
01662	Potassium	7440-09-7	1,660 J+	15.4	68.3		1
06936	Selenium	7782-49-2	N.D.	0.929	2.73		1
06966	Silver	7440-22-4	0.138 J	0.113	0.683		1
01667	Sodium	7440-23-5	580	8.12	137		1
06925	Thallium	7440-28-0	0.702 J	0.492	4.10		1
06971	Vanadium	7440-62-2	42.6	0.191	0.683		1
06972	Zinc	7440-66-6	45.3	0.451	2.73		1
	SW-846 7471A		mg/kg	mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-6	N.D. UJ-	0.0097	0.138		1
Wet Chemistry	SW-846 9060 modified		mg/kg	mg/kg	mg/kg	mg/kg	
02079	TOC Solids/Sludges Combustion	n.a.	1,560	323	969		1
Wet Chemistry	SM20 2540 G		%	%	%	%	
00111	Moisture	n.a.	28.2	0.50	0.50		1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10237	8260 Ext. Soil Master w/GRO	SW-846 8260B	1	B120811AA	03/21/2012	19:33	Chelsea B Eastep	0.91
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201208027098	03/20/2012	15:58	Lois E Hiltz	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201208027098	03/20/2012	15:58	Lois E Hiltz	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	3	201208027098	03/20/2012	15:58	Lois E Hiltz	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201208027098	03/20/2012	15:58	Lois E Hiltz	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	2	201208027098	03/20/2012	15:59	Lois E Hiltz	n.a.
10727	TCL 8270 (microwave)	SW-846 8270C	1	12080SLF026	03/21/2012	12:53	Joseph M Gambler	1
10722	SIM PAH 8270 (microwave)	SW-846 8270C SIM	1	12080SLE026	03/21/2012	06:56	Mark A Clark	1
10809	BNA Soil Microwave	SW-846 3546	1	12080SLF026	03/21/2012	02:30	David V Hershey Jr	1
10810	BNA Soil Microwave SIM PAH	SW-846 3546	1	12080SLE026	03/20/2012	16:50	JoElla L Rice	1
10401	Herbicide soils 8151A Master	SW-846 8151A	1	120800026A	03/21/2012	21:31	John W Perkins	1
10738	TCL Pesticides 8081A Soil	SW-846 8081A	1	120820003A	03/24/2012	20:56	Jamie L Brillhart	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: HUMT-P6-SE(0.0-0.3)1-A Sediment
S20113949 Laurel, MT

LLI Sample # SW 6584662
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012 17:45 by GL

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

P6E1A SDG#: ESM01-09

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10496	PPL Pest. Microwave Extraction	SW-846 3546	2	120820003A	03/22/2012 19:30	Sally L Appleyard	1
04181	Herbicide Soil Extraction	SW-846 3550B/SW-846 8151A	1	120800026A	03/20/2012 21:00	Karen L Beyer	1
05988	MT - VPH Soils	MA DEP VPH 5/04	1	12081A08A	03/21/2012 21:33	Nicholas R Rossi	47.41
05969	MT EPH Screen Soil	MT DEQ	1	120800024A	03/21/2012 11:11	Heather E Williams	1
11212	MT EPH Soils Extraction	SW-846 3546	1	120800024A	03/20/2012 16:50	JoElla L Rice	1
12136	VPH soils - Encore Prep	SW-846 5030A	1	201208027098	03/20/2012 16:00	Lois E Hiltz	n.a.
01643	Aluminum	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06944	Antimony	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06935	Arsenic	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06946	Barium	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06947	Beryllium	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06949	Cadmium	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
01650	Calcium	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06951	Chromium	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06952	Cobalt	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06953	Copper	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
01654	Iron	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06955	Lead	SW-846 6010B	1	120805708001	03/21/2012 17:31	Eric L Eby	1
01657	Magnesium	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06958	Manganese	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06961	Nickel	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
01662	Potassium	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06936	Selenium	SW-846 6010B	1	120805708001	03/21/2012 17:31	Eric L Eby	1
06966	Silver	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
01667	Sodium	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06925	Thallium	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06971	Vanadium	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
06972	Zinc	SW-846 6010B	1	120805708001	03/21/2012 11:02	Joanne M Gates	1
00159	Mercury	SW-846 7471A	1	120805711001	03/21/2012 08:57	Damary Valentin	1
05708	SW SW846 ICP Digest	SW-846 3050B	1	120805708001	03/20/2012 21:57	Annamaria Stipkovits	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	120805711001	03/20/2012 22:45	Annamaria Stipkovits	1
02079	TOC Solids/Sludges Combustion	SW-846 9060 modified	1	12080049531A	03/21/2012 01:29	James S Mathiot	1
00111	Moisture	SM20 2540 G	1	12080820004B	03/20/2012 17:49	Scott W Freisher	1

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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: TripBlank Water
S20113949 Laurel, MT

LLI Sample # WW 6584663
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

TBSED SDG#: ESM01-10TB*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	SW-846 8260B 25mL purge		ug/l	ug/l	ug/l	ug/l	
02898	Acetone	67-64-1	N.D.	3.0	5.0		1
02898	Allyl Chloride	107-05-1	N.D.	0.1	0.5		1
02898	Benzene	71-43-2	N.D.	0.1	0.5		1
02898	Bromobenzene	108-86-1	N.D.	0.1	0.5		1
02898	Bromochloromethane	74-97-5	N.D.	0.1	0.5		1
02898	Bromodichloromethane	75-27-4	N.D.	0.1	0.5		1
02898	Bromoform	75-25-2	N.D.	0.1	0.5		1
02898	Bromomethane	74-83-9	N.D.	0.1	0.5		1
02898	2-Butanone	78-93-3	N.D.	1.0	5.0		1
02898	n-Butylbenzene	104-51-8	N.D.	0.1	0.5		1
02898	sec-Butylbenzene	135-98-8	N.D.	0.1	0.5		1
02898	tert-Butylbenzene	98-06-6	N.D.	0.1	0.5		1
02898	Carbon Tetrachloride	56-23-5	N.D.	0.1	0.5		1
02898	Chlorobenzene	108-90-7	N.D.	0.1	0.5		1
02898	Chloroethane	75-00-3	N.D.	0.1	0.5		1
02898	Chloroform	67-66-3	N.D.	0.1	0.5		1
02898	Chloromethane	74-87-3	N.D.	0.2	0.5		1
02898	4-Chlorotoluene	106-43-4	N.D.	0.1	0.5		1
02898	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.2	0.5		1
02898	Dibromochloromethane	124-48-1	N.D.	0.1	0.5		1
02898	1,2-Dibromoethane	106-93-4	N.D.	0.1	0.5		1
02898	Dibromomethane	74-95-3	N.D.	0.1	0.5		1
02898	1,2-Dichlorobenzene	95-50-1	N.D.	0.1	0.5		1
02898	1,3-Dichlorobenzene	541-73-1	N.D.	0.1	0.5		1
02898	1,4-Dichlorobenzene	106-46-7	N.D.	0.1	0.5		1
02898	Dichlorodifluoromethane	75-71-8	N.D. UJ-	0.1	0.5		1
02898	1,1-Dichloroethane	75-34-3	N.D.	0.1	0.5		1
02898	1,2-Dichloroethane	107-06-2	N.D.	0.1	0.5		1
02898	1,1-Dichloroethene	75-35-4	N.D.	0.1	0.5		1
02898	cis-1,2-Dichloroethene	156-59-2	N.D.	0.1	0.5		1
02898	trans-1,2-Dichloroethene	156-60-5	N.D.	0.1	0.5		1
02898	Dichlorofluoromethane	75-43-4	N.D.	0.2	0.5		1
02898	1,2-Dichloropropane	78-87-5	N.D.	0.1	0.5		1
02898	1,3-Dichloropropane	142-28-9	N.D.	0.1	0.5		1
02898	2,2-Dichloropropane	594-20-7	N.D.	0.1	0.5		1
02898	1,1-Dichloropropene	563-58-6	N.D.	0.1	0.5		1
02898	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.1	0.5		1
02898	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.1	0.5		1
02898	Ethyl ether	60-29-7	N.D.	0.1	0.5		1
02898	Ethylbenzene	100-41-4	N.D.	0.1	0.5		1
02898	Freon 113	76-13-1	N.D.	0.2	0.5		1
02898	Hexachlorobutadiene	87-68-3	N.D.	0.1	0.5		1
02898	Isopropylbenzene	98-82-8	N.D.	0.1	0.5		1
02898	p-Isopropyltoluene	99-87-6	N.D.	0.1	0.5		1
02898	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.1	0.5		1
02898	4-Methyl-2-Pentanone	108-10-1	N.D.	1.0	5.0		1
02898	Methylene Chloride	75-09-2	N.D.	0.2	0.5		1
02898	Naphthalene	91-20-3	N.D.	0.1	0.5		1
02898	n-Propylbenzene	103-65-1	N.D.	0.1	0.5		1
02898	Styrene	100-42-5	N.D.	0.1	0.5		1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

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Analysis Report

Sample Description: TripBlank Water
S20113949 Laurel, MT

LLI Sample # WW 6584663
LLI Group # 1296396
Account # 13509

Project Name: Silvertip Huntley Channel

Collected: 03/18/2012

Submitted: 03/20/2012 09:30
Reported: 03/26/2012 12:02

ExxonMobil
c/o Scott Davies - ARCADIS
801 Corporate Center Dr # 300
Raleigh NC 27607

TBSED SDG#: ESM01-10TB*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Action Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		ug/l	ug/l	ug/l	ug/l	
02898	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.1	0.5		1
02898	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.1	0.5		1
02898	Tetrachloroethene	127-18-4	N.D.	0.1	0.5		1
02898	Tetrahydrofuran	109-99-9	N.D.	2.0	5.0		1
02898	Toluene	108-88-3	N.D.	0.1	0.5		1
02898	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.1	0.5		1
02898	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.1	0.5		1
02898	1,1,1-Trichloroethane	71-55-6	N.D.	0.1	0.5		1
02898	1,1,2-Trichloroethane	79-00-5	N.D.	0.1	0.5		1
02898	Trichloroethene	79-01-6	N.D.	0.1	0.5		1
02898	Trichlorofluoromethane	75-69-4	N.D.	0.1	0.5		1
02898	1,2,3-Trichloropropane	96-18-4	N.D.	0.3	1.0		1
02898	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.1	0.5		1
02898	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.1	0.5		1
02898	Vinyl Chloride	75-01-4	N.D.	0.1	0.5		1
02898	Xylene (Total)	1330-20-7	N.D.	0.1	0.5		1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	EPA SW846/8260 (water-25ml) #1	SW-846 8260B 25mL purge	1	C120811AA	03/21/2012 14:56	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	C120811AA	03/21/2012 14:56	Jason M Long	1

*=This limit was used in the evaluation of the final result
Shaded result = The results or reporting limit exceeded the client-provided action limit.

Attachment C

Forensic Evaluation Memorandum

ARCADIS
801 Corporate Center Drive
Suite 300
Raleigh
North Carolina 27607
Tel 919.854.1282
Fax 919.854.5448

MEMO

To:
Tom Henson, ExxonMobil

Copies:
Stephen Barrick
Scott Davies
Mike Jones

From:
Ted C. Sauer

Date:
June 20, 2012

ARCADIS Project No.:
B0085904.1201

Subject:
Forensic Evaluation of Sheen Samples Collected as Part of Environmental Assessment of Reported Fish Kill, Huntley, MT

Introduction

This memorandum summarizes my review of the forensic data for two interfacial (sheen) water samples (HUMT-P5-TN(031812)1-A [i.e., Sheen 1-A] and HUMT-P5-TN(031812)2-A [i.e., Sheen 2-A]) that were collected on March 18, 2012 and analyzed as part of the environmental assessment of a reported fish kill in a side channel of the Yellowstone River located within portions of the Shoreline Cleanup Assessment Technique (SCAT) River Segments 24 and 28 in Huntley, MT. This review was conducted in response to a May 25, 2012 letter from the Montana Department of Environmental Quality (MDEQ, 2012) that provided comments on ARCADIS' *Final Assessment Report for Reported Fish Kill, Huntley, MT* (ARCADIS, 2012). MDEQ specifically requested that the source of the sheens be more fully described, including comparison to the crude oil that was released upstream in the Yellowstone River near Laurel, MT in July 2011 (i.e., Silvertip Pipeline oil).

Key Findings

The trace hydrocarbons (20 and 21 ug/net for total petroleum hydrocarbons [TPH] and 134 and 126 ng/net for total polycyclic aromatic hydrocarbons [TPAH]) present in the two sheen samples originated from a common source, but that source is clearly not the Silvertip Pipeline oil. In fact, the sheens do not contain any obvious petroleum. Instead, most of the PAHs in the samples have a clearly pyrogenic (natural or anthropogenic combustion-derived) origin. Background information and details supporting these findings are presented below.

Background

The two sheen samples were collected with a fine Teflon mesh net manufactured by General Oceanics. The net was dragged within an approximately one square meter area of air/water interface where sheen was visibly observed to be present. The organic material collected on the nets was extracted and analyzed for an extended list of over 40 polycyclic aromatic hydrocarbons (PAHs), including the 2- to 6-ring priority pollutant PAHs and 2- to 4-ring alkylated PAHs by modified EPA Method 8270C (gas chromatography/mass spectrometry in selective ion monitoring mode [GC/MS SIM]). The samples were also analyzed for total petroleum hydrocarbons (TPH) by modified EPA Method 8015 (gas chromatography/flame ionization detection [GC/FID]). These analyses are commonly identified as 'forensic PAH' and 'forensic TPH' analyses, respectively.

The 'forensic PAH' compositions and 'forensic TPH' fingerprints provide useful information for determining the types and sources of hydrocarbons in environmental samples (Stout et al., 2002, Douglas et al., 2007). These forensic methods are superior for determining hydrocarbon types/sources compared to "simple" ratios/metrics that are sometimes used when 'forensic' data are not available. To ascertain the potential source(s) of PAHs detected in a sample, the entire distribution of forensic PAHs in a sample must be evaluated (not just a few selected ratios). Patterns within alkyl group families (e.g., phenanthrene, C1-phenanthrenes, C2-phenanthrenes etc.) for the 2-, 3-, and 4-ring PAHs (e.g., naphthalenes, dibenzothiophenes, and chrysenes) are routinely used to determine the sources of PAHs in the environment (Sauer and Uhler, 1994; Stout et al., 2002, Wang and Stout, 2007). Examples of the PAH distributions of typical pyrogenic (combustion-derived) and petrogenic (petroleum-derived) sources of PAHs are shown on Figure 1, and these are described in the following paragraphs.

Pyrogenic source PAHs are formed from the combustion of organic matter originating from natural fires and/or burning of fossil fuels, and occur at detectable concentrations in almost all environments (Laflamme and Hites, 1978; Stout et al., 2002; Wang and Stout, 2009). Pyrogenic PAHs enter aquatic environments via atmospheric deposition, sewer discharge, runoff, and boat traffic. Pyrogenic PAHs are characterized by the dominance of parent PAHs (e.g., fluoranthene, pyrene) with decreasing concentrations of alkyl groups as alkylation increases (e.g., concentration of phenanthrene > C1-phenanthrenes > C2-phenanthrenes > C3-phenanthrenes > C4-phenanthrenes). This results in the characteristic 'skewed' pattern of pyrogenic sources (Figure 1; Sauer and Uhler, 1994). Pyrogenic source PAHs also have a relatively significant amount of 5- and 6-ring PAHs that are negligible in crude oil.

PAHs from a petrogenic source, such as those in diesel and crude oil, have a composition in which the shape of alkyl group concentrations in a PAH family (e.g., naphthalene, C1-naphthalenes, C2-naphthalenes etc.) has a 'Gaussian', or 'bell curve', pattern where the C2-alkyl group has generally the highest relative concentration compared to the other alkyl groups in the family (Figure 1; Sauer and Uhler, 1994; Stout et al., 2002, Wang and Stout, 2007).

Interpretation of the 'forensic TPH' fingerprints involves evaluating the overall pattern of the GC trace. Generally, the presence of a distinctive 'hump' or 'humps' (unresolved complex mixture – UCM) in the GC trace indicates the presence of petroleum or natural organic matter in the sample (Stout et al., 2002). For petroleum, the relative shape and position of the UCM in the GC trace indicates the type of petroleum product in the sample. Lighter fuel oils (lower carbon range oils such as gasoline and diesel) are represented in the GC trace by UCMs present in the earlier minutes of the gas chromatograms whereas the heavier fuel oils (higher carbon range oils such as motor oils, No. 6 fuel oils) are represented by UCMs in the later minutes of the gas chromatograms (Stout et al., 2002).

Evaluation of Sheen Sample Results

The PAH and TPH results for the analyses of the sheen samples were provided in the TDI Brooks report (2012). These (Form 1) results and the associated laboratory QA/QC samples are included herein as Attachment A.

Because of its relevance to the evaluation of sheen results, the 'forensic PAH' composition and 'forensic TPH' fingerprint of the Silvertip Pipeline crude oil (STI-RO-1) are provided in Figures 2 and 3 as a reference for evaluating the sheen samples. These results were previously provided in the TDI Brooks reports (2011 and 2012). The PAH composition of the Silvertip Pipeline oil (Figure 2) exhibits the characteristic 'bell shaped' distribution within each alkyl group 'family', and has a distinguishing compositional feature-- it contains relatively significant amounts of sulfur-heterocyclic compounds (e.g., benzothiophenes, dibenzothiophenes and naphthobenzothiophenes). This distinctive feature, which is common to 'sour' crude oils, is useful for recognizing the potential presence of the Silvertip Pipeline oil in the sheen samples. This crude oil also contains very low amounts of 5- and 6-ring PAHs, typical of crude oil (Figure 2). The TPH fingerprint of the crude oil sample (Figure 3) has the characteristic "hump" (UCM) which is a common feature of a GC fingerprint of petroleum-type hydrocarbons in a sample.

The 'forensic PAH' compositions of the two sheen samples are nearly identical (Figures 4 and 5), indicating that the trace amounts (134 and 126 ng/net; Attachment A) of PAHs detected originate from a common source. However, the PAH compositions of the two sheen samples differ considerably from the PAH composition of the crude oil (Figure 2). For example, the sheens do not contain the prominent sulfur-heterocyclic compounds that predominate in the Silvertip Pipeline crude oil (Figure 2). Instead, most of the detected PAHs are priority pollutant PAHs (e.g., phenanthrene, fluorene, fluoranthene, pyrene, and 5- and 6-ring PAHs) that are commonly associated with pyrogenic PAH sources. Much less or no alkylated equivalents of the priority pollutant PAHs were detected in the sheen samples, resulting in a strongly 'skewed' pyrogenic pattern for each alkyl group 'family' (Figures 4 and 5). The sheen samples each also contain relatively abundant 5- and 6-ring parent PAHs consistent with PAHs of a combustion-related, pyrogenic origin. Finally, the naphthalenes are present at trace amounts, barely detectable, and may originate from a variety of sources as part of local runoff and river use.

The most notable feature of the sheens' PAHs is the relative prominence of phenanthrene and dibenzofuran compared to the other PAHs. These two PAHs are commonly associated with pyrogenic sources but are usually present in about the same concentration range as the other pyrogenic PAHs. The cause for the prominence of phenanthrene and dibenzofuran in the sheen samples is not known. However, if the phenanthrene and dibenzofuran had originated from the Silvertip Pipeline crude oil, the alkyl groups of phenanthrene and, in particular, the associated alkyl groups of the dibenzothiophenes, characteristic of the Silvertip Pipeline oil, would be readily apparent in the PAH compositions of the sheen samples. Because this is not the case, the prominent phenanthrene and dibenzofuran detected in the sheen samples do not appear to have a petrogenic source.

The TPH fingerprints of the two sheen samples are nearly identical and essentially featureless with only a few small peaks shown (i.e., no UCM, 'hump') (Figures 6 and 7). There is no UCM present that would indicate the presence of petroleum in the sheens. Therefore, these fingerprints provide no evidence for the presence of crude oil (or any other petroleum). These characteristics clearly indicate that the hydrocarbons in the sheen samples (20 and 21 ug/net; Attachment A) are from a common, non-crude oil source.

References

ARCADIS. 2012. Final Assessment Report for Reported Fish Kill, Huntley, MT (dated April 30, 2012).

Douglas, G.D., S.D Emsbo-Mattingly, S.A. Stout, A.D Uhler, and K.J. McCarthy. 2007. Chemical fingerprinting methods. In: *Introduction to Environmental Forensics,* 2nd Edition, Eds. B. Murphy and R. Morrison. Academic Press, New York, pp. 312-454.

LaFlamme, R.E. and R.A. Hites. 1978. The global distribution of polycyclic aromatic hydrocarbons in recent sediments. *Geochimica Cosmochimica Acta*, v42, pp289-303.

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Sauer, T.C., and A.D. Uhler. 1995. Pollutant source identification and allocation: Advances in hydrocarbon fingerprinting. *Remediation* 5(l): 25 50.

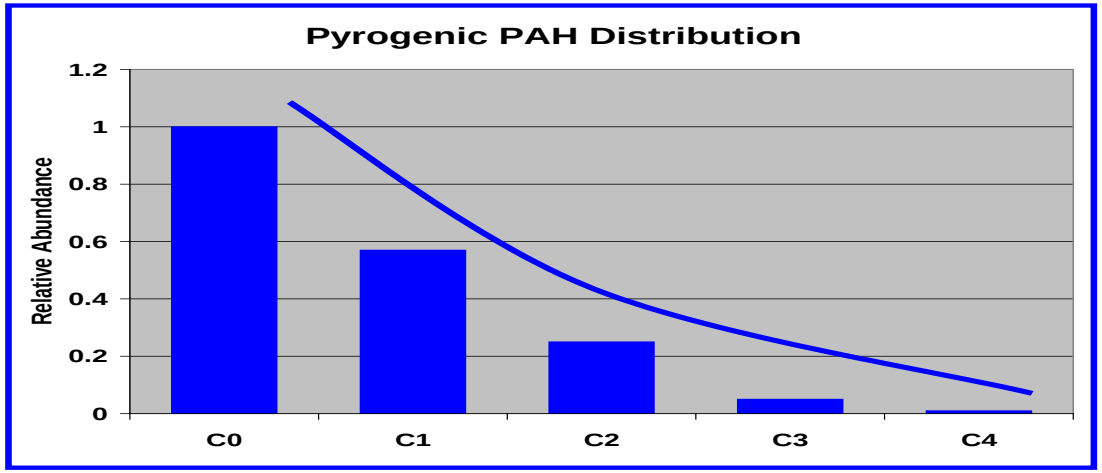
Stout, S.A., A.D. Uhler, K.J. McCarthy, and S. Emsbo-Mattingly. 2002. Chemical fingerprinting of hydrocarbons. In: *Introduction to Environmental Forensics*, 1st Edition. Eds. B.L Murphy and R.D. Morrison. Academic Press, London, pp. 137-260.

TDI-Brooks Int'l., Inc. 2011 and 2012. Technical Reports 11-2694 and 12-2772 (Silvertip pipeline crude oil sample, ST1-R01).

TDI-Brooks, Int'l. Inc. 2012. Technical Report 12-2755 (Sheen samples).

Wang, Z. and S.A. Stout. 2007. *Oil Spill Environmental Forensics: Fingerprinting and Source Identification*. Elsevier Publishing Co., Boston, MA, pp 554 (Pyrogenic Index definition on pg 457).

Figure 1. **Typical Pyrogenic and Petrogenic Distributions for Parent (C0) and Alkylated (C1, C2, C3, C4) PAHs**



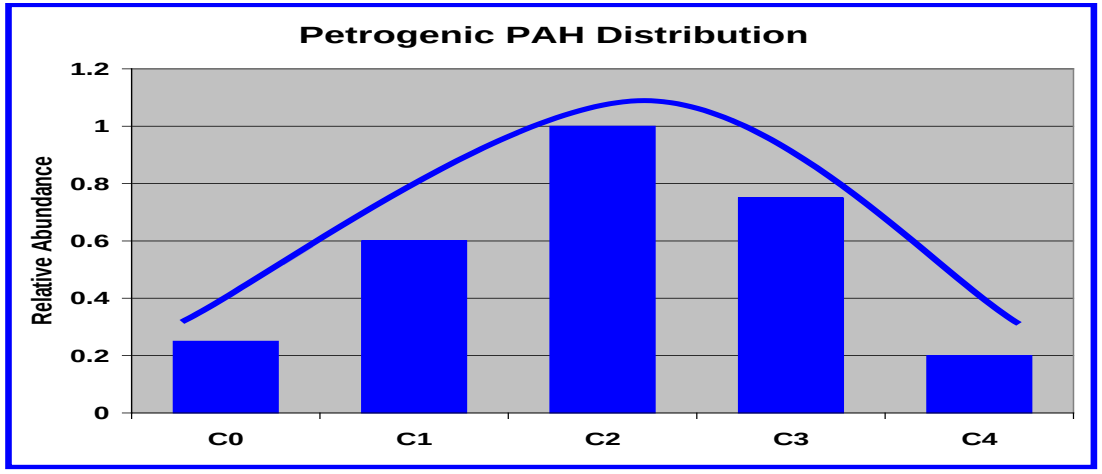


Figure 2. PAH Composition of Released Oil

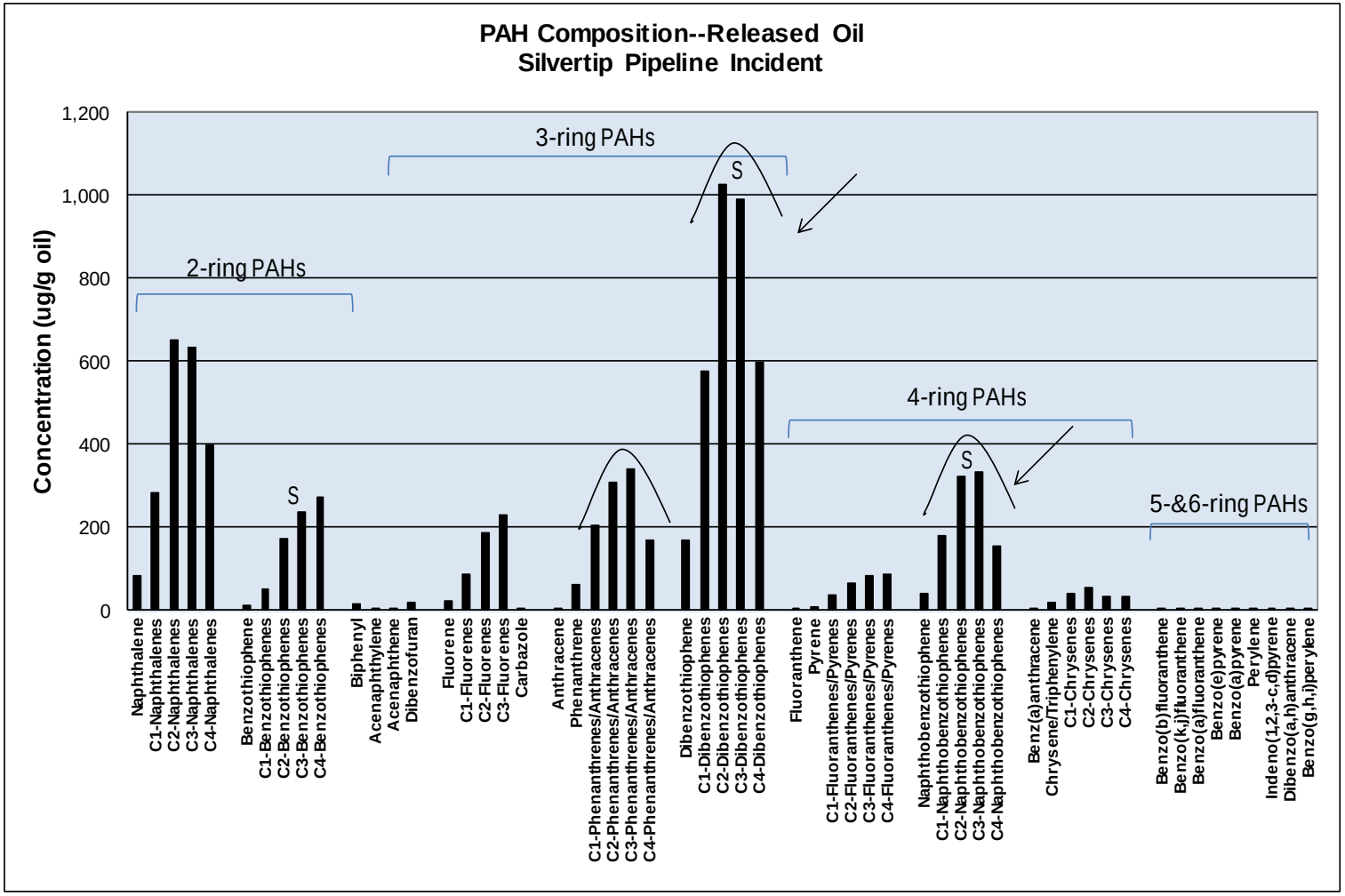


Figure 3. GC Fingerprint of Released Oil

```
File        : C:\HPCHEM\4\DATA\GC31906\ARC0991A.D
Operator    : CWJ
Acquired    : 24 Jan 2012  14:17     using AcqMethod ALI_FRNT.M
Instrument :   GC3
Sample Name: Rep 1
Misc Info  :
Vial Number: 6
```

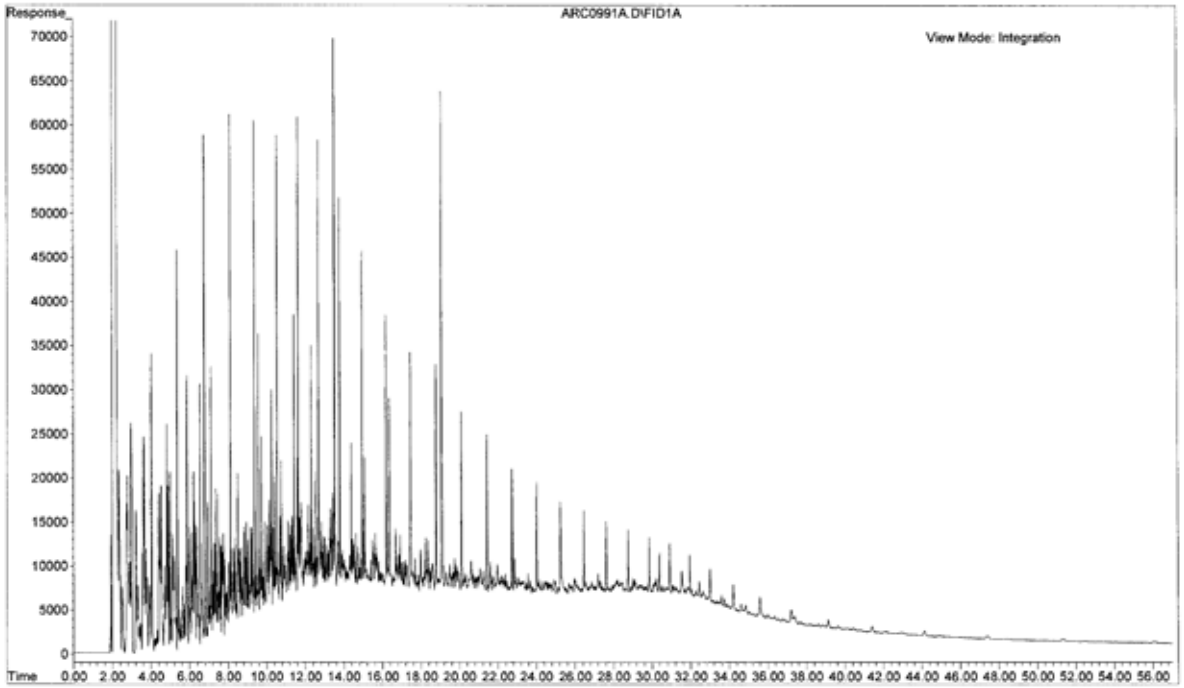


Figure 4. PAH Composition of Sheen Sample HUMT-P5-TN(031812)1-A

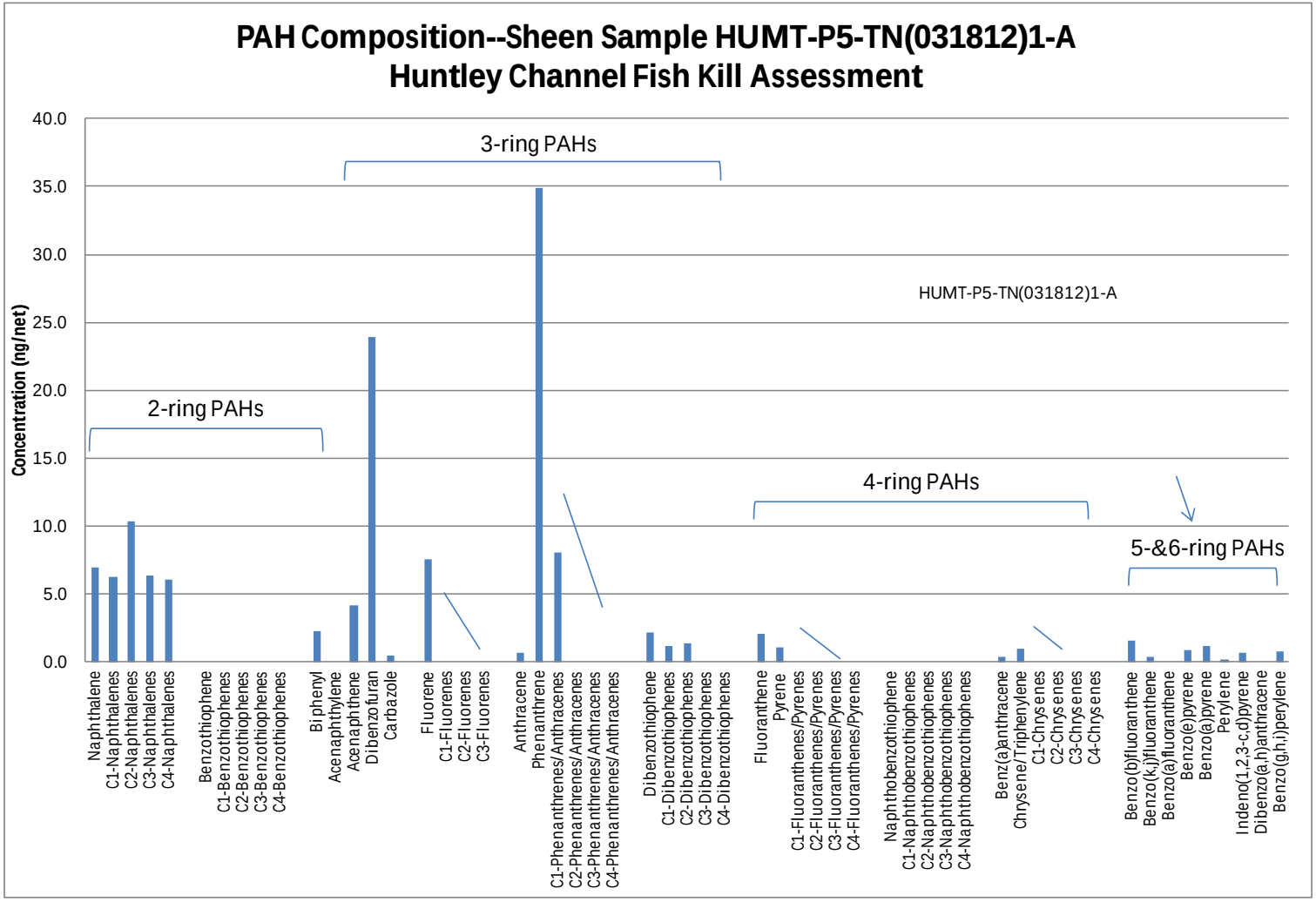


Figure 5. PAH Composition of Sheen Sample HUMT-P5-TN(031812)2-A

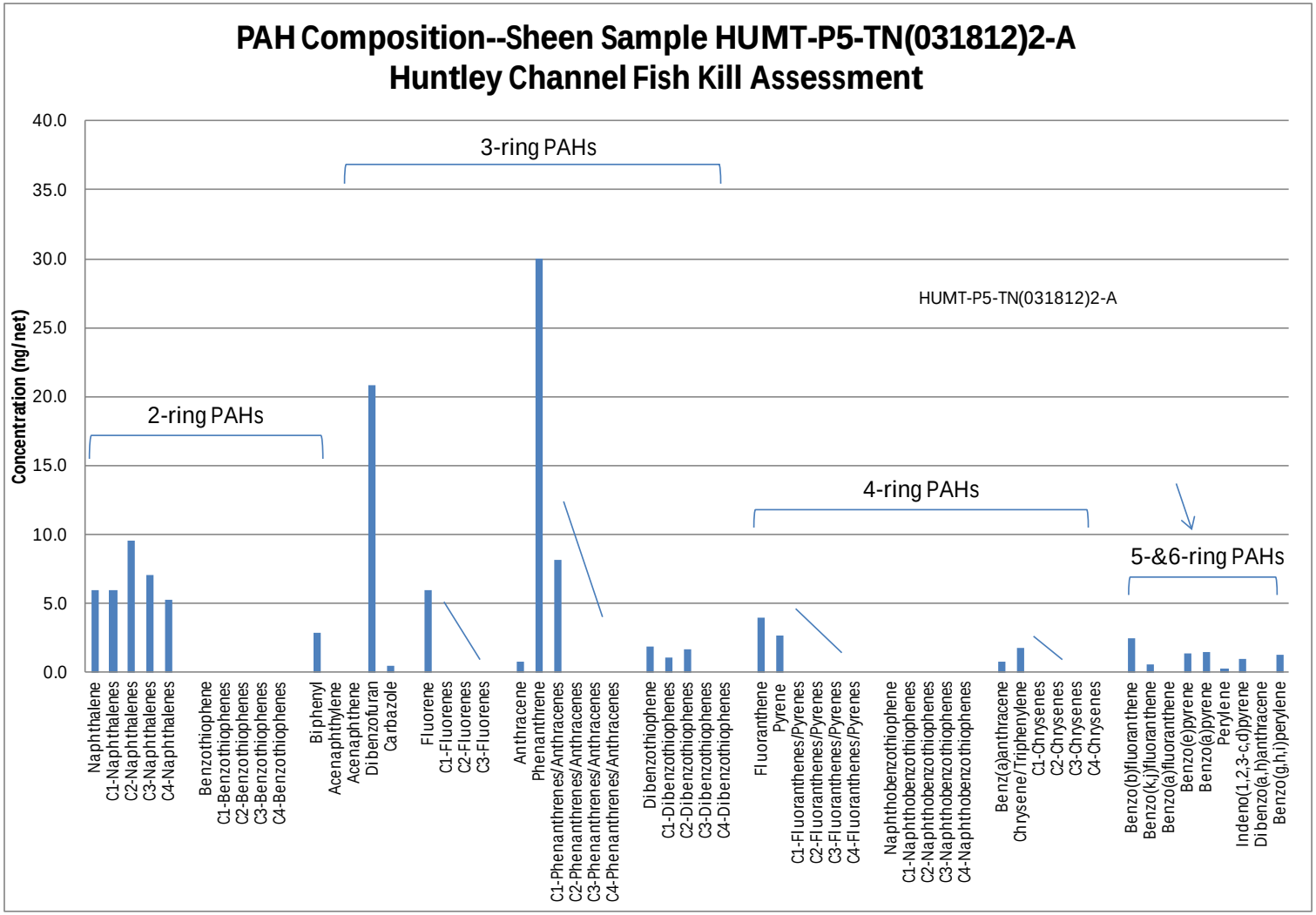


Figure 6. GC Fingerprint of Sheen Sample HUMT-P5-TN(031812)1-A

```
File        : L:\1\DATA\GC31940\ARC1122.D
Operator    : MAG
Acquired    : 26 Mar 2012  22:08      using AcqMethod ALI.M
Instrument :   GC3
Sample Name: HUMT-P5-TN(031812)1-A
Misc Info  :
Vial Number: 8
```

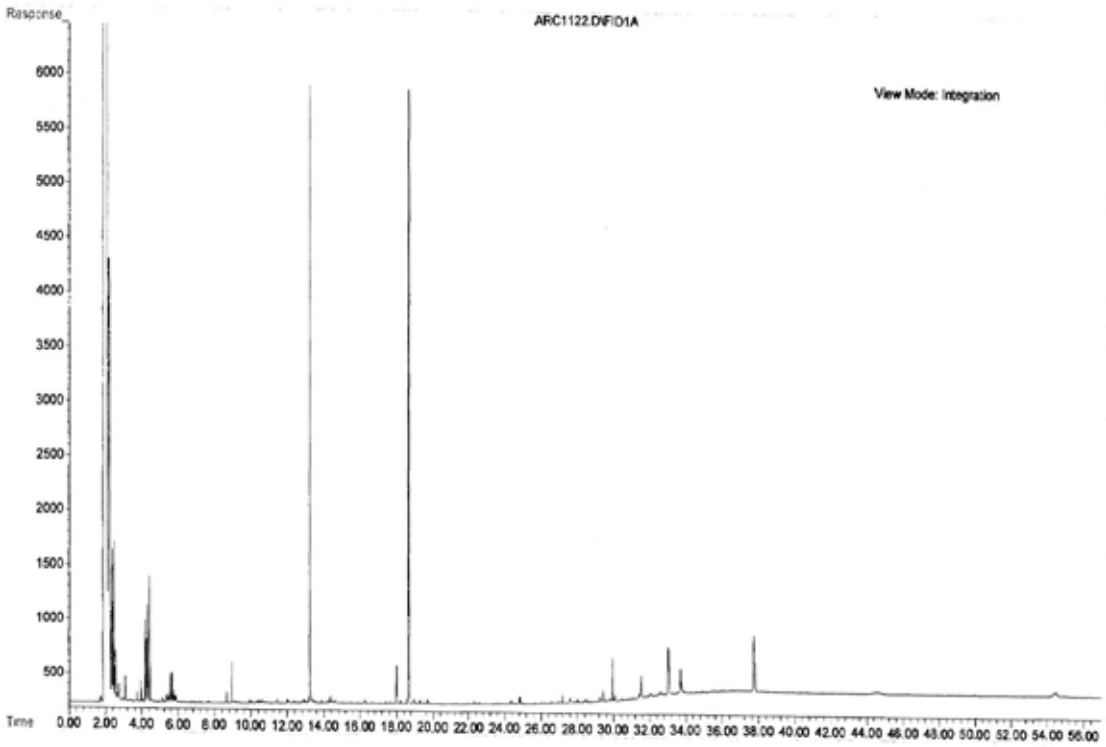
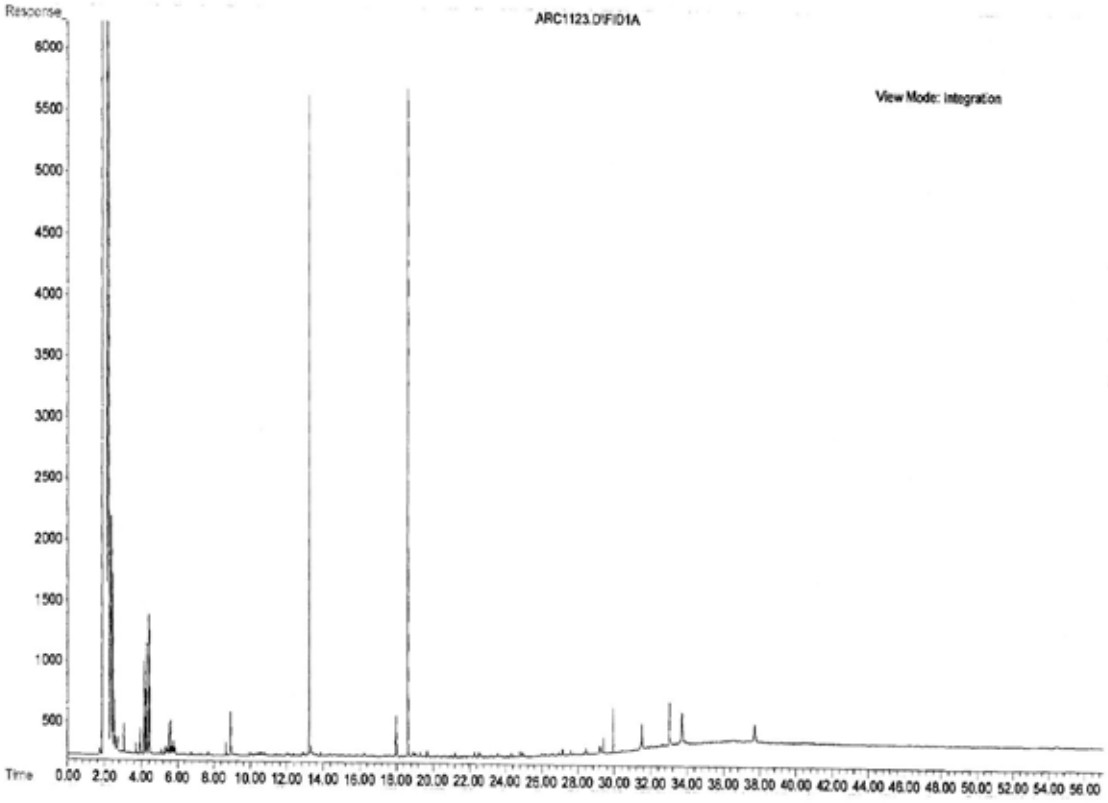


Figure 7. GC Fingerprint of Sheen Sample HUMT-P5-TN(031812)2-A

File : L:\1\DATA\GC31940\ARC1123.D
Operator : MAG
Acquired : 26 Mar 2012 23:13 using AcqMethod ALI.M
Instrument : GC3
Sample Name: HUMT-P5-TN(031812)2-A
Misc Info :
Vial Number: 9



Attachment 1

Form 1 - Analytical Results

Aliphatic Hydrocarbons (C9 – C40)/ Total Petroleum Hydrocarbons/ Extractable Organic Matter Concentrations

Arcadis ExxonMobil
Yellowstone Oil Spill Project
Aliphatic Hydrocarbon and Total Extractable Hydrocarbon Data
Client Submitted Samples

Sample Name	ARC1122.D	ARC1123.D
Client Name	HUMT-P5-TN(031812)1-A	HUMT-P5-TN(031812)2-A
Matrix	Net	Net
Collection Date	03/18/12	03/18/12
Received Date	03/20/12	03/20/12
Extraction Date	03/21/12	03/21/12
Extraction Batch	ENV 2755	ENV 2755
Date Acquired	03/26/12	03/26/12
Method	ALI.M	ALI.M
Sample (net)	1.0	1.0
% Dry	NA	NA
% Moisture	NA	NA
Dilution	1X	1X

Target Compounds	Su Corrected Conc. (µg/per net)	Q	Su Corrected Conc. (µg/per net)	Q
n-C9	<0.35	U	<0.35	U
n-C10	<0.35	U	<0.35	U
n-C11	<0.35	U	<0.35	U
n-C12	<0.35	U	<0.35	U
n-C13	<0.35	U	<0.35	U
i-C15	<0.35	U	<0.35	U
n-C14	<0.35	U	<0.35	U
i-C16	<0.35	U	<0.35	U
n-C15	<0.35	U	<0.35	U
n-C16	<0.35	U	<0.35	U
i-C18	<0.35	U	<0.35	U
n-C17	<0.35	U	<0.35	U
Pristane	<0.35	U	<0.35	U
n-C18	<0.35	U	<0.35	U
Phytane	<0.35	U	<0.35	U
n-C19	<0.35	U	<0.35	U
n-C20	<0.35	U	<0.35	U
n-C21	<0.35	U	<0.35	U
n-C22	<0.35	U	<0.35	U
n-C23	<0.35	U	<0.35	U
n-C24	<0.35	U	<0.35	U
n-C25	<0.35	U	<0.35	U
n-C26	<0.35	U	<0.35	U
n-C27	<0.35	U	<0.35	U
n-C28	<0.35	U	<0.35	U
n-C29	<0.35	U	<0.35	U
n-C30	<0.35	U	<0.35	U
n-C31	<0.35	U	<0.35	U
n-C32	<0.35	U	<0.35	U
n-C33	<0.35	U	<0.35	U
n-C34	<0.35	U	<0.35	U
n-C35	<0.35	U	<0.35	U
n-C36	<0.35	U	<0.35	U
n-C37	<0.35	U	<0.35	U
n-C38	<0.35	U	<0.35	U
n-C39	<0.35	U	<0.35	U
n-C40	<0.35	U	<0.35	U
Total Petroleum Hydrocarbons	20	J	21	
Total Resolved Hydrocarbons	15	J	12	J
Unresolved Complex Mixture	4	J	9	J

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)
n-dodecane-d28	77	80
n-eicosane-d42	92	93
n-triacontane-d62	99	99

Arcadis ExxonMobil
Yellowstone Oil Spill Project
Aliphatic Hydrocarbon and Total Extractable Hydrocarbon Data
Procedural Blank Report

Sample Name	ENV2755A.D
Client Name	Procedural Blank
Matrix	Net
Collection Date	NA
Received Date	NA
Extraction Date	03/21/12
Extraction Batch	ENV 2755
Date Acquired	03/26/12
Method	ALI.M
Sample (net)	1.0
Dilution	1X

Target Compounds	Su Corrected Conc. (µg/per net)	Q	3X MDL	Actual MDL
n-C9	<0.35	U	1.05	0.35
n-C10	<0.35	U	1.05	0.35
n-C11	<0.35	U	1.05	0.35
n-C12	<0.35	U	1.05	0.35
n-C13	<0.35	U	1.05	0.35
i-C15	<0.35	U	1.05	0.35
n-C14	<0.35	U	1.05	0.35
i-C16	<0.35	U	1.05	0.35
n-C15	<0.35	U	1.05	0.35
n-C16	<0.35	U	1.05	0.35
i-C18	<0.35	U	1.05	0.35
n-C17	<0.35	U	1.05	0.35
Pristane	<0.35	U	1.05	0.35
n-C18	<0.35	U	1.05	0.35
Phytane	<0.35	U	1.05	0.35
n-C19	<0.35	U	1.05	0.35
n-C20	<0.35	U	1.05	0.35
n-C21	<0.35	U	1.05	0.35
n-C22	<0.35	U	1.05	0.35
n-C23	<0.35	U	1.05	0.35
n-C24	<0.35	U	1.05	0.35
n-C25	<0.35	U	1.05	0.35
n-C26	<0.35	U	1.05	0.35
n-C27	<0.35	U	1.05	0.35
n-C28	<0.35	U	1.05	0.35
n-C29	<0.35	U	1.05	0.35
n-C30	<0.35	U	1.05	0.35
n-C31	<0.35	U	1.05	0.35
n-C32	<0.35	U	1.05	0.35
n-C33	<0.35	U	1.05	0.35
n-C34	<0.35	U	1.05	0.35
n-C35	<0.35	U	1.05	0.35
n-C36	<0.35	U	1.05	0.35
n-C37	<0.35	U	1.05	0.35
n-C38	<0.35	U	1.05	0.35
n-C39	<0.35	U	1.05	0.35
n-C40	<0.35	U	1.05	0.35
Total Petroleum Hydrocarbons	<13	U	39.0	13.0
Total Resolved Hydrocarbons	<13	U	39.0	13.0
Unresolved Complex Mixture	<13	U	39.0	13.0

Surrogate (Su)	Su Recovery (%)
n-dodecane-d26	84
n-eicosane-d42	99
n-triacontane-d62	100

Arcadis ExxonMobil
YellowstoneOil Spill Project
Aliphatic Hydrocarbon and Total Extractable Hydrocarbon Data
Blank Spike Report

Sample Name	ENV2755B.D	ENV2755C.D
Client Name	Blank Spike	Blank Spike Duplicate
Matrix	Net	Net
Collection Date	NA	NA
Received Date	NA	NA
Extraction Date	03/21/12	03/21/12
Extraction Batch	ENV 2755	ENV 2755
Date Acquired	03/26/12	03/26/12
Method	ALI.M	ALI.M
Sample (net)	1.0	1.0
Dilution	1X	1X

Target Compounds	Su Corrected Conc. (µg/per net)	Recovery (%)	Q	Su Corrected Conc. (µg/per net)	Recovery (%)	Q	RPD (%)	Q	Spike Amount (µg)
n-C9	7.9	79		7.7	78		2		10.0
n-C10	8.8	88		8.6	86		2		10.0
n-C11	9.4	94		9.1	91		3		9.9
n-C12	9.4	94		9.0	90		5		10.0
n-C13	9.4	95		9.2	92		2		10.0
i-C15	NA			NA					
n-C14	9.6	98		9.3	95		3		9.86
i-C16	NA			NA					
n-C15	10.1	102		9.7	97		5		9.98
n-C16	10.4	104		9.8	99		5		10.0
i-C18	NA			NA					
n-C17	10.3	104		9.7	97		6		9.9
Pristane	10.3	104		9.7	98		6		9.9
n-C18	10.6	105		10.1	101		5		10.0
Phytane	10.4	105		9.9	100		5		9.9
n-C19	10.5	105		10.0	100		5		10.0
n-C20	10.5	105		9.9	99		6		10.0
n-C21	10.6	106		10.2	101		5		10.0
n-C22	10.6	107		10.2	103		4		9.95
n-C23	10.6	107		10.2	103		4		9.91
n-C24	10.6	106		10.2	102		4		10.0
n-C25	10.5	104		10.1	101		4		10.0
n-C26	10.3	104		10.0	100		3		10.0
n-C27	10.4	105		10.1	102		3		9.89
n-C28	10.6	105		10.3	102		3		10.0
n-C29	10.3	103		10.0	99		4		10.0
n-C30	10.5	105		10.1	102		3		10.0
n-C31	10.4	104		10.1	100		4		10.0
n-C32	10.2	102		9.9	99		3		10.02
n-C33	10.3	102		9.9	99		3		10.0
n-C34	10.2	102		9.8	98		4		10.0
n-C35	9.9	99		9.5	95		4		10.0
n-C36	9.8	99		9.5	96		3		9.9
n-C37	9.9	99		9.6	96		3		10.0
n-C38	9.8	98		9.5	95		3		10.01
n-C39	NA			NA					
n-C40	9.7	98		9.5	95		3		10.0
Average %Recovery		101			97				

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)
n-dodecane-d26	90	89
n-eicosane-d42	98	100
n-triacontane-d62	102	100

Arcadis ExxonMobil
Yellowstone Oil Spill Project
Aliphatic Hydrocarbon and Total Extractable Hydrocarbon Data
Standard Reference Material Report

Sample Name	GC31940F.D
Client Name	AL-WKRef Oil-40-004
Matrix	Reference Oil
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	03/27/12
Method	ALI.M
Sample Weight (mg)	40.0
Dilution	1X

Target Compounds	Su Corrected Conc. (µg/mg)	Q	RPD (%)	B&B Average	-20% Conc. (µg/mg)	+20% Conc. (µg/mg)
n-C9	13.4		7	14.3	11.4	17.2
n-C10	13.1		5	12.5	10.0	15.0
n-C11	11.8		6	11.1	8.90	13.3
n-C12	10.3		1	10.2	8.17	12.3
n-C13	9.0		0	8.98	7.19	10.8
i-C15	2.00		6	1.89	1.51	2.27
n-C14	7.77		9	8.46	6.77	10.2
i-C16	2.86		7	3.10	2.48	3.72
n-C15	7.78		4	7.49	5.99	8.98
n-C16	6.24		8	6.75	5.40	8.10
i-C18	1.64		3	1.59	1.27	1.91
n-C17	5.08		8	4.71	3.77	5.65
Pristane	2.55		3	2.47	1.98	2.96
n-C18	4.09		4	3.93	3.14	4.71
Phytane	1.65		8	1.52	1.22	1.82
n-C19	3.74		9	3.41	2.73	4.09
n-C20	3.10		2	3.02	2.42	3.62
n-C21	2.60		4	2.50	2.00	3.00
n-C22	2.25		1	2.23	1.78	2.68
n-C23	1.99		2	1.95	1.56	2.34
n-C24	1.80		6	1.70	1.36	2.04
n-C25	1.50		5	1.42	1.13	1.70
n-C26	1.17		1	1.18	0.945	1.42
n-C27	0.908		5	0.955	0.764	1.15
n-C28	0.773		4	0.747	0.597	0.896
n-C29	0.687		7	0.734	0.588	0.881
n-C30	0.570		12	0.642	0.514	0.771
n-C31	0.455		12	0.512	0.410	0.615
n-C32	0.388		3	0.377	0.302	0.453
n-C33	0.350					
n-C34	0.279	J				
n-C35	0.210	J				
n-C36	0.100	J				
n-C37	0.080	J				
n-C38	0.0611	J				
n-C39	0.0534	J				
n-C40	0.0447	J				
Total Petroleum Hydrocarbons	615		2	605	484	726

Surrogate (Su)	Su Recovery (%)
n-dodecane-d26	104
n-eicosane-d42	92
n-triacontane-d62	92

Polycyclic Aromatic Hydrocarbon Concentration

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Client Submitted Samples

Sample Name	ARC1122.D	ARC1123.D
Client Name	HUMT-P5-TN(031812)1-A	HUMT-P5-TN(031812)2-A
Matrix	Net	Net
Collection Date	03/18/12	03/18/12
Received Date	03/20/12	03/20/12
Extraction Date	03/21/12	03/21/12
Extraction Batch	ENV 2755	ENV 2755
Date Acquired	04/06/12	04/06/12
Method	PAH-2010	PAH-2010
Sample (Net)	1.0	1.0
% Dry	NA	NA
% Moisture	NA	NA
Dilution	1X	1X

Target Compounds	Su. Corrected Conc. (ng/per net)	Q	Su. Corrected Conc. (ng/per net)	Q
cis/trans Decalin	<10	U	<10	U
C1-Decalins	<10	U	<10	U
C2-Decalins	<10	U	<10	U
C3-Decalins	<10	U	<10	U
C4-Decalins	<10	U	<10	U
Naphthalene	7.0	J	6.0	J
C1-Naphthalenes	6.3	J	6.0	J
C2-Naphthalenes	10.4		9.6	J
C3-Naphthalenes	6.4	J	7.1	J
C4-Naphthalenes	6.1	J	5.3	J
Benzothiophene	<10	U	<10	U
C1-Benzothiophenes	<10	U	<10	U
C2-Benzothiophenes	<10	U	<10	U
C3-Benzothiophenes	<10	U	<10	U
C4-Benzothiophenes	<10	U	<10	U
Biphenyl	2.3	J	2.9	J
Acenaphthylene	<10	U	<10	U
Acenaphthene	4.2	J	<10	U
Dibenzofuran	23.9		20.8	
Fluorene	7.6	J	6.0	J
C1-Fluorenes	<10	U	<10	U
C2-Fluorenes	<10	U	<10	U
C3-Fluorenes	<10	U	<10	U
Carbazole	0.5	J	0.5	J
Anthracene	0.7	J	0.8	J
Phenanthrene	34.9		30.0	
C1-Phenanthrenes/Anthracenes	8.1	J	8.2	J
C2-Phenanthrenes/Anthracenes	<10	U	<10	U
C3-Phenanthrenes/Anthracenes	<10	U	<10	U
C4-Phenanthrenes/Anthracenes	<10	U	<10	U
Dibenzothiophene	2.2	J	1.9	J
C1-Dibenzothiophenes	1.2	J	1.1	J
C2-Dibenzothiophenes	1.4	J	1.7	J
C3-Dibenzothiophenes	<10	U	<10	U
C4-Dibenzothiophenes	<10	U	<10	U
Fluoranthene	2.1	J	4.0	J
Pyrene	1.1	J	2.7	J
C1-Fluoranthenes/Pyrenes	<10	U	<10	U
C2-Fluorenthenes/Pyrenes	<10	U	<10	U
C3-Fluoranthenes/Pyrenes	<10	U	<10	U
C4-Fluoranthenes/Pyrenes	<10	U	<10	U
Naphthobenzothiophene	<10	U	<10	U
C1-Naphthobenzothiophenes	<10	U	<10	U
C2-Naphthobenzothiophenes	<10	U	<10	U
C3-Naphthobenzothiophenes	<10	U	<10	U
C4-Naphthobenzothiophenes	<10	U	<10	U
Benz(a)anthracene	0.4	J	0.7	J
Chrysene/Triphenylene	0.9	J	1.7	J
C1-Chrysenes	<10	U	<10	U
C2-Chrysenes	<10	U	<10	U
C3-Chrysenes	<10	U	<10	U
C4-Chrysenes	<10	U	<10	U
Benzo(b)fluoranthene	1.6	J	2.5	J
Benzo(k,j)fluoranthene	0.4	J	0.6	J
Benzo(a)fluoranthene	<10	U	<10	U
Benzo(e)pyrene	0.9	J	1.4	J
Benzo(a)pyrene	1.2	J	1.5	J
Perylene	0.2	J	0.3	J
Indeno(1,2,3-c,d)pyrene	0.7	J	1.0	J
Dibenzo(a,h)anthracene	<10	U	<10	U
Benzo(g,h,i)perylene	0.8	J	1.3	J
Total PAHs	134		126	

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Client Submitted Samples

Sample Name	ARC1122.D	ARC1123.D
Client Name	HUMT-P5-TN(031812)1-A	HUMT-P5-TN(031812)2-A
Matrix	Net	Net
Collection Date	03/18/12	03/18/12
Received Date	03/20/12	03/20/12
Extraction Date	03/21/12	03/21/12
Extraction Batch	ENV 2755	ENV 2755
Date Acquired	04/06/12	04/06/12
Method	PAH-2010	PAH-2010
Sample (Net)	1.0	1.0
% Dry	NA	NA
% Moisture	NA	NA
Dilution	1X	1X

Target Compounds	Su. Corrected Conc. (ng/per net)	Q	Su. Corrected Conc. (ng/per net)	Q
Individual Alkyl Isomers and Hopanes				
2-Methylnaphthalene	6.6	J	6.6	J
1-Methylnaphthalene	3.8	J	3.2	J
2,6-Dimethylnaphthalene	6.7	J	5.5	J
1,6,7-Trimethylnaphthalene	1.1	J	1.9	J
1-Methylfluorene	<10	U	<10	U
4-Methyldibenzothiophene	0.8	J	0.8	J
2/3-Methyldibenzothiophene	0.6	J	0.5	J
1-Methyldibenzothiophene	0.3	J	0.3	J
3-Methylphenanthrene	1.3	J	1.4	J
2-Methylphenanthrene	1.6	J	1.6	J
2-Methylanthracene	4.3	J	4.0	J
4/9-Methylphenanthrene	0.6	J	0.8	J
1-Methylphenanthrene	0.8	J	0.9	J
3,6-Dimethylphenanthrene	<10	U	<10	U
Retene	<10	U	<10	U
2-Methylfluoranthene	<10	U	<10	U
Benzo(b)fluorene	<10	U	<10	U
C29-Hopane	<10	U	<10	U
18a-Oleanane	<10	U	<10	U
C30-Hopane	<10	U	<10	U
C20-TAS	<10	U	<10	U
C21-TAS	<10	U	<10	U
C26(20S)-TAS	<10	U	<10	U
C26(20R)/C27(20S)-TAS	<10	U	<10	U
C28(20S)-TAS	<10	U	<10	U
C27(20R)-TAS	<10	U	<10	U
C28(20R)-TAS	<10	U	<10	U

Surrogate Recovery		
Naphthalene-d8	99	98
Acenaphthene-d10	96	98
Phenanthrene-d10	81	86
Chrysene-d12	56	61
Perylene-d12	73	75
5(b)H-Cholane	115	117

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Procedural Blank Report

Sample Name	ENV2755A.D
Client Name	Procedural Blank
Matrix	Net
Collection Date	NA
Received Date	NA
Extraction Date	03/21/12
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample (Net)	1.0
% Dry	NA
% Moisture	NA
Dilution	1X

Target Compounds	Su. Corrected Conc. (ng/per net)	Q	3X MDL	Actual MDL
cis/trans Decalin	<10	U	30.0	10.0
C1-Decalins	<10	U	30.0	10.0
C2-Decalins	<10	U	30.0	10.0
C3-Decalins	<10	U	30.0	10.0
C4-Decalins	<10	U	30.0	10.0
Naphthalene	<10	U	30.0	10.0
C1-Naphthalenes	<10	U	30.0	10.0
C2-Naphthalenes	<10	U	30.0	10.0
C3-Naphthalenes	<10	U	30.0	10.0
C4-Naphthalenes	<10	U	30.0	10.0
Benzothiophene	<10	U	30.0	10.0
C1-Benzothiophenes	<10	U	30.0	10.0
C2-Benzothiophenes	<10	U	30.0	10.0
C3-Benzothiophenes	<10	U	30.0	10.0
C4-Benzothiophenes	<10	U	30.0	10.0
Biphenyl	<10	U	30.0	10.0
Acenaphthylene	<10	U	30.0	10.0
Acenaphthene	<10	U	30.0	10.0
Dibenzofuran	0.3	J	30.0	10.0
Fluorene	0.3	J	30.0	10.0
C1-Fluorenes	<10	U	30.0	10.0
C2-Fluorenes	<10	U	30.0	10.0
C3-Fluorenes	<10	U	30.0	10.0
Carbazole	<10	U	30.0	10.0
Anthracene	<10	U	30.0	10.0
Phenanthrene	<10	U	30.0	10.0
C1-Phenanthrenes/Anthracenes	<10	U	30.0	10.0
C2-Phenanthrenes/Anthracenes	<10	U	30.0	10.0
C3-Phenanthrenes/Anthracenes	<10	U	30.0	10.0
C4-Phenanthrenes/Anthracenes	<10	U	30.0	10.0
Dibenzothiophene	<10	U	30.0	10.0
C1-Dibenzothiophenes	<10	U	30.0	10.0
C2-Dibenzothiophenes	<10	U	30.0	10.0
C3-Dibenzothiophenes	<10	U	30.0	10.0
C4-Dibenzothiophenes	<10	U	30.0	10.0
Fluoranthene	<10	U	30.0	10.0
Pyrene	<10	U	30.0	10.0
C1-Fluoranthenes/Pyrenes	<10	U	30.0	10.0
C2-Fluoranthenes/Pyrenes	<10	U	30.0	10.0
C3-Fluoranthenes/Pyrenes	<10	U	30.0	10.0
C4-Fluoranthenes/Pyrenes	<10	U	30.0	10.0
Naphthobenzothiophene	<10	U	30.0	10.0
C1-Naphthobenzothiophenes	<10	U	30.0	10.0
C2-Naphthobenzothiophenes	<10	U	30.0	10.0
C3-Naphthobenzothiophenes	<10	U	30.0	10.0
C4-Naphthobenzothiophenes	<10	U	30.0	10.0
Benz(a)anthracene	<10	U	30.0	10.0
Chrysene/Triphenylene	<10	U	30.0	10.0
C1-Chrysenes	<10	U	30.0	10.0
C2-Chrysenes	<10	U	30.0	10.0
C3-Chrysenes	<10	U	30.0	10.0
C4-Chrysenes	<10	U	30.0	10.0
Benzo(b)fluoranthene	<10	U	30.0	10.0
Benzo(k,j)fluoranthene	<10	U	30.0	10.0
Benzo(a)fluoranthene	<10	U	30.0	10.0
Benzo(e)pyrene	<10	U	30.0	10.0
Benzo(a)pyrene	<10	U	30.0	10.0
Perylene	<10	U	30.0	10.0
Indeno(1,2,3-c,d)pyrene	<10	U	30.0	10.0
Dibenzo(a,h)anthracene	<10	U	30.0	10.0
Benzo(g,h,i)perylene	<10	U	30.0	10.0
Total PAHs	0.6			

Arcadia/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Procedural Blank Report

Sample Name	ENV2755A.D
Client Name	Procedural Blank
Matrix	Net
Collection Date	NA
Received Date	NA
Extraction Date	03/21/12
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample (Net)	1.0
% Dry	NA
% Moisture	NA
Dilution	1X

Target Compounds	Su. Corrected Conc. (ng/per net)	Q	3X MDL	Actual MDL
Individual Alkyl Isomers and Hopanes				
2-Methylnaphthalene	<10	U	30.0	10.0
1-Methylnaphthalene	<10	U	30.0	10.0
2,6-Dimethylnephthalene	<10	U	30.0	10.0
1,8,7-Trimethylnaphthelene	<10	U	30.0	10.0
1-Methylfluorene	<10	U	30.0	10.0
4-Methyldibenzothiophene	<10	U	30.0	10.0
2/3-Methyldibenzothiophene	<10	U	30.0	10.0
1-Methyldibenzothiophene	<10	U	30.0	10.0
3-Methylphenenthrene	<10	U	30.0	10.0
2-Methylphenanthrene	<10	U	30.0	10.0
2-Methylanthracene	<10	U	30.0	10.0
4/9-Methylphenanthrene	<10	U	30.0	10.0
1-Methylphenanthrene	<10	U	30.0	10.0
3,6-Dimethylphenanthrene	<10	U	30.0	10.0
Retene	<10	U	30.0	10.0
2-Methylfluoranthene	<10	U	30.0	10.0
Benzo(b)fluorene	<10	U	30.0	10.0
C29-Hopane	<10	U	30.0	10.0
18a-Oleenane	<10	U	30.0	10.0
C30-Hopane	<10	U	30.0	10.0
C20-TAS	<10	U	30.0	10.0
C21-TAS	<10	U	30.0	10.0
C26(20S)-TAS	<10	U	30.0	10.0
C28(20R)/C27(20S)-TAS	<10	U	30.0	10.0
C28(20S)-TAS	<10	U	30.0	10.0
C27(20R)-TAS	<10	U	30.0	10.0
C28(20R)-TAS	<10	U	30.0	10.0

Surrogate Recovery	
Naphthalene-d8	94
Acenaphthene-d10	93
Phenanthrene-d10	97
Chrysene-d12	61
Perylene-d12	77
5(b)H-Cholane	119

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Blank Spike Report

Sample Name	ENV2755B.D	ENV2755C.D
Client Name	Blank Spike	Blank Spike Dupl.
Matrix	Net	Net
Collection Date	NA	NA
Received Date	NA	NA
Extraction Date	03/21/12	03/21/12
Extraction Batch	ENV 2755	ENV 2755
Date Acquired	04/06/12	04/06/12
Method	PAH-2010	PAH-2010
Sample (Net)	1.0	1.0
% Dry	NA	NA
% Moisture	NA	NA
Dilution	1X	1X

Target Compounds	Su. Corrected Conc. (ng/per net)	Q	Recovery (%)	Q	Su. Corrected Conc. (ng/per net)	Q	Recovery (%)	Q	RPD (%)	Q	Spike Amount (ng)
cis/trans Decalin	111		111		109		109		2		100
C1-Decalins	NA				NA						
C2-Decalins	NA				NA						
C3-Decalins	NA				NA						
C4-Decalins	NA				NA						
Naphthalene	117		117		115		115		1		100
C1-Naphthalenes	140				143						
C2-Naphthalenes	NA				NA						
C3-Naphthalenes	NA				NA						
C4-Naphthalenes	NA				NA						
Benzothiophene	117		117		116		116		0		100
C1-Benzothiophenes	NA				NA						
C2-Benzothiophenes	NA				NA						
C3-Benzothiophenes	NA				NA						
C4-Benzothiophenes	NA				NA						
Biphenyl	113		113		115		114		1		100
Acenaphthylene	116		116		119		119		2		100
Acenaphthene	117		117		111		111		5		100
Dibenzofuran	114		114		118		118		3		100
Fluorene	118		118		110		110		7		100
C1-Fluorenes	NA				NA						
C2-Fluorenes	NA				NA						
C3-Fluorenes	NA				NA						
Carbazole	112		112		116		116		3		100
Anthracene	112		112		118		118		5		100
Phenanthrene	115		115		115		115		0		100
C1-Phenanthrenes/Anthracenes	104				105						
C2-Phenanthrenes/Anthracenes	NA				NA						
C3-Phenanthrenes/Anthracenes	NA				NA						
C4-Phenanthrenes/Anthracenes	NA				NA						
Dibenzothiophene	115		115		114		114		1		100
C1-Dibenzothiophenes	73.6				71.2						
C2-Dibenzothiophenes	NA				NA						
C3-Dibenzothiophenes	NA				NA						
C4-Dibenzothiophenes	NA				NA						
Fluoranthene	93.4		93		87		87		7		100
Pyrene	103		103		102		102		1		100
C1-Fluoranthenes/Pyrenes	NA				NA						
C2-Fluoranthenes/Pyrenes	NA				NA						
C3-Fluoranthenes/Pyrenes	NA				NA						
C4-Fluoranthenes/Pyrenes	NA				NA						
Naphthobenzothiophene	96.3		97		97.1		98		1		99
C1-Naphthobenzothiophenes	NA				NA						
C2-Naphthobenzothiophenes	NA				NA						
C3-Naphthobenzothiophenes	NA				NA						
C4-Naphthobenzothiophenes	NA				NA						
Benz(a)anthracene	94.7		95		92.2		92		3		100
Chrysene/Triphenylene	94.0		94		93.1		93		1		100
C1-Chrysenes	NA				NA						
C2-Chrysenes	NA				NA						
C3-Chrysenes	NA				NA						
C4-Chrysenes	NA				NA						
Benzo(b)fluoranthene	101		101		106		106		5		100
Benzo(k,j)fluoranthene	94.0		94		95.4		95		2		100
Benzo(a)fluoranthene	NA				NA						
Benzo(e)pyrene	104		104		109		108		4		100
Benzo(a)pyrene	103		102		108		108		6		100
Perylene	104		103		106		106		2		100
Indeno(1,2,3-c,d)pyrene	103		103		110		110		6		100
Dibenzo(a,h)anthracene	103		103		111		111		7		100
Benzo(g,h,i)perylene	99.2		99		104		104		5		100
Average % Recovery			106				107				

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Blank Spike Report

Sample Name	ENV2755B.D	ENV2755C.D
Client Name	Blank Spike	Blank Spike Dupl.
Matrix	Net	Net
Collection Date	NA	NA
Received Date	NA	NA
Extraction Date	03/21/12	03/21/12
Extraction Batch	ENV 2755	ENV 2755
Date Acquired	04/06/12	04/06/12
Method	PAH-2010	PAH-2010
Sample (Net)	1.0	1.0
% Dry	NA	NA
% Moisture	NA	NA
Dilution	1X	1X

Target Compounds	Su. Corrected Conc. (ng/per net)	Q	Recovery (%)	Q	Su. Corrected Conc. (ng/per net)	Q	Recovery (%)	Q	RPD (%)	Q	Spike Amount (ng)
Individual Alkyl Isomers and Hopanes											
2-Methylnaphthalene	116		115		117		117		1		100
1-Methylnaphthalene	117		117		120		119		2		100
2,6-Dimethylnaphthalene	118		118		118		118		0		100
1,6,7-Trimethylnaphthalene	106		106		106		106		0		100
1-Methylfluorene	101		102		104		104		2		100
4-Methyldibenzothiophene	104		105		101		102		3		100
2/3-Methyldibenzothiophene	NA				NA						
1-Methyldibenzothiophene	NA				NA						
3-Methylphenanthrene	NA				NA						
2-Methylphenanthrene	NA				NA						
2-Methylanthracene	NA				NA						
4/9-Methylphenanthrene	NA				NA						
1-Methylphenanthrene	111		111		111		111		1		100
3,6-Dimethylphenanthrene	87.5		88		86.2		86		1		100
Retene	88.9		91		87.1		89		2		98
2-Methylfluoranthene	92.6		94		89.0		91		4		98
Benzo(b)fluorene	111		108		111		108		0		103
C29-Hopane	NA				NA						
18a-Oleanane	NA				NA						
C30-Hopane	105		107		113		114		7		99
C20-TAS	NA				NA						
C21-TAS	NA				NA						
C26(20S)-TAS	NA				NA						
C26(20R)/C27(20S)-TAS	108		108		112		112		4		100
C28(20S)-TAS	NA				NA						
C27(20R)-TAS	NA				NA						
C28(20R)-TAS	NA				NA						

Surrogate Recovery		
Naphthalene-d8	99	99
Acenaphthene-d10	99	100
Phenanthrene-d10	89	89
Chrysene-d12	75	75
Perylene-d12	86	87
5(b)H-Cholane	81	92

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Standard Reference Material Report

Sample Name	MS30860J.D
Client Name	SRM2779-WK-2.0-001
Matrix	Petroleum
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample Weight (mg)	2.0

Target Compounds	Su Corrected Conc. (ug/g)	Q	Q	RPD (%)	SRM 2779 Certified Value. (ug/g)	-20% Certified Value. (ug/g)	+20% Certified Value. (ug/g)	SRM 2779 Reference Value (ug/g)	-20% Reference Value (ug/g)	+20% Reference Value (ug/g)
cis/trans Decalin	750									
C1-Decalins	1023			2				1040 ± 410	504	1740
C2-Decalins	933			13				1060 ± 470	472	1836
C3-Decalins	1094			29				1460 ± 600	688	2472
C4-Decalins	694									
Naphthalene	884			3	855 ± 46	647	1081			
C1-Naphthalenes	1860									
C2-Naphthalenes	2088			4				2170 ± 360	1448	3036
C3-Naphthalenes	1491			8				1380 ± 270	888	1980
C4-Naphthalenes	812			15				700 ± 130	456	996
Benzothiophene	9.3	J								
C1-Benzothiophenes	32.5									
C2-Benzothiophenes	37.7			5				36 ± 13	18.4	58.8
C3-Benzothiophenes	36.5									
C4-Benzothiophenes	38.2			24				30 ± 4	21	41
Biphenyl	225			14				195 ± 19	141	257
Acenaphthylene	8.8	J						8.09 ± 0.10	6.39	9.83
Acenaphthene	14.0									
Dibenzofuran	24.0			7				25.7 ± 3.6	18	35
Fluorene	164			12				145 ± 43	82	226
C1-Fluorenes	369			21				300 ± 60	192	432
C2-Fluorenes	446			16				380 ± 30	280	492
C3-Fluorenes	362			29				270 ± 40	184	372
Carbazole	5.2	J								
Anthracene	3.3	J		4	3.42 ± 0.59	2.26	4.81			
Phenanthrene	292			12	258 ± 27	185	342			
C1-Phenanthrenes/Anthracenes	861			25				670 ± 90	464	912
C2-Phenanthrenes/Anthracenes	821			26				630 ± 60	456	828
C3-Phenanthrenes/Anthracenes	537			29				400 ± 50	280	540
C4-Phenanthrenes/Anthracenes	259			26				200 ± 30	136	276
Dibenzothiophene	59.2			13	51.8 ± 2.1	39.8	64.7			
C1-Dibenzothiophenes	139			7				130 ± 20	88	180
C2-Dibenzothiophenes	185			14				160 ± 20	112	216
C3-Dibenzothiophenes	123			11				110 ± 10	80	144
C4-Dibenzothiophenes	51.6			8				56 ± 10	37	79
Fluoranthene	3.6	J		20	4.36 ± 0.40	3.17	5.71			
Pyrene	12.2			20	14.81 ± 0.39	11.54	18.24			
C1-Fluoranthenes/Pyrenes	74.3			10				67 ± 7	48	89
C2-Fluoranthenes/Pyrenes	103			23				130 ± 20	88	180
C3-Fluoranthenes/Pyrenes	125			4				120 ± 20	80	168
C4-Fluoranthenes/Pyrenes	105			18				87 ± 21	53	130
Naphthobenzothiophene	26.1									
C1-Naphthobenzothiophenes	56.0			2				57 ± 15	34	86
C2-Naphthobenzothiophenes	76.0			8				70 ± 19	41	107
C3-Naphthobenzothiophenes	52.0			8				48 ± 12	29	72
C4-Naphthobenzothiophenes	23.7			27				31 ± 10	17	49
Benz(a)anthracene	5.7	J		21	7.03 ± 0.85	4.94	9.46			
Chrysene/Triphenylene	41.8			13	47.4 ± 1.7	36.6	58.9			
C1-Chrysenes	99.2			10				110 ± 7	82	140
C2-Chrysenes	133			2				130 ± 10	96	168
C3-Chrysenes	90.7			3				93 ± 12	65	126
C4-Chrysenes	71.6			1				71 ± 16	44	104
Benzo(b)fluoranthene	5.5	J		2	5.62 ± 0.34	4.22	7.15			
Benzo(k,j)fluoranthene	0.63	J						1.41 ± 0.57	0.67	2.38
Benzo(a)fluoranthene	<10	U								
Benzo(e)pyrene	11.2			3	10.78 ± 0.60	8.14	13.7			
Benzo(a)pyrene	1.6	J						1.36 ± 0.35	0.81	2.05
Perylene	0.9	J						0.71 ± 0.17	0.43	1.06
Indeno(1,2,3-c,d)pyrene	0.5	J						0.48 ± 0.14	0.27	0.74
Dibenzo(a,h)anthracene	3.0	J								
Benzo(g,h,i)perylene	1.9	J		9	2.11 ± 0.26	1.48	2.84			
Total PAHs	17855									

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Standard Reference Material Report

Sample Name	MS30860J.D
Client Name	SRM2779-WK-2.0-001
Matrix	Petroleum
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample Weight (mg)	2.0

Target Compounds	Su Corrected Conc. (ug/g)	Q	RPD (%)	SRM 2779 Certified Value. (ug/g)	-20% Certified Value. (ug/g)	+20% Certified Value. (ug/g)	SRM 2779 Reference Value (ug/g)	-20% Reference Value (ug/g)	+20% Reference Value (ug/g)
Individual Alkyl Isomers and Hopanes									
2-Methylnaphthalene	1813		11	1630 ± 50	1264	2016			
1-Methylnaphthalene	1253		9	1140 ± 20	896	1392			
2,6-Dimethylnaphthalene	1172								
1,6,7-Trimethylnaphthalene	302		1				306 ± 63	194	443
1-Methylfluorene	288								
4-Methyldibenzothiophene	104								
2/3-Methyldibenzothiophene	59.4								
1-Methyldibenzothiophene	33.7								
3-Methylphenanthrene	219		6	206 ± 32	139	286			
2-Methylphenanthrene	227								
2-Methylanthracene	9.2	J							
4/9-Methylphenanthrene	286		21	232 ± 19	170	301			
1-Methylphenanthrene	174		3	169 ± 10	127	215			
3,6-Dimethylphenanthrene	71.7								
Retene	22.3								
2-Methylfluoranthene	6.7	J							
Benzo(b)fluorene	20.6								
C29-Hopane	38.2								
18a-Oleanane	<10	U							
C30-Hopane	62.4		39				42.1 ± 9.9	25.8	62.4
C20-TAS	5.4	J							
C21-TAS	8.5	J							
C26(20S)-TAS	4.3	J							
C26(20R)/C27(20S)-TAS	13.5								
C28(20S)-TAS	8.9	J							
C27(20R)-TAS	8.2	J							
C28(20R)-TAS	7.3	J							

Surrogate Recovery	
Naphthalene-d8	96
Acenaphthene-d10	105
Phenanthrene-d10	99
Chrysene-d12	76
Perylene-d12	92
5(b)H-Cholane	101

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Standard Reference Material Report

Sample Name	MS30860K.D
Client Name	SRM1582-WK-1.76-006
Matrix	Petroleum
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample Weight (mg)	1.8

Target Compounds	Su Corrected Conc. (ug/g)	Q	RPD (%)	SRM 1582 Certified Conc. (ug/g)	B&B Average Concentration (ug/g)	-20% Concentration (ug/g)	+20% Concentration (ug/g)
cis/trans Decalin	527		17		443	355	532
C1-Decalins	865		4		898	718	1077
C2-Decalins	1311		11		1458	1167	1750
C3-Decalins	1110		21		1375	1100	1650
C4-Decalins	778		20		946	757	1136
Naphthalene	166		14		144	115	173
C1-Naphthalenes	598		1		604	483	725
C2-Naphthalenes	1043		15		1211	968	1453
C3-Naphthalenes	1096		21		1348	1078	1617
C4-Naphthalenes	875		8		946	757	1135
Benzothiophene	9.7	J					
C1-Benzothiophenes	45.1						
C2-Benzothiophenes	87.3		6		92.2	73.8	111
C3-Benzothiophenes	164		19		198	158	237
C4-Benzothiophenes	166						
Biphenyl	28.9		11		32.3	25.8	38.7
Acenaphthylene	<10	U					
Acenaphthene	23.1		13		20.2	16.2	24.3
Dibenzofuran	12.0		0		11.9	9.6	14.3
Fluorene	35.1		3		36.0	28.8	43.2
C1-Fluorenes	141		6		151	121	181
C2-Fluorenes	295		9		322	258	387
C3-Fluorenes	290		10		321	256	385
Carbazole	7.9	J					
Anthracene	0.3	J					
Phenanthrene	103		3	101 ± 5.0	106	84.5	127
C1-Phenanthrenes/Anthracenes	367		7		343	274	412
C2-Phenanthrenes/Anthracenes	600		12		531	425	637
C3-Phenanthrenes/Anthracenes	576		1		581	465	698
C4-Phenanthrenes/Anthracenes	300		14		345	276	414
Dibenzothiophene	39.4		15	33 ± 2	33.9	27.1	40.6
C1-Dibenzothiophenes	105		10		117	93.6	140
C2-Dibenzothiophenes	197		14		226	181	271
C3-Dibenzothiophenes	234		19		284	227	341
C4-Dibenzothiophenes	132		17		156	125	187
Fluoranthene	5.0	J		2.5 ± 0.3			
Pyrene	7.2	J					
C1-Fluoranthenes/Pyrenes	60.6		3		62.7	50.2	75.2
C2-Fluoranthenes/Pyrenes	90.1		9		98.8	79.1	119
C3-Fluoranthenes/Pyrenes	120		15		140	112	168
C4-Fluoranthenes/Pyrenes	82.8						
Naphthobenzothiophene	41.1		1		41.6	33.3	50.0
C1-Naphthobenzothiophenes	63.3		19		76.8	61.4	92.1
C2-Naphthobenzothiophenes	90.5		13		103	82.6	124
C3-Naphthobenzothiophenes	64.6		11		72.4	57.9	86.9
C4-Naphthobenzothiophenes	30.5		5		28.9	23.1	34.7
Benz(a)anthracene	3.5	J		3.0 ± 0.3			
Chrysene/Triphenylene	15.5		18		18.5	14.8	22.2
C1-Chrysenes	55.9		15		64.8	51.8	77.7
C2-Chrysenes	114		19		137	110	165
C3-Chrysenes	75.6		3		78.2	62.6	93.9
C4-Chrysenes	48.4						
Benzo(b)fluoranthene	1.1	J					
Benzo(k,j)fluoranthene	9.6	J					
Benzo(a)fluoranthene	<10	U					
Benzo(e)pyrene	3.8	J					
Benzo(a)pyrene	8.2	J		1.1 ± 0.3			
Perylene	29.5		20	31 ± 3	35.8	28.7	43.0
Indeno(1,2,3-c,d)pyrene	0.4	J					
Dibenzo(a,h)anthracene	0.6	J					
Benzo(g,h,i)perylene	2.6	J					
Total PAHs	13352						

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Standard Reference Material Report

Sample Name	MS30860K.D
Client Name	SRM1582-WK-1.76-006
Matrix	Petroleum
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample Weight (mg)	1.8

Target Compounds	Su Corrected Conc. (ug/g)	Q	RPD (%)	SRM 1582 Certified Conc. (ug/g)	B&B Average Concentration (ug/g)	-20% Concentration (ug/g)	+20% Concentration (ug/g)
Individual Alkyl Isomers and Hopanes							
2-Methylnaphthalene	585		3		602	482	722
1-Methylnaphthalene	400		4		415	332	498
2,6-Dimethylnaphthalene	578		4		602	482	722
1,6,7-Trimethylnaphthalene	145		5		152	122	182
1-Methylfluorene	96.9						
4-Methyldibenzothiophene	68.2		18		57.0	45.6	68.4
2/3-Methyldibenzothiophene	44.3		10		40.0	32.0	48.0
1-Methyldibenzothiophene	37.0		18		31.0	24.8	37.2
3-Methylphenanthrene	98.8	*	28		74.3	59.4	89.2
2-Methylphenanthrene	103		16		87.8	70.2	105
2-Methylanthracene	4.7	J					
4/9-Methylphenanthrene	101		7		94.4	75.5	113
1-Methylphenanthrene	82.0		8		75.6	60.5	90.7
3,6-Dimethylphenanthrene	44.9						
Retene	43.8						
2-Methylfluoranthene	4.9	J					
Benzo(b)fluorene	9.2	J					
C29-Hopane	315						
18a-Oleanane	82.4						
C30-Hopane	513		14		445	356	534
C20-TAS	26.8						
C21-TAS	40.6						
C26(20S)-TAS	99.1						
C26(20R)/C27(20S)-TAS	328						
C28(20S)-TAS	102						
C27(20R)-TAS	197						
C28(20R)-TAS	97.5						

Surrogate Recovery	
Naphthalene-d8	95
Acenaphthene-d10	94
Phenanthrene-d10	94
Chrysene-d12	77
Perylene-d12	94
5(b)H-Cholane	85

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Laboratory Control Material Report

Sample Name	MS30860H.D
Client Name	AR-WKCC-250-035
Matrix	Solution
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample Volume (mL)	1

Target Compounds	Concentration (ng/mL)	Q	RPD (%)	LCM Certified Conc. (ng/mL)	-15% Conc. (ng/mL)	+15% Conc. (ng/mL)
cis/trans Decalin	258		4.3	247	210	284
C1-Decalins	NA					
C2-Decalins	NA					
C3-Decalins	NA					
C4-Decalins	NA					
Naphthalene	280		11.2	250	213	288
C1-Naphthalenes	NA					
C2-Naphthalenes	NA					
C3-Naphthalenes	NA					
C4-Naphthalenes	NA					
Benzothiophene	282		12.6	249	211	286
C1-Benzothiophenes	NA					
C2-Benzothiophenes	NA					
C3-Benzothiophenes	NA					
C4-Benzothiophenes	NA					
Biphenyl	282		12.9	248	211	285
Acenephthylene	266		6.8	248	211	285
Acenaphthene	263		4.9	251	213	288
Dibenzofuran	271		8.4	249	211	286
Fluorene	253		0.9	251	213	288
C1-Fluorenes	NA					
C2-Fluorenes	NA					
C3-Fluorenes	NA					
Carbazole	281		12.7	248	211	285
Anthracene	277		9.9	251	213	288
Phenanthrene	280		12.2	248	211	285
C1-Phenanthrenes/Anthracenes	NA					
C2-Phenanthrenes/Anthracenes	NA					
C3-Phenanthrenes/Anthracenes	NA					
C4-Phenanthrenes/Anthracenes	NA					
Dibenzothiophene	280		12.9	247	210	283
C1-Dibenzothiophenes	NA					
C2-Dibenzothiophenes	NA					
C3-Dibenzothiophenes	NA					
C4-Dibenzothiophenes	NA					
Fluoranthene	279		10.7	250	213	288
Pyrene	274		9.2	250	213	288
C1-Fluoranthenes/Pyrenes	NA					
C2-Fluoranthenes/Pyrenes	NA					
C3-Fluoranthenes/Pyrenes	NA					
C4-Fluoranthenes/Pyrenes	NA					
Nephthobenzothiophene	231		-7.0	248	210	285
C1-Naphthobenzothiophenes	NA					
C2-Nephthobenzothiophenes	NA					
C3-Naphthobenzothiophenes	NA					
C4-Naphthobenzothiophenes	NA					
Benz(e)anthracene	252		1.0	250	212	287
Chrysene/Triphenylene	234		-5.9	249	211	286
C1-Chrysenes	NA					
C2-Chrysenes	NA					
C3-Chrysenes	NA					
C4-Chrysenes	NA					
Benzo(b)fluoranthene	281		11.6	251	213	288
Benzo(k,j)fluoranthene	281		12.0	249	212	286
Benzo(a)fluorenthene	NA					
Benzo(e)pyrene	276		10.4	249	212	286
Benzo(a)pyrene	270		7.7	250	212	287
Perylene	259		3.6	250	213	288
Indeno(1,2,3-c,d)pyrene	238		-3.3	246	209	283
Dibenzo(a,h)anthracene	228		-8.2	248	211	285
Benzo(g,h,i)perylene	249		-0.3	250	213	288

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Laboratory Control Material Report

Sample Name	MS30860H.D
Client Name	AR-WKCC-250-035
Matrix	Solution
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample Volume (mL)	1

Target Compounds	Concentration (ng/mL)	Q	RPD (%)	LCM Certified Conc. (ng/mL)	-15% Conc. (ng/mL)	+15% Conc. (ng/mL)
Individual Alkyl Isomers and Hopanes						
2-Methylnaphthalene	278		10.3	250	213	288
1-Methylnaphthalene	271		8.3	250	212	287
2,6-Dimethylnaphthalene	263		5.0	250	213	288
1,6,7-Trimethylnaphthalene	274		9.1	250	213	288
1-Methylfluorene	280		11.2	250	213	288
4-Methyldibenzothiophene	265		5.7	250	213	288
2/3-Methyldibenzothiophene	NA					
1-Methyldibenzothiophene	NA					
3-Methylphenanthrene	NA					
2-Methylphenanthrene	NA					
2-Methylanthracene	NA					
4/9-Methylphenanthrene	NA					
1-Methylphenanthrene	274		9.6	249	211	286
3,6-Dimethylphenanthrene	248		-0.7	250	213	288
Retene	274		9.3	250	213	288
2-Methylfluoranthene	282		12.1	250	213	288
Benzo(b)fluorene	281		10.9	252	214	289
C29-Hopane	NA					
18a-Oleanane	NA					
C30-Hopane	250		1.7	246	209	283
C20-TAS	NA					
C21-TAS	NA					
C26(20S)-TAS	NA					
C26(20R)/C27(20S)-TAS	217		-11.1	242	206	279
C28(20S)-TAS	NA					
C27(20R)-TAS	NA					
C28(20R)-TAS	NA					

Surrogate Recovery	
Naphthalene-d8	110
Acenaphthene-d10	110
Phenanthrene-d10	113
Chrysene-d12	96
Perylene-d12	110
5(b)H-Cholane	107

Attachment D

Forensic PAH and TPH Analytical Data
(Included on Enclosed CD)

Privileged and Confidential Attorney Client Communication/Attorney Work Product

TDI - BROOKS INTERNATIONAL, INC.
B&B Laboratories, Inc.
College Station, TX

Arcadis
Silver Tip Incident
March 18, 2012 Collection Date

Determination of:
Aliphatic Hydrocarbons (ALI), Total Petroleum Hydrocarbons (TPH), and Polycyclic Aromatic Hydrocarbons (PAHs) in Net Samples

(QC Batch ENV 2755)

April 15, 2012

Technical Report 12-2824

Arcadis
Silver Tip Incident
March 18, 2012 Collection Date
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B&B Laboratories
15-April-2012

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Narrative

Technical Report 12-2824
Arcadis
Silver Tip Incident
Net Samples
March 18, 2012 Collection Date

April 15, 2012

Introduction

B&B Laboratories received a shipment of five (5) ice chests that were sent by Gordon Levin using FedEx on March 19, 2012 and arrived on March 20, 2012 in College Station, Texas. The ice chests arrived sealed and in good to fair condition.

Cooler Number	Temperature	Samples Received
1	7.0°C 6.4°C Temp Blank	Eight soil samples (8 oz jar) Two net samples (8 oz jar)
2	5.3°C 4.5°C Temp Blank	Six water samples (1L)
3	2.4°C 2.3°C Temp Blank	Ten water samples (1L)
4	1.1°C 3.3°C Temp Blank	Eight water samples (1L)
5	4.2°C 1.1°C Temp Blank	Eight water samples (1L)

The soil, water, and net samples were collected between March 13, 2012and March 18, 2012 in support of the Silver Tip Incident, Billings, MT (Arcadis-US Contract # B0085881.1201). The samples were logged in according to B&B Laboratories standard operating procedure (B&B 1009) and was stored in an access-controlled freezer (-20.0°C) prior to analysis or access controlled refrigerator (4.0°C). The net samples were analyzed for Total Petroleum Hydrocarbons (TPH) and C_9 to C_{40} Aliphatic Hydrocarbons (ALI) by GC/FID, Polycyclic Aromatic Hydrocarbons (PAH) by GC/MS-SIM, and selected biological markers by GC/MS-SIM.

The analytical results for ALI, TPH, PAH, and biological markers are included in this report.

Analytical Methods

The standard operating procedures for TPH, ALI, PAH, hopanes, and TAS are listed in Table 1.

Table 1. Standard Operating Procedures for each analytical test.

Blank	Preparation	Ali/TPH	PAH
Net	SW-846 3580A	B&B 1013/B&B 1016	B&B 1006

Data Reporting

The reporting units for each analyte are listed in Table 2. Data Qualifier Definitions are listed in Table 3. The method detection limits (MDL) for each analyte are listed in Table 4.

Table 2. Analytical reporting units.

Blank	TPH	ALI	PAH
Net	µg/net	µg/net	ng/net

Table 3. Data Qualifier Definitions.

Qualifier	Definition
B	Analyte detected in the procedural blank greater than 3X MDL
D	Diluted Value
I	Analytical interference
J	Analyte detected below the method detection limit
NA	Not Applicable
U	Analyte not detected
X	Analyte <3X MDL
Y	Spiked level of analyte <50% of the native concentration
*	Outside QA limits, refer to narrative

Table 4. Method Reporting Limits.

Aliphatics	**Net RLs**
Sample size	1 net, 1ml final extract
Unit of measure	µg/net
n-C9	0.35
n-C10	0.35
n-C11	0.35
n-C12	0.35
n-C13	0.35
i-c15	0.35
n-C14	0.35
i-c16	0.35
n-C15	0.35
n-C16	0.35
i-c18	0.35
n-C17	0.35
Pristane	0.35
n-C18	0.35
Phytane	0.35
n-C19	0.35
n-C20	0.35
n-C21	0.35
n-C22	0.35
n-C23	0.35
n-C24	0.35
n-C25	0.35
n-C26	0.35
n-C27	0.35
n-C28	0.35
n-C29	0.35
n-C30	0.35
n-C31	0.35
n-C32	0.35
n-C33	0.35
n-C34	0.35
n-C35	0.35
n-C36	0.35
n-C37	0.35
n-C38	0.35
n-C39	0.35
n-C40	0.35
Total Petroleum Hydrocarbons	13.0
Total Resolved Hydrocarbons	13.0
Unresolved Complex Mixture	13.0

Table 4. Continued. Method Reporting Limits.

PAH Sample size Unit of measure	Net RLs 1 net, 1mL final extract ng/net
cis/trans Decalin	10.0
C1-Decalins	10.0
C2-Decalins	10.0
C3-Decalins	10.0
C4-Decalins	10.0
Naphthalene	10.0
C1-Naphthalenes	10.0
C2-Naphthalenes	10.0
C3-Naphthalenes	10.0
C4-Naphthalenes	10.0
Benzothiophene	10.0
C1-Benzothiophenes	10.0
C2-Benzothiophenes	10.0
C3-Benzothiophenes	10.0
C4-Benzothiophenes	10.0
Biphenyl	10.0
Acenaphthylene	10.0
Acenaphthene	10.0
Dibenzofuran	10.0
Fluorene	10.0
C1-Fluorenes	10.0
C2-Fluorenes	10.0
C3-Fluorenes	10.0
Carbazole	10.0
Anthracene	10.0
Phenanthrene	10.0
C1-Phenanthrenes/Anthracenes	10.0
C2-Phenanthrenes/Anthracenes	10.0
C3-Phenanthrenes/Anthracenes	10.0
C4-Phenanthrenes/Anthracenes	10.0
Dibenzothiophene	10.0
C1-Dibenzothiophenes	10.0
C2-Dibenzothiophenes	10.0
C3-Dibenzothiophenes	10.0
C4-Dibenzothiophenes	10.0
Fluoranthene	10.0
Pyrene	10.0
C1-Fluoranthenes/Pyrenes	10.0
C2-Fluoranthenes/Pyrenes	10.0
C3-Fluoranthenes/Pyrenes	10.0
C4-Fluoranthenes/Pyrenes	10.0
Naphthobenzothiophene	10.0
C1-Naphthobenzothiophenes	10.0
C2-Naphthobenzothiophenes	10.0
C3-Naphthobenzothiophenes	10.0
C4-Naphthobenzothiophenes	10.0
Benz(a)anthracene	10.0
Chrysene/Triphenylene	10.0
C1-Chrysenes	10.0

PAH (continued) Sample size Unit of measure	Net RLs 1 net, 1mL final extract ng/net
C2-Chrysenes	10.0
C3-Chrysenes	10.0
C4-Chrysenes	10.0
Benzo(b)fluoranthene	10.0
Benzo(k,j)fluoranthene	10.0
Benzo(a)fluoranthene	10.0
Benzo(e)pyrene	10.0
Benzo(a)pyrene	10.0
Perylene	10.0
Indeno(1,2,3-c,d)pyrene	10.0
Dibenzo(a,h)anthracene	10.0
Benzo(g,h,i)perylene	10.0
Individual Alkyl Isomers, Hopanes, TAS	
2-Methylnaphthalene	10.0
1-Methylnaphthalene	10.0
2,6-Dimethylnaphthalene	10.0
1,6,7-Trimethylnaphthalene	10.0
4-Methyldibenzothiophene	10.0
2/3-Methyldibenzothiophene	10.0
1-Methyldibenzothiophene	10.0
3-Methylphenanthrene	10.0
2/4-Methylphenanthrene	10.0
2-Methylanthracene	10.0
9-Methylphenanthrene	10.0
1-Methylphenanthrene	10.0
Retene	10.0
Benzo(b)fluorene	10.0
C29-Hopane	10.0
18a-Oleanane	10.0
C30-Hopane	10.0
C20-TAS	10.0
C21-TAS	10.0
C26(20S)-TAS	10.0
C26(20R)/C27 (20S)-TAS	10.0
C28(20S)-TAS	10.0
C27(20R)-TAS	10.0
C28(20R)-TAS	10.0

Quality Assurance/Quality Control - Net

Total Petroleum Hydrocarbons (TPH) and Aliphatic Hydrocarbons (ALI)

The quality assurance/quality control procedure for this program included the analyses of a procedural blank, blank spike/blank spike duplicate and reference oil per analytical batch of no more than 19 samples. Procedural method blanks are used to determine that sample preparation and analyses are free of contaminants. The blank spike/blank spike duplicate is used to measure accuracy and precision of the analysis. All QC samples are subject to the identical preparation and analysis steps as samples The QC criterion for blanks specifies no more than 2 analytes to exceed 3x target MDL unless analyte not detected in associated sample(s) or analyte concentration >10x blank value. The QC criteria for spike recoveries are between 60-120%. The QC criterion for RPDs in valid spiked duplicates is ± 30%.

Surrogate solutions equivalent to 5-10X the MDL are prepared for various hydrocarbon analyses. The appropriate surrogate solution is added to every sample including quality control samples. The data are corrected based on surrogate recovery up to 100%. The QC criteria for surrogate recoveries are between 40-120%.

Polycyclic Aromatic Hydrocarbons (PAH)

The quality assurance/quality control procedure for this program included the analyses of a method blank, laboratory duplicate, and a blank spike/blank spike duplicate per analytical batch of no more than 19 samples. Two standard reference oils (SRM 1582 and SRM 2779) were analyzed with this data set. Method blanks are used to determine that sample preparation and analyses are free of contaminants. The blank spike/blank spike duplicate is used to measure accuracy and precision of the analysis. A SRM is a material for which a mean and confidence interval are certified for specific analytes. SRMs are selected based on blank similarities as well as type and level of certified analytes. All SRMs are traceable to NIST. SRMs are used to verify analytical accuracy. All QC samples are subject to the identical preparation and analysis steps as samples. The QC criterion for blanks specifies no more than 2 analytes to exceed 3x target MDL unless analyte not detected in associated sample(s) or analyte concentration >10x blank value. The QC criteria for spike recoveries are between 60-120% (except for Biphenyl which is 40% to 140% and for Decalin which is 25% to 125%). The QC criterion for RPDs for valid spiked duplicates is ±30%. The QC criterion for the reference oil SRM is ± 15% the laboratory derived mean.

Surrogate solutions equivalent to 5-10X the MDL are prepared for various hydrocarbon analyses. The appropriate surrogate solution is added to every sample including quality control samples. The data are corrected based on surrogate recovery up to 100%. The QC criteria for surrogate recoveries are between 40-120%, except d12-perylene.

Quality Assurance/Quality Control Variances - Net

Total Petroleum Hydrocarbons (TPH) and Aliphatic Hydrocarbons (ALI)

Initial Calibration

Observation

- No variances were observed.

Initial Calibration Verification

Observation

- No variances were observed.

Continuing Calibration Checks

Observation

- No variances were observed.

Surrogate Recoveries

Observation

- No variances were observed.

Procedural Blank

Observation

- No variances were observed.

Blank Spike/Blank Spike Duplicate

Observation

- No variances were observed.

Standard Reference Material

Observation

- No variances were observed.

Polycyclic Aromatic Hydrocarbons (PAH)

Initial Calibration

Observation

- No variances were observed.

Initial Calibration Verification and Continuing Calibration Checks (The CCC is a prepared from a second source.)

Observation

- No variances were observed.

Surrogate Recoveries

Observation

- No variances were observed.

Procedural Blank

Observation

- No variances were observed.

Blank Spike/Blank Spike Duplicates

Observation

- No variances were observed.

Standard Reference Materials

Observation

- 3-Methylphenanthrene was detected outside of the B&B QC ±20%RPD limits in MS30860K (SRM1582-WK-1.76-006).

Comment

- It is unknown as to why this analyte was detected outside of the B&B ±20%RPD limits.

Additional QC Batch Information

Observation

- No variances were observed.

It is our judgment that these QA/QC variances do not impact the overall quality of the data submitted in this report.

We appreciate the opportunity to serve your analytical needs and please do not hesitate to contact us should you have any questions.

Juan A. Ramirez
Environmental Laboratory Manager

Donell S. Frank
Project Quality Manager

Sample/Analyses Description

B&B Laboratories
Project J11913
Report 12-2824

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Sample Inventory

Client Project #B0085904

File Number	Client Identification	Collection Date	Receive Date	Analysis	Matrix	Comments	B&B SDG	Client Project #
ARC1122	HUMT-P5-TN(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	Net	1 of 1	12032001	B0085904.1202
ARC1123	HUMT-P5-TN(031812)2-A	03/18/12	03/20/12	PAH, TPH, ALI	Net	1 of 1	12032001	B0085904.1202

Net Samples

Aliphatic Hydrocarbons (C9 – C40)/ Total Petroleum Hydrocarbons/ Extractable Organic Matter Concentrations

Arcadis ExxonMobil
Yellowstone Oil Spill Project
Aliphatic Hydrocarbon and Total Extractable Hydrocarbon Data
Client Submitted Samples

Sample Name	ARC1122.D	ARC1123.D
Client Name	HUMT-P5-TN(031812)1-A	HUMT-P5-TN(031812)2-A
Matrix	Net	Net
Collection Date	03/18/12	03/18/12
Received Date	03/20/12	03/20/12
Extraction Date	03/21/12	03/21/12
Extraction Batch	ENV 2755	ENV 2755
Date Acquired	03/26/12	03/26/12
Method	ALI.M	ALI.M
Sample (net)	1.0	1.0
% Dry	NA	NA
% Moisture	NA	NA
Dilution	1X	1X

Target Compounds	Su Corrected Conc. (µg/per net)	Q	Su Corrected Conc. (µg/per net)	Q
n-C9	<0.35	U	<0.35	U
n-C10	<0.35	U	<0.35	U
n-C11	<0.35	U	<0.35	U
n-C12	<0.35	U	<0.35	U
n-C13	<0.35	U	<0.35	U
i-C15	<0.35	U	<0.35	U
n-C14	<0.35	U	<0.35	U
i-C16	<0.35	U	<0.35	U
n-C15	<0.35	U	<0.35	U
n-C16	<0.35	U	<0.35	U
i-C18	<0.35	U	<0.35	U
n-C17	<0.35	U	<0.35	U
Pristane	<0.35	U	<0.35	U
n-C18	<0.35	U	<0.35	U
Phytane	<0.35	U	<0.35	U
n-C19	<0.35	U	<0.35	U
n-C20	<0.35	U	<0.35	U
n-C21	<0.35	U	<0.35	U
n-C22	<0.35	U	<0.35	U
n-C23	<0.35	U	<0.35	U
n-C24	<0.35	U	<0.35	U
n-C25	<0.35	U	<0.35	U
n-C26	<0.35	U	<0.35	U
n-C27	<0.35	U	<0.35	U
n-C28	<0.35	U	<0.35	U
n-C29	<0.35	U	<0.35	U
n-C30	<0.35	U	<0.35	U
n-C31	<0.35	U	<0.35	U
n-C32	<0.35	U	<0.35	U
n-C33	<0.35	U	<0.35	U
n-C34	<0.35	U	<0.35	U
n-C35	<0.35	U	<0.35	U
n-C36	<0.35	U	<0.35	U
n-C37	<0.35	U	<0.35	U
n-C38	<0.35	U	<0.35	U
n-C39	<0.35	U	<0.35	U
n-C40	<0.35	U	<0.35	U
Total Petroleum Hydrocarbons	20	J	21	
Total Resolved Hydrocarbons	15	J	12	J
Unresolved Complex Mixture	4	J	9	J

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)
n-dodecane-d28	77	80
n-eicosane-d42	92	93
n-triacontane-d62	99	99

Arcadis ExxonMobil
Yellowstone Oil Spill Project
Aliphatic Hydrocarbon and Total Extractable Hydrocarbon Data
Procedural Blank Report

Sample Name	ENV2755A.D
Client Name	Procedural Blank
Matrix	Net
Collection Date	NA
Received Date	NA
Extraction Date	03/21/12
Extraction Batch	ENV 2755
Date Acquired	03/26/12
Method	ALI.M
Sample (net)	1.0
Dilution	1X

Target Compounds	Su Corrected Conc. (µg/per net)	Q	3X MDL	Actual MDL
n-C9	<0.35	U	1.05	0.35
n-C10	<0.35	U	1.05	0.35
n-C11	<0.35	U	1.05	0.35
n-C12	<0.35	U	1.05	0.35
n-C13	<0.35	U	1.05	0.35
i-C15	<0.35	U	1.05	0.35
n-C14	<0.35	U	1.05	0.35
i-C16	<0.35	U	1.05	0.35
n-C15	<0.35	U	1.05	0.35
n-C16	<0.35	U	1.05	0.35
i-C18	<0.35	U	1.05	0.35
n-C17	<0.35	U	1.05	0.35
Pristane	<0.35	U	1.05	0.35
n-C18	<0.35	U	1.05	0.35
Phytane	<0.35	U	1.05	0.35
n-C19	<0.35	U	1.05	0.35
n-C20	<0.35	U	1.05	0.35
n-C21	<0.35	U	1.05	0.35
n-C22	<0.35	U	1.05	0.35
n-C23	<0.35	U	1.05	0.35
n-C24	<0.35	U	1.05	0.35
n-C25	<0.35	U	1.05	0.35
n-C26	<0.35	U	1.05	0.35
n-C27	<0.35	U	1.05	0.35
n-C28	<0.35	U	1.05	0.35
n-C29	<0.35	U	1.05	0.35
n-C30	<0.35	U	1.05	0.35
n-C31	<0.35	U	1.05	0.35
n-C32	<0.35	U	1.05	0.35
n-C33	<0.35	U	1.05	0.35
n-C34	<0.35	U	1.05	0.35
n-C35	<0.35	U	1.05	0.35
n-C36	<0.35	U	1.05	0.35
n-C37	<0.35	U	1.05	0.35
n-C38	<0.35	U	1.05	0.35
n-C39	<0.35	U	1.05	0.35
n-C40	<0.35	U	1.05	0.35
Total Petroleum Hydrocarbons	<13	U	39.0	13.0
Total Resolved Hydrocarbons	<13	U	39.0	13.0
Unresolved Complex Mixture	<13	U	39.0	13.0

Surrogate (Su)	Su Recovery (%)
n-dodecane-d26	84
n-eicosane-d42	99
n-triacontane-d62	100

Arcadis ExxonMobil
YellowstoneOil Spill Project
Aliphatic Hydrocarbon and Total Extractable Hydrocarbon Data
Blank Spike Report

Sample Name	ENV2755B.D	ENV2755C.D
Client Name	Blank Spike	Blank Spike Duplicate
Matrix	Net	Net
Collection Date	NA	NA
Received Date	NA	NA
Extraction Date	03/21/12	03/21/12
Extraction Batch	ENV 2755	ENV 2755
Date Acquired	03/26/12	03/26/12
Method	ALI.M	ALI.M
Sample (net)	1.0	1.0
Dilution	1X	1X

Target Compounds	Su Corrected Conc. (µg/per net)	Recovery (%)	Q	Su Corrected Conc. (µg/per net)	Recovery (%)	Q	RPD (%)	Q	Spike Amount (µg)
n-C9	7.9	79		7.7	78		2		10.0
n-C10	8.8	88		8.6	86		2		10.0
n-C11	9.4	94		9.1	91		3		9.9
n-C12	9.4	94		9.0	90		5		10.0
n-C13	9.4	95		9.2	92		2		10.0
i-C15	NA			NA					
n-C14	9.6	98		9.3	95		3		9.86
i-C16	NA			NA					
n-C15	10.1	102		9.7	97		5		9.98
n-C16	10.4	104		9.8	99		5		10.0
i-C18	NA			NA					
n-C17	10.3	104		9.7	97		6		9.9
Pristane	10.3	104		9.7	98		6		9.9
n-C18	10.6	105		10.1	101		5		10.0
Phytane	10.4	105		9.9	100		5		9.9
n-C19	10.5	105		10.0	100		5		10.0
n-C20	10.5	105		9.9	99		6		10.0
n-C21	10.6	106		10.2	101		5		10.0
n-C22	10.6	107		10.2	103		4		9.95
n-C23	10.6	107		10.2	103		4		9.91
n-C24	10.6	106		10.2	102		4		10.0
n-C25	10.5	104		10.1	101		4		10.0
n-C26	10.3	104		10.0	100		3		10.0
n-C27	10.4	105		10.1	102		3		9.89
n-C28	10.6	105		10.3	102		3		10.0
n-C29	10.3	103		10.0	99		4		10.0
n-C30	10.5	105		10.1	102		3		10.0
n-C31	10.4	104		10.1	100		4		10.0
n-C32	10.2	102		9.9	99		3		10.02
n-C33	10.3	102		9.9	99		3		10.0
n-C34	10.2	102		9.8	98		4		10.0
n-C35	9.9	99		9.5	95		4		10.0
n-C36	9.8	99		9.5	96		3		9.9
n-C37	9.9	99		9.6	96		3		10.0
n-C38	9.8	98		9.5	95		3		10.01
n-C39	NA			NA					
n-C40	9.7	98		9.5	95		3		10.0
Average %Recovery		101			97				

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)
n-dodecane-d26	90	89
n-eicosane-d42	98	100
n-triacontane-d62	102	100

Arcadis ExxonMobil
Yellowstone Oil Spill Project
Aliphatic Hydrocarbon and Total Extractable Hydrocarbon Data
Standard Reference Material Report

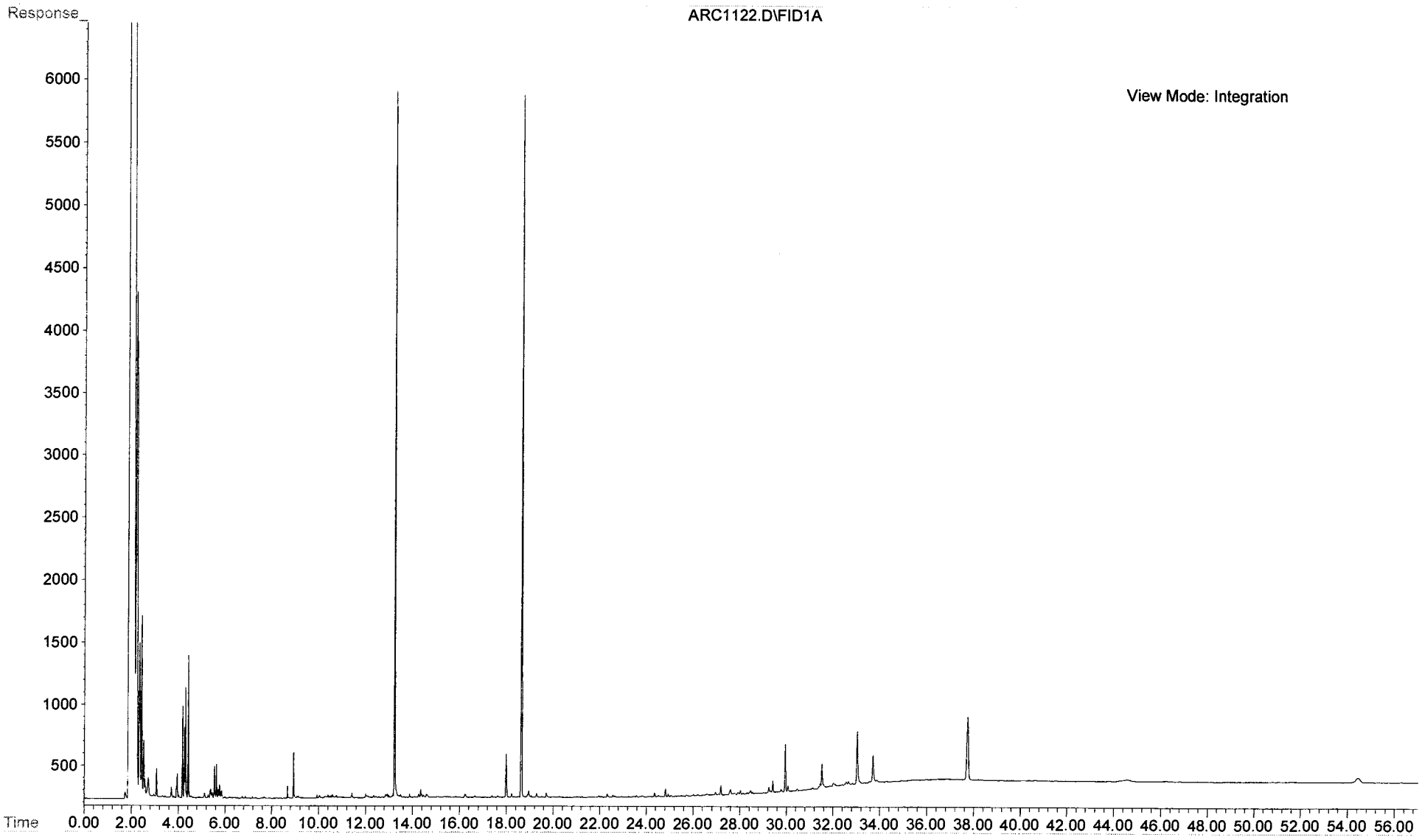
Sample Name	GC31940F.D
Client Name	AL-WKRef Oil-40-004
Matrix	Reference Oil
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	03/27/12
Method	ALI.M
Sample Weight (mg)	40.0
Dilution	1X

Target Compounds	Su Corrected Conc. (µg/mg)	Q	RPD (%)	B&B Average	-20% Conc. (µg/mg)	+20% Conc. (µg/mg)
n-C9	13.4		7	14.3	11.4	17.2
n-C10	13.1		5	12.5	10.0	15.0
n-C11	11.8		6	11.1	8.90	13.3
n-C12	10.3		1	10.2	8.17	12.3
n-C13	9.0		0	8.98	7.19	10.8
i-C15	2.00		6	1.89	1.51	2.27
n-C14	7.77		9	8.46	6.77	10.2
i-C16	2.86		7	3.10	2.48	3.72
n-C15	7.78		4	7.49	5.99	8.98
n-C16	6.24		8	6.75	5.40	8.10
i-C18	1.64		3	1.59	1.27	1.91
n-C17	5.08		8	4.71	3.77	5.65
Pristane	2.55		3	2.47	1.98	2.96
n-C18	4.09		4	3.93	3.14	4.71
Phytane	1.65		8	1.52	1.22	1.82
n-C19	3.74		9	3.41	2.73	4.09
n-C20	3.10		2	3.02	2.42	3.62
n-C21	2.60		4	2.50	2.00	3.00
n-C22	2.25		1	2.23	1.78	2.68
n-C23	1.99		2	1.95	1.56	2.34
n-C24	1.80		6	1.70	1.36	2.04
n-C25	1.50		5	1.42	1.13	1.70
n-C26	1.17		1	1.18	0.945	1.42
n-C27	0.908		5	0.955	0.764	1.15
n-C28	0.773		4	0.747	0.597	0.896
n-C29	0.687		7	0.734	0.588	0.881
n-C30	0.570		12	0.642	0.514	0.771
n-C31	0.455		12	0.512	0.410	0.615
n-C32	0.388		3	0.377	0.302	0.453
n-C33	0.350					
n-C34	0.279	J				
n-C35	0.210	J				
n-C36	0.100	J				
n-C37	0.080	J				
n-C38	0.0611	J				
n-C39	0.0534	J				
n-C40	0.0447	J				
Total Petroleum Hydrocarbons	615		2	605	484	726

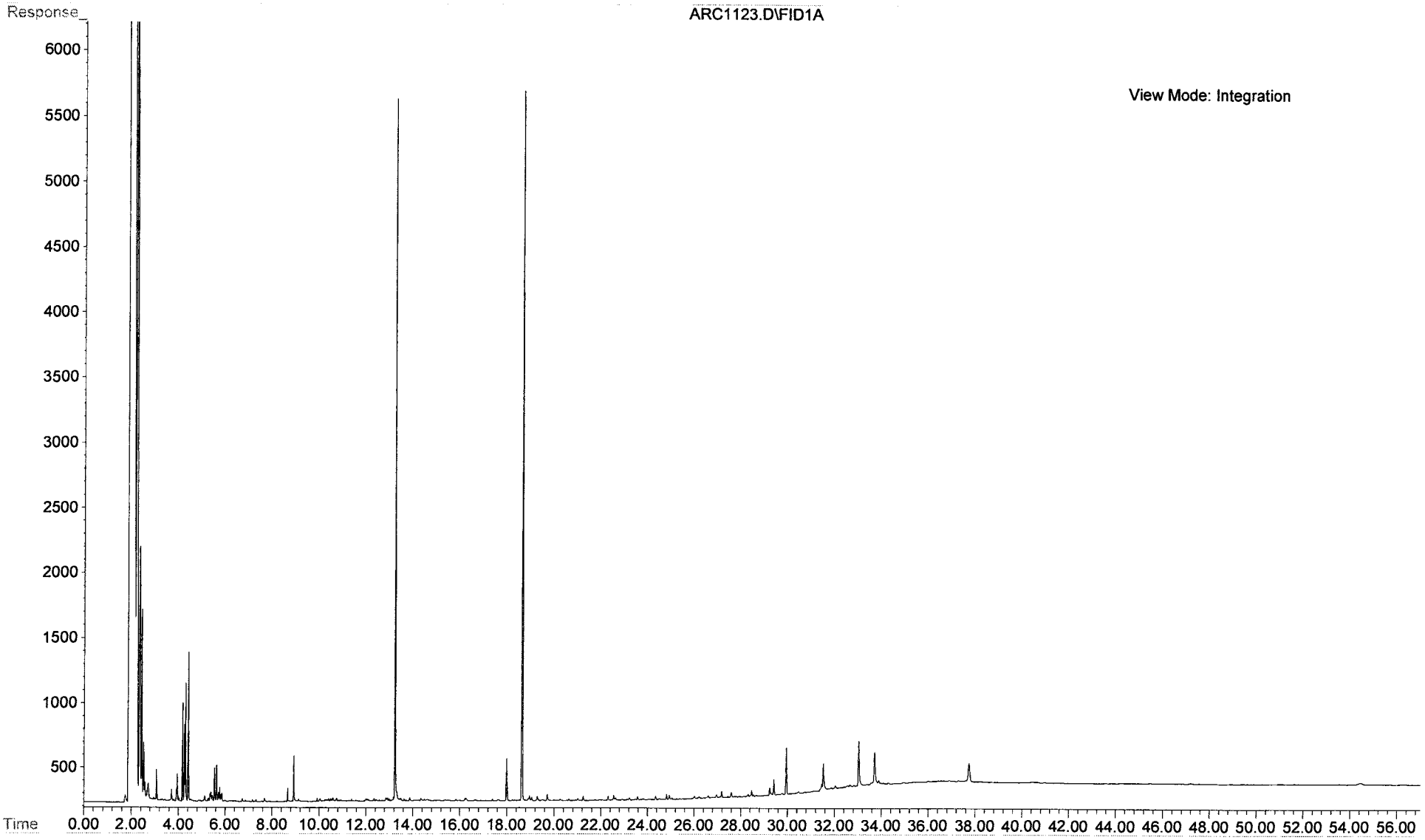
Surrogate (Su)	Su Recovery (%)
n-dodecane-d26	104
n-eicosane-d42	92
n-triacontane-d62	92

Total Petroleum Hydrocarbons Chromatograms

File : L:\1\DATA\GC31940\ARC1122.D
Operator : MAG
Acquired : 26 Mar 2012 22:08 using AcqMethod ALI.M
Instrument : GC3
Sample Name: HUMT-P5-TN(031812)1-A
Misc Info :
Vial Number: 8



File : L:\1\DATA\GC31940\ARC1123.D
Operator : MAG
Acquired : 26 Mar 2012 23:13 using AcqMethod ALI.M
Instrument : GC3
Sample Name: HUMT-P5-TN(031812)2-A
Misc Info :
Vial Number: 9



Polycyclic Aromatic Hydrocarbon Concentration

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Client Submitted Samples

Sample Name	ARC1122.D	ARC1123.D
Client Name	HUMT-P5-TN(031812)1-A	HUMT-P5-TN(031812)2-A
Matrix	Net	Net
Collection Date	03/18/12	03/18/12
Received Date	03/20/12	03/20/12
Extraction Date	03/21/12	03/21/12
Extraction Batch	ENV 2755	ENV 2755
Date Acquired	04/06/12	04/06/12
Method	PAH-2010	PAH-2010
Sample (Net)	1.0	1.0
% Dry	NA	NA
% Moisture	NA	NA
Dilution	1X	1X

Target Compounds	Su. Corrected Conc. (ng/per net)	Q	Su. Corrected Conc. (ng/per net)	Q
cis/trans Decalin	<10	U	<10	U
C1-Decalins	<10	U	<10	U
C2-Decalins	<10	U	<10	U
C3-Decalins	<10	U	<10	U
C4-Decalins	<10	U	<10	U
Naphthalene	7.0	J	6.0	J
C1-Naphthalenes	6.3	J	6.0	J
C2-Naphthalenes	10.4		9.6	J
C3-Naphthalenes	6.4	J	7.1	J
C4-Naphthalenes	6.1	J	5.3	J
Benzothiophene	<10	U	<10	U
C1-Benzothiophenes	<10	U	<10	U
C2-Benzothiophenes	<10	U	<10	U
C3-Benzothiophenes	<10	U	<10	U
C4-Benzothiophenes	<10	U	<10	U
Biphenyl	2.3	J	2.9	J
Acenaphthylene	<10	U	<10	U
Acenaphthene	4.2	J	<10	U
Dibenzofuran	23.9		20.8	
Fluorene	7.6	J	6.0	J
C1-Fluorenes	<10	U	<10	U
C2-Fluorenes	<10	U	<10	U
C3-Fluorenes	<10	U	<10	U
Carbazole	0.5	J	0.5	J
Anthracene	0.7	J	0.8	J
Phenanthrene	34.9		30.0	
C1-Phenanthrenes/Anthracenes	8.1	J	8.2	J
C2-Phenanthrenes/Anthracenes	<10	U	<10	U
C3-Phenanthrenes/Anthracenes	<10	U	<10	U
C4-Phenanthrenes/Anthracenes	<10	U	<10	U
Dibenzothiophene	2.2	J	1.9	J
C1-Dibenzothiophenes	1.2	J	1.1	J
C2-Dibenzothiophenes	1.4	J	1.7	J
C3-Dibenzothiophenes	<10	U	<10	U
C4-Dibenzothiophenes	<10	U	<10	U
Fluoranthene	2.1	J	4.0	J
Pyrene	1.1	J	2.7	J
C1-Fluoranthenes/Pyrenes	<10	U	<10	U
C2-Fluorenthenes/Pyrenes	<10	U	<10	U
C3-Fluoranthenes/Pyrenes	<10	U	<10	U
C4-Fluoranthenes/Pyrenes	<10	U	<10	U
Naphthobenzothiophene	<10	U	<10	U
C1-Naphthobenzothiophenes	<10	U	<10	U
C2-Naphthobenzothiophenes	<10	U	<10	U
C3-Naphthobenzothiophenes	<10	U	<10	U
C4-Naphthobenzothiophenes	<10	U	<10	U
Benz(a)anthracene	0.4	J	0.7	J
Chrysene/Triphenylene	0.9	J	1.7	J
C1-Chrysenes	<10	U	<10	U
C2-Chrysenes	<10	U	<10	U
C3-Chrysenes	<10	U	<10	U
C4-Chrysenes	<10	U	<10	U
Benzo(b)fluoranthene	1.6	J	2.5	J
Benzo(k,j)fluoranthene	0.4	J	0.6	J
Benzo(a)fluoranthene	<10	U	<10	U
Benzo(e)pyrene	0.9	J	1.4	J
Benzo(a)pyrene	1.2	J	1.5	J
Perylene	0.2	J	0.3	J
Indeno(1,2,3-c,d)pyrene	0.7	J	1.0	J
Dibenzo(a,h)anthracene	<10	U	<10	U
Benzo(g,h,i)perylene	0.8	J	1.3	J
Total PAHs	134		126	

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Client Submitted Samples

Sample Name	ARC1122.D	ARC1123.D
Client Name	HUMT-P5-TN(031812)1-A	HUMT-P5-TN(031812)2-A
Matrix	Net	Net
Collection Date	03/18/12	03/18/12
Received Date	03/20/12	03/20/12
Extraction Date	03/21/12	03/21/12
Extraction Batch	ENV 2755	ENV 2755
Date Acquired	04/06/12	04/06/12
Method	PAH-2010	PAH-2010
Sample (Net)	1.0	1.0
% Dry	NA	NA
% Moisture	NA	NA
Dilution	1X	1X

Target Compounds	Su. Corrected Conc. (ng/per net)	Q	Su. Corrected Conc. (ng/per net)	Q
Individual Alkyl Isomers and Hopanes				
2-Methylnaphthalene	6.6	J	6.6	J
1-Methylnaphthalene	3.8	J	3.2	J
2,6-Dimethylnaphthalene	6.7	J	5.5	J
1,6,7-Trimethylnaphthalene	1.1	J	1.9	J
1-Methylfluorene	<10	U	<10	U
4-Methyldibenzothiophene	0.8	J	0.8	J
2/3-Methyldibenzothiophene	0.6	J	0.5	J
1-Methyldibenzothiophene	0.3	J	0.3	J
3-Methylphenanthrene	1.3	J	1.4	J
2-Methylphenanthrene	1.6	J	1.6	J
2-Methylanthracene	4.3	J	4.0	J
4/9-Methylphenanthrene	0.6	J	0.8	J
1-Methylphenanthrene	0.8	J	0.9	J
3,6-Dimethylphenanthrene	<10	U	<10	U
Retene	<10	U	<10	U
2-Methylfluoranthene	<10	U	<10	U
Benzo(b)fluorene	<10	U	<10	U
C29-Hopane	<10	U	<10	U
18a-Oleanane	<10	U	<10	U
C30-Hopane	<10	U	<10	U
C20-TAS	<10	U	<10	U
C21-TAS	<10	U	<10	U
C26(20S)-TAS	<10	U	<10	U
C26(20R)/C27(20S)-TAS	<10	U	<10	U
C28(20S)-TAS	<10	U	<10	U
C27(20R)-TAS	<10	U	<10	U
C28(20R)-TAS	<10	U	<10	U

Surrogate Recovery		
Naphthalene-d8	99	98
Acenaphthene-d10	96	98
Phenanthrene-d10	81	86
Chrysene-d12	56	61
Perylene-d12	73	75
5(b)H-Cholane	115	117

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Procedural Blank Report

Sample Name	ENV2755A.D
Client Name	Procedural Blank
Matrix	Net
Collection Date	NA
Received Date	NA
Extraction Date	03/21/12
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample (Net)	1.0
% Dry	NA
% Moisture	NA
Dilution	1X

Target Compounds	Su. Corrected Conc. (ng/per net)	Q	3X MDL	Actual MDL
cis/trans Decalin	<10	U	30.0	10.0
C1-Decalins	<10	U	30.0	10.0
C2-Decalins	<10	U	30.0	10.0
C3-Decalins	<10	U	30.0	10.0
C4-Decalins	<10	U	30.0	10.0
Naphthalene	<10	U	30.0	10.0
C1-Naphthalenes	<10	U	30.0	10.0
C2-Naphthalenes	<10	U	30.0	10.0
C3-Naphthalenes	<10	U	30.0	10.0
C4-Naphthalenes	<10	U	30.0	10.0
Benzothiophene	<10	U	30.0	10.0
C1-Benzothiophenes	<10	U	30.0	10.0
C2-Benzothiophenes	<10	U	30.0	10.0
C3-Benzothiophenes	<10	U	30.0	10.0
C4-Benzothiophenes	<10	U	30.0	10.0
Biphenyl	<10	U	30.0	10.0
Acenaphthylene	<10	U	30.0	10.0
Acenaphthene	<10	U	30.0	10.0
Dibenzofuran	0.3	J	30.0	10.0
Fluorene	0.3	J	30.0	10.0
C1-Fluorenes	<10	U	30.0	10.0
C2-Fluorenes	<10	U	30.0	10.0
C3-Fluorenes	<10	U	30.0	10.0
Carbazole	<10	U	30.0	10.0
Anthracene	<10	U	30.0	10.0
Phenanthrene	<10	U	30.0	10.0
C1-Phenanthrenes/Anthracenes	<10	U	30.0	10.0
C2-Phenanthrenes/Anthracenes	<10	U	30.0	10.0
C3-Phenanthrenes/Anthracenes	<10	U	30.0	10.0
C4-Phenanthrenes/Anthracenes	<10	U	30.0	10.0
Dibenzothiophene	<10	U	30.0	10.0
C1-Dibenzothiophenes	<10	U	30.0	10.0
C2-Dibenzothiophenes	<10	U	30.0	10.0
C3-Dibenzothiophenes	<10	U	30.0	10.0
C4-Dibenzothiophenes	<10	U	30.0	10.0
Fluoranthene	<10	U	30.0	10.0
Pyrene	<10	U	30.0	10.0
C1-Fluoranthenes/Pyrenes	<10	U	30.0	10.0
C2-Fluoranthenes/Pyrenes	<10	U	30.0	10.0
C3-Fluoranthenes/Pyrenes	<10	U	30.0	10.0
C4-Fluoranthenes/Pyrenes	<10	U	30.0	10.0
Naphthobenzothiophene	<10	U	30.0	10.0
C1-Naphthobenzothiophenes	<10	U	30.0	10.0
C2-Naphthobenzothiophenes	<10	U	30.0	10.0
C3-Naphthobenzothiophenes	<10	U	30.0	10.0
C4-Naphthobenzothiophenes	<10	U	30.0	10.0
Benz(a)anthracene	<10	U	30.0	10.0
Chrysene/Triphenylene	<10	U	30.0	10.0
C1-Chrysenes	<10	U	30.0	10.0
C2-Chrysenes	<10	U	30.0	10.0
C3-Chrysenes	<10	U	30.0	10.0
C4-Chrysenes	<10	U	30.0	10.0
Benzo(b)fluoranthene	<10	U	30.0	10.0
Benzo(k,j)fluoranthene	<10	U	30.0	10.0
Benzo(a)fluoranthene	<10	U	30.0	10.0
Benzo(e)pyrene	<10	U	30.0	10.0
Benzo(a)pyrene	<10	U	30.0	10.0
Perylene	<10	U	30.0	10.0
Indeno(1,2,3-c,d)pyrene	<10	U	30.0	10.0
Dibenzo(a,h)anthracene	<10	U	30.0	10.0
Benzo(g,h,i)perylene	<10	U	30.0	10.0
Total PAHs	0.6			

Arcadia/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Procedural Blank Report

Sample Name	ENV2755A.D
Client Name	Procedural Blank
Matrix	Net
Collection Date	NA
Received Date	NA
Extraction Date	03/21/12
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample (Net)	1.0
% Dry	NA
% Moisture	NA
Dilution	1X

Target Compounds	Su. Corrected Conc. (ng/per net)	Q	3X MDL	Actual MDL
Individual Alkyl Isomers and Hopanes				
2-Methylnaphthalene	<10	U	30.0	10.0
1-Methylnaphthalene	<10	U	30.0	10.0
2,6-Dimethylnephthalene	<10	U	30.0	10.0
1,8,7-Trimethylnaphthelene	<10	U	30.0	10.0
1-Methylfluorene	<10	U	30.0	10.0
4-Methyldibenzothiophene	<10	U	30.0	10.0
2/3-Methyldibenzothiophene	<10	U	30.0	10.0
1-Methyldibenzothiophene	<10	U	30.0	10.0
3-Methylphenenthrene	<10	U	30.0	10.0
2-Methylphenanthrene	<10	U	30.0	10.0
2-Methylanthracene	<10	U	30.0	10.0
4/9-Methylphenanthrene	<10	U	30.0	10.0
1-Methylphenanthrene	<10	U	30.0	10.0
3,6-Dimethylphenanthrene	<10	U	30.0	10.0
Retene	<10	U	30.0	10.0
2-Methylfluoranthene	<10	U	30.0	10.0
Benzo(b)fluorene	<10	U	30.0	10.0
C29-Hopane	<10	U	30.0	10.0
18a-Oleenane	<10	U	30.0	10.0
C30-Hopane	<10	U	30.0	10.0
C20-TAS	<10	U	30.0	10.0
C21-TAS	<10	U	30.0	10.0
C26(20S)-TAS	<10	U	30.0	10.0
C28(20R)/C27(20S)-TAS	<10	U	30.0	10.0
C28(20S)-TAS	<10	U	30.0	10.0
C27(20R)-TAS	<10	U	30.0	10.0
C28(20R)-TAS	<10	U	30.0	10.0

Surrogate Recovery	
Naphthalene-d8	94
Acenaphthene-d10	93
Phenanthrene-d10	97
Chrysene-d12	61
Perylene-d12	77
5(b)H-Cholane	119

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Blank Spike Report

Sample Name	ENV2755B.D	ENV2755C.D
Client Name	Blank Spike	Blank Spike Dupl.
Matrix	Net	Net
Collection Date	NA	NA
Received Date	NA	NA
Extraction Date	03/21/12	03/21/12
Extraction Batch	ENV 2755	ENV 2755
Date Acquired	04/06/12	04/06/12
Method	PAH-2010	PAH-2010
Sample (Net)	1.0	1.0
% Dry	NA	NA
% Moisture	NA	NA
Dilution	1X	1X

Target Compounds	Su. Corrected Conc. (ng/per net)	Q	Recovery (%)	Q	Su. Corrected Conc. (ng/per net)	Q	Recovery (%)	Q	RPD (%)	Q	Spike Amount (ng)
cis/trans Decalin	111		111		109		109		2		100
C1-Decalins	NA				NA						
C2-Decalins	NA				NA						
C3-Decalins	NA				NA						
C4-Decalins	NA				NA						
Naphthalene	117		117		115		115		1		100
C1-Naphthalenes	140				143						
C2-Naphthalenes	NA				NA						
C3-Naphthalenes	NA				NA						
C4-Naphthalenes	NA				NA						
Benzothiophene	117		117		116		116		0		100
C1-Benzothiophenes	NA				NA						
C2-Benzothiophenes	NA				NA						
C3-Benzothiophenes	NA				NA						
C4-Benzothiophenes	NA				NA						
Biphenyl	113		113		115		114		1		100
Acenaphthylene	116		116		119		119		2		100
Acenaphthene	117		117		111		111		5		100
Dibenzofuran	114		114		118		118		3		100
Fluorene	118		118		110		110		7		100
C1-Fluorenes	NA				NA						
C2-Fluorenes	NA				NA						
C3-Fluorenes	NA				NA						
Carbazole	112		112		116		116		3		100
Anthracene	112		112		118		118		5		100
Phenanthrene	115		115		115		115		0		100
C1-Phenanthrenes/Anthracenes	104				105						
C2-Phenanthrenes/Anthracenes	NA				NA						
C3-Phenanthrenes/Anthracenes	NA				NA						
C4-Phenanthrenes/Anthracenes	NA				NA						
Dibenzothiophene	115		115		114		114		1		100
C1-Dibenzothiophenes	73.6				71.2						
C2-Dibenzothiophenes	NA				NA						
C3-Dibenzothiophenes	NA				NA						
C4-Dibenzothiophenes	NA				NA						
Fluoranthene	93.4		93		87		87		7		100
Pyrene	103		103		102		102		1		100
C1-Fluoranthenes/Pyrenes	NA				NA						
C2-Fluoranthenes/Pyrenes	NA				NA						
C3-Fluoranthenes/Pyrenes	NA				NA						
C4-Fluoranthenes/Pyrenes	NA				NA						
Naphthobenzothiophene	96.3		97		97.1		98		1		99
C1-Naphthobenzothiophenes	NA				NA						
C2-Naphthobenzothiophenes	NA				NA						
C3-Naphthobenzothiophenes	NA				NA						
C4-Naphthobenzothiophenes	NA				NA						
Benz(a)anthracene	94.7		95		92.2		92		3		100
Chrysene/Triphenylene	94.0		94		93.1		93		1		100
C1-Chrysenes	NA				NA						
C2-Chrysenes	NA				NA						
C3-Chrysenes	NA				NA						
C4-Chrysenes	NA				NA						
Benzo(b)fluoranthene	101		101		106		106		5		100
Benzo(k,j)fluoranthene	94.0		94		95.4		95		2		100
Benzo(a)fluoranthene	NA				NA						
Benzo(e)pyrene	104		104		109		108		4		100
Benzo(a)pyrene	103		102		108		108		6		100
Perylene	104		103		106		106		2		100
Indeno(1,2,3-c,d)pyrene	103		103		110		110		6		100
Dibenzo(a,h)anthracene	103		103		111		111		7		100
Benzo(g,h,i)perylene	99.2		99		104		104		5		100
Average % Recovery			106				107				

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Blank Spike Report

Sample Name	ENV2755B.D	ENV2755C.D
Client Name	Blank Spike	Blank Spike Dupl.
Matrix	Net	Net
Collection Date	NA	NA
Received Date	NA	NA
Extraction Date	03/21/12	03/21/12
Extraction Batch	ENV 2755	ENV 2755
Date Acquired	04/06/12	04/06/12
Method	PAH-2010	PAH-2010
Sample (Net)	1.0	1.0
% Dry	NA	NA
% Moisture	NA	NA
Dilution	1X	1X

Target Compounds	Su. Corrected Conc. (ng/per net)	Q	Recovery (%)	Q	Su. Corrected Conc. (ng/per net)	Q	Recovery (%)	Q	RPD (%)	Q	Spike Amount (ng)
Individual Alkyl Isomers and Hopanes											
2-Methylnaphthalene	116		115		117		117		1		100
1-Methylnaphthalene	117		117		120		119		2		100
2,6-Dimethylnaphthalene	118		118		118		118		0		100
1,6,7-Trimethylnaphthalene	106		106		106		106		0		100
1-Methylfluorene	101		102		104		104		2		100
4-Methyldibenzothiophene	104		105		101		102		3		100
2/3-Methyldibenzothiophene	NA				NA						
1-Methyldibenzothiophene	NA				NA						
3-Methylphenanthrene	NA				NA						
2-Methylphenanthrene	NA				NA						
2-Methylanthracene	NA				NA						
4/9-Methylphenanthrene	NA				NA						
1-Methylphenanthrene	111		111		111		111		1		100
3,6-Dimethylphenanthrene	87.5		88		86.2		86		1		100
Retene	88.9		91		87.1		89		2		98
2-Methylfluoranthene	92.6		94		89.0		91		4		98
Benzo(b)fluorene	111		108		111		108		0		103
C29-Hopane	NA				NA						
18a-Oleanane	NA				NA						
C30-Hopane	105		107		113		114		7		99
C20-TAS	NA				NA						
C21-TAS	NA				NA						
C26(20S)-TAS	NA				NA						
C26(20R)/C27(20S)-TAS	108		108		112		112		4		100
C28(20S)-TAS	NA				NA						
C27(20R)-TAS	NA				NA						
C28(20R)-TAS	NA				NA						

Surrogate Recovery		
Naphthalene-d8	99	99
Acenaphthene-d10	99	100
Phenanthrene-d10	89	89
Chrysene-d12	75	75
Perylene-d12	86	87
5(b)H-Cholane	81	92

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Standard Reference Material Report

Sample Name	MS30860J.D
Client Name	SRM2779-WK-2.0-001
Matrix	Petroleum
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample Weight (mg)	2.0

Target Compounds	Su Corrected Conc. (ug/g)	Q	Q	RPD (%)	SRM 2779 Certified Value. (ug/g)	-20% Certified Value. (ug/g)	+20% Certified Value. (ug/g)	SRM 2779 Reference Value (ug/g)	-20% Reference Value (ug/g)	+20% Reference Value (ug/g)
cis/trans Decalin	750									
C1-Decalins	1023			2				1040 ± 410	504	1740
C2-Decalins	933			13				1060 ± 470	472	1836
C3-Decalins	1094			29				1460 ± 600	688	2472
C4-Decalins	694									
Naphthalene	884			3	855 ± 46	647	1081			
C1-Naphthalenes	1860									
C2-Naphthalenes	2088			4				2170 ± 360	1448	3036
C3-Naphthalenes	1491			8				1380 ± 270	888	1980
C4-Naphthalenes	812			15				700 ± 130	456	996
Benzothiophene	9.3	J								
C1-Benzothiophenes	32.5									
C2-Benzothiophenes	37.7			5				36 ± 13	18.4	58.8
C3-Benzothiophenes	36.5									
C4-Benzothiophenes	38.2			24				30 ± 4	21	41
Biphenyl	225			14				195 ± 19	141	257
Acenaphthylene	8.8	J						8.09 ± 0.10	6.39	9.83
Acenaphthene	14.0									
Dibenzofuran	24.0			7				25.7 ± 3.6	18	35
Fluorene	164			12				145 ± 43	82	226
C1-Fluorenes	369			21				300 ± 60	192	432
C2-Fluorenes	446			16				380 ± 30	280	492
C3-Fluorenes	362			29				270 ± 40	184	372
Carbazole	5.2	J								
Anthracene	3.3	J		4	3.42 ± 0.59	2.26	4.81			
Phenanthrene	292			12	258 ± 27	185	342			
C1-Phenanthrenes/Anthracenes	861			25				670 ± 90	464	912
C2-Phenanthrenes/Anthracenes	821			26				630 ± 60	456	828
C3-Phenanthrenes/Anthracenes	537			29				400 ± 50	280	540
C4-Phenanthrenes/Anthracenes	259			26				200 ± 30	136	276
Dibenzothiophene	59.2			13	51.8 ± 2.1	39.8	64.7			
C1-Dibenzothiophenes	139			7				130 ± 20	88	180
C2-Dibenzothiophenes	185			14				160 ± 20	112	216
C3-Dibenzothiophenes	123			11				110 ± 10	80	144
C4-Dibenzothiophenes	51.6			8				56 ± 10	37	79
Fluoranthene	3.6	J		20	4.36 ± 0.40	3.17	5.71			
Pyrene	12.2			20	14.81 ± 0.39	11.54	18.24			
C1-Fluoranthenes/Pyrenes	74.3			10				67 ± 7	48	89
C2-Fluoranthenes/Pyrenes	103			23				130 ± 20	88	180
C3-Fluoranthenes/Pyrenes	125			4				120 ± 20	80	168
C4-Fluoranthenes/Pyrenes	105			18				87 ± 21	53	130
Naphthobenzothiophene	26.1									
C1-Naphthobenzothiophenes	56.0			2				57 ± 15	34	86
C2-Naphthobenzothiophenes	76.0			8				70 ± 19	41	107
C3-Naphthobenzothiophenes	52.0			8				48 ± 12	29	72
C4-Naphthobenzothiophenes	23.7			27				31 ± 10	17	49
Benz(a)anthracene	5.7	J		21	7.03 ± 0.85	4.94	9.46			
Chrysene/Triphenylene	41.8			13	47.4 ± 1.7	36.6	58.9			
C1-Chrysenes	99.2			10				110 ± 7	82	140
C2-Chrysenes	133			2				130 ± 10	96	168
C3-Chrysenes	90.7			3				93 ± 12	65	126
C4-Chrysenes	71.6			1				71 ± 16	44	104
Benzo(b)fluoranthene	5.5	J		2	5.62 ± 0.34	4.22	7.15			
Benzo(k,j)fluoranthene	0.63	J						1.41 ± 0.57	0.67	2.38
Benzo(a)fluoranthene	<10	U								
Benzo(e)pyrene	11.2			3	10.78 ± 0.60	8.14	13.7			
Benzo(a)pyrene	1.6	J						1.36 ± 0.35	0.81	2.05
Perylene	0.9	J						0.71 ± 0.17	0.43	1.06
Indeno(1,2,3-c,d)pyrene	0.5	J						0.48 ± 0.14	0.27	0.74
Dibenzo(a,h)anthracene	3.0	J								
Benzo(g,h,i)perylene	1.9	J		9	2.11 ± 0.26	1.48	2.84			
Total PAHs	17855									

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Standard Reference Material Report

Sample Name	MS30860J.D
Client Name	SRM2779-WK-2.0-001
Matrix	Petroleum
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample Weight (mg)	2.0

Target Compounds	Su Corrected Conc. (ug/g)	Q	RPD (%)	SRM 2779 Certified Value. (ug/g)	-20% Certified Value. (ug/g)	+20% Certified Value. (ug/g)	SRM 2779 Reference Value (ug/g)	-20% Reference Value (ug/g)	+20% Reference Value (ug/g)
Individual Alkyl Isomers and Hopanes									
2-Methylnaphthalene	1813		11	1630 ± 50	1264	2016			
1-Methylnaphthalene	1253		9	1140 ± 20	896	1392			
2,6-Dimethylnaphthalene	1172								
1,6,7-Trimethylnaphthalene	302		1				306 ± 63	194	443
1-Methylfluorene	288								
4-Methyldibenzothiophene	104								
2/3-Methyldibenzothiophene	59.4								
1-Methyldibenzothiophene	33.7								
3-Methylphenanthrene	219		6	206 ± 32	139	286			
2-Methylphenanthrene	227								
2-Methylanthracene	9.2	J							
4/9-Methylphenanthrene	286		21	232 ± 19	170	301			
1-Methylphenanthrene	174		3	169 ± 10	127	215			
3,6-Dimethylphenanthrene	71.7								
Retene	22.3								
2-Methylfluoranthene	6.7	J							
Benzo(b)fluorene	20.6								
C29-Hopane	38.2								
18a-Oleanane	<10	U							
C30-Hopane	62.4		39				42.1 ± 9.9	25.8	62.4
C20-TAS	5.4	J							
C21-TAS	8.5	J							
C26(20S)-TAS	4.3	J							
C26(20R)/C27(20S)-TAS	13.5								
C28(20S)-TAS	8.9	J							
C27(20R)-TAS	8.2	J							
C28(20R)-TAS	7.3	J							

Surrogate Recovery	
Naphthalene-d8	96
Acenaphthene-d10	105
Phenanthrene-d10	99
Chrysene-d12	76
Perylene-d12	92
5(b)H-Cholane	101

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Standard Reference Material Report

Sample Name	MS30860K.D
Client Name	SRM1582-WK-1.76-006
Matrix	Petroleum
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample Weight (mg)	1.8

Target Compounds	Su Corrected Conc. (ug/g)	Q	RPD (%)	SRM 1582 Certified Conc. (ug/g)	B&B Average Concentration (ug/g)	-20% Concentration (ug/g)	+20% Concentration (ug/g)
cis/trans Decalin	527		17		443	355	532
C1-Decalins	865		4		898	718	1077
C2-Decalins	1311		11		1458	1167	1750
C3-Decalins	1110		21		1375	1100	1650
C4-Decalins	778		20		946	757	1136
Naphthalene	166		14		144	115	173
C1-Naphthalenes	598		1		604	483	725
C2-Naphthalenes	1043		15		1211	968	1453
C3-Naphthalenes	1096		21		1348	1078	1617
C4-Naphthalenes	875		8		946	757	1135
Benzothiophene	9.7	J					
C1-Benzothiophenes	45.1						
C2-Benzothiophenes	87.3		6		92.2	73.8	111
C3-Benzothiophenes	164		19		198	158	237
C4-Benzothiophenes	166						
Biphenyl	28.9		11		32.3	25.8	38.7
Acenaphthylene	<10	U					
Acenaphthene	23.1		13		20.2	16.2	24.3
Dibenzofuran	12.0		0		11.9	9.6	14.3
Fluorene	35.1		3		36.0	28.8	43.2
C1-Fluorenes	141		6		151	121	181
C2-Fluorenes	295		9		322	258	387
C3-Fluorenes	290		10		321	256	385
Carbazole	7.9	J					
Anthracene	0.3	J					
Phenanthrene	103		3	101 ± 5.0	106	84.5	127
C1-Phenanthrenes/Anthracenes	367		7		343	274	412
C2-Phenanthrenes/Anthracenes	600		12		531	425	637
C3-Phenanthrenes/Anthracenes	576		1		581	465	698
C4-Phenanthrenes/Anthracenes	300		14		345	276	414
Dibenzothiophene	39.4		15	33 ± 2	33.9	27.1	40.6
C1-Dibenzothiophenes	105		10		117	93.6	140
C2-Dibenzothiophenes	197		14		226	181	271
C3-Dibenzothiophenes	234		19		284	227	341
C4-Dibenzothiophenes	132		17		156	125	187
Fluoranthene	5.0	J		2.5 ± 0.3			
Pyrene	7.2	J					
C1-Fluoranthenes/Pyrenes	60.6		3		62.7	50.2	75.2
C2-Fluoranthenes/Pyrenes	90.1		9		98.8	79.1	119
C3-Fluoranthenes/Pyrenes	120		15		140	112	168
C4-Fluoranthenes/Pyrenes	82.8						
Naphthobenzothiophene	41.1		1		41.6	33.3	50.0
C1-Naphthobenzothiophenes	63.3		19		76.8	61.4	92.1
C2-Naphthobenzothiophenes	90.5		13		103	82.6	124
C3-Naphthobenzothiophenes	64.6		11		72.4	57.9	86.9
C4-Naphthobenzothiophenes	30.5		5		28.9	23.1	34.7
Benz(a)anthracene	3.5	J		3.0 ± 0.3			
Chrysene/Triphenylene	15.5		18		18.5	14.8	22.2
C1-Chrysenes	55.9		15		64.8	51.8	77.7
C2-Chrysenes	114		19		137	110	165
C3-Chrysenes	75.6		3		78.2	62.6	93.9
C4-Chrysenes	48.4						
Benzo(b)fluoranthene	1.1	J					
Benzo(k,j)fluoranthene	9.6	J					
Benzo(a)fluoranthene	<10	U					
Benzo(e)pyrene	3.8	J					
Benzo(a)pyrene	8.2	J		1.1 ± 0.3			
Perylene	29.5		20	31 ± 3	35.8	28.7	43.0
Indeno(1,2,3-c,d)pyrene	0.4	J					
Dibenzo(a,h)anthracene	0.6	J					
Benzo(g,h,i)perylene	2.6	J					
Total PAHs	13352						

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Standard Reference Material Report

Sample Name	MS30860K.D
Client Name	SRM1582-WK-1.76-006
Matrix	Petroleum
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample Weight (mg)	1.8

Target Compounds	Su Corrected Conc. (ug/g)	Q	RPD (%)	SRM 1582 Certified Conc. (ug/g)	B&B Average Concentration (ug/g)	-20% Concentration (ug/g)	+20% Concentration (ug/g)
Individual Alkyl Isomers and Hopanes							
2-Methylnaphthalene	585		3		602	482	722
1-Methylnaphthalene	400		4		415	332	498
2,6-Dimethylnaphthalene	578		4		602	482	722
1,6,7-Trimethylnaphthalene	145		5		152	122	182
1-Methylfluorene	96.9						
4-Methyldibenzothiophene	68.2		18		57.0	45.6	68.4
2/3-Methyldibenzothiophene	44.3		10		40.0	32.0	48.0
1-Methyldibenzothiophene	37.0		18		31.0	24.8	37.2
3-Methylphenanthrene	98.8	*	28		74.3	59.4	89.2
2-Methylphenanthrene	103		16		87.8	70.2	105
2-Methylanthracene	4.7	J					
4/9-Methylphenanthrene	101		7		94.4	75.5	113
1-Methylphenanthrene	82.0		8		75.6	60.5	90.7
3,6-Dimethylphenanthrene	44.9						
Retene	43.8						
2-Methylfluoranthene	4.9	J					
Benzo(b)fluorene	9.2	J					
C29-Hopane	315						
18a-Oleanane	82.4						
C30-Hopane	513		14		445	356	534
C20-TAS	26.8						
C21-TAS	40.6						
C26(20S)-TAS	99.1						
C26(20R)/C27(20S)-TAS	328						
C28(20S)-TAS	102						
C27(20R)-TAS	197						
C28(20R)-TAS	97.5						

Surrogate Recovery	
Naphthalene-d8	95
Acenaphthene-d10	94
Phenanthrene-d10	94
Chrysene-d12	77
Perylene-d12	94
5(b)H-Cholane	85

Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Laboratory Control Material Report

Sample Name	MS30860H.D
Client Name	AR-WKCC-250-035
Matrix	Solution
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample Volume (mL)	1

Target Compounds	Concentration (ng/mL)	Q	RPD (%)	LCM Certified Conc. (ng/mL)	-15% Conc. (ng/mL)	+15% Conc. (ng/mL)
cis/trans Decalin	258		4.3	247	210	284
C1-Decalins	NA					
C2-Decalins	NA					
C3-Decalins	NA					
C4-Decalins	NA					
Naphthalene	280		11.2	250	213	288
C1-Naphthalenes	NA					
C2-Naphthalenes	NA					
C3-Naphthalenes	NA					
C4-Naphthalenes	NA					
Benzothiophene	282		12.6	249	211	286
C1-Benzothiophenes	NA					
C2-Benzothiophenes	NA					
C3-Benzothiophenes	NA					
C4-Benzothiophenes	NA					
Biphenyl	282		12.9	248	211	285
Acenephthylene	266		6.8	248	211	285
Acenaphthene	263		4.9	251	213	288
Dibenzofuran	271		8.4	249	211	286
Fluorene	253		0.9	251	213	288
C1-Fluorenes	NA					
C2-Fluorenes	NA					
C3-Fluorenes	NA					
Carbazole	281		12.7	248	211	285
Anthracene	277		9.9	251	213	288
Phenanthrene	280		12.2	248	211	285
C1-Phenanthrenes/Anthracenes	NA					
C2-Phenanthrenes/Anthracenes	NA					
C3-Phenanthrenes/Anthracenes	NA					
C4-Phenanthrenes/Anthracenes	NA					
Dibenzothiophene	280		12.9	247	210	283
C1-Dibenzothiophenes	NA					
C2-Dibenzothiophenes	NA					
C3-Dibenzothiophenes	NA					
C4-Dibenzothiophenes	NA					
Fluoranthene	279		10.7	250	213	288
Pyrene	274		9.2	250	213	288
C1-Fluoranthenes/Pyrenes	NA					
C2-Fluoranthenes/Pyrenes	NA					
C3-Fluoranthenes/Pyrenes	NA					
C4-Fluoranthenes/Pyrenes	NA					
Nephthobenzothiophene	231		-7.0	248	210	285
C1-Naphthobenzothiophenes	NA					
C2-Nephthobenzothiophenes	NA					
C3-Naphthobenzothiophenes	NA					
C4-Naphthobenzothiophenes	NA					
Benz(e)anthracene	252		1.0	250	212	287
Chrysene/Triphenylene	234		-5.9	249	211	286
C1-Chrysenes	NA					
C2-Chrysenes	NA					
C3-Chrysenes	NA					
C4-Chrysenes	NA					
Benzo(b)fluoranthene	281		11.6	251	213	288
Benzo(k,j)fluoranthene	281		12.0	249	212	286
Benzo(a)fluorenthene	NA					
Benzo(e)pyrene	276		10.4	249	212	286
Benzo(a)pyrene	270		7.7	250	212	287
Perylene	259		3.6	250	213	288
Indeno(1,2,3-c,d)pyrene	238		-3.3	246	209	283
Dibenzo(a,h)anthracene	228		-8.2	248	211	285
Benzo(g,h,i)perylene	249		-0.3	250	213	288

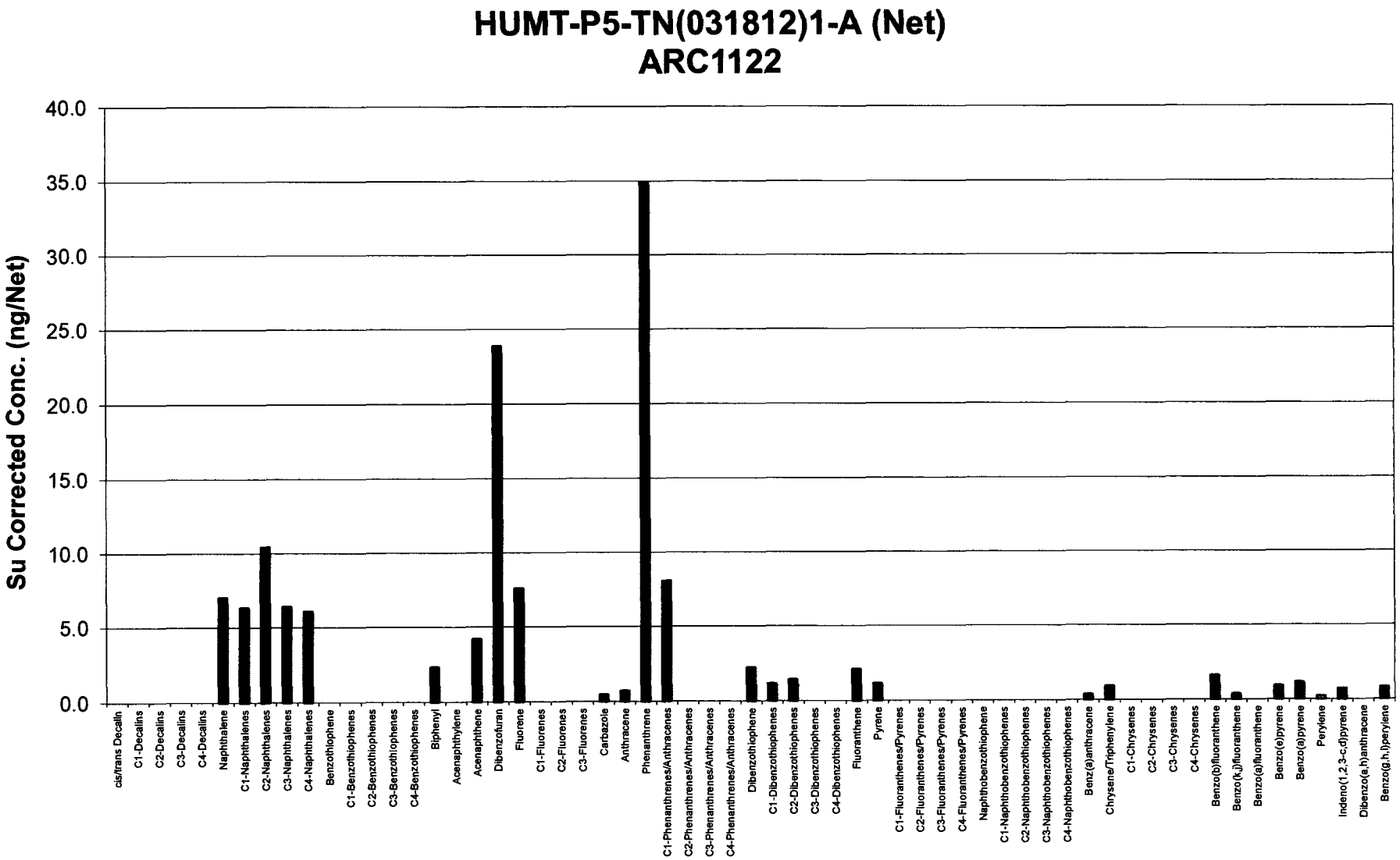
Arcadis/ExxonMobil
Yellowstone Oil Spill Project
Polycyclic Aromatic Hydrocarbon Data
Laboratory Control Material Report

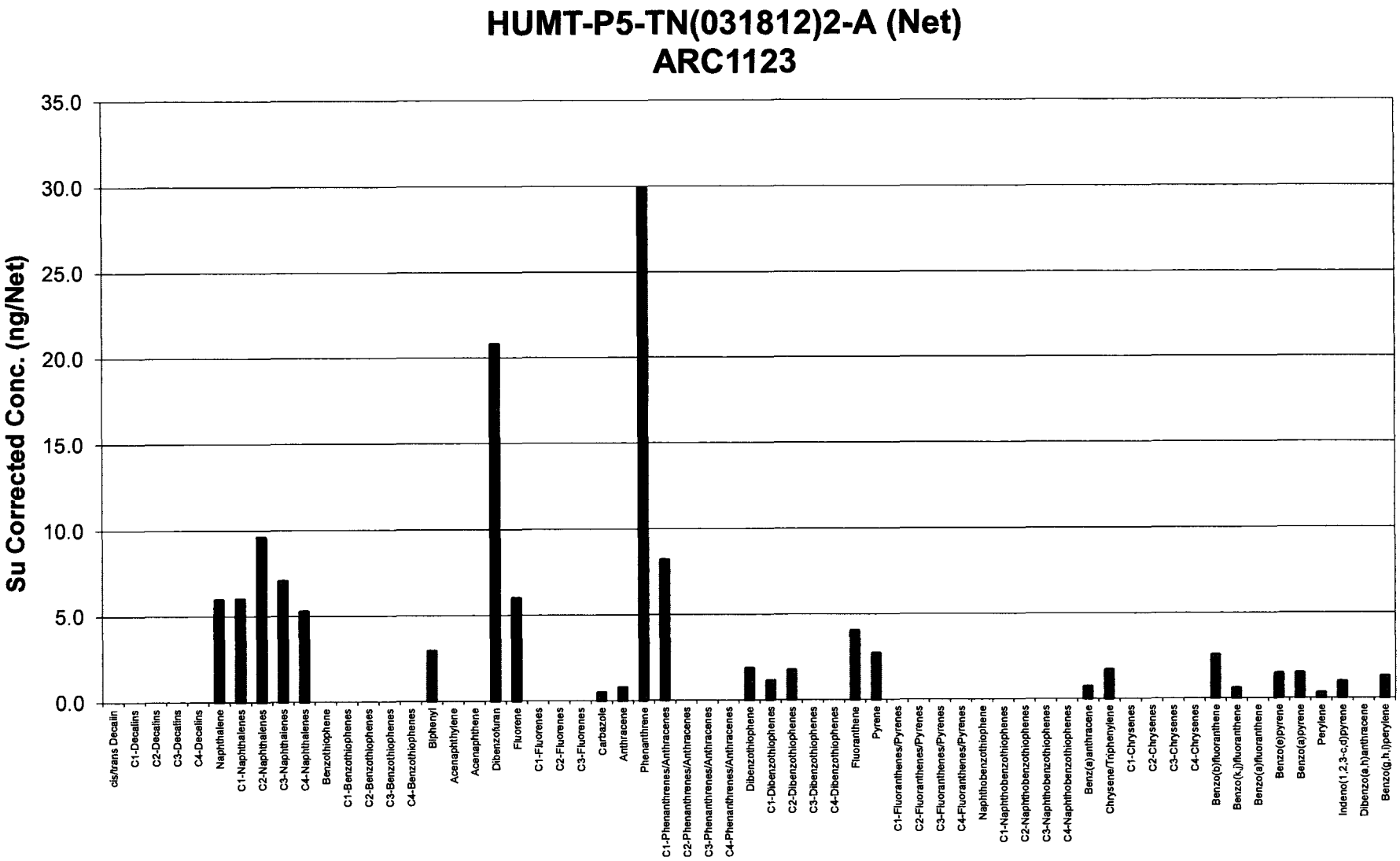
Sample Name	MS30860H.D
Client Name	AR-WKCC-250-035
Matrix	Solution
Collection Date	NA
Received Date	NA
Extraction Date	NA
Extraction Batch	ENV 2755
Date Acquired	04/05/12
Method	PAH-2010
Sample Volume (mL)	1

Target Compounds	Concentration (ng/mL)	Q	RPD (%)	LCM Certified Conc. (ng/mL)	-15% Conc. (ng/mL)	+15% Conc. (ng/mL)
Individual Alkyl Isomers and Hopanes						
2-Methylnaphthalene	278		10.3	250	213	288
1-Methylnaphthalene	271		8.3	250	212	287
2,6-Dimethylnaphthalene	263		5.0	250	213	288
1,6,7-Trimethylnaphthalene	274		9.1	250	213	288
1-Methylfluorene	280		11.2	250	213	288
4-Methyldibenzothiophene	265		5.7	250	213	288
2/3-Methyldibenzothiophene	NA					
1-Methyldibenzothiophene	NA					
3-Methylphenanthrene	NA					
2-Methylphenanthrene	NA					
2-Methylanthracene	NA					
4/9-Methylphenanthrene	NA					
1-Methylphenanthrene	274		9.6	249	211	286
3,6-Dimethylphenanthrene	248		-0.7	250	213	288
Retene	274		9.3	250	213	288
2-Methylfluoranthene	282		12.1	250	213	288
Benzo(b)fluorene	281		10.9	252	214	289
C29-Hopane	NA					
18a-Oleanane	NA					
C30-Hopane	250		1.7	246	209	283
C20-TAS	NA					
C21-TAS	NA					
C26(20S)-TAS	NA					
C26(20R)/C27(20S)-TAS	217		-11.1	242	206	279
C28(20S)-TAS	NA					
C27(20R)-TAS	NA					
C28(20R)-TAS	NA					

Surrogate Recovery	
Naphthalene-d8	110
Acenaphthene-d10	110
Phenanthrene-d10	113
Chrysene-d12	96
Perylene-d12	110
5(b)H-Cholane	107

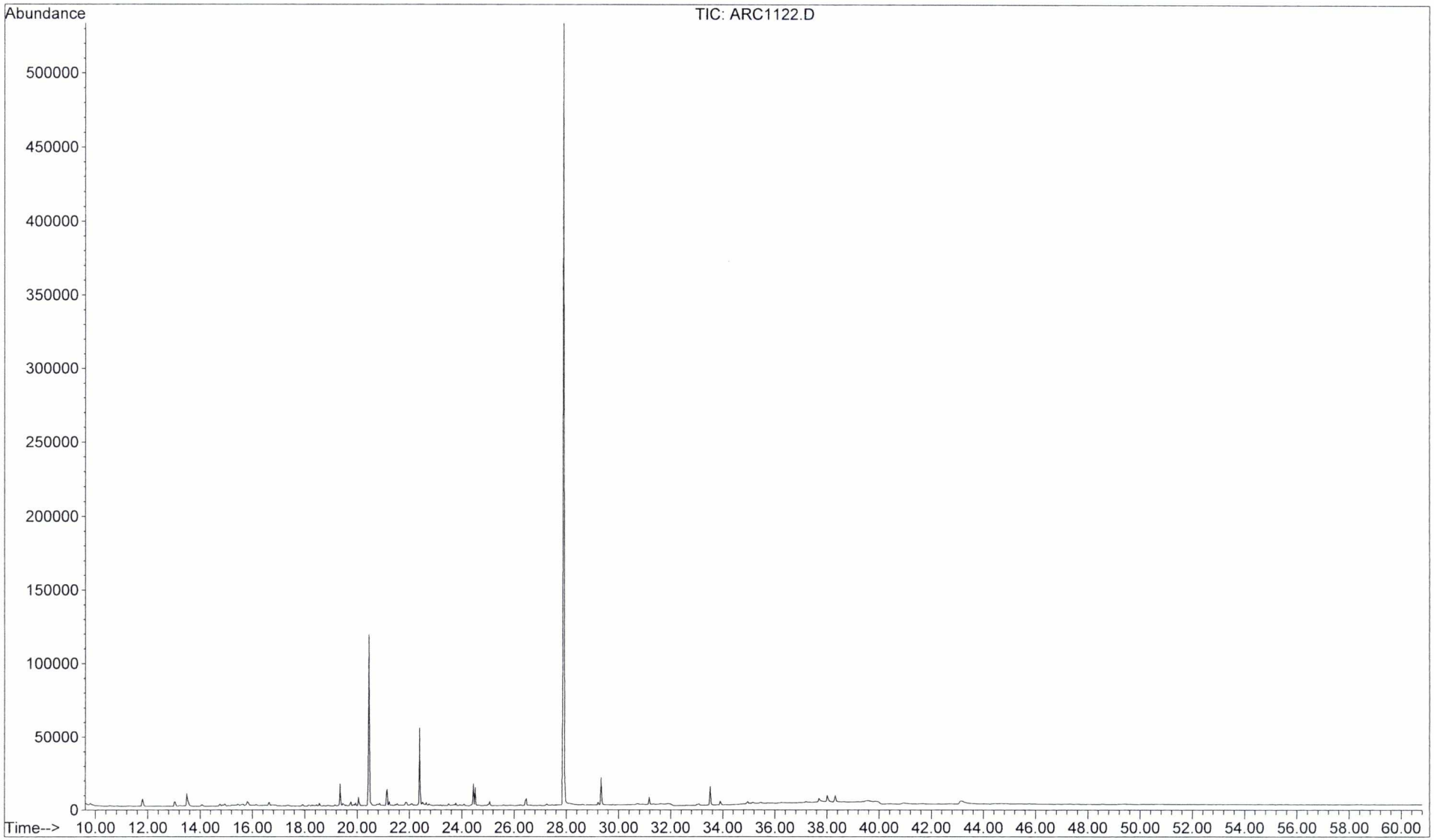
Polycyclic Aromatic Hydrocarbon Histograms


HUMT-P5-TN(031812)1-A (Net)
ARC1122
Su Corrected Conc. (ng/Net)
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
cis/trans Decalin
C1-Decalins
C2-Decalins
C3-Decalins
C4-Decalins
Naphthalene
C1-Naphthalenes
C2-Naphthalenes
C3-Naphthalenes
C4-Naphthalenes
Benzothiophene
C1-Benzothiophenes
C2-Benzothiophenes
C3-Benzothiophenes
C4-Benzothiophenes
Biphenyl
Acenaphthylene
Acenaphthene
Dibenzofuran
Fluorene
C1-Fluorenes
C2-Fluorenes
C3-Fluorenes
Carbazole
Anthracene
Phenanthrene
C1-Phenanthrenes/Anthracenes
C2-Phenanthrenes/Anthracenes
C3-Phenanthrenes/Anthracenes
C4-Phenanthrenes/Anthracenes
Dibenzothiophene
C1-Dibenzothiophenes
C2-Dibenzothiophenes
C3-Dibenzothiophenes
C4-Dibenzothiophenes
Fluoranthene
Pyrene
C1-Fluoranthenes/Pyrenes
C2-Fluoranthenes/Pyrenes
C3-Fluoranthenes/Pyrenes
C4-Fluoranthenes/Pyrenes
Naphthobenzothiophene
C1-Naphthobenzothiophenes
C2-Naphthobenzothiophenes
C3-Naphthobenzothiophenes
C4-Naphthobenzothiophenes
Benz(a)anthracene
Chrysene/Triphenylene
C1-Chrysenes
C2-Chrysenes
C3-Chrysenes
C4-Chrysenes
Benzo(b)fluoranthene
Benzo(k,j)fluoranthene
Benzo(a)fluoranthene
Benzo(e)pyrene
Benzo(a)pyrene
Perylene
Indeno(1,2,3-c,d)pyrene
Dibenzo(a,h)anthracene
Benzo(g,h,i)perylene

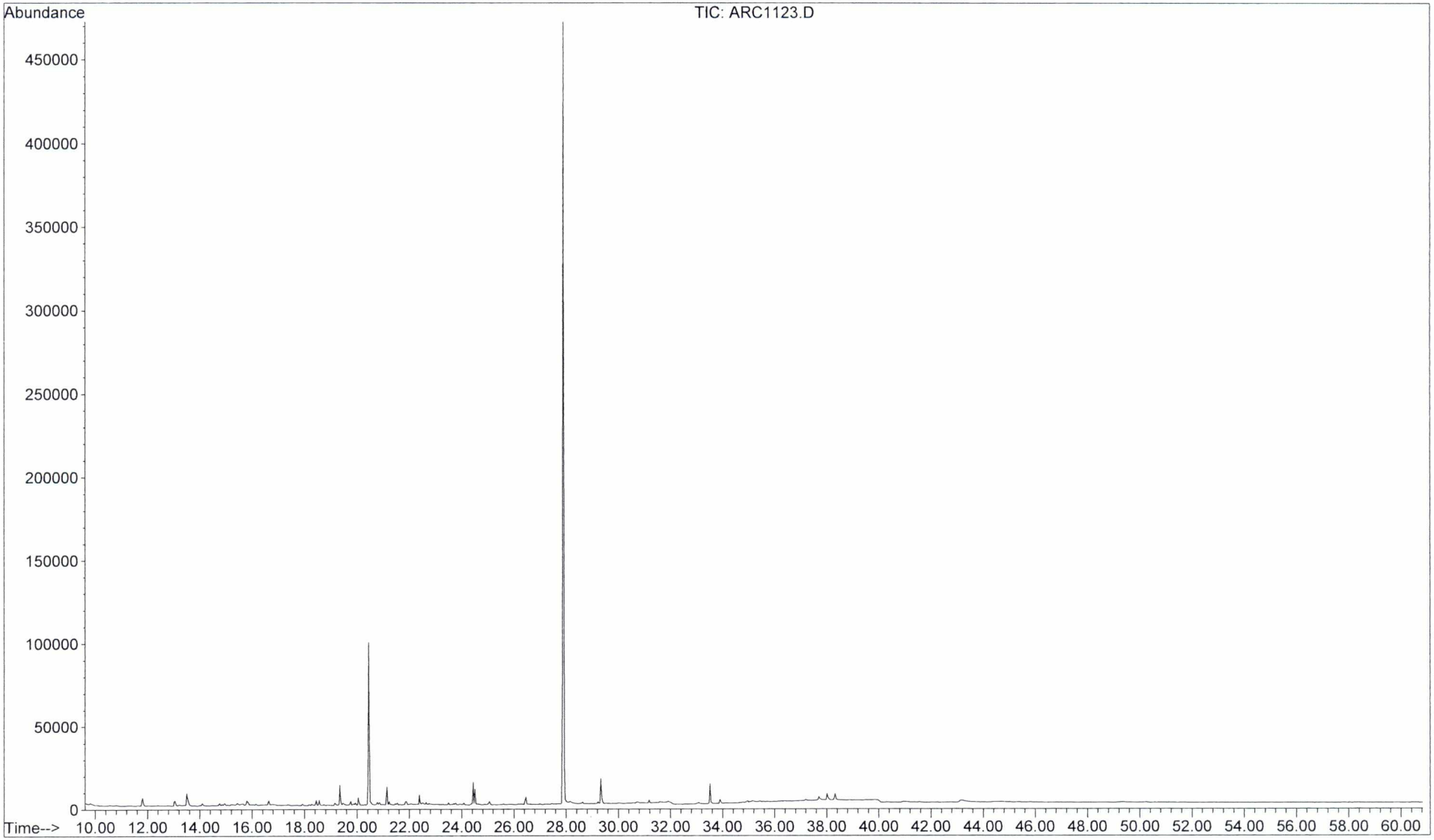

HUMT-P5-TN(031812)2-A (Net)
ARC1123
Su Corrected Conc. (ng/Net)
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
cis/trans Decalin
C1-Decalins
C2-Decalins
C3-Decalins
C4-Decalins
Naphthalene
C1-Naphthalenes
C2-Naphthalenes
C3-Naphthalenes
C4-Naphthalenes
Benzothiophene
C1-Benzothiophenes
C2-Benzothiophenes
C3-Benzothiophenes
C4-Benzothiophenes
Biphenyl
Acenaphthylene
Acenaphthene
Dibenzofuran
Fluorene
C1-Fluorenes
C2-Fluorenes
C3-Fluorenes
Carbazole
Anthracene
Phenanthrene
C1-Phenanthrenes/Anthracenes
C2-Phenanthrenes/Anthracenes
C3-Phenanthrenes/Anthracenes
C4-Phenanthrenes/Anthracenes
Dibenzothiophene
C1-Dibenzothiophenes
C2-Dibenzothiophenes
C3-Dibenzothiophenes
C4-Dibenzothiophenes
Fluoranthene
Pyrene
C1-Fluoranthenes/Pyrenes
C2-Fluoranthenes/Pyrenes
C3-Fluoranthenes/Pyrenes
C4-Fluoranthenes/Pyrenes
Naphthobenzothiophene
C1-Naphthobenzothiophenes
C2-Naphthobenzothiophenes
C3-Naphthobenzothiophenes
C4-Naphthobenzothiophenes
Benz(a)anthracene
Chrysene/Triphenylene
C1-Chrysenes
C2-Chrysenes
C3-Chrysenes
C4-Chrysenes
Benzo(b)fluoranthene
Benzo(k,j)fluoranthene
Benzo(a)fluoranthene
Benzo(e)pyrene
Benzo(a)pyrene
Perylene
Indeno(1,2,3-c,d)pyrene
Dibenzo(a,h)anthracene
Benzo(g,h,i)perylene

Polycyclic Aromatic Hydrocarbon Total Ion Chromatograms

File : C:\HPCHEM\1\DATA\MS30860\ARC1122.D
Operator : YM
Acquired : 6 Apr 2012 2:44 am using AcqMethod PAH-2010
Instrument : GC/MS Ins
Sample Name: HUMT-P5-TN(031812)1-A
Misc Info :
Vial Number: 15



File : C:\HPCHEM\1\DATA\MS30860\ARC1123.D
Operator : YM
Acquired : 6 Apr 2012 3:52 am using AcqMethod PAH-2010
Instrument : GC/MS Ins
Sample Name: HUMT-P5-TN(031812)2-A
Misc Info :
Vial Number: 16



Total Petroleum Hydrocarbons/ Aliphatic Hydrocarbons Raw Data

B&B LABORATORIES ALIPHATICS/TEH QA FORM

Extraction Page: ENU-2755	Analyst: C. Jackson
Client: Arcadis	Date: 4-15-2012
Job: #: J11913	Project Quality Manager: D Franz
SDG #: 12032001	Date: 04/18/12

Initial Calibration: No failure	ICV No failure
Surrogate Recoveries: No failure	
Procedural Blank: No failure	
Blank Spike: No failure	
Blank Spike Duplicate: No failure	
Laboratory Duplicate: NA	
Matrix Spike: NA	
Matirx Spike Duplicate: NA	
Reference Oil No failure	
Mass Discrimination Check (n-C36/n-C20 >0.7) No failure	

Sequence Name: C:\HPCHEM\1\SEQUENCE\GC31940.S
Comment: 3/26/12 Entrix MC 252/Arcadis
Operator: MAG
Data Path: C:\HPCHEM\1\DATA\GC31940\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	DualTwr -	c:\hpchem\1\data\gc31941			
2	RearSamp	51	GC31941A	ALI	Solvent blank
3	Sample	1	GC31940A	ALI	Solvent blank
4	RearSamp	52	GC31941B	ALI	AL-WKCC-25-019 (CCC)
5	Sample	2	GC31940B	ALI	AL-WKCC-25-019 (CCC)
6	RearSamp	53	GC31941C	ALI	PEM Low
7	Sample	3	GC31940C	ALI	PEM Low
8	RearSamp	54	GC31941D	ALI	PEM High
9	Sample	4	GC31940D	ALI	PEM High
10	RearSamp	55	ENV2740A	ALI	Procedural Blank
11	Sample	5	ENV2755A	ALI	Procedural Blank
12	RearSamp	56	ENV2740B	ALI	Blank Spike
13	Sample	6	ENV2755B	ALI	Blank Spike
14	RearSamp	57	ENV2740C	ALI	Blank Spike Duplicate
15	Sample	7	ENV2755C	ALI	Blank Spike Duplicate
16	RearSamp	58	ENV2740D	ALI	Duplicate (ENX0620)
17	Sample	8	ARC1122	ALI	
18	RearSamp	59	ENX0620	ALI	
19	Sample	9	ARC1123	ALI	
20	RearSamp	60	ENX0622	ALI	
21	Sample	10	GC31940E	ALI	AL-WKCC-25-019 (CCC)
22	RearSamp	61	ENX0618	ALI	
23	Sample	11	GC31940F	ALI	AL-WKRef OIl-40-004
24	RearSamp	62	ENX3328	ALI	
25	Sample	1	GC31940Z	ALI	Solvent Blank
26	RearSamp	63	GC31941E	ALI	AL-WKCC-25-019 (CCC)
27	Sample	1	GC31940Z	ALI	Solvent Blank
28	RearSamp	64	GC31941F	ALI	AL-WKMC252-40-004
29	Sample	12	GC31940G	ALI	AL-WKCC-25-019 (CCC)
30	RearSamp	65	GC31941Z	ALI	Solvent Blank
31	Sample	1	GC31940Z	ALI	Solvent Blank
32	RearSamp	66	GC31941G	ALI	AL-WKCC-25-019 (CCC)
33	Sample	1	GC31940Z	ALI	Solvent Blank

Evaluate Continuing Calibration Report

Data File : L:\1\DATA\GC31940\GC31940B.D
Acq On : 26 Mar 2012 2:38 pm
Sample : AL-WKCC-25-019 (CCC)
Misc :
IntFile : autoint1.e

Vial: 2
Operator: MAG
Inst : GC3
Multiplr: 1.00

Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:45:09 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	n-hexadecane-d34	1.000	1.000	0.0	87	0.00
2		n-C8	0.898	0.925	-3.0	91	-0.01
3		n-C9	0.897	0.901	-0.4	89	-0.01
4		n-C10	0.928	0.935	-0.8	88	0.00
5		n-C11	0.944	0.953	-1.0	88	0.00
6	S	n-dodecane-d26	0.860	0.874	-1.6	89	0.00
7		n-C12	0.974	0.980	-0.6	87	0.00
10		n-C13	1.000	1.016	-1.6	89	0.00
12		n-C14	1.049	1.065	-1.5	89	0.00
14		n-C15	1.042	1.075	-3.2	90	0.00
15		n-C16	1.069	1.094	-2.3	89	-0.01
16	I	5a-androstane	1.000	1.000	0.0	88	-0.02
18		n-C17	0.897	0.918	-2.3	91	-0.01
19		Pristane	0.928	0.950	-2.4	91	-0.01
20		n-C18	0.920	0.940	-2.2	91	-0.01
21		Phytane	0.915	0.941	-2.8	91	-0.01
22		n-C19	0.927	0.948	-2.3	91	-0.01
23	S	n-eicosane-d42	0.803	0.837	-4.2	93	-0.01
24		n-C20	0.941	0.956	-1.6	92	-0.02
25		n-C21	0.931	0.957	-2.8	92	-0.02
26		n-C22	0.951	0.977	-2.7	92	-0.02
27		n-C23	0.938	0.965	-2.9	92	-0.02
28		n-C24	0.939	0.959	-2.1	92	-0.02
29		n-C25	0.971	0.989	-1.9	91	-0.02
30		n-C26	0.969	0.989	-2.1	92	-0.02
31		n-C27	0.947	0.963	-1.7	91	-0.02
32		n-C28	0.951	0.965	-1.5	91	-0.02
33		n-C29	0.968	0.967	0.1	91	-0.02
34	S	n-triacontane-d62	0.868	0.879	-1.3	90	-0.02
35		n-C30	0.938	0.942	-0.4	91	-0.03
36		n-C31	0.952	0.955	-0.3	91	-0.03
37		n-C32	0.973	0.966	0.7	91	-0.03
38		n-C33	0.917	0.906	1.2	91	-0.03
39		n-C34	0.962	0.934	2.9	91	-0.04
40		n-C35	0.990	0.961	2.9	91	-0.04
41		n-C36	1.013	0.982	3.1	92	-0.06
42		n-C37	0.984	0.937	4.8	90	-0.07
43		n-C38	0.980	0.932	4.9	91	-0.09
45		n-C40	0.895	0.837	6.5	90	-0.13

Evaluate Continuing Calibration Report - Not Founds

Data File : L:\1\DATA\GC31940\GC31940B.D Vial: 2
Acq On : 26 Mar 2012 2:38 pm Operator: MAG
Sample : AL-WKCC-25-019 (CCC) Inst : GC3
Misc : Multiplr: 1.00
IntFile : autoint1.e

Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:45:09 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
8	i-13	0.042	0.000	100.0#	0#	-9.69#
9	i-14	0.044	0.000	100.0#	0#	-9.90#
11	i-15	0.043	0.000	100.0#	0#	-11.18#
13	i-16	0.045	0.000	100.0#	0#	-12.07#
17	i-18	0.046	0.000	100.0#	0#	-14.08#
44	n-C39	0.047	0.000	100.0#	0#	-45.91#
46	TPH	0.046	0.000	100.0#	0#	-37.12#
47	TRH1	0.046	0.000	100.0#	0#	-5.33#
48	TRH2	0.046	0.000	100.0#	0#	-11.90#
49	TRH3	0.046	0.000	100.0#	0#	-17.83#
50	TRH4	0.046	0.000	100.0#	0#	-24.43#
51	TRH5	0.046	0.000	100.0#	0#	-30.60#
52	TRH6	0.046	0.000	100.0#	0#	-38.73#
53	GRO	0.046	0.000	100.0#	0#	-5.33#
54	DRO	0.046	0.000	100.0#	0#	-14.46#
55	RRO	0.046	0.000	100.0#	0#	-33.36#

Quantitation Report (QT Reviewed)

Data File : L:\1\DATA\GC31940\GC31940B.D
Vial: 2
Acq On : 26 Mar 2012 2:38 pm
Operator: MAG
Sample : AL-WKCC-25-019 (CCC)
Inst : GC3
Misc :
Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Mar 26 17:24 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.24	93505	20.012	ug/mlm
16)	I	5a-androstane	18.64	112990	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	102151	25.432	ug/mlm
23)	S	n-eicosane-d42	17.99	118125	26.069	ug/ml
34)	S	n-triacontane-d62	29.95	124240	25.373	ug/ml
		Target Compounds				
2)		n-C8	3.79	106240	25.328	ug/ml
3)		n-C9	5.12	105577	25.201	ug/ml
4)		n-C10	6.53	108881	25.113	ug/mlm
5)		n-C11	7.88	110818	25.123	ug/mlm
7)		n-C12	9.13	114173	25.075	ug/mlm
10)		n-C13	10.30	118681	25.409	ug/mlm
12)		n-C14	11.39	122940	25.084	ug/mlm
14)		n-C15	12.43	125417	25.753	ug/mlm
15)		n-C16	13.50	127977	25.627	ug/mlm
18)		n-C17	14.63	128889	25.468	ug/ml
19)		Pristane	14.75	132728	25.354	ug/mlm
20)		n-C18	15.84	133044	25.626	ug/mlm
21)		Phytane	16.00	132665	25.691	ug/ml
22)		n-C19	17.10	133941	25.602	ug/mlm
24)		n-C20	18.39	135704	25.572	ug/mlm
25)		n-C21	19.71	135760	25.854	ug/ml
26)		n-C22	21.02	137091	25.559	ug/ml
27)		n-C23	22.31	136943	25.871	ug/ml
28)		n-C24	23.58	136401	25.761	ug/ml
29)		n-C25	24.82	139217	25.406	ug/ml
30)		n-C26	26.02	137534	25.149	ug/ml
31)		n-C27	27.19	135219	25.313	ug/ml
32)		n-C28	28.33	136419	25.419	ug/ml
33)		n-C29	29.42	136525	25.008	ug/ml
35)		n-C30	30.48	134165	25.359	ug/mlm
36)		n-C31	31.52	135419	25.209	ug/mlm
37)		n-C32	32.53	134213	24.464	ug/mlm
38)		n-C33	33.65	128228	24.796	ug/mlm
39)		n-C34	34.94	131644	24.254	ug/mlm
40)		n-C35	36.44	133441	23.885	ug/mlm
41)		n-C36	38.20	136469	23.878	ug/mlm
42)		n-C37	40.31	131678	23.722	ug/mlm
43)		n-C38	42.81	131443	23.784	ug/mlm
45)		n-C40	49.45	119062	23.573	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

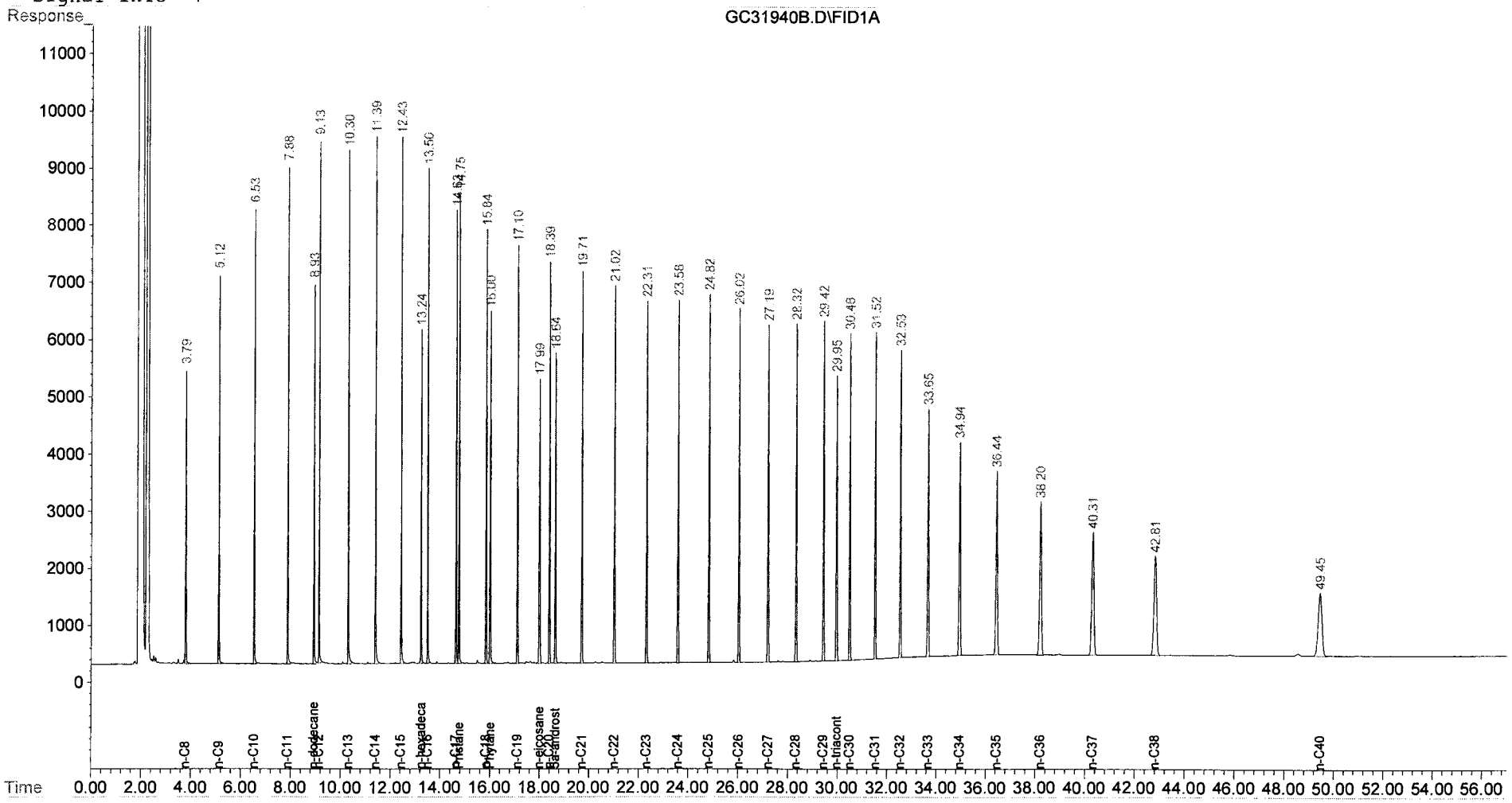
Quantitation Report

Data File : L:\1\DATA\GC31940\GC31940B.D
Acq On : 26 Mar 2012 2:38 pm
Sample : AL-WKCC-25-019 (CCC)
Misc :
IntFile : autoint1.e
Quant Time: Mar 26 17:24 2012 Quant Results File: C08F0323.RES

Vial: 2
Operator: MAG
Inst : GC3
Multiplr: 1.00

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Evaluate Continuing Calibration Report

Data File : L:\1\DATA\GC31940\GC31940E.D Vial: 10
Acq On : 27 Mar 2012 12:19 am Operator: MAG
Sample : AL-WKCC-25-019 (CCC) Inst : GC3
Misc : Multiplr: 1.00
IntFile : autoint1.e

Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:45:09 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	n-hexadecane-d34	1.000	1.000	0.0	102	0.00
2		n-C8	0.898	0.882	1.8	101	-0.01
3		n-C9	0.897	0.881	1.8	101	-0.01
4		n-C10	0.928	0.929	-0.1	102	0.00
5		n-C11	0.944	0.951	-0.7	102	0.00
6	S	n-dodecane-d26	0.860	0.869	-1.0	103	0.00
7		n-C12	0.974	0.980	-0.6	101	0.00
10		n-C13	1.000	1.013	-1.3	103	0.00
12		n-C14	1.049	1.071	-2.1	104	0.00
14		n-C15	1.042	1.072	-2.9	105	-0.01
15		n-C16	1.069	1.094	-2.3	104	-0.01
16	I	5a-androstane	1.000	1.000	0.0	102	-0.02
18		n-C17	0.897	0.918	-2.3	105	-0.01
19		Pristane	0.928	0.949	-2.3	105	-0.01
20		n-C18	0.920	0.941	-2.3	106	-0.02
21		Phytane	0.915	0.936	-2.3	105	-0.02
22		n-C19	0.927	0.946	-2.0	106	-0.02
23	S	n-eicosane-d42	0.803	0.833	-3.7	107	-0.02
24		n-C20	0.941	0.957	-1.7	106	-0.02
25		n-C21	0.931	0.960	-3.1	107	-0.02
26		n-C22	0.951	0.984	-3.5	108	-0.02
27		n-C23	0.938	0.975	-3.9	108	-0.02
28		n-C24	0.939	0.973	-3.6	108	-0.02
29		n-C25	0.971	1.004	-3.4	108	-0.02
30		n-C26	0.969	1.004	-3.6	108	-0.02
31		n-C27	0.947	0.980	-3.5	108	-0.02
32		n-C28	0.951	0.984	-3.5	108	-0.03
33		n-C29	0.968	0.987	-2.0	108	-0.03
34	S	n-triacontane-d62	0.868	0.898	-3.5	106	-0.03
35		n-C30	0.938	0.965	-2.9	108	-0.03
36		n-C31	0.952	0.976	-2.5	108	-0.03
37		n-C32	0.973	0.990	-1.7	108	-0.03
38		n-C33	0.917	0.928	-1.2	108	-0.03
39		n-C34	0.962	0.957	0.5	108	-0.04
40		n-C35	0.990	0.989	0.1	109	-0.05
41		n-C36	1.013	1.003	1.0	108	-0.06
42		n-C37	0.984	0.967	1.7	108	-0.07
43		n-C38	0.980	0.950	3.1	108	-0.09
45		n-C40	0.895	0.860	3.9	108	-0.14

Evaluate Continuing Calibration Report - Not Founds

Data File : L:\1\DATA\GC31940\GC31940E.D Vial: 10
Acq On : 27 Mar 2012 12:19 am Operator: MAG
Sample : AL-WKCC-25-019 (CCC) Inst : GC3
Misc : Multiplr: 1.00
IntFile : autoint1.e

Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:45:09 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
8	i-13	0.042	0.000	100.0#	0#	-9.69#
9	i-14	0.044	0.000	100.0#	0#	-9.90#
11	i-15	0.043	0.000	100.0#	0#	-11.18#
13	i-16	0.045	0.000	100.0#	0#	-12.07#
17	i-18	0.046	0.000	100.0#	0#	-14.08#
44	n-C39	0.047	0.000	100.0#	0#	-45.91#
46	TPH	0.046	0.000	100.0#	0#	-37.12#
47	TRH1	0.046	0.000	100.0#	0#	-5.33#
48	TRH2	0.046	0.000	100.0#	0#	-11.90#
49	TRH3	0.046	0.000	100.0#	0#	-17.83#
50	TRH4	0.046	0.000	100.0#	0#	-24.43#
51	TRH5	0.046	0.000	100.0#	0#	-30.60#
52	TRH6	0.046	0.000	100.0#	0#	-38.73#
53	GRO	0.046	0.000	100.0#	0#	-5.33#
54	DRO	0.046	0.000	100.0#	0#	-14.46#
55	RRO	0.046	0.000	100.0#	0#	-33.36#

Quantitation Report (QT Reviewed)

Data File : L:\1\DATA\GC31940\GC31940E.D Vial: 10
Acq On : 27 Mar 2012 12:19 am Operator: MAG
Sample : AL-WKCC-25-019 (CCC) Inst : GC3
Misc : Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Mar 27 7:44 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.23	108899	20.012	ug/mlm
16)	I	5a-androstane	18.63	131097	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	118375	25.305	ug/mlm
23)	S	n-eicosane-d42	17.99	136354	25.936	ug/mlm
34)	S	n-triacontane-d62	29.95	147202	25.910	ug/ml
		Target Compounds				
2)		n-C8	3.79	118011	24.158	ug/mlm
3)		n-C9	5.12	120299	24.656	ug/mlm
4)		n-C10	6.53	125968	24.947	ug/mlm
5)		n-C11	7.88	128862	25.084	ug/mlm
7)		n-C12	9.13	132950	25.071	ug/mlm
10)		n-C13	10.30	137798	25.332	ug/mlm
12)		n-C14	11.39	144022	25.231	ug/mlm
14)		n-C15	12.43	145768	25.701	ug/mlm
15)		n-C16	13.50	149062	25.630	ug/mlm
18)		n-C17	14.63	149444	25.451	ug/ml
19)		Pristane	14.75	153911	25.340	ug/mlm
20)		n-C18	15.83	154533	25.654	ug/mlm
21)		Phytane	16.00	153030	25.541	ug/mlm
22)		n-C19	17.09	155001	25.535	ug/mlm
24)		n-C20	18.39	157606	25.597	ug/mlm
25)		n-C21	19.71	157920	25.920	ug/ml
26)		n-C22	21.02	160100	25.726	ug/ml
27)		n-C23	22.31	160603	26.150	ug/ml
28)		n-C24	23.58	160495	26.124	ug/ml
29)		n-C25	24.82	164028	25.799	ug/ml
30)		n-C26	26.02	161937	25.521	ug/ml
31)		n-C27	27.19	159610	25.752	ug/ml
32)		n-C28	28.32	161459	25.929	ug/ml
33)		n-C29	29.42	161646	25.520	ug/ml
35)		n-C30	30.48	159420	25.970	ug/mlm
36)		n-C31	31.51	160713	25.785	ug/mlm
37)		n-C32	32.53	159674	25.085	ug/mlm
38)		n-C33	33.65	152356	25.393	ug/mlm
39)		n-C34	34.94	156576	24.863	ug/mlm
40)		n-C35	36.44	159409	24.592	ug/mlm
41)		n-C36	38.20	161639	24.376	ug/ml
42)		n-C37	40.30	157686	24.484	ug/mlm
43)		n-C38	42.81	155405	24.236	ug/mlm
45)		n-C40	49.44	141842	24.205	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

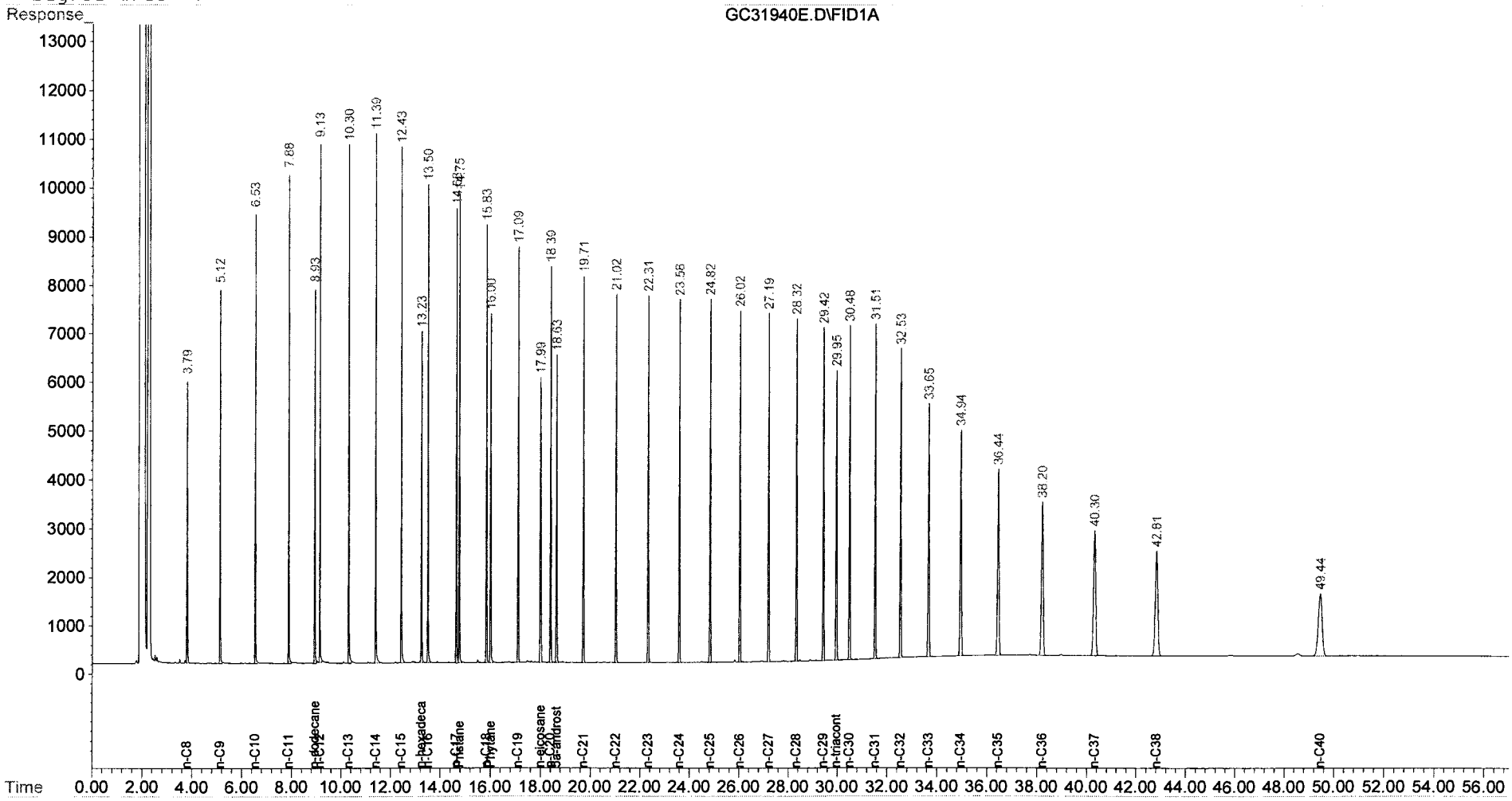
Quantitation Report

Data File : L:\1\DATA\GC31940\GC31940E.D
Acq On : 27 Mar 2012 12:19 am
Sample : AL-WKCC-25-019 (CCC)
Misc :
IntFile : autoint1.e
Quant Time: Mar 27 7:44 2012 Quant Results File: C08F0323.RES

Vial: 10
Operator: MAG
Inst : GC3
Multiplr: 1.00

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Evaluate Continuing Calibration Report

Data File : L:\1\DATA\GC31940\GC31940G.D Vial: 12
Acq On : 27 Mar 2012 4:42 am Operator: MAG
Sample : AL-WKCC-25-019 (CCC) Inst : GC3
Misc : Multiplr: 1.00
IntFile : autoint1.e

Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:45:09 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	n-hexadecane-d34	1.000	1.000	0.0	109	-0.01
2		n-C8	0.898	0.883	1.7	109	-0.01
3		n-C9	0.897	0.883	1.6	109	0.00
4		n-C10	0.928	0.936	-0.9	111	0.00
5		n-C11	0.944	0.959	-1.6	110	0.00
6	S	n-dodecane-d26	0.860	0.885	-2.9	112	0.00
7		n-C12	0.974	0.993	-2.0	110	0.00
10		n-C13	1.000	1.025	-2.5	112	0.00
12		n-C14	1.049	1.066	-1.6	111	0.00
14		n-C15	1.042	1.073	-3.0	112	-0.01
15		n-C16	1.069	1.092	-2.2	111	-0.01
16	I	5a-androstane	1.000	1.000	0.0	110	-0.02
18		n-C17	0.897	0.916	-2.1	113	-0.01
19		Pristane	0.928	0.952	-2.6	113	-0.01
20		n-C18	0.920	0.941	-2.3	113	-0.02
21		Phytane	0.915	0.929	-1.5	112	-0.02
22		n-C19	0.927	0.944	-1.8	113	-0.02
23	S	n-eicosane-d42	0.803	0.833	-3.7	115	-0.02
24		n-C20	0.941	0.955	-1.5	114	-0.02
25		n-C21	0.931	0.954	-2.5	114	-0.02
26		n-C22	0.951	0.973	-2.3	114	-0.02
27		n-C23	0.938	0.960	-2.3	113	-0.03
28		n-C24	0.939	0.956	-1.8	113	-0.03
29		n-C25	0.971	0.986	-1.5	113	-0.03
30		n-C26	0.969	0.985	-1.7	113	-0.03
31		n-C27	0.947	0.961	-1.5	113	-0.03
32		n-C28	0.951	0.962	-1.2	113	-0.03
33		n-C29	0.968	0.964	0.4	113	-0.03
34	S	n-triacontane-d62	0.868	0.875	-0.8	111	-0.03
35		n-C30	0.938	0.937	0.1	113	-0.03
36		n-C31	0.952	0.943	0.9	112	-0.03
37		n-C32	0.973	0.953	2.1	112	-0.03
38		n-C33	0.917	0.888	3.2	111	-0.04
39		n-C34	0.962	0.910	5.4	110	-0.05
40		n-C35	0.990	0.932	5.9	110	-0.05
41		n-C36	1.013	0.939	7.3	109	-0.06
42		n-C37	0.984	0.905	8.0	108	-0.07
43		n-C38	0.980	0.883	9.9	107	-0.09
45		n-C40	0.895	0.794	11.3	107	-0.13

Evaluate Continuing Calibration Report - Not Founds

Data File : L:\1\DATA\GC31940\GC31940G.D Vial: 12
Acq On : 27 Mar 2012 4:42 am Operator: MAG
Sample : AL-WKCC-25-019 (CCC) Inst : GC3
Misc : Multiplr: 1.00
IntFile : autoint1.e

Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:45:09 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
8	i-13	0.042	0.000	100.0#	0#	-9.69#
9	i-14	0.044	0.000	100.0#	0#	-9.90#
11	i-15	0.043	0.000	100.0#	0#	-11.18#
13	i-16	0.045	0.000	100.0#	0#	-12.07#
17	i-18	0.046	0.000	100.0#	0#	-14.08#
44	n-C39	0.047	0.000	100.0#	0#	-45.91#
46	TPH	0.046	0.000	100.0#	0#	-37.12#
47	TRH1	0.046	0.000	100.0#	0#	-5.33#
48	TRH2	0.046	0.000	100.0#	0#	-11.90#
49	TRH3	0.046	0.000	100.0#	0#	-17.83#
50	TRH4	0.046	0.000	100.0#	0#	-24.43#
51	TRH5	0.046	0.000	100.0#	0#	-30.60#
52	TRH6	0.046	0.000	100.0#	0#	-38.73#
53	GRO	0.046	0.000	100.0#	0#	-5.33#
54	DRO	0.046	0.000	100.0#	0#	-14.46#
55	RRO	0.046	0.000	100.0#	0#	-33.36#

Quantitation Report (QT Reviewed)

Data File : L:\1\DATA\GC31940\GC31940G.D
Vial: 12
Acq On : 27 Mar 2012 4:42 am
Operator: MAG
Sample : AL-WKCC-25-019 (CCC)
Inst : GC3
Misc :
Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Mar 27 7:49 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.23	116759	20.012	ug/mlm
16)	I	5a-androstane	18.63	140410	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	129248	25.769	ug/mlm
23)	S	n-eicosane-d42	17.99	146049	25.937	ug/ml
34)	S	n-triacontane-d62	29.94	153630	25.248	ug/mlm
		Target Compounds				
2)		n-C8	3.79	126663	24.183	ug/ml
3)		n-C9	5.12	129268	24.711	ug/ml
4)		n-C10	6.53	136065	25.132	ug/mlm
5)		n-C11	7.88	139297	25.289	ug/mlm
7)		n-C12	9.13	144499	25.415	ug/mlm
10)		n-C13	10.30	149441	25.623	ug/mlm
12)		n-C14	11.39	153642	25.105	ug/mlm
14)		n-C15	12.43	156324	25.706	ug/mlm
15)		n-C16	13.49	159408	25.563	ug/mlm
18)		n-C17	14.63	159714	25.396	ug/ml
19)		Pristane	14.75	165281	25.407	ug/ml
20)		n-C18	15.83	165484	25.650	ug/ml
21)		Phytane	16.00	162751	25.362	ug/mlm
22)		n-C19	17.09	165749	25.495	ug/mlm
24)		n-C20	18.39	168496	25.550	ug/ml
25)		n-C21	19.70	168193	25.775	ug/ml
26)		n-C22	21.01	169604	25.446	ug/ml
27)		n-C23	22.31	169319	25.741	ug/mlm
28)		n-C24	23.58	168904	25.670	ug/mlm
29)		n-C25	24.82	172460	25.326	ug/mlm
30)		n-C26	26.02	170240	25.050	ug/mlm
31)		n-C27	27.18	167641	25.254	ug/mlm
32)		n-C28	28.32	169109	25.357	ug/mlm
33)		n-C29	29.41	169074	24.922	ug/mlm
35)		n-C30	30.48	165802	25.218	ug/mlm
36)		n-C31	31.51	166322	24.915	ug/mlm
37)		n-C32	32.53	164493	24.128	ug/mlm
38)		n-C33	33.65	156158	24.300	ug/mlm
39)		n-C34	34.93	159307	23.619	ug/mlm
40)		n-C35	36.43	160893	23.174	ug/mlm
41)		n-C36	38.20	162120	22.827	ug/mlm
42)		n-C37	40.30	158042	22.911	ug/mlm
43)		n-C38	42.81	154690	22.525	ug/mlm
45)		n-C40	49.45	140403	22.370	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

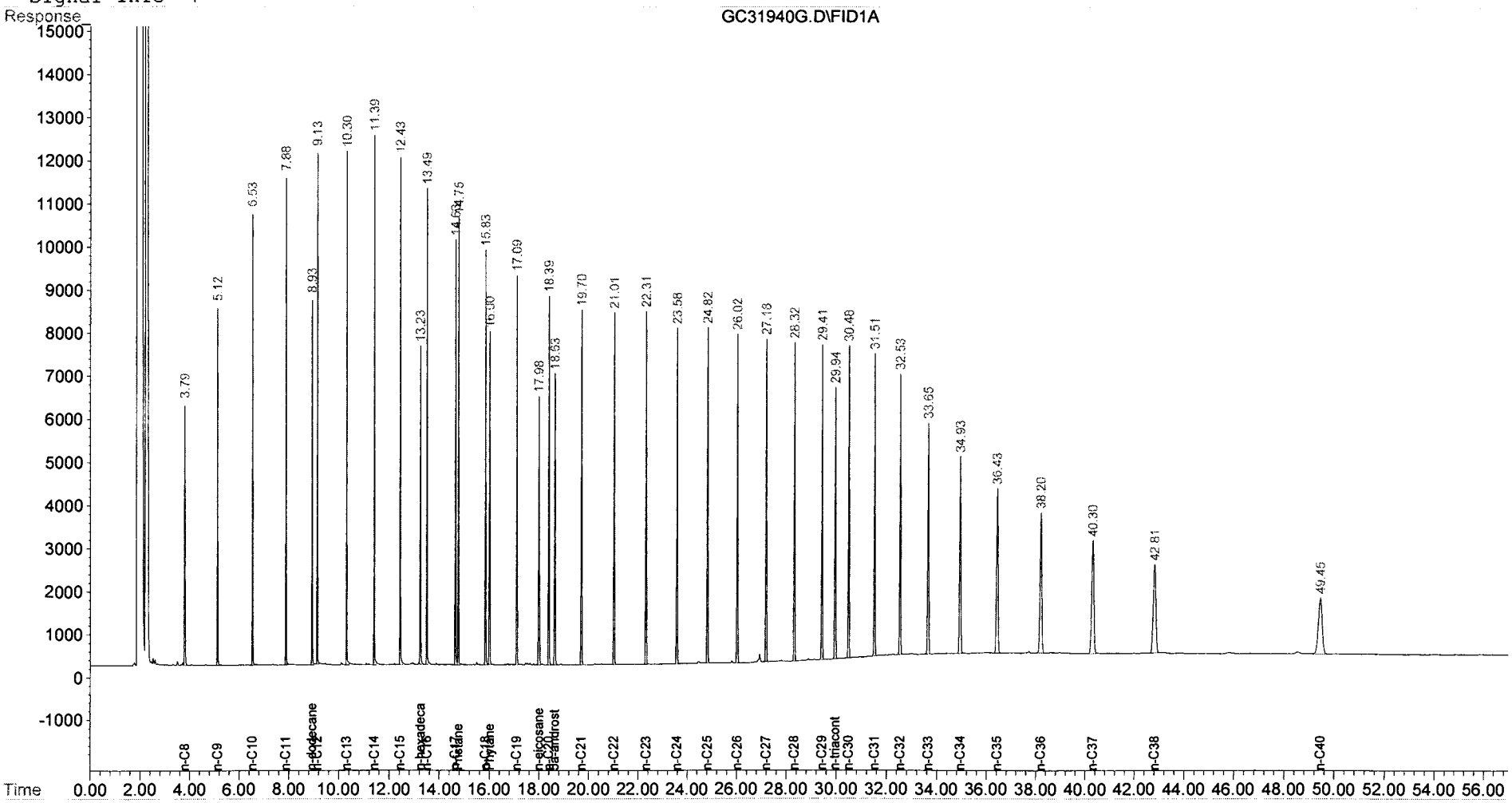
Quantitation Report

Data File : L:\1\DATA\GC31940\GC31940G.D
Acq On : 27 Mar 2012 4:42 am
Sample : AL-WKCC-25-019 (CCC)
Misc :
IntFile : autoint1.e
Quant Time: Mar 27 7:49 2012 Quant Results File: C08F0323.RES

Vial: 12
Operator: MAG
Inst : GC3
Multiplr: 1.00

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Data File Name	**GC31940C.D**	GC31940C.D
Sample Name	**PEM Low**	PEM Low
Misc Info		03/26/20 -1:6:
Data File Path	**C:\HPCHEM\4\DATA\GC31940**	ALI.M
Operator	**MAG**	
Date Acquired	**03/26/20 -1:6:**	1
Instrument Name	**GC3**	
Method File	**ALI.M**	
Vial Number	**3**	
Sample Multiplier	**1**	

#	Name	Ret Time	Target Response	Amount	Concentration
2)	n-C8	0.00	0	0.00	0.000
3)	n-C9	0.00	0	0.00	0.000
4)	n-C10	0.00	0	0.00	0.000
5)	n-C11	0.00	0	0.00	0.000
7)	n-C12	0.00	0	0.00	0.000
8)	i-13	0.00	0	0.00	0.000
9)	i-14	0.00	0	0.00	0.000
10)	n-C13	0.00	0	0.00	0.000
11)	i-15	0.00	0	0.00	0.000
12)	n-C14	0.00	0	0.00	0.000
13)	i-16	0.00	0	0.00	0.000
14)	n-C15	0.00	0	0.00	0.000
15)	n-C16	0.00	0	0.00	0.000
17)	i-18	0.00	0	0.00	0.000
18)	n-C17	0.00	0	0.00	0.000
19)	Pristane	0.00	0	0.00	0.000
20)	n-C18	0.00	0	0.00	0.000
21)	Phytane	0.00	0	0.00	0.000
22)	n-C19	0.00	0	0.00	0.000
24)	n-C20	0.00	0	0.00	0.000
25)	n-C21	0.00	0	0.00	0.000
26)	n-C22	0.00	0	0.00	0.000
27)	n-C23	0.00	0	0.00	0.000
28)	n-C24	0.00	0	0.00	0.000
29)	n-C25	0.00	0	0.00	0.000
30)	n-C26	0.00	0	0.00	0.000
31)	n-C27	0.00	0	0.00	0.000
32)	n-C28	0.00	0	0.00	0.000
33)	n-C29	0.00	0	0.00	0.000
35)	n-C30	0.00	0	0.00	0.000
36)	n-C31	0.00	0	0.00	0.000
37)	n-C32	0.00	0	0.00	0.000
38)	n-C33	0.00	0	0.00	0.000
39)	n-C34	0.00	0	0.00	0.000
40)	n-C35	0.00	0	0.00	0.000
41)	n-C36	0.00	0	0.00	0.000
42)	n-C37	0.00	0	0.00	0.000
43)	n-C38	0.00	0	0.00	0.000
44)	n-C39	0.00	0	0.00	0.000
45)	n-C40	0.00	0	0.00	0.000
46)	TPH	13.24	2983237	446.50	446.502
47)	TRH1	13.24	142796	21.37	21.372
48)	TRH2	18.64	168635	25.24	25.240
49)	TRH3	20.26	11273	1.69	1.687
50)	TRH4	29.95	14018	2.10	2.098
51)	TRH5	36.12	24950	3.73	3.734
52)	TRH6	44.60	19497	2.92	2.918
53)	GRO	0.00	0	0.00	0.000
54)	DRO	0.00	0	0.00	0.000
55)	RRO	0.00	0	0.00	0.000
6)	n-dodecane-d26	8.93	8866	1.77	88.7
23)	n-eicosane-d42	18.00	11513	1.96	97.8
34)	n-triacontane-d62	29.95	13122	2.06	103.1
1)	n-hexadecane-d34	13.24	116366	20.01	
16)	5a-androstane	18.64	146837	20.03	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\4\DATA\GC31940\GC31940C.D Vial: 3
Acq On : 26 Mar 2012 16:39 Operator: MAG
Sample : PEM Low Inst : GC3
Misc : Multiplr: 1.00
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Mar 27 14:15 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.24	116367	20.012	ug/mlm
16)	I	5a-androstane	18.64	146837	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	8867	1.774	ug/mlm
23)	S	n-eicosane-d42	18.00	11513	1.955	ug/mlm
34)	S	n-triacontane-d62	29.95	13122	2.062	ug/mlm
		Target Compounds				
46)		TPH	13.24f	2983238	446.502	ug/mlm
47)		TRH1	13.24f	142797	21.372	ug/mlm
48)		TRH2	18.64f	168636	25.240	ug/mlm
49)		TRH3	20.26	11273	1.687	ug/mlm
50)		TRH4	29.95f	14019	2.098	ug/mlm
51)		TRH5	36.12	24951	3.734	ug/mlm
52)		TRH6	44.60f	19497	2.918	ug/mlm

Quantitation Report

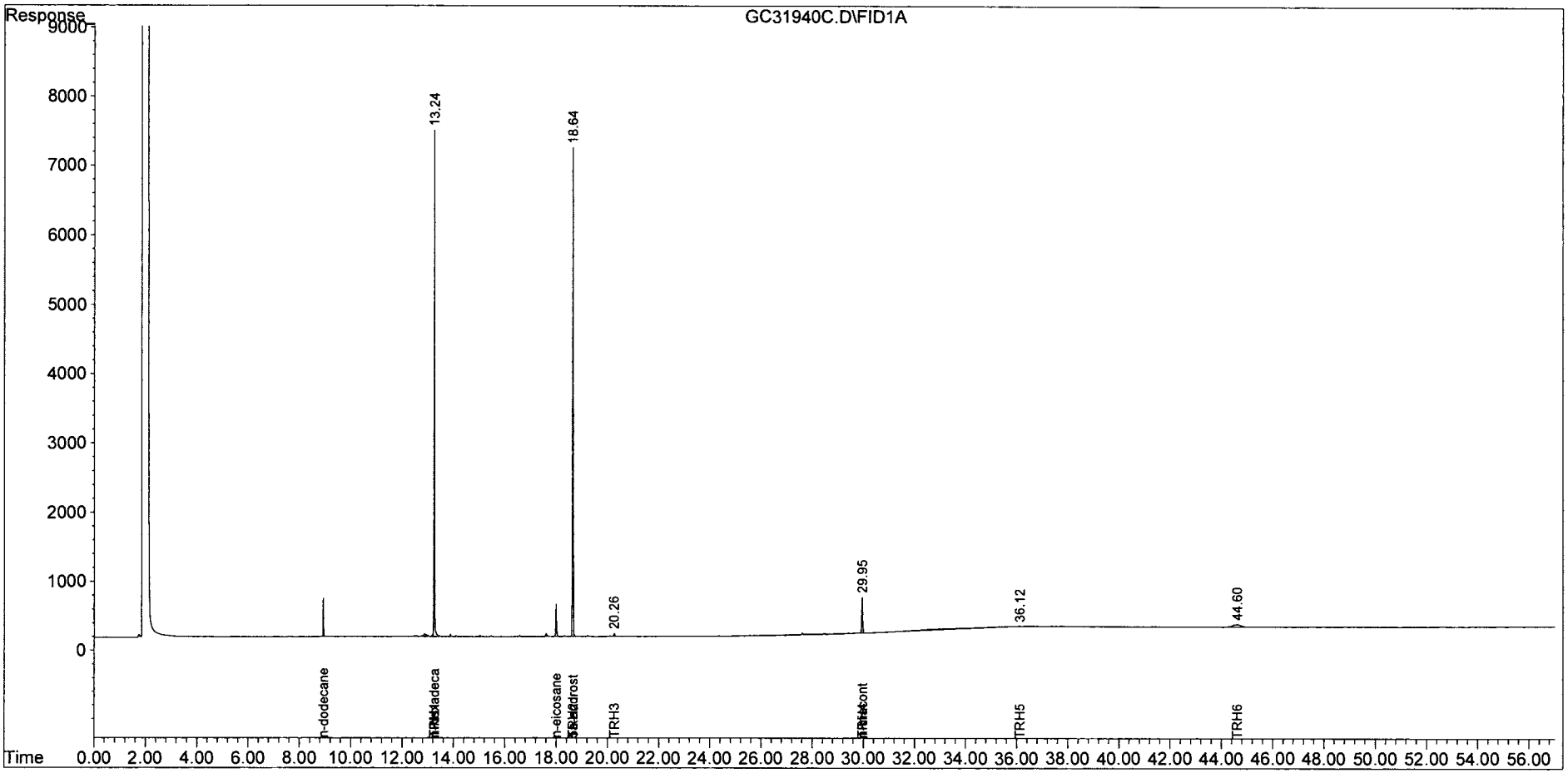
Data File : C:\HPCHEM\4\DATA\GC31940\GC31940C.D Vial: 3
Acq On : 26 Mar 2012 16:39 Operator: MAG
Sample : PEM Low Inst : GC3
Misc : Multiplr: 1.00
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Mar 27 14:15 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Data File Name	**GC31940D.D**	GC31940D.D
Sample Name	**PEM High**	PEM High
Misc Info		03/26/20 -1:5:
Data File Path	**L:\1\DATA\GC31940**	ALI.M
Operator	**MAG**	
Date Acquired	**03/26/20 -1:5:**	0.25
Instrument Name	**GC3**	
Method File	**ALI.M**	
Vial Number	**4**	
Sample Multiplier	**0.25**	

#	Name	Ret Time	Target Response	Amount	Concentration
2)	n-C8	0.00	0	0.00	0.000
3)	n-C9	0.00	0	0.00	0.000
4)	n-C10	0.00	0	0.00	0.000
5)	n-C11	0.00	0	0.00	0.000
7)	n-C12	0.00	0	0.00	0.000
8)	i-13	0.00	0	0.00	0.000
9)	i-14	0.00	0	0.00	0.000
10)	n-C13	0.00	0	0.00	0.000
11)	i-15	0.00	0	0.00	0.000
12)	n-C14	0.00	0	0.00	0.000
13)	i-16	0.00	0	0.00	0.000
14)	n-C15	0.00	0	0.00	0.000
15)	n-C16	0.00	0	0.00	0.000
17)	i-18	0.00	0	0.00	0.000
18)	n-C17	0.00	0	0.00	0.000
19)	Pristane	0.00	0	0.00	0.000
20)	n-C18	0.00	0	0.00	0.000
21)	Phytane	0.00	0	0.00	0.000
22)	n-C19	0.00	0	0.00	0.000
24)	n-C20	0.00	0	0.00	0.000
25)	n-C21	0.00	0	0.00	0.000
26)	n-C22	0.00	0	0.00	0.000
27)	n-C23	0.00	0	0.00	0.000
28)	n-C24	0.00	0	0.00	0.000
29)	n-C25	0.00	0	0.00	0.000
30)	n-C26	0.00	0	0.00	0.000
31)	n-C27	0.00	0	0.00	0.000
32)	n-C28	0.00	0	0.00	0.000
33)	n-C29	0.00	0	0.00	0.000
35)	n-C30	0.00	0	0.00	0.000
36)	n-C31	0.00	0	0.00	0.000
37)	n-C32	0.00	0	0.00	0.000
38)	n-C33	0.00	0	0.00	0.000
39)	n-C34	0.00	0	0.00	0.000
40)	n-C35	0.00	0	0.00	0.000
41)	n-C36	0.00	0	0.00	0.000
42)	n-C37	0.00	0	0.00	0.000
43)	n-C38	0.00	0	0.00	0.000
44)	n-C39	0.00	0	0.00	0.000
45)	n-C40	0.00	0	0.00	0.000
46)	TPH	13.25	5266778	21.25	21.251
47)	TRH1	13.25	1281504	5.17	5.171
48)	TRH2	18.66	1495220	6.03	6.033
49)	TRH3	25.51	5604	0.02	0.023
50)	TRH4	29.95	128556	0.52	0.519
51)	TRH5	36.61	7378	0.03	0.030
52)	TRH6	36.68	17776	0.07	0.072
53)	GRO	0.00	0	0.00	0.000
54)	DRO	0.00	0	0.00	0.000
55)	RRO	0.00	0	0.00	0.000
6)	n-dodecane-d26	8.93	91771	0.48	95.6
23)	n-eicosane-d42	17.99	107566	0.49	98.5
34)	n-triacontane-d62	29.95	121455	0.51	102.9
1)	n-hexadecane-d34	13.25	1117581	5.00	
16)	5a-androstane	18.66	1361685	5.01	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\4\DATA\GC31940\GC31940D.D Vial: 4
Acq On : 26 Mar 2012 17:44 Operator: MAG
Sample : PEM High Inst : GC3
Misc : Multiplr: 0.25
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Mar 27 13:43 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.25	1117581	20.012	ug/mlm
16)	I	5a-androstane	18.66	1361686	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	91772	0.478	ug/mlm
23)	S	n-eicosane-d42	17.99	107566	0.492	ug/mlm
34)	S	n-triacontane-d62	29.95	121456	0.515	ug/mlm
		Target Compounds				
46)		TPH	13.25f	5266778	21.251	ug/mlm
47)		TRH1	13.25f	1281504	5.171	ug/mlm
48)		TRH2	18.66f	1495221	6.033	ug/mlm
49)		TRH3	25.51f	5605	0.023	ug/mlm
50)		TRH4	29.95f	128557	0.519	ug/mlm
51)		TRH5	36.61	7378	0.030	ug/mlm
52)		TRH6	36.68	17776	0.072	ug/mlm

Quantitation Report

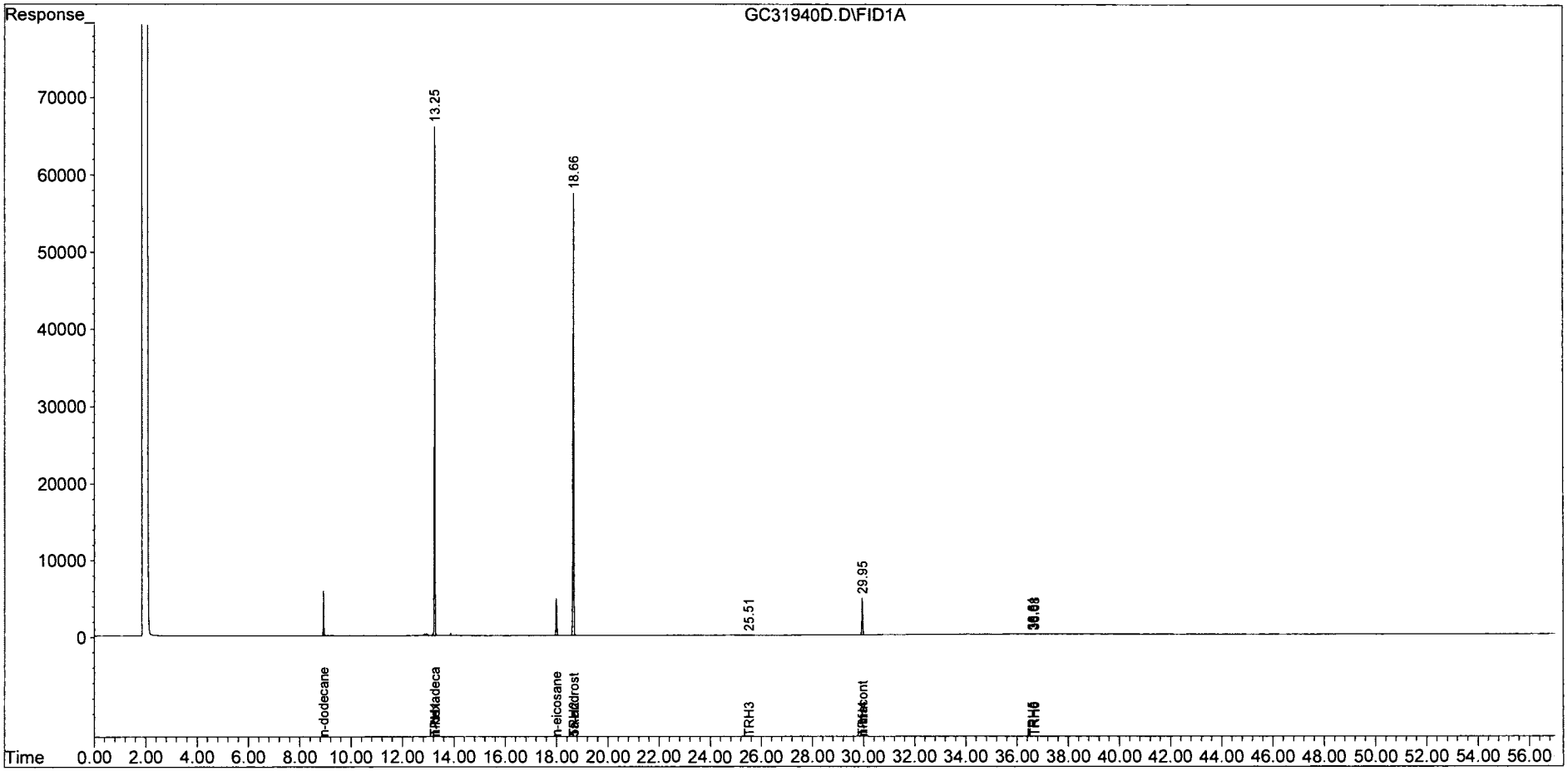
Data File : C:\HPCHEM\4\DATA\GC31940\GC31940D.D Vial: 4
Acq On : 26 Mar 2012 17:44 Operator: MAG
Sample : PEM High Inst : GC3
Misc : Multiplr: 0.25
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Mar 27 13:43 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Data File Name	**GC31940F.D**	GC31940F.D
Sample Name	**AL-WKRef OII-40-004**	AL-WKRef OII-40-004
Misc Info		03/27/20 -1:1:
Data File Path	**C:\HPCHEM\4\DATA\GC31940**	ALI.M
Operator	**MAG**	
Date Acquired	**03/27/20 -1:1:**	0.25
Instrument Name	**GC3**	
Method File	**ALI.M**	
Vial Number	**11**	
Sample Multiplier	**0.25**	

#	Name	Ret Time	Target Response	Amount	Concentration
2)	n-C8	0.00	0	0.00	0.000
3)	n-C9	5.14	3080176	12.29	12.286
4)	n-C10	6.55	3116809	12.01	12.013
5)	n-C11	7.90	2862897	10.85	10.846
7)	n-C12	9.16	2584098	9.48	9.484
8)	i-13	0.00	0	0.00	0.000
9)	i-14	0.00	0	0.00	0.000
10)	n-C13	10.33	2297711	8.22	8.220
11)	i-15	11.19	535565	1.84	1.838
12)	n-C14	11.42	2088905	7.12	7.122
13)	i-16	12.08	788717	2.64	2.639
14)	n-C15	12.46	2079123	7.13	7.134
15)	n-C16	13.53	1709345	5.72	5.720
17)	i-18	14.09	522737	1.50	1.503
18)	n-C17	14.66	1579326	4.66	4.660
19)	Pristane	14.77	820754	2.34	2.341
20)	n-C18	15.87	1304336	3.75	3.751
21)	Phytane	16.02	521973	1.51	1.509
22)	n-C19	17.13	1200377	3.43	3.426
24)	n-C20	18.43	1009200	2.84	2.839
25)	n-C21	19.74	838046	2.38	2.383
26)	n-C22	21.05	739875	2.06	2.060
27)	n-C23	22.34	646535	1.82	1.824
28)	n-C24	23.61	584672	1.65	1.649
29)	n-C25	24.85	503257	1.37	1.371
30)	n-C26	26.05	394246	1.08	1.076
31)	n-C27	27.22	297886	0.83	0.833
32)	n-C28	28.35	254767	0.71	0.709
33)	n-C29	29.44	230414	0.63	0.630
35)	n-C30	30.51	185390	0.52	0.523
36)	n-C31	31.54	149899	0.42	0.417
37)	n-C32	32.55	123708	0.34	0.337
38)	n-C33	33.67	111279	0.32	0.321
39)	n-C34	34.96	92994	0.26	0.256
40)	n-C35	36.46	72347	0.19	0.193
41)	n-C36	38.22	35095	0.09	0.092
42)	n-C37	40.32	27324	0.07	0.073
43)	n-C38	42.85	20910	0.06	0.056
44)	n-C39	45.85	17420	0.05	0.049
45)	n-C40	49.48	13834	0.04	0.041
46)	TPH	6.55	201418800	584.95	584.946
47)	TRH1	6.55	50337184	146.19	146.186
48)	TRH2	12.46	26569984	77.16	77.163
49)	TRH3	23.61	3269946	9.50	9.496
50)	TRH4	28.35	2437138	7.08	7.078
51)	TRH5	33.67	496534	1.44	1.442
52)	TRH6	40.32	718260	2.09	2.086
53)	GRO	0.00	0	0.00	0.000
54)	DRO	0.00	0	0.00	0.000
55)	RRO	0.00	0	0.00	0.000
6)	n-dodecane-d26	8.94	125501	0.52	104.4
23)	n-eicosane-d42	18.01	139154	0.46	91.7
34)	n-triacontane-d62	29.97	151245	0.46	92.2
1)	n-hexadecane-d34	13.26	1398882	5.00	
16)	5a-androstane	18.69	1891891	5.01	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\4\DATA\GC31940\GC31940F.D Vial: 11
Acq On : 27 Mar 2012 1:24 Operator: MAG
Sample : AL-WKRef OIl-40-004 Inst : GC3
Misc : Multiplr: 0.25
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Apr 4 21:15 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.26	1398883	20.012	ug/mlm
16)	I	5a-androstane	18.69	1891891	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.94	125502	0.522	ug/ml
23)	S	n-eicosane-d42	18.01	139155	0.459	ug/mlm
34)	S	n-triacontane-d62	29.97	151245	0.461	ug/ml
		Target Compounds				
3)		n-C9	5.14	3080177	12.286	ug/ml
4)		n-C10	6.55	3116810	12.013	ug/ml
5)		n-C11	7.90	2862898	10.846	ug/ml
7)		n-C12	9.16	2584099	9.484	ug/ml
10)		n-C13	10.33	2297712	8.220	ug/mlm
11)		i-15	11.19	535565	1.838	ug/ml
12)		n-C14	11.42	2088905	7.122	ug/ml
13)		i-16	12.08	788717	2.639	ug/ml
14)		n-C15	12.46	2079124	7.134	ug/ml
15)		n-C16	13.53	1709345	5.720	ug/ml
17)		i-18	14.09	522737	1.503	ug/ml
18)		n-C17	14.66	1579326	4.660	ug/ml
19)		Pristane	14.77	820755	2.341	ug/mlm
20)		n-C18	15.87	1304336	3.751	ug/ml
21)		Phytane	16.02	521974	1.509	ug/ml
22)		n-C19	17.13	1200378	3.426	ug/ml
24)		n-C20	18.43	1009200	2.839	ug/ml
25)		n-C21	19.74	838047	2.383	ug/ml
26)		n-C22	21.05	739875	2.060	ug/ml
27)		n-C23	22.34	646535	1.824	ug/ml
28)		n-C24	23.61	584672	1.649	ug/ml
29)		n-C25	24.85	503257	1.371	ug/ml
30)		n-C26	26.05	394247	1.076	ug/ml
31)		n-C27	27.22	297886	0.833	ug/ml
32)		n-C28	28.35	254767	0.709	ug/mlm
33)		n-C29	29.44	230415	0.630	ug/mlm
35)		n-C30	30.51	185390	0.523	ug/mlm
36)		n-C31	31.54	149900	0.417	ug/mlm
37)		n-C32	32.55	123708	0.337	ug/mlm
38)		n-C33	33.67	111279	0.321	ug/mlm
39)		n-C34	34.96	92994	0.256	ug/mlm
40)		n-C35	36.46	72348	0.193	ug/mlm
41)		n-C36	38.22	35095	0.092	ug/mlm
42)		n-C37	40.32	27324	0.073	ug/mlm
43)		n-C38	42.85	20911	0.056	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\4\DATA\GC31940\GC31940F.D Vial: 11
Acq On : 27 Mar 2012 1:24 Operator: MAG
Sample : AL-WKRef OI1-40-004 Inst : GC3
Misc : Multiplr: 0.25
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Apr 4 21:15 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
44)	n-C39	45.85	17420	0.049	ug/mlm
45)	n-C40	49.48	13834	0.041	ug/mlm
46)	TPH	6.55f	201418801	584.946	ug/ml
47)	TRH1	6.55	50337185	146.186	ug/ml
48)	TRH2	12.46	26569985	77.163	ug/ml
49)	TRH3	23.61f	3269947	9.496	ug/ml
50)	TRH4	28.35	2437139	7.078	ug/ml
51)	TRH5	33.67	496535	1.442	ug/ml
52)	TRH6	40.32	718260	2.086	ug/ml

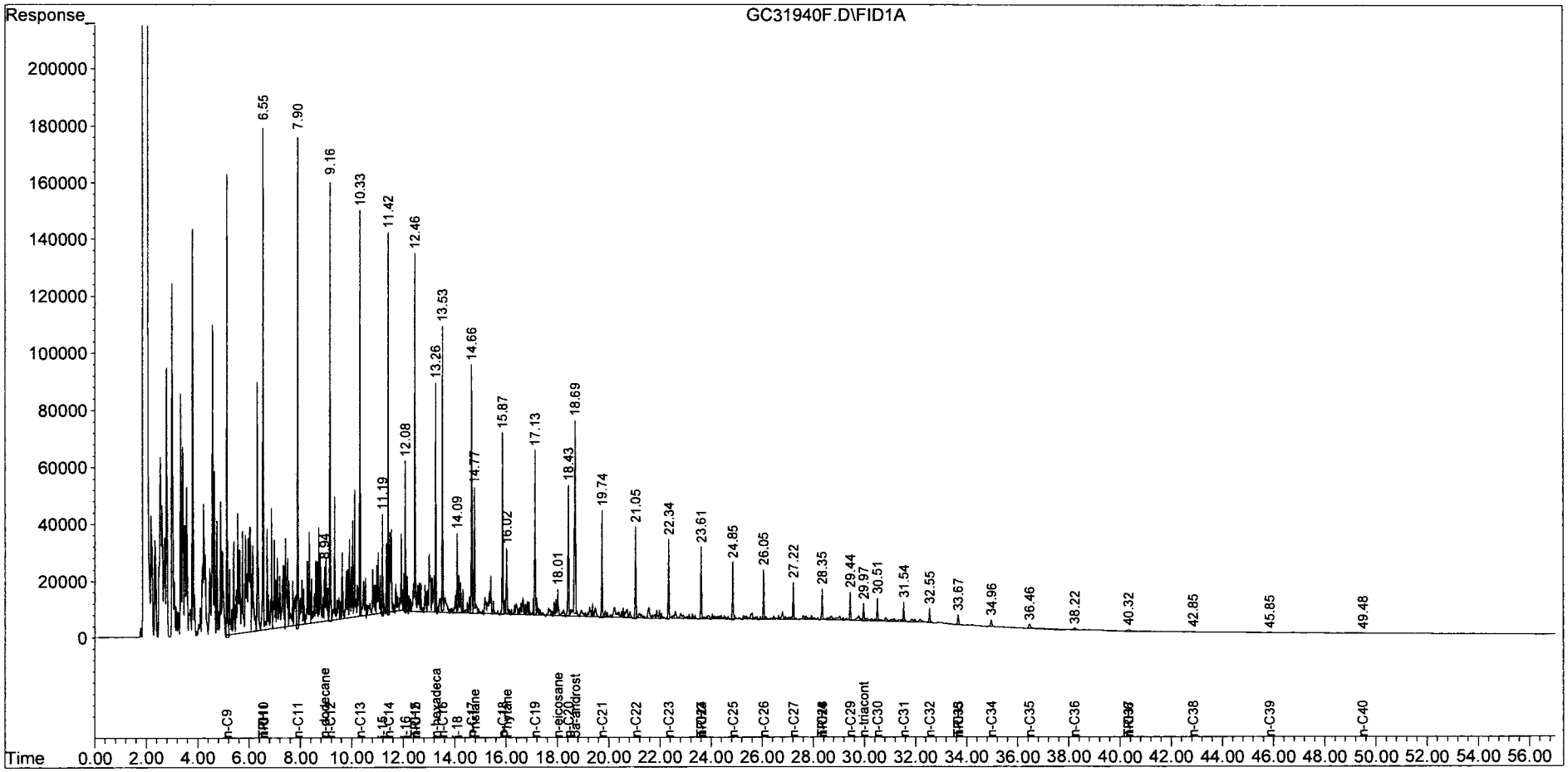
Data File : C:\HPCHEM\4\DATA\GC31940\GC31940F.D Vial: 11
Acq On : 27 Mar 2012 1:24 Operator: MAG
Sample : AL-WKRef OIl-40-004 Inst : GC3
Misc : Multiplr: 0.25
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Apr 4 21:15 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Data File Name	**ENV2755A.D**	ENV2755A.D
Sample Name	**Procedural Blank**	Procedural Blank
Misc Info		03/26/20 -1:8:
Data File Path	**C:\HPCHEM\4\DATA\GC31940**	ALI.M
Operator	**MAG**	
Date Acquired	**03/26/20 -1:8:**	1
Instrument Name	**GC3**	
Method File	**ALI.M**	
Vial Number	**5**	
Sample Multiplier	**1**	

#	Name	Ret Time	Target Response	Amount	Concentration
2)	n-C8	0.00	0	0.00	0.000
3)	n-C9	0.00	0	0.00	0.000
4)	n-C10	0.00	0	0.00	0.000
5)	n-C11	0.00	0	0.00	0.000
7)	n-C12	0.00	0	0.00	0.000
8)	i-13	0.00	0	0.00	0.000
9)	i-14	0.00	0	0.00	0.000
10)	n-C13	0.00	0	0.00	0.000
11)	i-15	0.00	0	0.00	0.000
12)	n-C14	0.00	0	0.00	0.000
13)	i-16	0.00	0	0.00	0.000
14)	n-C15	0.00	0	0.00	0.000
15)	n-C16	0.00	0	0.00	0.000
17)	i-18	0.00	0	0.00	0.000
18)	n-C17	0.00	0	0.00	0.000
19)	Pristane	0.00	0	0.00	0.000
20)	n-C18	0.00	0	0.00	0.000
21)	Phytane	0.00	0	0.00	0.000
22)	n-C19	0.00	0	0.00	0.000
24)	n-C20	0.00	0	0.00	0.000
25)	n-C21	0.00	0	0.00	0.000
26)	n-C22	0.00	0	0.00	0.000
27)	n-C23	0.00	0	0.00	0.000
28)	n-C24	0.00	0	0.00	0.000
29)	n-C25	0.00	0	0.00	0.000
30)	n-C26	0.00	0	0.00	0.000
31)	n-C27	0.00	0	0.00	0.000
32)	n-C28	0.00	0	0.00	0.000
33)	n-C29	0.00	0	0.00	0.000
35)	n-C30	0.00	0	0.00	0.000
36)	n-C31	0.00	0	0.00	0.000
37)	n-C32	0.00	0	0.00	0.000
38)	n-C33	0.00	0	0.00	0.000
39)	n-C34	0.00	0	0.00	0.000
40)	n-C35	0.00	0	0.00	0.000
41)	n-C36	0.00	0	0.00	0.000
42)	n-C37	0.00	0	0.00	0.000
43)	n-C38	0.00	0	0.00	0.000
44)	n-C39	0.00	0	0.00	0.000
45)	n-C40	0.00	0	0.00	0.000
46)	TPH	13.23	2242066	443.40	443.405
47)	TRH1	13.23	109584	21.67	21.672
48)	TRH2	18.63	127632	25.24	25.241
49)	TRH3	22.56	9168	1.81	1.813
50)	TRH4	29.95	11052	2.19	2.186
51)	TRH5	35.83	21495	4.25	4.251
52)	TRH6	37.74	43204	8.54	8.544
53)	GRO	0.00	0	0.00	0.000
54)	DRO	0.00	0	0.00	0.000
55)	RRO	0.00	0	0.00	0.000
6)	n-dodecane-d26	8.93	6404	1.69	84.3
23)	n-eicosane-d42	17.99	8824	1.98	99.0
34)	n-triacontane-d62	29.95	9615	2.00	99.8
1)	n-hexadecane-d34	13.23	88440	20.01	
16)	5a-androstane	18.63	111127	20.03	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\4\DATA\GC31940\ENV2755A.D Vial: 5
Acq On : 26 Mar 2012 18:50 Operator: MAG
Sample : Procedural Blank Inst : GC3
Misc : Multiplr: 1.00
Sample Amount: 0.00
IntFile : autoint1.e

Quant Time: Mar 27 14:17 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.23	88441	20.012	ug/mlm
16)	I	5a-androstane	18.63	111127	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	6405	1.686	ug/ml
23)	S	n-eicosane-d42	17.99	8825	1.980	ug/mlm
34)	S	n-triacontane-d62	29.95	9615	1.997	ug/mlm
		Target Compounds				
46)		TPH	13.23f	2242067	443.405	ug/mlm
47)		TRH1	13.23f	109584	21.672	ug/mlm
48)		TRH2	18.63f	127632	25.241	ug/mlm
49)		TRH3	22.56	9168	1.813	ug/mlm
50)		TRH4	29.95f	11053	2.186	ug/mlm
51)		TRH5	35.83	21496	4.251	ug/mlm
52)		TRH6	37.74	43204	8.544	ug/mlm

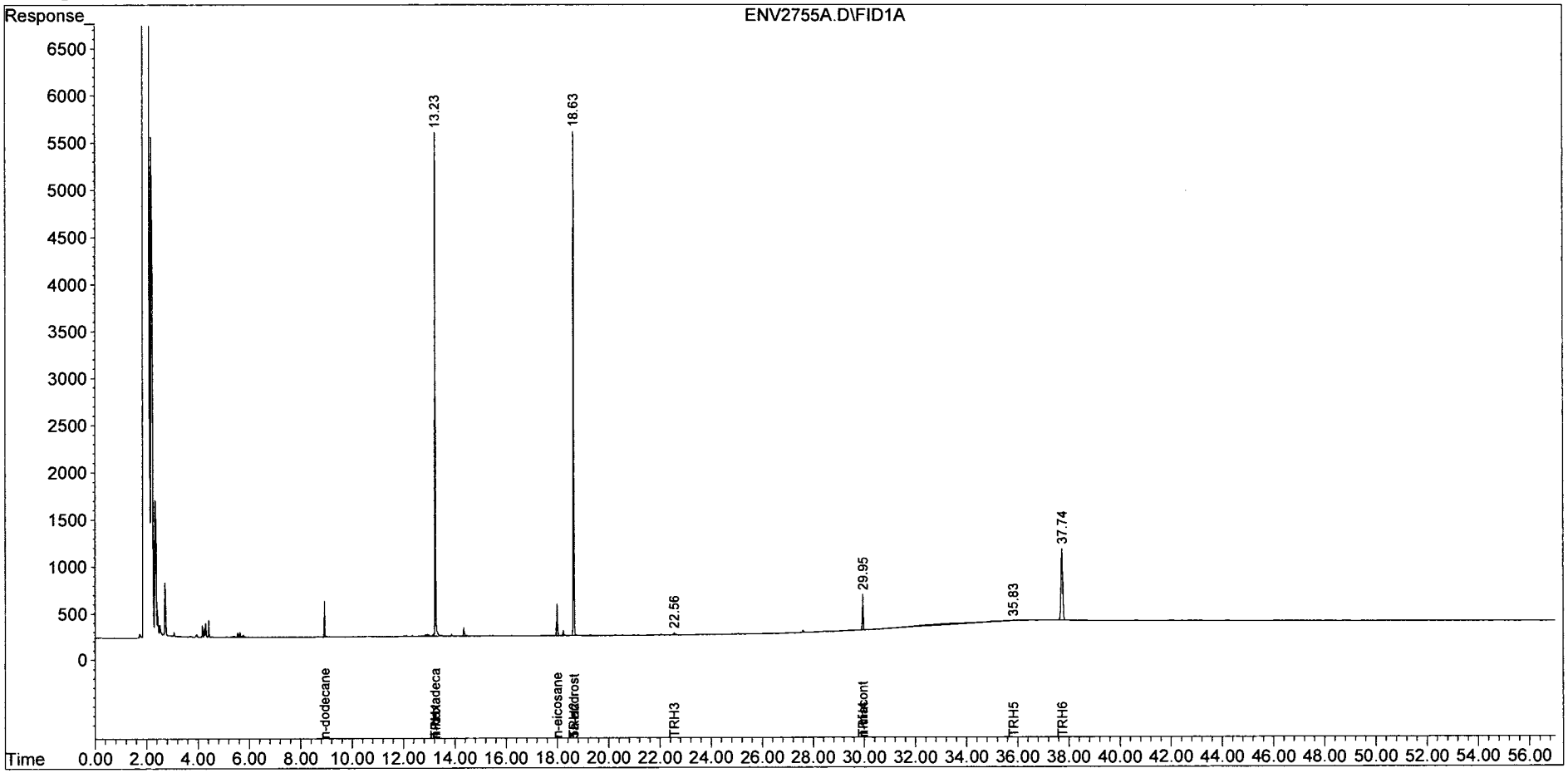
Data File : C:\HPCHEM\4\DATA\GC31940\ENV2755A.D Vial: 5
Acq On : 26 Mar 2012 18:50 Operator: MAG
Sample : Procedural Blank Inst : GC3
Misc : Multiplr: 1.00
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Mar 27 14:17 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Data File Name	**ENV2755B.D**	ENV2755B.D
Sample Name	**Blank Spike**	Blank Spike
Misc Info		03/26/20 -1:9:
Data File Path	**C:\HPCHEM\4\DATA\GC31940**	ALI.M
Operator	**MAG**	
Date Acquired	**03/26/20 -1:9:**	1
Instrument Name	**GC3**	
Method File	**ALI.M**	
Vial Number	**6**	
Sample Multiplier	**1**	

#	Name	Ret Time	Target Response	Amount	Concentration
2)	n-C8	0.00	0	0.00	0.000
3)	n-C9	5.12	29586	7.69	7.685
4)	n-C10	6.53	34243	8.59	8.595
5)	n-C11	7.88	36957	9.12	9.118
7)	n-C12	9.13	38488	9.20	9.199
8)	i-13	0.00	0	0.00	0.000
9)	i-14	0.00	0	0.00	0.000
10)	n-C13	10.30	39470	9.20	9.196
11)	i-15	0.00	0	0.00	0.000
12)	n-C14	11.39	42249	9.38	9.381
13)	i-16	0.00	0	0.00	0.000
14)	n-C15	12.43	44284	9.90	9.896
15)	n-C16	13.50	46424	10.12	10.117
17)	i-18	0.00	0	0.00	0.000
18)	n-C17	14.63	47152	10.05	10.046
19)	Pristane	14.75	48783	10.05	10.048
20)	n-C18	15.83	49532	10.29	10.287
21)	Phytane	16.00	48529	10.13	10.133
22)	n-C19	17.09	49493	10.20	10.201
24)	n-C20	18.39	50315	10.22	10.223
25)	n-C21	19.71	50477	10.36	10.365
26)	n-C22	21.02	51600	10.37	10.373
27)	n-C23	22.31	50789	10.35	10.346
28)	n-C24	23.58	50691	10.32	10.322
29)	n-C25	24.82	51788	10.19	10.190
30)	n-C26	26.02	51046	10.06	10.064
31)	n-C27	27.19	50193	10.13	10.131
32)	n-C28	28.32	51356	10.32	10.318
33)	n-C29	29.42	50973	10.07	10.068
35)	n-C30	30.48	50111	10.21	10.213
36)	n-C31	31.51	50584	10.15	10.153
37)	n-C32	32.53	50738	9.97	9.972
38)	n-C33	33.65	47956	10.00	9.999
39)	n-C34	34.93	50181	9.97	9.969
40)	n-C35	36.43	50057	9.66	9.661
41)	n-C36	38.20	50509	9.53	9.529
42)	n-C37	40.30	49686	9.65	9.651
43)	n-C38	42.80	49112	9.58	9.582
44)	n-C39	0.00	0	0.00	0.000
45)	n-C40	49.43	44481	9.50	9.496
46)	TPH	0.00	0	0.00	0.000
47)	TRH1	0.00	0	0.00	0.000
48)	TRH2	0.00	0	0.00	0.000
49)	TRH3	0.00	0	0.00	0.000
50)	TRH4	0.00	0	0.00	0.000
51)	TRH5	0.00	0	0.00	0.000
52)	TRH6	0.00	0	0.00	0.000
53)	GRO	0.00	0	0.00	0.000
54)	DRO	0.00	0	0.00	0.000
55)	RRO	0.00	0	0.00	0.000
6)	n-dodecane-d26	8.93	6665	1.81	90.3
23)	n-eicosane-d42	17.99	8190	1.95	97.5
34)	n-triacontane-d62	29.94	9215	2.03	101.5
1)	n-hexadecane-d34	13.23	85924	20.01	
16)	5a-androstane	18.63	104791	20.03	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\4\DATA\GC31940\ENV2755B.D Vial: 6
Acq On : 26 Mar 2012 19:56 Operator: MAG
Sample : Blank Spike Inst : GC3
Misc : Multiplr: 1.00
Sample Amount: 0.00
IntFile : autoint1.e

Quant Time: Mar 27 14:49 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.23	85924	20.012	ug/mlm
16)	I	5a-androstane	18.63	104792	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	6666	1.806	ug/mlm
23)	S	n-eicosane-d42	17.99	8191	1.949	ug/mlm
34)	S	n-triacontane-d62	29.94	9215	2.029	ug/mlm
		Target Compounds				
3)		n-C9	5.12	29586	7.685	ug/mlm
4)		n-C10	6.53	34243	8.595	ug/mlm
5)		n-C11	7.88	36958	9.118	ug/mlm
7)		n-C12	9.13	38488	9.199	ug/mlm
10)		n-C13	10.30	39470	9.196	ug/mlm
12)		n-C14	11.39	42250	9.381	ug/mlm
14)		n-C15	12.43	44285	9.896	ug/mlm
15)		n-C16	13.50	46425	10.117	ug/mlm
18)		n-C17	14.63	47153	10.046	ug/ml
19)		Pristane	14.75	48783	10.048	ug/mlm
20)		n-C18	15.83	49533	10.287	ug/mlm
21)		Phytane	16.00	48530	10.133	ug/mlm
22)		n-C19	17.09	49494	10.201	ug/mlm
24)		n-C20	18.39	50315	10.223	ug/ml
25)		n-C21	19.71	50477	10.365	ug/ml
26)		n-C22	21.02	51600	10.373	ug/mlm
27)		n-C23	22.31	50790	10.346	ug/mlm
28)		n-C24	23.58	50691	10.322	ug/ml
29)		n-C25	24.82	51788	10.190	ug/ml
30)		n-C26	26.02	51047	10.064	ug/mlm
31)		n-C27	27.19	50193	10.131	ug/mlm
32)		n-C28	28.32	51356	10.318	ug/mlm
33)		n-C29	29.42	50974	10.068	ug/mlm
35)		n-C30	30.48	50112	10.213	ug/mlm
36)		n-C31	31.51	50584	10.153	ug/mlm
37)		n-C32	32.53	50739	9.972	ug/mlm
38)		n-C33	33.65	47956	9.999	ug/mlm
39)		n-C34	34.93	50181	9.969	ug/mlm
40)		n-C35	36.43	50058	9.661	ug/mlm
41)		n-C36	38.20	50510	9.529	ug/mlm
42)		n-C37	40.30	49687	9.651	ug/ml
43)		n-C38	42.80	49113	9.582	ug/ml
45)		n-C40	49.43	44481	9.496	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

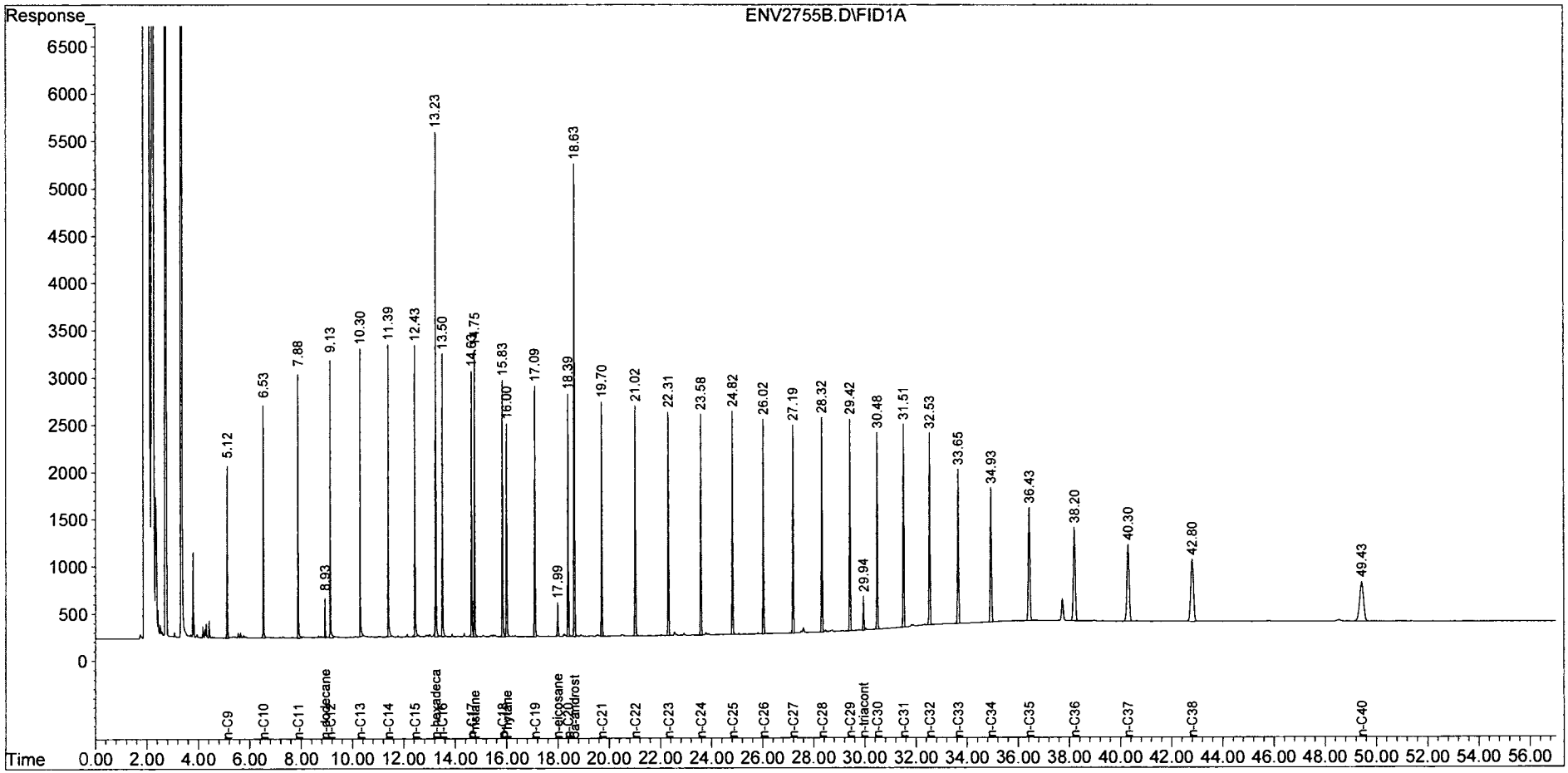
Data File : C:\HPCHEM\4\DATA\GC31940\ENV2755B.D Vial: 6
Acq On : 26 Mar 2012 19:56 Operator: MAG
Sample : Blank Spike Inst : GC3
Misc : Multiplr: 1.00
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Mar 27 14:49 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Data File Name	**ENV2755C.D**	ENV2755C.D
Sample Name	**Blank Spike Duplicate**	Blank Spike Duplicate
Misc Info		03/26/20 -1:1:
Data File Path	**C:\HPCHEM\4\DATA\GC31940**	ALI.M
Operator	**MAG**	
Date Acquired	**03/26/20 -1:1:**	1
Instrument Name	**GC3**	
Method File	**ALI.M**	
Vial Number	**7**	
Sample Multiplier	**1**	

#	Name	Ret Time	Target Response	Amount	Concentration
2)	n-C8	0.00	0	0.00	0.000
3)	n-C9	5.12	29879	7.74	7.737
4)	n-C10	6.53	34381	8.60	8.602
5)	n-C11	7.88	36801	9.05	9.050
7)	n-C12	9.13	37788	9.00	9.002
8)	i-13	0.00	0	0.00	0.000
9)	i-14	0.00	0	0.00	0.000
10)	n-C13	10.30	39614	9.20	9.200
11)	i-15	0.00	0	0.00	0.000
12)	n-C14	11.39	42196	9.34	9.339
13)	i-16	0.00	0	0.00	0.000
14)	n-C15	12.43	43531	9.70	9.696
15)	n-C16	13.49	45237	9.83	9.826
17)	i-18	0.00	0	0.00	0.000
18)	n-C17	14.63	45394	9.68	9.676
19)	Pristane	14.75	47056	9.70	9.697
20)	n-C18	15.83	48538	10.09	10.086
21)	Phytane	16.00	47449	9.91	9.912
22)	n-C19	17.09	48438	9.99	9.988
24)	n-C20	18.39	48815	9.92	9.923
25)	n-C21	19.70	49431	10.15	10.155
26)	n-C22	21.02	50726	10.20	10.202
27)	n-C23	22.31	50153	10.22	10.221
28)	n-C24	23.58	50099	10.21	10.207
29)	n-C25	24.82	51211	10.08	10.081
30)	n-C26	26.02	50663	9.99	9.994
31)	n-C27	27.19	49825	10.06	10.062
32)	n-C28	28.32	51123	10.28	10.276
33)	n-C29	29.42	50387	9.96	9.957
35)	n-C30	30.48	49700	10.13	10.134
36)	n-C31	31.51	50058	10.05	10.052
37)	n-C32	32.53	50393	9.91	9.909
38)	n-C33	33.65	47523	9.91	9.913
39)	n-C34	34.93	49349	9.81	9.808
40)	n-C35	36.43	49443	9.55	9.547
41)	n-C36	38.19	50185	9.47	9.473
42)	n-C37	40.29	49276	9.58	9.576
43)	n-C38	42.80	48910	9.55	9.547
44)	n-C39	0.00	0	0.00	0.000
45)	n-C40	49.42	44361	9.48	9.475
46)	TPH	0.00	0	0.00	0.000
47)	TRH1	0.00	0	0.00	0.000
48)	TRH2	0.00	0	0.00	0.000
49)	TRH3	0.00	0	0.00	0.000
50)	TRH4	0.00	0	0.00	0.000
51)	TRH5	0.00	0	0.00	0.000
52)	TRH6	0.00	0	0.00	0.000
53)	GRO	0.00	0	0.00	0.000
54)	DRO	0.00	0	0.00	0.000
55)	RRO	0.00	0	0.00	0.000
6)	n-dodecane-d26	8.93	6590	1.78	89.0
23)	n-eicosane-d42	17.99	8401	2.00	100.0
34)	n-triacontane-d62	29.95	9043	1.99	99.6
1)	n-hexadecane-d34	13.23	86200	20.01	
16)	5a-androstane	18.63	104741	20.03	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\4\DATA\GC31940\ENV2755C.D Vial: 7
Acq On : 26 Mar 2012 21:01 Operator: MAG
Sample : Blank Spike Duplicate Inst : GC3
Misc : Multiplr: 1.00
Sample Amount: 0.00
IntFile : autoint1.e

Quant Time: Mar 27 14:55 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.23	86200	20.012	ug/mlm
16)	I	5a-androstane	18.63	104742	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	6591	1.780	ug/mlm
23)	S	n-eicosane-d42	17.99	8401	2.000	ug/mlm
34)	S	n-triacontane-d62	29.95	9043	1.992	ug/mlm
		Target Compounds				
3)		n-C9	5.12	29879	7.737	ug/mlm
4)		n-C10	6.53	34382	8.602	ug/mlm
5)		n-C11	7.88	36802	9.050	ug/mlm
7)		n-C12	9.13	37788	9.002	ug/mlm
10)		n-C13	10.30	39615	9.200	ug/mlm
12)		n-C14	11.39	42196	9.339	ug/mlm
14)		n-C15	12.43	43531	9.696	ug/mlm
15)		n-C16	13.49	45238	9.826	ug/mlm
18)		n-C17	14.63	45394	9.676	ug/mlm
19)		Pristane	14.75	47057	9.697	ug/mlm
20)		n-C18	15.83	48539	10.086	ug/mlm
21)		Phytane	16.00	47450	9.912	ug/mlm
22)		n-C19	17.09	48439	9.988	ug/mlm
24)		n-C20	18.39	48816	9.923	ug/mlm
25)		n-C21	19.70	49432	10.155	ug/mlm
26)		n-C22	21.02	50727	10.202	ug/mlm
27)		n-C23	22.31	50153	10.221	ug/ml
28)		n-C24	23.58	50099	10.207	ug/ml
29)		n-C25	24.82	51211	10.081	ug/ml
30)		n-C26	26.02	50664	9.994	ug/ml
31)		n-C27	27.19	49826	10.062	ug/ml
32)		n-C28	28.32	51124	10.276	ug/mlm
33)		n-C29	29.42	50388	9.957	ug/mlm
35)		n-C30	30.48	49700	10.134	ug/mlm
36)		n-C31	31.51	50059	10.052	ug/mlm
37)		n-C32	32.53	50393	9.909	ug/mlm
38)		n-C33	33.65	47523	9.913	ug/mlm
39)		n-C34	34.93	49349	9.808	ug/mlm
40)		n-C35	36.43	49443	9.547	ug/mlm
41)		n-C36	38.19	50186	9.473	ug/mlm
42)		n-C37	40.29	49276	9.576	ug/mlm
43)		n-C38	42.80	48910	9.547	ug/mlm
45)		n-C40	49.42	44362	9.475	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

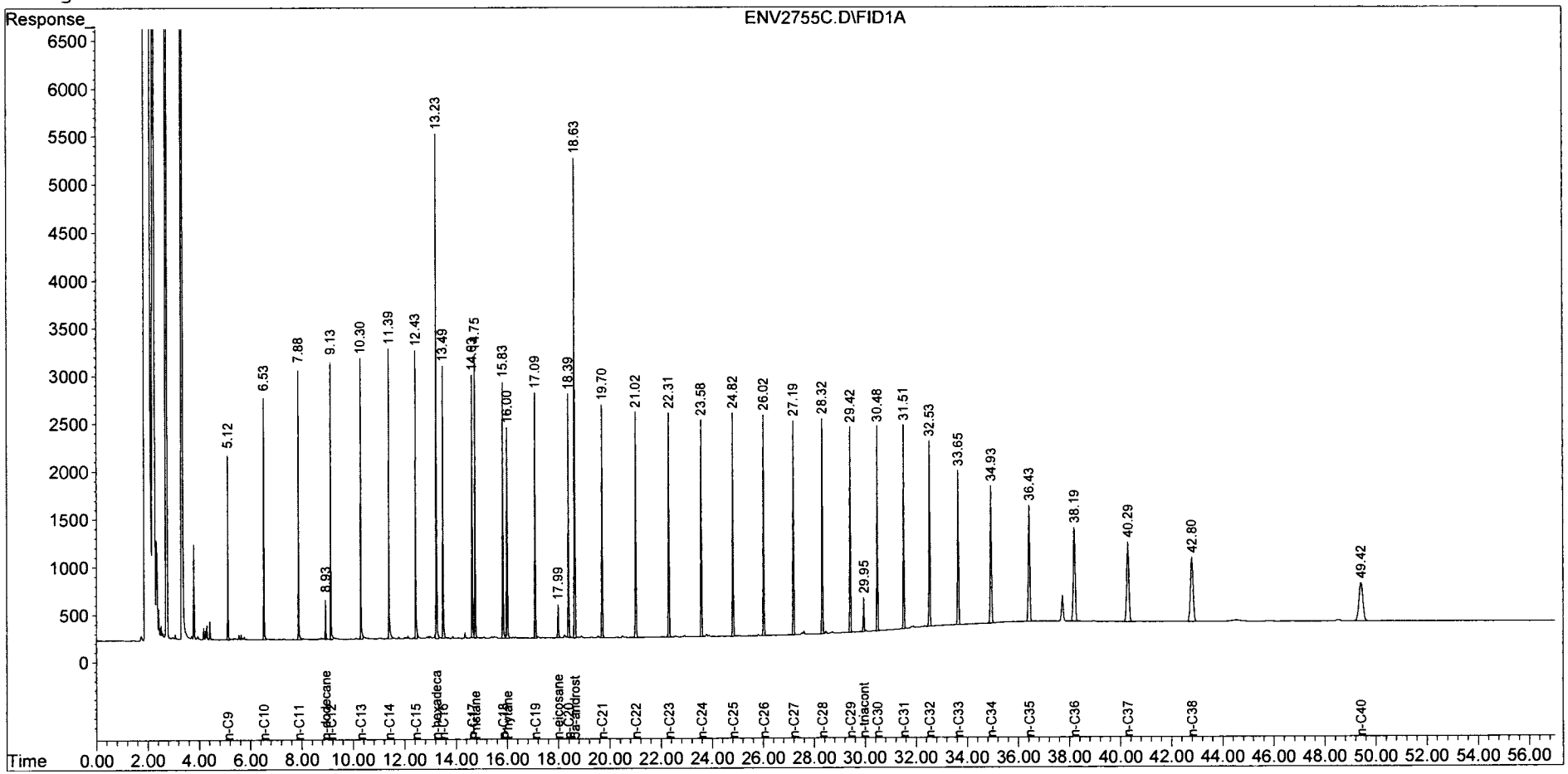
Data File : C:\HPCHEM\4\DATA\GC31940\ENV2755C.D Vial: 7
Acq On : 26 Mar 2012 21:01 Operator: MAG
Sample : Blank Spike Duplicate Inst : GC3
Misc : Multiplr: 1.00
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Mar 27 14:55 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Data File Name	**ARC1122.D**	ARC1122.D
Sample Name	**HUMT-P5-TN(031812)1-A**	HUMT-P5-TN(031812)1-A
Misc Info		03/26/20 -1:2:
Data File Path	**C:\HPCHEM\4\DATA\GC31940**	ALI.M
Operator	**MAG**	
Date Acquired	**03/26/20 -1:2:**	1
Instrument Name	**GC3**	
Method File	**ALI.M**	
Vial Number	**8**	
Sample Multiplier	**1**	

#	Name	Ret Time	Target Response	Amount	Concentration
2)	n-C8	0.00	0	0.00	0.000
3)	n-C9	0.00	0	0.00	0.000
4)	n-C10	0.00	0	0.00	0.000
5)	n-C11	0.00	0	0.00	0.000
7)	n-C12	0.00	0	0.00	0.000
8)	i-13	0.00	0	0.00	0.000
9)	i-14	0.00	0	0.00	0.000
10)	n-C13	0.00	0	0.00	0.000
11)	i-15	0.00	0	0.00	0.000
12)	n-C14	0.00	0	0.00	0.000
13)	i-16	0.00	0	0.00	0.000
14)	n-C15	0.00	0	0.00	0.000
15)	n-C16	0.00	0	0.00	0.000
17)	i-18	0.00	0	0.00	0.000
18)	n-C17	0.00	0	0.00	0.000
19)	Pristane	0.00	0	0.00	0.000
20)	n-C18	0.00	0	0.00	0.000
21)	Phytane	0.00	0	0.00	0.000
22)	n-C19	0.00	0	0.00	0.000
24)	n-C20	0.00	0	0.00	0.000
25)	n-C21	0.00	0	0.00	0.000
26)	n-C22	0.00	0	0.00	0.000
27)	n-C23	0.00	0	0.00	0.000
28)	n-C24	0.00	0	0.00	0.000
29)	n-C25	0.00	0	0.00	0.000
30)	n-C26	0.00	0	0.00	0.000
31)	n-C27	0.00	0	0.00	0.000
32)	n-C28	0.00	0	0.00	0.000
33)	n-C29	0.00	0	0.00	0.000
35)	n-C30	0.00	0	0.00	0.000
36)	n-C31	0.00	0	0.00	0.000
37)	n-C32	0.00	0	0.00	0.000
38)	n-C33	0.00	0	0.00	0.000
39)	n-C34	0.00	0	0.00	0.000
40)	n-C35	0.00	0	0.00	0.000
41)	n-C36	0.00	0	0.00	0.000
42)	n-C37	0.00	0	0.00	0.000
43)	n-C38	0.00	0	0.00	0.000
44)	n-C39	0.00	0	0.00	0.000
45)	n-C40	0.00	0	0.00	0.000
46)	TPH	13.23	2455538	464.44	464.440
47)	TRH1	13.23	123618	23.38	23.381
48)	TRH2	18.63	147267	27.85	27.854
49)	TRH3	29.42	18166	3.44	3.436
50)	TRH4	33.03	54104	10.23	10.233
51)	TRH5	37.74	32951	6.23	6.232
52)	TRH6	0.00	0	0.00	0.000
53)	GRO	0.00	0	0.00	0.000
54)	DRO	0.00	0	0.00	0.000
55)	RRO	0.00	0	0.00	0.000
6)	n-dodecane-d26	8.93	6193	1.54	77.0
23)	n-eicosane-d42	17.99	8527	1.83	91.5
34)	n-triacontane-d62	29.95	9952	1.98	98.8
1)	n-hexadecane-d34	13.23	93571	20.01	
16)	5a-androstane	18.63	116195	20.03	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\4\DATA\GC31940\ARC1122.D Vial: 8
Acq On : 26 Mar 2012 22:08 Operator: MAG
Sample : HUMT-P5-TN(031812)1-A Inst : GC3
Misc : Multiplr: 1.00
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Apr 4 21:17 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.23	93571	20.012	ug/mlm
16)	I	5a-androstane	18.63	116195	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	6193	1.541	ug/mlm
23)	S	n-eicosane-d42	17.99	8527	1.830	ug/mlm
34)	S	n-triacontane-d62	29.95	9952	1.976	ug/ml
		Target Compounds				
46)		TPH	13.23f	2455538	464.440	ug/mlm
47)		TRH1	13.23f	123618	23.381	ug/mlm
48)		TRH2	18.63f	147268	27.854	ug/mlm
49)		TRH3	29.42f	18167	3.436	ug/mlm
50)		TRH4	33.03f	54104	10.233	ug/mlm
51)		TRH5	37.74f	32951	6.232	ug/mlm

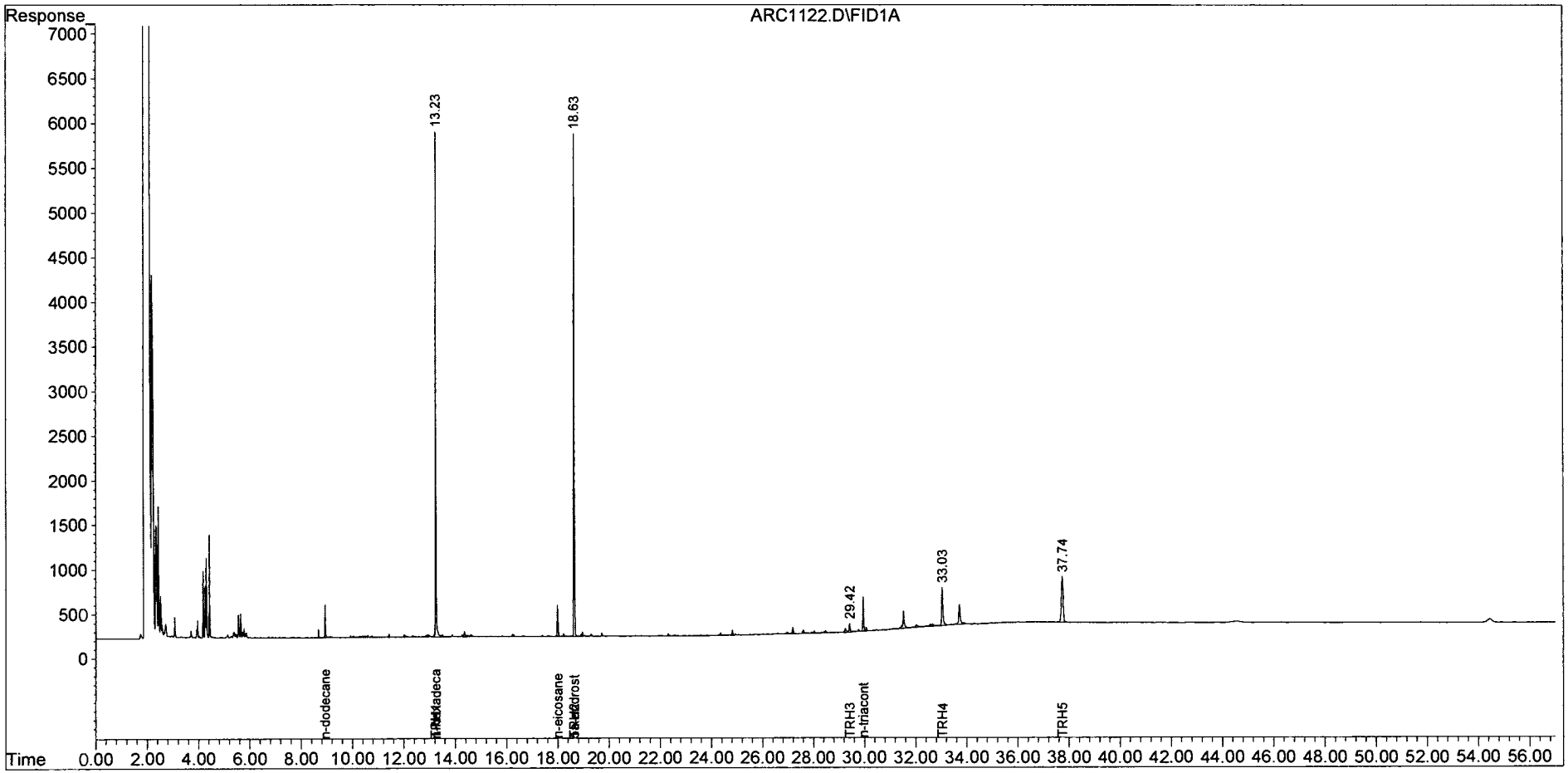
Data File : C:\HPCHEM\4\DATA\GC31940\ARC1122.D Vial: 8
Acq On : 26 Mar 2012 22:08 Operator: MAG
Sample : HUMT-P5-TN(031812)1-A Inst : GC3
Misc : Multiplr: 1.00
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Apr 4 21:17 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Data File Name	**ARC1123.D**	ARC1123.D
Sample Name	**HUMT-P5-TN(031812)2-A**	HUMT-P5-TN(031812)2-A
Misc Info		03/26/20 -1:3:
Data File Path	**C:\HPCHEM\4\DATA\GC31940**	ALI.M
Operator	**MAG**	
Date Acquired	**03/26/20 -1:3:**	1
Instrument Name	**GC3**	
Method File	**ALI.M**	
Vial Number	**9**	
Sample Multiplier	**1**	

#	Name	Ret Time	Target Response	Amount	Concentration
2)	n-C8	0.00	0	0.00	0.000
3)	n-C9	0.00	0	0.00	0.000
4)	n-C10	0.00	0	0.00	0.000
5)	n-C11	0.00	0	0.00	0.000
7)	n-C12	0.00	0	0.00	0.000
8)	i-13	0.00	0	0.00	0.000
9)	i-14	0.00	0	0.00	0.000
10)	n-C13	0.00	0	0.00	0.000
11)	i-15	0.00	0	0.00	0.000
12)	n-C14	0.00	0	0.00	0.000
13)	i-16	0.00	0	0.00	0.000
14)	n-C15	0.00	0	0.00	0.000
15)	n-C16	0.00	0	0.00	0.000
17)	i-18	0.00	0	0.00	0.000
18)	n-C17	0.00	0	0.00	0.000
19)	Pristane	0.00	0	0.00	0.000
20)	n-C18	0.00	0	0.00	0.000
21)	Phytane	0.00	0	0.00	0.000
22)	n-C19	0.00	0	0.00	0.000
24)	n-C20	0.00	0	0.00	0.000
25)	n-C21	0.00	0	0.00	0.000
26)	n-C22	0.00	0	0.00	0.000
27)	n-C23	0.00	0	0.00	0.000
28)	n-C24	0.00	0	0.00	0.000
29)	n-C25	0.00	0	0.00	0.000
30)	n-C26	0.00	0	0.00	0.000
31)	n-C27	0.00	0	0.00	0.000
32)	n-C28	0.00	0	0.00	0.000
33)	n-C29	0.00	0	0.00	0.000
35)	n-C30	0.00	0	0.00	0.000
36)	n-C31	0.00	0	0.00	0.000
37)	n-C32	0.00	0	0.00	0.000
38)	n-C33	0.00	0	0.00	0.000
39)	n-C34	0.00	0	0.00	0.000
40)	n-C35	0.00	0	0.00	0.000
41)	n-C36	0.00	0	0.00	0.000
42)	n-C37	0.00	0	0.00	0.000
43)	n-C38	0.00	0	0.00	0.000
44)	n-C39	0.00	0	0.00	0.000
45)	n-C40	0.00	0	0.00	0.000
46)	TPH	18.63	2361185	465.81	465.813
47)	TRH1	13.23	133121	26.26	26.262
48)	TRH2	18.63	135232	26.68	26.679
49)	TRH3	29.42	16477	3.25	3.251
50)	TRH4	33.03	44274	8.73	8.734
51)	TRH5	37.73	16723	3.30	3.299
52)	TRH6	0.00	0	0.00	0.000
53)	GRO	0.00	0	0.00	0.000
54)	DRO	0.00	0	0.00	0.000
55)	RRO	0.00	0	0.00	0.000
6)	n-dodecane-d26	8.93	6043	1.60	80.1
23)	n-eicosane-d42	17.99	8281	1.85	92.7
34)	n-triacontane-d62	29.95	9549	1.98	98.9
1)	n-hexadecane-d34	13.23	87777	20.01	
16)	5a-androstane	18.63	111401	20.03	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\4\DATA\GC31940\ARC1123.D Vial: 9
Acq On : 26 Mar 2012 23:13 Operator: MAG
Sample : HUMT-P5-TN(031812)2-A Inst : GC3
Misc : Multiplr: 1.00
Sample Amount: 0.00
IntFile : autoint1.e

Quant Time: Apr 4 21:19 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc Units
		Internal Standards			
1)	I	n-hexadecane-d34	13.23	87777	20.012 ug/ml
16)	I	5a-androstane	18.63	111401	20.030 ug/mlm
		System Monitoring Compounds			
6)	S	n-dodecane-d26	8.93	6043	1.603 ug/mlm
23)	S	n-eicosane-d42	17.99	8281	1.854 ug/mlm
34)	S	n-triacontane-d62	29.95	9549	1.978 ug/ml
		Target Compounds			
46)		TPH	18.63f	2361185	465.813 ug/mlm
47)		TRH1	13.23f	133121	26.262 ug/mlm
48)		TRH2	18.63f	135233	26.679 ug/mlm
49)		TRH3	29.42f	16477	3.251 ug/mlm
50)		TRH4	33.03f	44275	8.734 ug/mlm
51)		TRH5	37.73f	16724	3.299 ug/mlm

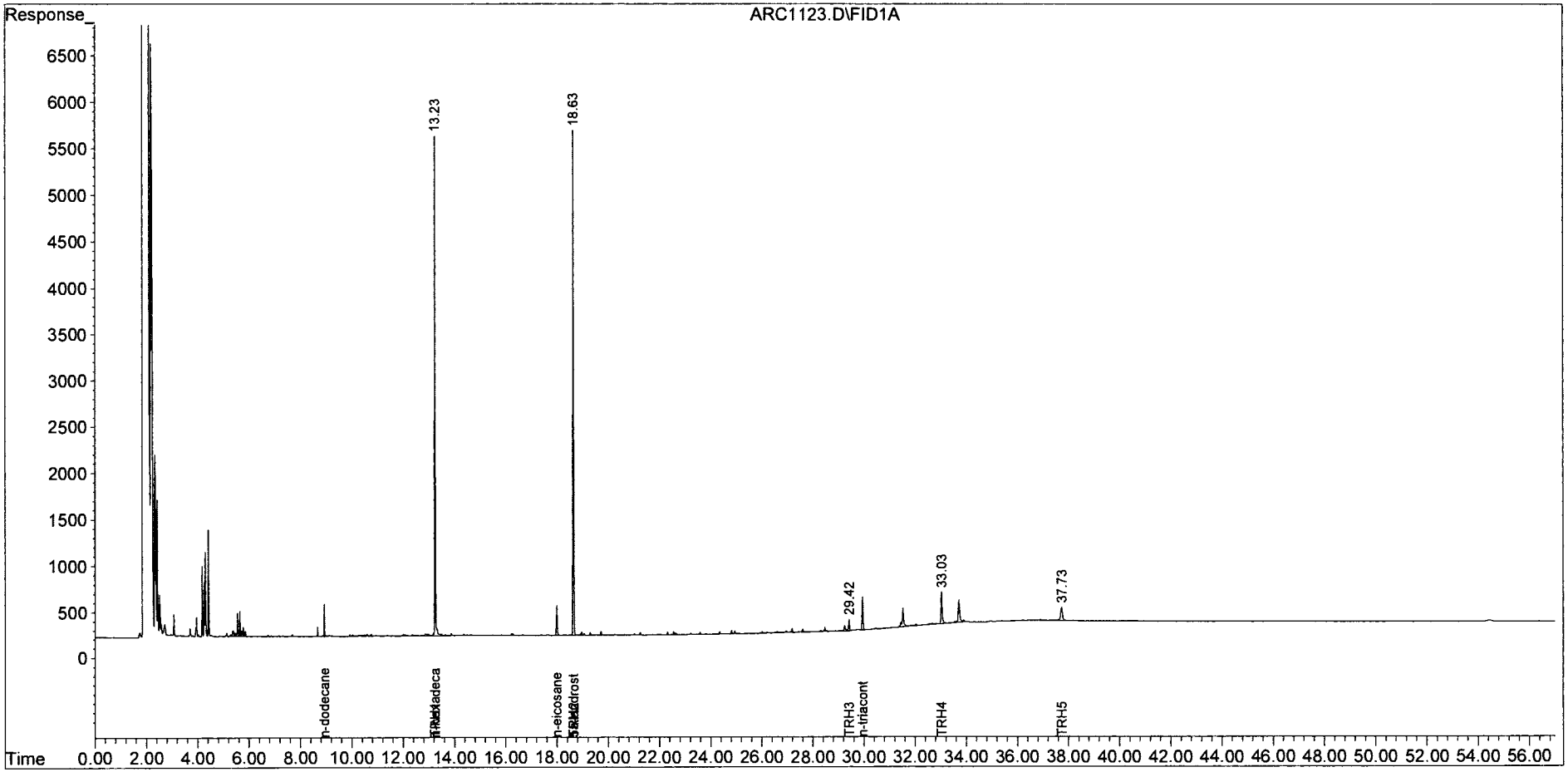
Data File : C:\HPCHEM\4\DATA\GC31940\ARC1123.D Vial: 9
Acq On : 26 Mar 2012 23:13 Operator: MAG
Sample : HUMT-P5-TN(031812)2-A Inst : GC3
Misc : Multiplr: 1.00
Sample Amount: 0.00

IntFile : autoint1.e

Quant Time: Apr 4 21:19 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Polycyclic Aromatic Hydrocarbon Raw Data

B&B LABORATORIES PAHs QA FORM

Extraction Page: ENV-2755	Analyst: Y. Miao
Client: Arcadis	Date: 4-15-2012
Job: #: J11913	Project Quality Manager: D Frank
SDG #: 12032001	Date: 04/18/12

Initial Calibration:	No failure
Surrogate Recoveries:	No failure
Procedural Blank:	No failure
Blank Spike:	No failure
Blank Spike Duplicate:	No failure
Laboratory Duplicate:	NA
Matrix Spike:	NA
Matirx Spike Duplicate:	NA
SRM/LCS:	Solution - no failure Petroleum 3MP was outside of QC limits in SRM 1582
CCC (also ICV as the CCC is from a second source):	No failure
Mass Discrimination Check (benzo(ghi)perylene/phenanthrene >0.7)	No failure

Sequence Name: G:\1\SEQUENCE\MS30860.S
Comment: Arcadis/Exxon-Yellow Stone-PAH (04/05/12)
Operator: YM
Data Path: C:\HPCHEM\1\data\ms30860\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	MS30860A	PAH-2010	Solvent Rinse
2	Sample	2	MS30860B	PAH-2010	AR-WKC1-020-026
3	Sample	3	MS30860C	PAH-2010	AR-WKC2-100-026
4	Sample	4	MS30860D	PAH-2010	AR-WKC3-250-026
5	Sample	5	MS30860E	PAH-2010	AR-WKC4-500-026
6	Sample	6	MS30860F	PAH-2010	AR-WKC5-1000-026
7	Sample	7	MS30860G	PAH-2010	AR-WKICV-250-001
8	Sample	8	MS30860H	PAH-2010	AR-WKCC-250-035
9	Sample	9	MS30860I	PAH-2010	PAH-ISSU-050-001
10	Sample	10	MS30860J	PAH-2010	SRM2779-WK-2.04-001
11	Sample	11	MS30860K	PAH-2010	SRM1582-WK-1.76-006
12	Sample	12	ENV2755A	PAH-2010	
13	Sample	13	ENV2755B	PAH-2010	
14	Sample	14	ENV2755C	PAH-2010	
15	Sample	15	ARC1122	PAH-2010	
16	Sample	16	ARC1123	PAH-2010	
17	Sample	17	MS30860L	PAH-2010	AR-WKCC-250-035

Evaluate Continuing Calibration Report

Data File : C:\GCMS3\MS30860\MS30860H.D Vial: 8
Acq On : 5 Apr 2012 6:46 pm Operator: YM
Sample : AR-WKCC-250-035 Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 25% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorene-d10	1.000	1.000	0.0	197	0.00
2	S	Naphthalene-d8	1.623	1.784	-9.9	223#	0.03
3	T	cis/trans Decalin	0.309	0.319	-3.2	218#	0.00
4	un	C1-Decalins	0.309	0.000	100.0#	0#	-12.39#
5	un	C2-Decalins	0.309	0.000	100.0#	0#	-13.20#
6	un	C3-Decalins	0.309	0.000	100.0#	0#	-15.53#
7	un	C4-Decalins	0.309	0.000	100.0#	0#	-18.39#
8	T	Naphthalene	1.832	2.048	-11.8	225#	0.00
9	T	2-Methylnaphthalene	1.149	1.273	-10.8	218#	0.00
10	T	1-Methylnaphthalene	1.057	1.145	-8.3	212#	0.03
11	T	2,6-Dimethylnaphthalene	0.909	0.956	-5.2	205#	0.00
12	T	1,6,7-Trimethylnaphthalene	1.041	1.138	-9.3	219#	0.00
13	un	C2-Naphthalenes	1.832	0.000	100.0#	0#	-18.28#
14	un	C3-Naphthalenes	1.832	0.000	100.0#	0#	-20.56#
15	un	C4-Naphthalenes	1.832	0.000	100.0#	0#	-22.52#
16	T	Benzothiophene	1.461	1.646	-12.7	221#	0.00
17	un	C1-Benzothiophenes	1.461	0.000	100.0#	0#	-15.34#
18	un	C2-Benzothiophenes	1.461	0.000	100.0#	0#	-18.34#
19	un	C3-Benzothiophenes	1.461	0.000	100.0#	0#	-20.02#
20	un	C4-Benzothiophenes	1.461	0.000	100.0#	0#	-21.79#
21	S	Acenaphthene-d10	0.895	0.986	-10.2	225#	0.03
22	T	Biphenyl	1.334	1.500	-12.4	220#	0.00
23	T	Acenaphthylene	1.774	1.883	-6.1	212#	0.00
24	T	Acenaphthene	1.003	1.055	-5.2	207#	0.00
25	T	Dibenzofuran	1.657	1.791	-8.1	214#	0.03
26	T	Fluorene	1.326	1.340	-1.1	200	0.00
27	T	1-Methylfluorene	0.747	0.837	-12.0	235#	0.00
28	un	C1-Fluorenes	1.326	0.000	100.0#	0#	-23.17#
29	un	C2-Fluorenes	1.326	0.000	100.0#	0#	-24.94#
30	un	C3-Fluorenes	1.326	0.000	100.0#	0#	-26.58#
31	I	Pyrene-d10	1.000	1.000	0.0	153	0.00
32	S	Phenanthrene-d10	1.105	1.244	-12.6	182	0.00
33	T	Carbazole	0.968	1.089	-12.5	183	0.00
34	T	Dibenzothiophene	1.280	1.435	-12.1	177	0.00
35	T	4-Methyldibenzothiophene	0.903	0.960	-6.3	164	0.00
36	un	2/3-Methyldibenzothiophene	0.903	0.000	100.0#	0#	-25.91#
37	un	1-Methyldibenzothiophene	0.903	0.000	100.0#	0#	-26.26#
38	un	C2-Dibenzothiophenes	1.280	0.000	100.0#	0#	-27.34#
39	un	C3-Dibenzothiophenes	1.280	0.000	100.0#	0#	-28.68#
40	un	C4-Dibenzothiophenes	1.280	0.000	100.0#	0#	-29.64#
41	T	Phenanthrene	1.056	1.182	-11.9	175	0.00
42	T	Anthracene	1.015	1.124	-10.7	173	0.00
43	un	3-Methylphenanthrene	0.993	0.000	100.0#	0#	-26.22#
44	un	2/4-Methylphenanthrene	0.993	0.000	100.0#	0#	-26.29#
45	un	2-Methylanthracene	0.993	0.000	100.0#	0#	-26.47#
46	un	9-Methylphenanthrene	0.993	0.000	100.0#	0#	-26.57#
47	T	1-Methylphenanthrene	0.993	1.085	-9.3	171	0.00
48	T	3,6-Dimethylphenanthrene	0.853	0.848	0.6	158	0.00
49	T	Retene	0.215	0.240	-11.6	192	0.00
50	un	C2-Phenanthrenes/Anthracene	1.056	0.000	100.0#	0#	-28.11#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\GCMS3\MS30860\MS30860H.D Vial: 8
Acq On : 5 Apr 2012 6:46 pm Operator: YM
Sample : AR-WKCC-250-035 Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 25% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
51	un	C3-Phenanthrenes/Anthracene	1.056	0.000	100.0#	0#	-30.76#
52	un	C4-Phenanthrenes/Anthracene	1.056	0.000	100.0#	0#	-31.52#
53	T	Naphthobenzothiophene	1.288	1.181	8.3	142	0.00
54	un	C1-Naphthobenzothiophenes	1.288	0.000	100.0#	0#	-34.45#
55	un	C2-Naphthobenzothiophenes	1.288	0.000	100.0#	0#	-35.48#
56	un	C3-Naphthobenzothiophenes	1.288	0.000	100.0#	0#	-36.83#
57	un	C4-Naphthobenzothiophenes	1.288	0.000	100.0#	0#	-37.53#
58	T	Fluoranthene	1.385	1.544	-11.5	189	0.00
59	T	Pyrene	1.594	1.747	-9.6	177	0.00
60	T	2-Methylfluoranthene	0.944	1.085	-14.9	191	0.00
61	T	Benzo(b)fluorene	0.709	0.770	-8.6	172	0.04
62	un	C1-Fluoranthenes/Pyrenes	1.385	0.000	100.0#	0#	-31.25#
63	un	C2-Fluoranthenes/Pyrenes	1.385	0.000	100.0#	0#	-32.07#
64	un	C3-Fluoranthenes/Pyrenes	1.385	0.000	100.0#	0#	-33.70#
65	un	C4-Fluoranthenes/Pyrenes	1.385	0.000	100.0#	0#	-34.96#
66	S	Chrysene-d12	1.168	1.121	4.0	151	0.00
67	T	Benz(a)anthracene	1.329	1.339	-0.8	162	0.00
68	T	Chrysene/Triphenylene	1.208	1.130	6.5	142	0.00
69	un	C1-Chrysenes	1.208	0.000	100.0#	0#	-34.90#
70	un	C2-Chrysenes	1.208	0.000	100.0#	0#	-36.36#
71	un	C3-Chrysenes	1.208	0.000	100.0#	0#	-39.10#
72	un	C4-Chrysenes	1.208	0.000	100.0#	0#	-39.10#
73	I	Benzo(a)pyrene-d12	1.000	1.000	0.0	137	0.04
74	un	C29-Hopane	0.520	0.000	100.0#	0#	-40.34#
75	un	18a-Oleanane	0.520	0.000	100.0#	0#	-41.79#
76	T	C30-Hopane	0.520	0.529	-1.7	151	0.00
77	T	Benzo(b)fluoranthene	1.599	1.799	-12.5	156	0.00
78	T	Benzo(k,j)fluoranthene	1.464	1.643	-12.2	170	0.00
79	un	Benzo(a)fluoranthene	1.464	0.000	100.0#	0#	-37.50#
80	T	Benzo(e)pyrene	1.548	1.710	-10.5	158	0.00
81	T	Benzo(a)pyrene	1.223	1.318	-7.8	152	0.04
82	T	Indeno(1,2,3-c,d)pyrene	0.900	0.855	5.0	136	0.00
83	T	Dibenzo(a,h)anthracene	0.704	0.642	8.8	133	0.00
84	un	C1-Dibenzo(a,h)anthracenes	0.704	0.000	100.0#	0#	-45.27#
85	un	C2-Dibenzo(a,h)anthracenes	0.704	0.000	100.0#	0#	-47.25#
86	un	C3-Dibenzo(a,h)anthracenes	0.704	0.000	100.0#	0#	-47.74#
87	T	Benzo(g,h,i)perylene	0.812	0.810	0.2	144	0.04
88	S	Perylene-d12	1.214	1.333	-9.8	162	0.00
89	T	Perylene	1.364	1.412	-3.5	143	0.00
90	S	5(b)H-Cholane	0.375	0.403	-7.5	145	0.04
91	un	C20-TAS	2.162	0.000	100.0#	0#	-33.06#
92	un	C21-TAS	2.162	0.000	100.0#	0#	-34.15#
93	un	C26(20S)-TAS	2.162	0.000	100.0#	0#	-38.21#
94	T	C26(20R)/C27(20S)-TAS	2.162	1.878	13.1	134	0.00
95	un	C28(20S)-TAS	2.162	0.000	100.0#	0#	-39.89#
96	un	C27(20R)-TAS	2.162	0.000	100.0#	0#	-40.30#
97	un	C28(20R)-TAS	2.162	0.000	100.0#	0#	-41.38#

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860H.D
Acq On : 5 Apr 2012 6:46 pm
Sample : AR-WKCC-250-035
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 10:00 2012

Vial: 8
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	11141m	49.46	0.00
31) Pyrene-d10	29.33	212	18208m	49.47	0.00
73) Benzo(a)pyrene-d12	38.05	264	8614m	49.41	0.04
System Monitoring Compounds					
2) Naphthalene-d8	13.52	136	100578m	275.17	0.03
21) Acenaphthene-d10	19.37	164	55591m	275.76	0.03
32) Phenanthrene-d10	24.44	188	114594m	281.86	0.00
66) Chrysene-d12	33.51	240	103226m	240.19	0.00
88) Perylene-d12	38.32	264	58120	274.55	0.00
90) 5(b)H-Cholane	33.94	217	17370	265.44	0.04
Target Compounds					Qvalue
3) cis/trans Decalin	10.85	138	17978m	258.13	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	13.57	128	115382m	279.64	
9) 2-Methylnaphthalene	15.82	142	71820m	277.55	
10) 1-Methylnaphthalene	16.16	142	64637m	271.46	
11) 2,6-Dimethylnaphthalene	17.91	156	53856m	262.89	
12) 1,6,7-Trimethylnaphthalene	20.77	170	64194m	273.78	
13) C2-Naphthalenes	0.00	156	0	N.D. d	
14) C3-Naphthalenes	0.00	170	0	N.D. d	
15) C4-Naphthalenes	0.00	184	0	N.D. d	
16) Benzothiophene	13.74	134	92797m	282.05	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	17.40	154	84737m	281.91	
23) Acenaphthylene	18.86	152	106110m	265.52	
24) Acenaphthene	19.45	154	59439m	263.12	
25) Dibenzofuran	20.07	168	100961m	270.56	
26) Fluorene	21.22	166	75522m	252.80	
27) 1-Methylfluorene	23.21	180	47063m	279.68	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	25.27	167	100273m	281.46	
34) Dibenzothiophene	24.09	184	132159m	280.45	
35) 4-Methyldibenzothiophene	25.59	198	87929m	264.71	
36) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
37) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
38) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	24.51	178	108797m	279.99	
42) Anthracene	24.68	178	103494m	276.90	
43) 3-Methylphenanthrene	0.00	192	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860H.D
Acq On : 5 Apr 2012 6:46 pm
Sample : AR-WKCC-250-035
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 10:00 2012

Vial: 8
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	0.00	192	0	N.D. d	
45)	2-Methylanthracene	0.00	192	0	N.D. d	
46)	9-Methylphenanthrene	0.00	192	0	N.D. d	
47)	1-Methylphenanthrene	26.64	192	99947m	273.56	
48)	3,6-Dimethylphenanthrene	27.72	206	77906m	248.27	
49)	Retene	30.41	234	21686m	274.35	
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
53)	Naphthobenzothiophene	32.65	234	109361m	230.69	
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D. d	
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D. d	
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D. d	
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D. d	
58)	Fluoranthene	28.63	202	142065m	278.64	
59)	Pyrene	29.40	202	160772m	274.02	
60)	2-Methylfluoranthene	30.16	216	98052m	282.07	
61)	Benzo(b)fluorene	30.79	216	73180m	280.54	
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D. d	
67)	Benz(a)anthracene	33.48	228	123240m	252.02	
68)	Chrysene/Triphenylene	33.59	228	104071m	234.16	
69)	C1-Chrysenes	0.00	242	0	N.D. d	
70)	C2-Chrysenes	0.00	256	0	N.D. d	
71)	C3-Chrysenes	0.00	270	0	N.D. d	
72)	C4-Chrysenes	0.00	284	0	N.D. d	
74)	C29-Hopane	0.00	191	0	N.D. d	
75)	18a-Oleanane	0.00	191	0	N.D. d	
76)	C30-Hopane	42.27	191	22698	250.40	
77)	Benzo(b)fluoranthene	36.99	252	78451m	281.44	
78)	Benzo(k,j)fluoranthene	37.07	252	71649m	280.81	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
80)	Benzo(e)pyrene	37.93	252	74579m	276.38	
81)	Benzo(a)pyrene	38.13	252	57476	269.57	
82)	Indeno(1,2,3-c,d)pyrene	42.65	276	37301	237.84	
83)	Dibenzo(a,h)anthracene	42.72	278	27986	228.14	
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D. d	
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D. d	
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D. d	
87)	Benzo(g,h,i)perylene	43.98	276	35295	249.42	
89)	Perylene	38.40	252	61686	259.45	
91)	C20-TAS	0.00	231	0	N.D. d	
92)	C21-TAS	0.00	231	0	N.D. d	
93)	C26(20S)-TAS	0.00	231	0	N.D. d	
94)	C26(20R)/C27(20S)-TAS	39.03	231	81674	216.72	
95)	C28(20S)-TAS	0.00	231	0	N.D. d	
96)	C27(20R)-TAS	0.00	231	0	N.D. d	
97)	C28(20R)-TAS	0.00	231	0	N.D. d	

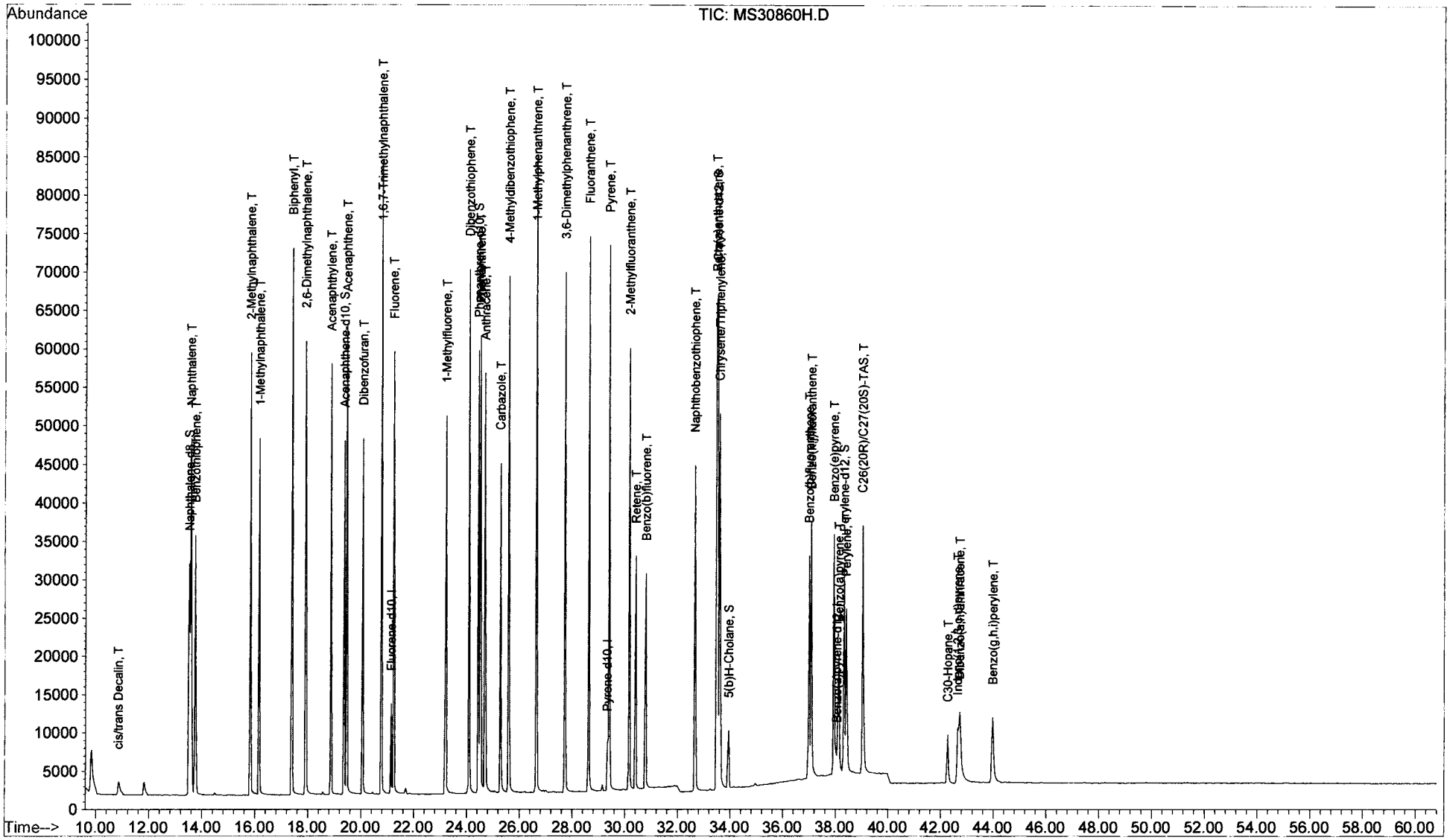
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\GCMS3\MS30860\MS30860H.D
Acq On : 5 Apr 2012 6:46 pm
Sample : AR-WKCC-250-035
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 10:00 2012

Vial: 8
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Evaluate Continuing Calibration Report

Data File : C:\GCMS3\MS30860\MS30860L.D Vial: 17
Acq On : 6 Apr 2012 6:09 am Operator: YM
Sample : AR-WKCC-250-035 Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 25% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorene-d10	1.000	1.000	0.0	334#	0.00
2	S	Naphthalene-d8	1.623	1.817	-12.0	386#	0.00
3	T	cis/trans Decalin	0.309	0.328	-6.1	382#	0.00
4	un	C1-Decalins	0.309	0.000	100.0#	0#	-12.39#
5	un	C2-Decalins	0.309	0.000	100.0#	0#	-13.20#
6	un	C3-Decalins	0.309	0.000	100.0#	0#	-15.53#
7	un	C4-Decalins	0.309	0.000	100.0#	0#	-18.39#
8	T	Naphthalene	1.832	2.079	-13.5	388#	0.00
9	T	2-Methylnaphthalene	1.149	1.282	-11.6	372#	0.00
10	T	1-Methylnaphthalene	1.057	1.213	-14.8	381#	0.00
11	T	2,6-Dimethylnaphthalene	0.909	1.055	-16.1	384#	0.00
12	T	1,6,7-Trimethylnaphthalene	1.041	1.133	-8.8	370#	0.00
13	un	C2-Naphthalenes	1.832	0.000	100.0#	0#	-18.28#
14	un	C3-Naphthalenes	1.832	0.000	100.0#	0#	-20.56#
15	un	C4-Naphthalenes	1.832	0.000	100.0#	0#	-22.52#
16	T	Benzothiophene	1.461	1.652	-13.1	377#	0.00
17	un	C1-Benzothiophenes	1.461	0.000	100.0#	0#	-15.34#
18	un	C2-Benzothiophenes	1.461	0.000	100.0#	0#	-18.34#
19	un	C3-Benzothiophenes	1.461	0.000	100.0#	0#	-20.02#
20	un	C4-Benzothiophenes	1.461	0.000	100.0#	0#	-21.79#
21	S	Acenaphthene-d10	0.895	0.985	-10.1	381#	0.00
22	T	Biphenyl	1.334	1.433	-7.4	357#	-0.03
23	T	Acenaphthylene	1.774	1.942	-9.5	371#	0.00
24	T	Acenaphthene	1.003	1.205	-20.1	401#	0.00
25	T	Dibenzofuran	1.657	1.870	-12.9	379#	0.00
26	T	Fluorene	1.326	1.613	-21.6	408#	0.00
27	T	1-Methylfluorene	0.747	0.734	1.7	349#	0.00
28	un	C1-Fluorenes	1.326	0.000	100.0#	0#	-23.17#
29	un	C2-Fluorenes	1.326	0.000	100.0#	0#	-24.94#
30	un	C3-Fluorenes	1.326	0.000	100.0#	0#	-26.58#
31	I	Pyrene-d10	1.000	1.000	0.0	282#	0.00
32	S	Phenanthrene-d10	1.105	1.211	-9.6	326#	0.00
33	T	Carbazole	0.968	1.169	-20.8	362#	0.00
34	T	Dibenzothiophene	1.280	1.479	-15.5	337#	0.00
35	T	4-Methyldibenzothiophene	0.903	0.979	-8.4	308#	0.00
36	un	2/3-Methyldibenzothiophene	0.903	0.000	100.0#	0#	-25.91#
37	un	1-Methyldibenzothiophene	0.903	0.000	100.0#	0#	-26.26#
38	un	C2-Dibenzothiophenes	1.280	0.000	100.0#	0#	-27.34#
39	un	C3-Dibenzothiophenes	1.280	0.000	100.0#	0#	-28.68#
40	un	C4-Dibenzothiophenes	1.280	0.000	100.0#	0#	-29.64#
41	T	Phenanthrene	1.056	1.306	-23.7	356#	0.00
42	T	Anthracene	1.015	1.248	-23.0	353#	0.00
43	un	3-Methylphenanthrene	0.993	0.000	100.0#	0#	-26.22#
44	un	2/4-Methylphenanthrene	0.993	0.000	100.0#	0#	-26.29#
45	un	2-Methylanthracene	0.993	0.000	100.0#	0#	-26.47#
46	un	9-Methylphenanthrene	0.993	0.000	100.0#	0#	-26.57#
47	T	1-Methylphenanthrene	0.993	1.063	-7.0	309#	0.00
48	T	3,6-Dimethylphenanthrene	0.853	0.850	0.4	292#	0.00
49	T	Retene	0.215	0.166	22.8	245#	0.00
50	un	C2-Phenanthrenes/Anthracene	1.056	0.000	100.0#	0#	-28.11#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\GCMS3\MS30860\MS30860L.D Vial: 17
Acq On : 6 Apr 2012 6:09 am Operator: YM
Sample : AR-WKCC-250-035 Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 25% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
51	un	C3-Phenanthrenes/Anthracene	1.056	0.000	100.0#	0#	-30.76#
52	un	C4-Phenanthrenes/Anthracene	1.056	0.000	100.0#	0#	-31.52#
53	T	Naphthobenzothiophene	1.288	1.212	5.9	269#	0.00
54	un	C1-Naphthobenzothiophenes	1.288	0.000	100.0#	0#	-34.45#
55	un	C2-Naphthobenzothiophenes	1.288	0.000	100.0#	0#	-35.48#
56	un	C3-Naphthobenzothiophenes	1.288	0.000	100.0#	0#	-36.83#
57	un	C4-Naphthobenzothiophenes	1.288	0.000	100.0#	0#	-37.53#
58	T	Fluoranthene	1.385	1.218	12.1	275#	0.00
59	T	Pyrene	1.594	1.523	4.5	284#	0.00
60	T	2-Methylfluoranthene	0.944	0.773	18.1	250#	0.00
61	T	Benzo(b)fluorene	0.709	0.701	1.1	288#	0.00
62	un	C1-Fluoranthenes/Pyrenes	1.385	0.000	100.0#	0#	-31.25#
63	un	C2-Fluoranthenes/Pyrenes	1.385	0.000	100.0#	0#	-32.07#
64	un	C3-Fluoranthenes/Pyrenes	1.385	0.000	100.0#	0#	-33.70#
65	un	C4-Fluoranthenes/Pyrenes	1.385	0.000	100.0#	0#	-34.96#
66	S	Chrysene-d12	1.168	0.951	18.6	236#	0.00
67	T	Benz(a)anthracene	1.329	1.050	21.0	234#	0.00
68	T	Chrysene/Triphenylene	1.208	1.036	14.2	240#	0.00
69	un	C1-Chrysenes	1.208	0.000	100.0#	0#	-34.90#
70	un	C2-Chrysenes	1.208	0.000	100.0#	0#	-36.36#
71	un	C3-Chrysenes	1.208	0.000	100.0#	0#	-39.10#
72	un	C4-Chrysenes	1.208	0.000	100.0#	0#	-39.10#
73	I	Benzo(a)pyrene-d12	1.000	1.000	0.0	210#	0.00
74	un	C29-Hopane	0.520	0.000	100.0#	0#	-40.34#
75	un	18a-Oleanane	0.520	0.000	100.0#	0#	-41.79#
76	T	C30-Hopane	0.520	0.591	-13.7	258#	-0.04
77	T	Benzo(b)fluoranthene	1.599	1.766	-10.4	236#	0.00
78	T	Benzo(k,j)fluoranthene	1.464	1.322	9.7	210#	0.00
79	un	Benzo(a)fluoranthene	1.464	0.000	100.0#	0#	-37.50#
80	T	Benzo(e)pyrene	1.548	1.538	0.6	219#	0.00
81	T	Benzo(a)pyrene	1.223	1.298	-6.1	229#	0.00
82	T	Indeno(1,2,3-c,d)pyrene	0.900	0.788	12.4	192	0.00
83	T	Dibenzo(a,h)anthracene	0.704	0.586	16.8	186	0.00
84	un	C1-Dibenzo(a,h)anthracenes	0.704	0.000	100.0#	0#	-45.27#
85	un	C2-Dibenzo(a,h)anthracenes	0.704	0.000	100.0#	0#	-47.25#
86	un	C3-Dibenzo(a,h)anthracenes	0.704	0.000	100.0#	0#	-47.74#
87	T	Benzo(g,h,i)perylene	0.812	0.732	9.9	200	0.00
88	S	Perylene-d12	1.214	1.168	3.8	218#	0.00
89	T	Perylene	1.364	1.400	-2.6	218#	0.00
90	S	5(b)H-Cholane	0.375	0.464	-23.7	258#	0.00
91	un	C20-TAS	2.162	0.000	100.0#	0#	-33.06#
92	un	C21-TAS	2.162	0.000	100.0#	0#	-34.15#
93	un	C26(20S)-TAS	2.162	0.000	100.0#	0#	-38.21#
94	T	C26(20R)/C27(20S)-TAS	2.162	2.074	4.1	228#	0.00
95	un	C28(20S)-TAS	2.162	0.000	100.0#	0#	-39.89#
96	un	C27(20R)-TAS	2.162	0.000	100.0#	0#	-40.30#
97	un	C28(20R)-TAS	2.162	0.000	100.0#	0#	-41.38#

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860L.D Vial: 17
Acq On : 6 Apr 2012 6:09 am Operator: YM
Sample : AR-WKCC-250-035 Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 8:18 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	18910m	49.46	0.00
31) Pyrene-d10	29.33	212	33514m	49.47	0.00
73) Benzo(a)pyrene-d12	38.01	264	13229m	49.41	0.00
System Monitoring Compounds					
2) Naphthalene-d8	13.49	136	173860m	280.24	0.00
21) Acenaphthene-d10	19.34	164	94278m	275.53	0.00
32) Phenanthrene-d10	24.44	188	205233	274.25	0.00
66) Chrysene-d12	33.52	240	161269m	203.87	0.00
88) Perylene-d12	38.32	264	78218m	240.59	0.00
90) 5(b)H-Cholane	33.91	217	30775m	306.22	0.00
Target Compounds					Qvalue
3) cis/trans Decalin	10.85	138	31427m	265.85	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	13.58	128	198882m	283.98	
9) 2-Methylnaphthalene	15.83	142	122707m	279.38	
10) 1-Methylnaphthalene	16.13	142	116211m	287.54	
11) 2,6-Dimethylnaphthalene	17.91	156	100892m	290.15	
12) 1,6,7-Trimethylnaphthalene	20.78	170	108491m	272.60	
13) C2-Naphthalenes	0.00	156	0	N.D. d	
14) C3-Naphthalenes	0.00	170	0	N.D. d	
15) C4-Naphthalenes	0.00	184	0	N.D. d	
16) Benzothiophene	13.74	134	158127m	283.16	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	17.37	154	137366m	269.25	
23) Acenaphthylene	18.86	152	185713m	273.79	
24) Acenaphthene	19.45	154	115266m	300.62	
25) Dibenzofuran	20.04	168	178875m	282.42	
26) Fluorene	21.23	166	154210m	304.13	
27) 1-Methylfluorene	23.21	180	70044m	245.24	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	25.27	167	197978	301.91	
34) Dibenzothiophene	24.09	184	250791	289.14	
35) 4-Methyldibenzothiophene	25.59	198	165052	269.95	
36) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
37) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
38) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	24.51	178	221189	309.26	
42) Anthracene	24.68	178	211476m	307.40	
43) 3-Methylphenanthrene	0.00	192	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860L.D Vial: 17
Acq On : 6 Apr 2012 6:09 am Operator: YM
Sample : AR-WKCC-250-035 Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 8:18 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	0.00	192	0	N.D. d	
45)	2-Methylanthracene	0.00	192	0	N.D. d	
46)	9-Methylphenanthrene	0.00	192	0	N.D. d	
47)	1-Methylphenanthrene	26.64	192	180166m	267.91	
48)	3,6-Dimethylphenanthrene	27.72	206	143708m	248.82	
49)	Retene	30.41	234	27590m	189.63	
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
53)	Naphthobenzothiophene	32.66	234	206683m	236.87	
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D. d	
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D. d	
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D. d	
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D. d	
58)	Fluoranthene	28.63	202	206246m	219.78	
59)	Pyrene	29.40	202	257984m	238.89	
60)	2-Methylfluoranthene	30.17	216	128498m	200.83	
61)	Benzo(b)fluorene	30.76	216	122536m	255.21	
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D. d	
67)	Benz(a)anthracene	33.48	228	177900m	197.65	
68)	Chrysene/Triphenylene	33.59	228	175600m	214.66	
69)	C1-Chrysenes	0.00	242	0	N.D. d	
70)	C2-Chrysenes	0.00	256	0	N.D. d	
71)	C3-Chrysenes	0.00	270	0	N.D. d	
72)	C4-Chrysenes	0.00	284	0	N.D. d	
74)	C29-Hopane	0.00	191	0	N.D. d	
75)	18a-Oleanane	0.00	191	0	N.D. d	
76)	C30-Hopane	42.24	191	38951m	279.79	
77)	Benzo(b)fluoranthene	37.00	252	118229m	276.18	
78)	Benzo(k,j)fluoranthene	37.07	252	88531m	225.93	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
80)	Benzo(e)pyrene	37.93	252	103057m	248.69	
81)	Benzo(a)pyrene	38.09	252	86940m	265.51	
82)	Indeno(1,2,3-c,d)pyrene	42.65	276	52757m	219.04	
83)	Dibenzo(a,h)anthracene	42.72	278	39251m	208.34	
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D. d	
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D. d	
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D. d	
87)	Benzo(g,h,i)perylene	43.94	276	49009m	225.51	
89)	Perylene	38.40	252	93899m	257.16	
91)	C20-TAS	0.00	231	0	N.D. d	
92)	C21-TAS	0.00	231	0	N.D. d	
93)	C26(20S)-TAS	0.00	231	0	N.D. d	
94)	C26(20R)/C27(20S)-TAS	39.03	231	138552m	239.39	
95)	C28(20S)-TAS	0.00	231	0	N.D. d	
96)	C27(20R)-TAS	0.00	231	0	N.D. d	
97)	C28(20R)-TAS	0.00	231	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

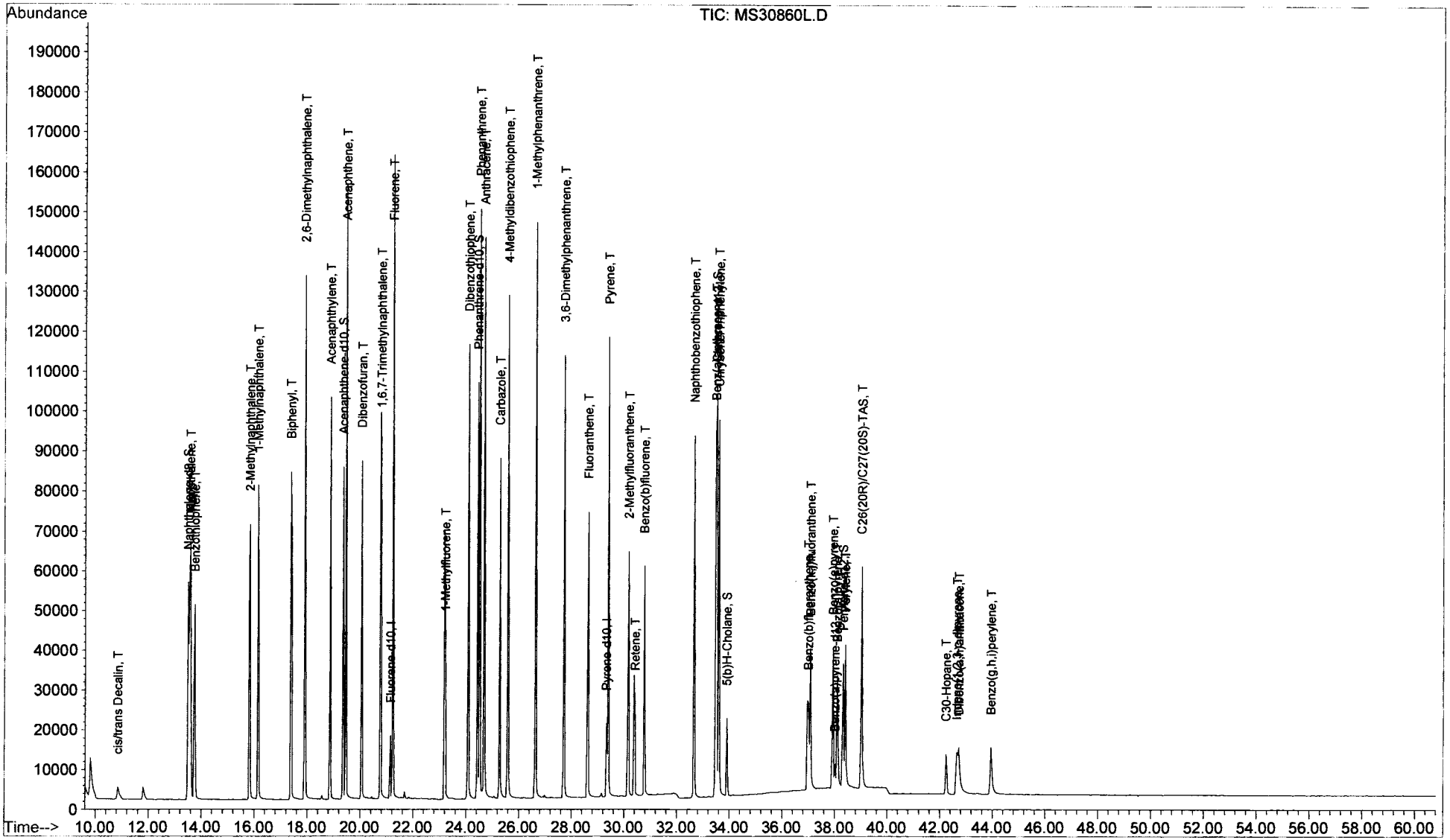
Quantitation Report

Data File : C:\GCMS3\MS30860\MS30860L.D
Acq On : 6 Apr 2012 6:09 am
Sample : AR-WKCC-250-035
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 8:18 2012

Vial: 17
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00

Quant Results File: AR30860.RES

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	MS30860J.D	Surrogate Amount		MS30860J.D	
Data File Path	C:\HPCHEM\1\DATA\MS30860\	Naphthalene-d8	50.044	SRM2779-WK-2.0-001	50.044
Operator	YM	Acenaphthene-d10	50.050		50.050
Date Acquired	04/ 5/20 -1:9:	Phenanthrene-d10	50.035		50.035
Method File	PAH-2010	Chrysene-d12	50.044		50.044
Sample Name	SRM2779-WK-2.0-001	Perylene-d12	50.056		50.056
Misc Info		5(b)H-Cholane	49.500		49.500
Instrument Name	GC/MS Ins			04/ 5/20 -1:9:	
Vial Number	10			PAH-2010	
Sample Multiplier	0.48921			2.044111936	
Sample Amount	0				

#	Compound	Ret Time (min)	Target Response (area)	Concentration	Surrogate Corrected Concentration
3)	cis/trans Decalin	10.85	156139	740.9404	750.3456
4)	C1-Decalins	12.03	212819	1009.9091	1022.7285
5)	C2-Decalins	14.42	194178	921.4503	933.1468
6)	C3-Decalins	16.39	227618	1080.1361	1093.8469
7)	C4-Decalins	18.39	144384	685.1584	693.8555
8)	Naphthalene	13.58	1089672	872.8360	883.9154
9)+10)	C1-Naphthalenes	16.00	2292747	1836.5087	1859.8205
13)	C2-Naphthalenes	18.19	2573738	2061.5847	2087.7536
14)	C3-Naphthalenes	20.08	1838365	1472.5451	1491.2369
15)	C4-Naphthalenes	22.52	1001231	801.9940	812.1742
16)	Benzothiophene	13.78	9183	9.2247	9.3417
17)	C1-Benzothiophenes	15.32	31967	32.1120	32.5196
18)	C2-Benzothiophenes	18.33	37078	37.2462	37.7190
19)	C3-Benzothiophenes	20.02	35857	36.0196	36.4769
20)	C4-Benzothiophenes	21.48	37578	37.7484	38.2276
22)	Biphenyl	17.40	201926	222.0250	224.8433
23)	Acenaphthylene	18.87	10474	8.6622	8.7721
24)	Acenaphthene	19.46	9442	13.8138	13.9892
25)	Dibenzofuran	20.08	26733	23.6770	23.9776
26)	Fluorene	21.23	146246	161.7954	163.8492
28)	C1-Fluorenes	23.21	329655	364.7051	369.3345
29)	C2-Fluorenes	24.86	398518	440.8899	446.4864
30)	C3-Fluorenes	26.53	323098	357.4510	361.9883
33)	Carbazole	25.27	5437	5.0879	5.1525
42)	Anthracene	24.68	3654	3.2593	3.3007
41)	Phenanthrene	24.51	336350	288.5789	292.2420
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.42	990505	849.8256	860.6129
50)	C2-Phenanthrenes/Anthracenes	28.10	944814	810.6240	820.9137
51)	C3-Phenanthrenes/Anthracenes	29.64	617668	529.9419	536.6687
52)	C4-Phenanthrenes/Anthracenes	31.49	297969	255.6491	258.8942
34)	Dibenzothiophene	24.09	82644	58.4693	59.2114
35)+36)+37)	C1-Dibenzothiophenes	25.90	194095	137.3190	139.0620
38)	C2-Dibenzothiophenes	27.02	258157	182.6418	184.9602
39)	C3-Dibenzothiophenes	28.52	171854	121.5838	123.1272
40)	C4-Dibenzothiophenes	30.59	72070	50.9883	51.6355
58)	Fluoranthene	28.63	5377	3.5181	3.5607
59)	Pyrene	29.40	21138	12.0112	12.1637
62)	C1-Fluoranthenes/Pyrenes	30.55	112213	73.3771	74.3085
63)	C2-Fluoranthenes/Pyrenes	32.61	155198	101.4854	102.7736
64)	C3-Fluoranthenes/Pyrenes	33.71	188122	123.0147	124.5762
65)	C4-Fluoranthenes/Pyrenes	34.84	157864	103.2287	104.5390
53)	Naphthobenzothiophene	32.65	36665	25.7853	26.1126
54)	C1-Naphthobenzothiophenes	33.83	78698	55.3457	56.0482
55)	C2-Naphthobenzothiophenes	35.51	106646	75.0006	75.9526
56)	C3-Naphthobenzothiophenes	36.88	73067	51.3856	52.0378
57)	C4-Naphthobenzothiophenes	37.85	33249	23.3829	23.6797
67)	Benz(a)anthracene	33.47	8223	5.6061	5.6773
68)	Chrysene/Triphenylene	33.59	55011	41.2662	41.7900
69)	C1-Chrysenes	34.84	130623	97.9862	99.2300
70)	C2-Chrysenes	36.02	175401	131.5761	133.2463
71)	C3-Chrysenes	37.66	119377	89.5500	90.6867
72)	C4-Chrysenes	39.07	94298	70.7372	71.6351
77)	Benzo(b)fluoranthene	36.99	7329	5.4286	5.4975
78)	Benzo(k,j)fluoranthene	37.03	772	0.6247	0.6326
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	37.93	14393	11.0129	11.1527
81)	Benzo(a)pyrene	38.13	1670	1.6172	1.6377
89)	Perylene	38.36	988	0.8580	0.8689
82)	Indeno(1,2,3-c,d)pyrene	42.68	365	0.4805	0.4866
83)	Dibenzo(a,h)anthracene	42.72	1786	3.0060	3.0442
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	43.98	1305	1.9041	1.9283
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	15.83	1401451	1789.9585	1812.6795
10)	1-Methylnaphthalene	16.17	891296	1237.1431	1252.8469
11)	2,6-Dimethylnaphthalene	17.97	717565	1157.6415	1172.3361
12)	1,6,7-Trimethylnaphthalene	20.78	211590	298.2424	302.0282
27)	1-Methylfluorene	23.21	144668	284.1365	287.7432
35)	4-Methyldibenzothiophene	25.59	102492	102.8665	104.1723
36)	2/3-Methyldibenzothiophene	25.90	58473	58.6867	59.4316
37)	1-Methyldibenzothiophene	26.22	33130	33.2511	33.6731
43)	3-Methylphenanthrene	26.18	237175	216.4215	219.1687
44)	2/4-Methylphenanthrene	26.29	245860	224.3465	227.1943
45)	2-Methylanthracene	26.43	9984	9.1104	9.2260
46)	9-Methylphenanthrene	26.57	309106	282.0583	285.6387
47)	1-Methylphenanthrene	26.64	188380	171.8962	174.0782
48)	3,6-Dimethylphenanthrene	27.72	66611	70.7718	71.6702
49)	Retene	30.41	5219	22.0124	22.2918
60)	2-Methylfluoranthene	30.20	6910	6.6272	6.7114
61)	Benzo(b)fluorene	30.79	15894	20.3137	20.5715
74)	C29-Hopane	40.31	16564	37.7281	38.2070
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	41.57	27058	61.6305	62.4128
91)	C20-TAS	33.08	9696	5.3122	5.3796
92)	C21-TAS	34.14	15279	8.3710	8.4772
93)	C26(20S)-TAS	38.21	7761	4.2521	4.3060
94)	C26(20R)/C27(20S)-TAS	39.11	24394	13.3649	13.5345
95)	C28(20S)-TAS	39.85	16043	8.7896	8.9011
96)	C27(20R)-TAS	40.27	14733	8.0718	8.1743
97)	C28(20R)-TAS	41.35	13234	7.2506	7.3426
	Surrogate Standards				
2)	Naphthalene-d8	13.52	26028	23.5344	96.1295
21)	Acenaphthene-d10	19.37	15697	25.7342	105.1021
32)	Phenanthrene-d10	24.44	29476	24.1708	98.7466
66)	Chrysene-d12	33.51	23901	18.5411	75.7336
88)	Perylene-d12	38.32	23056	22.4873	91.8302
90)	5(b)H-Cholane	33.94	7761	24.4872	101.1203
	Internal Standards				
1)	Fluorene-d10	21.14	16491	24.1968	
31)	Pyrene-d10	29.36	26718	24.2012	
73)	Benzo(a)pyrene-d12	38.05	20410	24.1728	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\MS30860J.D Vial: 10
Acq On : 5 Apr 2012 9:03 pm Operator: YM
Sample : SRM2779-WK-2.0-001 Inst : GC/MS Ins
Misc : Multiplr: 0.49
MS Integration Params: rteint.p
Quant Time: Apr 10 17:02 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	16491m	49.46	0.00
31) Pyrene-d10	29.36	212	26718m	49.47	0.04
73) Benzo(a)pyrene-d12	38.05	264	20410m	49.41	0.04
System Monitoring Compounds					
2) Naphthalene-d8	13.52	136	26028m	23.53	0.03
21) Acenaphthene-d10	19.37	164	15697m	25.73	0.03
32) Phenanthrene-d10	24.44	188	29476m	24.17	0.00
66) Chrysene-d12	33.51	240	23901m	18.54	0.00
88) Perylene-d12	38.32	264	23056	22.49	0.00
90) 5(b)H-Cholane	33.94	217	7761	24.49	0.04
Target Compounds					Qvalue
3) cis/trans Decalin	10.85	138	156139m	740.94	
4) C1-Decalins	12.03	152	212819m	1009.91	
5) C2-Decalins	14.42	166	194178m	921.45	
6) C3-Decalins	16.39	180	227618m	1080.14	
7) C4-Decalins	18.39	194	144384m	685.16	
8) Naphthalene	13.58	128	1089672m	872.84	
9) 2-Methylnaphthalene	15.83	142	1401451m	1789.96	
10) 1-Methylnaphthalene	16.17	142	891296m	1237.14	
11) 2,6-Dimethylnaphthalene	17.97	156	717565m	1157.64	
12) 1,6,7-Trimethylnaphthalene	20.78	170	211590m	298.24	
13) C2-Naphthalenes	18.19	156	2573738m	2061.58	
14) C3-Naphthalenes	20.08	170	1838365m	1472.55	
15) C4-Naphthalenes	22.52	184	1001231m	801.99	
16) Benzothiophene	13.78	134	9183m	9.22	
17) C1-Benzothiophenes	15.32	148	31967m	32.11	
18) C2-Benzothiophenes	18.33	162	37078m	37.25	
19) C3-Benzothiophenes	20.02	176	35857m	36.02	
20) C4-Benzothiophenes	21.48	190	37578m	37.75	
22) Biphenyl	17.40	154	201926m	222.02	
23) Acenaphthylene	18.87	152	10474m	8.66	
24) Acenaphthene	19.46	154	9442m	13.81	
25) Dibenzofuran	20.08	168	26733m	23.68	
26) Fluorene	21.23	166	146246	161.80	
27) 1-Methylfluorene	23.21	180	144668m	284.14	
28) C1-Fluorenes	23.21	180	329655m	364.71	
29) C2-Fluorenes	24.86	194	398518m	440.89	
30) C3-Fluorenes	26.53	208	323098m	357.45	
33) Carbazole	25.27	167	5437m	5.09	
34) Dibenzothiophene	24.09	184	82644m	58.47	
35) 4-Methyldibenzothiophene	25.59	198	102492m	102.87	
36) 2/3-Methyldibenzothiophene	25.90	198	58473m	58.69	
37) 1-Methyldibenzothiophene	26.22	198	33130m	33.25	
38) C2-Dibenzothiophenes	27.02	212	258157m	182.64	
39) C3-Dibenzothiophenes	28.52	226	171854m	121.58	
40) C4-Dibenzothiophenes	30.59	240	72070m	50.99	
41) Phenanthrene	24.51	178	336350m	288.58	
42) Anthracene	24.68	178	3654m	3.26	
43) 3-Methylphenanthrene	26.18	192	237175m	216.42	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\MS30860J.D Vial: 10
Acq On : 5 Apr 2012 9:03 pm Operator: YM
Sample : SRM2779-WK-2.0-001 Inst : GC/MS Ins
Misc : Multiplr: 0.49
MS Integration Params: rteint.p
Quant Time: Apr 10 17:02 2012 Quant Results File: AR30860.RES

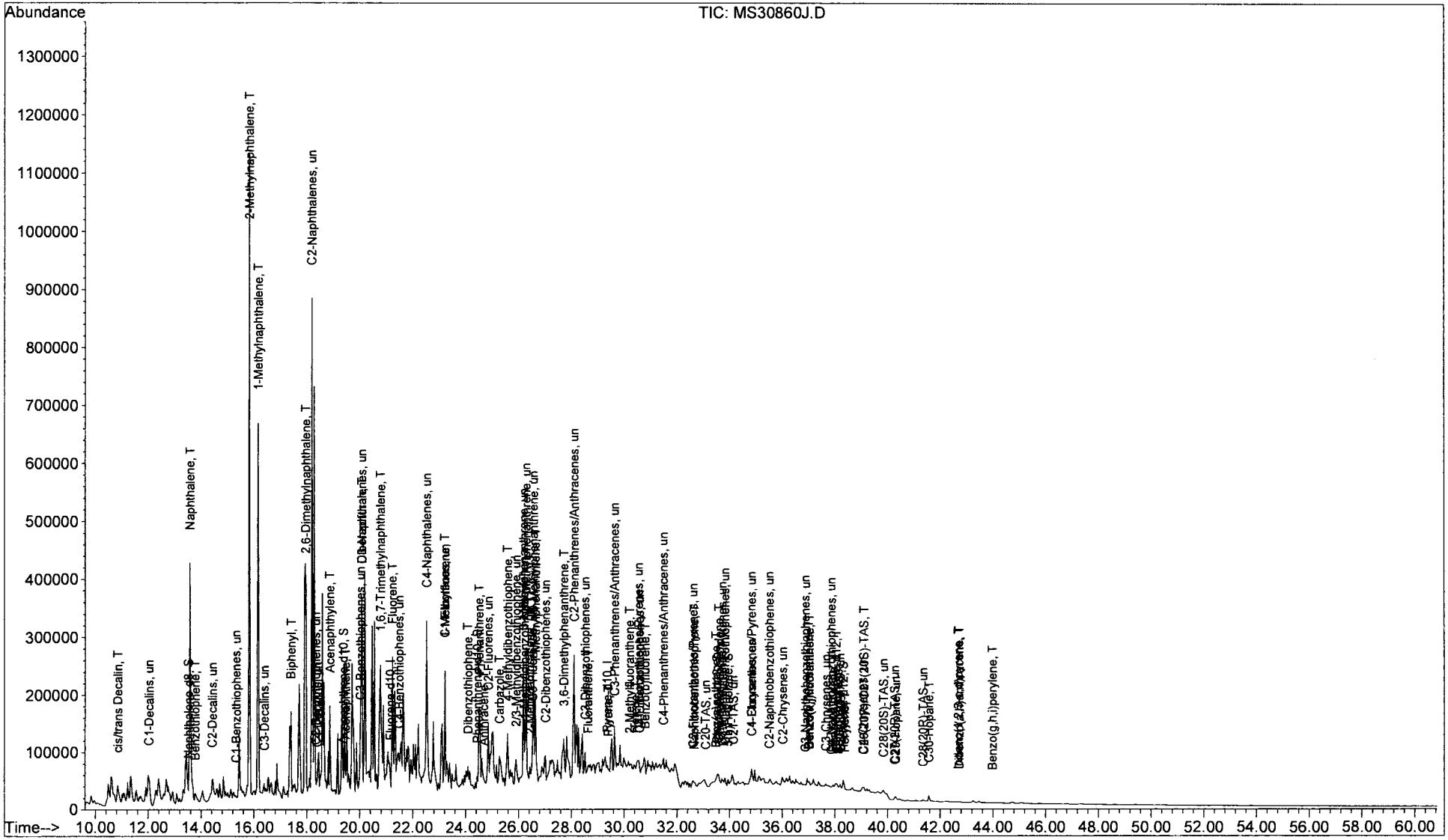
Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	26.29	192	245860m	224.35	
45)	2-Methylanthracene	26.43	192	9984m	9.11	
46)	9-Methylphenanthrene	26.57	192	309106m	282.06	
47)	1-Methylphenanthrene	26.64	192	188380m	171.90	
48)	3,6-Dimethylphenanthrene	27.72	206	66611m	70.77	
49)	Retene	30.41	234	5219m	22.01	
50)	C2-Phenanthrenes/Anthracen	28.10	206	944814m	810.62	
51)	C3-Phenanthrenes/Anthracen	29.64	220	617668m	529.94	
52)	C4-Phenanthrenes/Anthracen	31.49	234	297969m	255.65	
53)	Naphthobenzothiophene	32.65	234	36665m	25.79	
54)	C1-Naphthobenzothiophenes	33.83	248	78698m	55.35	
55)	C2-Naphthobenzothiophenes	35.51	262	106646m	75.00	
56)	C3-Naphthobenzothiophenes	36.88	276	73067m	51.39	
57)	C4-Naphthobenzothiophenes	37.85	290	33249m	23.38	
58)	Fluoranthene	28.63	202	5377m	3.52	
59)	Pyrene	29.40	202	21138m	12.01	
60)	2-Methylfluoranthene	30.20	216	6910m	6.63	
61)	Benzo(b)fluorene	30.79	216	15894m	20.31	
62)	C1-Fluoranthenes/Pyrenes	30.55	216	112213m	73.38	
63)	C2-Fluoranthenes/Pyrenes	32.61	230	155198m	101.49	
64)	C3-Fluoranthenes/Pyrenes	33.71	244	188122m	123.01	
65)	C4-Fluoranthenes/Pyrenes	34.84	258	157864m	103.23	
67)	Benz(a)anthracene	33.47	228	8223m	5.61	
68)	Chrysene/Triphenylene	33.59	228	55011m	41.27	
69)	C1-Chrysenes	34.84	242	130623m	97.99	
70)	C2-Chrysenes	36.02	256	175401m	131.58	
71)	C3-Chrysenes	37.66	270	119377m	89.55	
72)	C4-Chrysenes	39.07	284	94298m	70.74	
74)	C29-Hopane	40.31	191	16564	37.73	
75)	18a-Oleanane	0.00	191	0	N.D.	d
76)	C30-Hopane	41.57	191	27058	61.63	
77)	Benzo(b)fluoranthene	36.99	252	7329	5.43	
78)	Benzo(k,j)fluoranthene	37.03	252	772	0.62	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d
80)	Benzo(e)pyrene	37.93	252	14393	11.01	
81)	Benzo(a)pyrene	38.13	252	1670	1.62	
82)	Indeno(1,2,3-c,d)pyrene	42.68	276	365	0.48	
83)	Dibenzo(a,h)anthracene	42.72	278	1786	3.01	
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D.	d
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D.	d
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D.	d
87)	Benzo(g,h,i)perylene	43.98	276	1305	1.90	
89)	Perylene	38.36	252	988	0.86	
91)	C20-TAS	33.08	231	9696	5.31	
92)	C21-TAS	34.14	231	15279	8.37	
93)	C26(20S)-TAS	38.21	231	7761	4.25	
94)	C26(20R)/C27(20S)-TAS	39.11	231	24394	13.36	
95)	C28(20S)-TAS	39.85	231	16043	8.79	
96)	C27(20R)-TAS	40.27	231	14733	8.07	
97)	C28(20R)-TAS	41.35	231	13234	7.25	

(#) = qualifier out of range (m) = manual integration

Data File : C:\HPCHEM\1\DATA\MS30860\MS30860J.D Vial: 10
Acq On : 5 Apr 2012 9:03 pm Operator: YM
Sample : SRM2779-WK-2.0-001 Inst : GC/MS Ins
Misc : Multiplr: 0.49
MS Integration Params: rteint.p
Quant Time: Apr 10 17:02 2012 Quant Results File: AR30860.RES

Method : C:\HPCHEM\1\DATA\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	MS30860K.D	Surrogate Amount		MS30860K.D	
Data File Path	C:\GCMS3\MS30860\	Naphthalene-d8	50.044	SRM1582-WK-1.76-006	50.044
Operator	YM	Acenaphthene-d10	50.050		50.050
Date Acquired	04/ 5/20 -1:0:	Phenanthrene-d10	50.035		50.035
Method File	PAH-2010	Chrysene-d12	50.044		50.044
Sample Name	SRM1582-WK-1.76-006	Perylene-d12	50.056		50.056
Misc Info		5(b)H-Cholane	49.500		49.500
Instrument Name	GC/MS Ins			04/ 5/20 -1:0:	
Vial Number	11			PAH-2010	
Sample Multiplier	0.56818			1.760005632	
Sample Amount	0				

#	Compound	Ret Time (min)	Target Response (area)	Concentration	Surrogate Corrected Concentration
3)	cis/trans Decalin	10.87	112186	493.6304	526.5256
4)	C1-Decalins	12.03	184265	810.7858	864.8159
5)	C2-Decalins	13.18	279226	1228.6244	1310.4990
6)	C3-Decalins	15.51	236409	1040.2250	1109.5448
7)	C4-Decalins	16.75	165679	729.0054	777.5858
8)	Naphthalene	13.57	209333	155.4769	165.8378
9)+10)	C1-Naphthalenes	15.99	754418	560.3254	597.6650
13)	C2-Naphthalenes	18.19	1316223	977.5922	1042.7382
14)	C3-Naphthalenes	20.55	1383314	1027.4223	1095.8890
15)	C4-Naphthalenes	22.80	1104795	820.5592	875.2407
16)	Benzothiophene	13.80	9762	9.0928	9.6987
17)	C1-Benzothiophenes	15.35	45421	42.3071	45.1264
18)	C2-Benzothiophenes	18.33	87810	81.7901	87.2405
19)	C3-Benzothiophenes	20.01	165155	153.8326	164.0839
20)	C4-Benzothiophenes	22.46	166721	155.2913	165.6398
22)	Biphenyl	17.40	26528	27.0462	28.8485
23)	Acenaphthylene	0.00	0	0.0000	0.0000
24)	Acenaphthene	19.48	15943	21.6277	23.0690
25)	Dibenzofuran	20.07	13699	11.2502	11.9999
26)	Fluorene	21.22	32083	32.9116	35.1048
28)	C1-Fluorenes	23.21	129284	132.6228	141.4607
29)	C2-Fluorenes	24.85	270000	276.9729	295.4302
30)	C3-Fluorenes	28.53	265415	272.2695	290.4134
33)	Carbazole	25.27	7990	7.4206	7.9151
42)	Anthracene	24.68	277	0.2452	0.2616
41)	Phenanthrene	24.50	113186	96.3772	102.7997
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.42	403784	343.8196	366.7315
50)	C2-Phenanthrenes/Anthracenes	28.10	661005	562.8417	600.3490
51)	C3-Phenanthrenes/Anthracenes	30.72	634019	539.8632	575.8393
52)	C4-Phenanthrenes/Anthracenes	31.49	330442	281.3693	300.1196
34)	Dibenzothiophene	24.09	52652	36.9691	39.4327
35)+36)+37)	C1-Dibenzothiophenes	25.90	140745	98.8229	105.4084
38)	C2-Dibenzothiophenes	27.33	263045	184.6948	197.0027
39)	C3-Dibenzothiophenes	29.19	312000	219.0681	233.6666
40)	C4-Dibenzothiophenes	31.21	176497	123.9258	132.1842
58)	Fluoranthene	28.63	7275	4.7213	5.0359
59)	Pyrene	29.40	11924	6.7244	7.1725
62)	C1-Fluoranthenes/Pyrenes	30.55	87529	56.8038	60.5892
63)	C2-Fluoranthenes/Pyrenes	32.62	130193	84.4918	90.1220
64)	C3-Fluoranthenes/Pyrenes	33.83	173476	112.5810	120.0833
65)	C4-Fluoranthenes/Pyrenes	34.92	119553	77.5865	82.7568
53)	Naphthobenzothiophene	32.65	55166	38.5035	41.0693
54)	C1-Naphthobenzothiophenes	34.41	84973	59.3075	63.2597
55)	C2-Naphthobenzothiophenes	35.55	121538	84.8282	90.4811
56)	C3-Naphthobenzothiophenes	36.88	86801	60.5833	64.6206
57)	C4-Naphthobenzothiophenes	37.85	40921	28.5611	30.4644
67)	Benz(a)anthracene	33.48	4795	3.2443	3.4605
68)	Chrysene/Triphenylene	33.59	19455	14.4839	15.4491
69)	C1-Chrysenes	34.96	70388	52.4025	55.8946
70)	C2-Chrysenes	37.19	143487	106.8233	113.9419
71)	C3-Chrysenes	37.66	95212	70.8835	75.6071
72)	C4-Chrysenes	39.07	60928	45.3597	48.3825
77)	Benzo(b)fluoranthene	36.99	1260	1.0702	1.1416
78)	Benzo(k,j)fluoranthene	37.11	9745	9.0431	9.6457
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	37.93	4087	3.5862	3.8251
81)	Benzo(a)pyrene	38.17	6909	7.6722	8.1835
89)	Perylene	38.40	27730	27.6146	29.4548
82)	Indeno(1,2,3-c,d)pyrene	42.68	240	0.3623	0.3865
83)	Dibenzo(a,h)anthracene	42.72	309	0.5964	0.6361
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	43.98	1443	2.4144	2.5753
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	15.82	463125	548.4723	585.0220
10)	1-Methylnaphthalene	16.16	291293	374.9034	399.8867
11)	2,6-Dimethylnaphthalene	17.96	361962	541.4610	577.5436
12)	1,6,7-Trimethylnaphthalene	20.77	103884	135.7733	144.8211
27)	1-Methylfluorene	23.21	49897	90.8700	96.9255
35)	4-Methyldibenzothiophene	25.59	64230	63.9780	68.2414
36)	2/3-Methyldibenzothiophene	25.90	41736	41.5722	44.3426
37)	1-Methyldibenzothiophene	26.22	34779	34.6425	36.9511
43)	3-Methylphenanthrene	26.18	102272	92.6183	98.7903
44)	2/4-Methylphenanthrene	26.29	106999	96.8991	103.3563
45)	2-Methylanthracene	26.43	4905	4.4420	4.7380
46)	9-Methylphenanthrene	26.57	104754	94.8660	101.1878
47)	1-Methylphenanthrene	26.64	84854	76.8444	81.9652
48)	3,6-Dimethylphenanthrene	27.72	39897	42.0691	44.8725
49)	Retene	30.41	9805	41.0427	43.7777
60)	2-Methylfluoranthene	30.16	4783	4.5526	4.8560
61)	Benzo(b)fluorene	30.79	6768	8.5847	9.1568
74)	C29-Hopane	40.31	113200	295.6776	315.3813
75)	18a-Oleanane	41.35	29581	77.2654	82.4143
76)	C30-Hopane	41.57	184229	481.2048	513.2719
91)	C20-TAS	33.08	40023	25.1457	26.8214
92)	C21-TAS	34.14	60595	38.0707	40.6077
93)	C26(20S)-TAS	38.21	147828	92.8775	99.0668
94)	C26(20R)/C27(20S)-TAS	39.11	489317	307.4284	327.9152
95)	C28(20S)-TAS	39.85	152312	95.6947	102.0717
96)	C27(20R)-TAS	40.27	293326	184.2910	196.5721
97)	C28(20R)-TAS	41.35	145423	91.3665	97.4550
	Surrogate Standards				
2)	Naphthalene-d8	13.52	32344	27.1174	95.3697
21)	Acenaphthene-d10	19.37	17629	26.7987	94.2374
32)	Phenanthrene-d10	24.43	32750	26.6528	93.7524
66)	Chrysene-d12	33.51	28445	21.8995	77.0187
88)	Perylene-d12	38.32	23957	26.7952	94.2140
90)	5(b)H-Cholane	33.94	6622	23.9598	85.1905
	Internal Standards				
1)	Fluorene-d10	21.14	20656	28.1028	
31)	Pyrene-d10	29.36	31267	28.1079	
73)	Benzo(a)pyrene-d12	38.05	20671	28.0749	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\MS30860K.D Vial: 11
Acq On : 5 Apr 2012 10:11 pm Operator: YM
Sample : SRM1582-WK-1.76-006 Inst : GC/MS Ins
Misc : Multiplr: 0.57
MS Integration Params: rteint.p
Quant Time: Apr 7 19:40 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	20656m	49.46	0.00
31) Pyrene-d10	29.36	212	31267m	49.47	0.04
73) Benzo(a)pyrene-d12	38.05	264	20671m	49.41	0.04
System Monitoring Compounds					
2) Naphthalene-d8	13.52	136	32344	27.12	0.03
21) Acenaphthene-d10	19.37	164	17629m	26.80	0.03
32) Phenanthrene-d10	24.43	188	32750m	26.65	0.00
66) Chrysene-d12	33.51	240	28445	21.90	0.00
88) Perylene-d12	38.32	264	23957m	26.80	0.00
90) 5(b)H-Cholane	33.94	217	6622m	23.96	0.04
Target Compounds					Qvalue
3) cis/trans Decalin	10.87	138	112186	493.63	
4) C1-Decalins	12.03	152	184265	810.79	
5) C2-Decalins	13.18	166	279226	1228.62	
6) C3-Decalins	15.51	180	236409	1040.22	
7) C4-Decalins	16.75	194	165679	729.01	
8) Naphthalene	13.57	128	209333	155.48	
9) 2-Methylnaphthalene	15.82	142	463125	548.47	
10) 1-Methylnaphthalene	16.16	142	291293	374.90	
11) 2,6-Dimethylnaphthalene	17.96	156	361962	541.46	
12) 1,6,7-Trimethylnaphthalene	20.77	170	103884	135.77	
13) C2-Naphthalenes	18.19	156	1316223	977.59	
14) C3-Naphthalenes	20.55	170	1383314	1027.42	
15) C4-Naphthalenes	22.80	184	1104795	820.56	
16) Benzothiophene	13.80	134	9762	9.09	
17) C1-Benzothiophenes	15.35	148	45421	42.31	
18) C2-Benzothiophenes	18.33	162	87810	81.79	
19) C3-Benzothiophenes	20.01	176	165155	153.83	
20) C4-Benzothiophenes	22.46	190	166721	155.29	
22) Biphenyl	17.40	154	26528	27.05	
23) Acenaphthylene	0.00	152	0	N.D. d	
24) Acenaphthene	19.48	154	15943	21.63	
25) Dibenzofuran	20.07	168	13699	11.25	
26) Fluorene	21.22	166	32083	32.91	
27) 1-Methylfluorene	23.21	180	49897	90.87	
28) C1-Fluorenes	23.21	180	129284	132.62	
29) C2-Fluorenes	24.85	194	270000	276.97	
30) C3-Fluorenes	26.53	208	265415m	272.27	
33) Carbazole	25.27	167	7990	7.42	
34) Dibenzothiophene	24.09	184	52652	36.97	
35) 4-Methyldibenzothiophene	25.59	198	64230m	63.98	
36) 2/3-Methyldibenzothiophene	25.90	198	41736	41.57	
37) 1-Methyldibenzothiophene	26.22	198	34779	34.64	
38) C2-Dibenzothiophenes	27.33	212	263045	184.69	
39) C3-Dibenzothiophenes	29.19	226	312000	219.07	
40) C4-Dibenzothiophenes	31.21	240	176497	123.93	
41) Phenanthrene	24.50	178	113186	96.38	
42) Anthracene	24.68	178	277	0.25	
43) 3-Methylphenanthrene	26.18	192	102272	92.62	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\MS30860K.D Vial: 11
Acq On : 5 Apr 2012 10:11 pm Operator: YM
Sample : SRM1582-WK-1.76-006 Inst : GC/MS Ins
Misc : Multiplr: 0.57
MS Integration Params: rteint.p
Quant Time: Apr 7 19:40 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

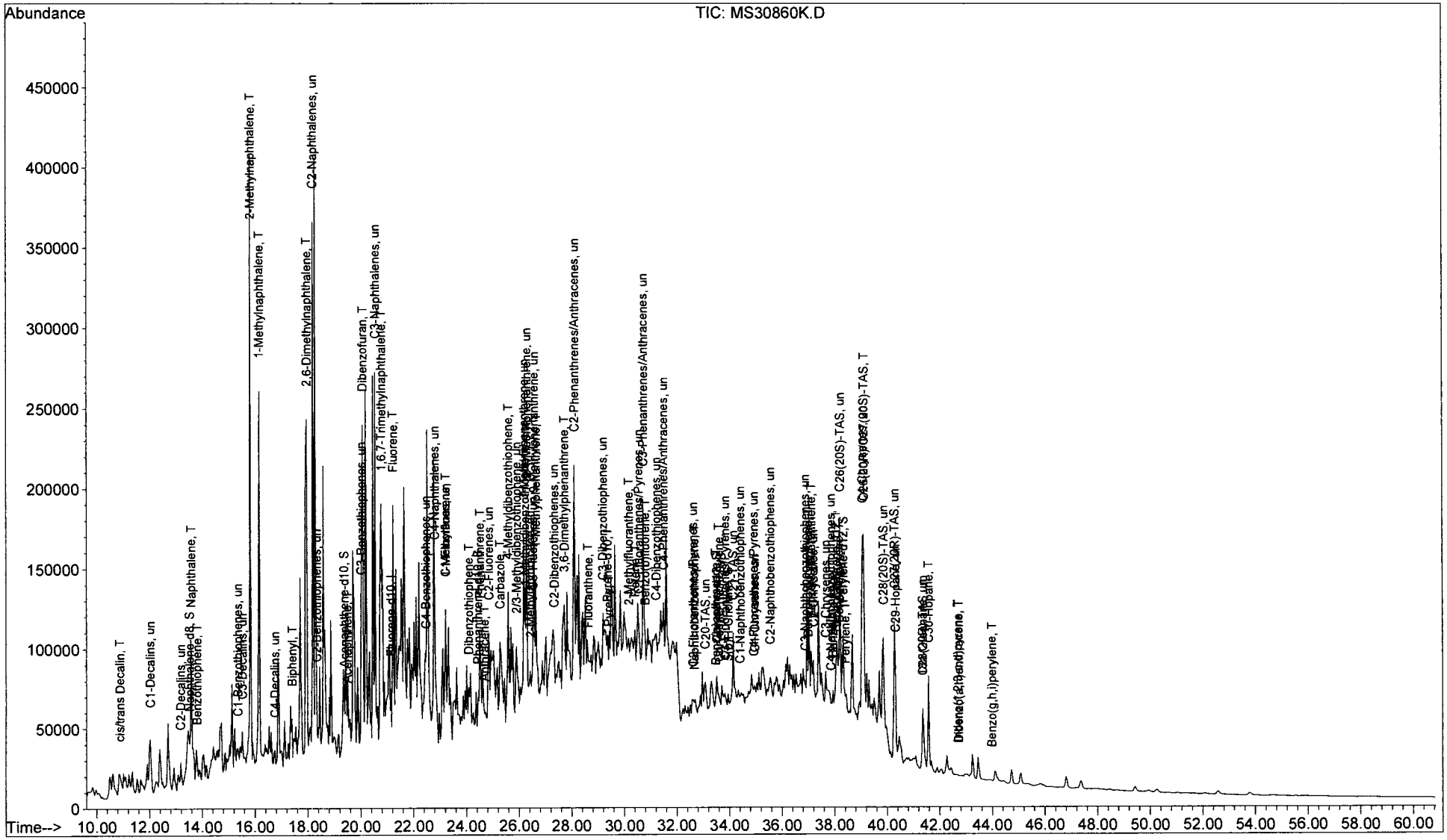
	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	26.29	192	106999	96.90	
45)	2-Methylanthracene	26.43	192	4905	4.44	
46)	9-Methylphenanthrene	26.57	192	104754	94.87	
47)	1-Methylphenanthrene	26.64	192	84854	76.84	
48)	3,6-Dimethylphenanthrene	27.72	206	39897	42.07	
49)	Retene	30.41	234	9805	41.04	
50)	C2-Phenanthrenes/Anthracen	28.10	206	661005	562.84	
51)	C3-Phenanthrenes/Anthracen	30.72	220	634019	539.86	
52)	C4-Phenanthrenes/Anthracen	31.49	234	330442	281.37	
53)	Naphthobenzothiophene	32.65	234	55166	38.50	
54)	C1-Naphthobenzothiophenes	34.41	248	84973	59.31	
55)	C2-Naphthobenzothiophenes	35.55	262	121538	84.83	
56)	C3-Naphthobenzothiophenes	36.88	276	86801	60.58	
57)	C4-Naphthobenzothiophenes	37.85	290	40921	28.56	
58)	Fluoranthene	28.63	202	7275	4.72	
59)	Pyrene	29.40	202	11924	6.72	
60)	2-Methylfluoranthene	30.16	216	4783	4.55	
61)	Benzo(b)fluorene	30.79	216	6768	8.58	
62)	C1-Fluoranthenes/Pyrenes	30.55	216	87529	56.80	
63)	C2-Fluoranthenes/Pyrenes	32.62	230	130193	84.49	
64)	C3-Fluoranthenes/Pyrenes	33.83	244	173476	112.58	
65)	C4-Fluoranthenes/Pyrenes	34.92	258	119553	77.59	
67)	Benz(a)anthracene	33.48	228	4795m	3.24	
68)	Chrysene/Triphenylene	33.59	228	19455	14.48	
69)	C1-Chrysenes	34.96	242	70388	52.40	
70)	C2-Chrysenes	37.19	256	143487	106.82	
71)	C3-Chrysenes	37.66	270	95212	70.88	
72)	C4-Chrysenes	39.07	284	60928	45.36	
74)	C29-Hopane	40.31	191	113200m	295.68	
75)	18a-Oleanane	41.35	191	29581m	77.27	
76)	C30-Hopane	41.57	191	184229m	481.20	
77)	Benzo(b)fluoranthene	36.99	252	1260m	1.07	
78)	Benzo(k,j)fluoranthene	37.11	252	9745m	9.04	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d
80)	Benzo(e)pyrene	37.93	252	4087m	3.59	
81)	Benzo(a)pyrene	38.17	252	6909m	7.67	
82)	Indeno(1,2,3-c,d)pyrene	42.68	276	240m	0.36	
83)	Dibenzo(a,h)anthracene	42.72	278	309m	0.60	
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D.	d
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D.	d
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D.	d
87)	Benzo(g,h,i)perylene	43.98	276	1443m	2.41	
89)	Perylene	38.40	252	27730m	27.61	
91)	C20-TAS	33.08	231	40023m	25.15	
92)	C21-TAS	34.14	231	60595m	38.07	
93)	C26(20S)-TAS	38.21	231	147828m	92.88	
94)	C26(20R)/C27(20S)-TAS	39.11	231	489317m	307.43	
95)	C28(20S)-TAS	39.85	231	152312m	95.69	
96)	C27(20R)-TAS	40.27	231	293326m	184.29	
97)	C28(20R)-TAS	41.35	231	145423m	91.37	

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\MS30860\MS30860K.D Vial: 11
Acq On : 5 Apr 2012 10:11 pm Operator: YM
Sample : SRM1582-WK-1.76-006 Inst : GC/MS Ins
Misc : Multiplr: 0.57
MS Integration Params: rteint.p
Quant Time: Apr 7 19:40 2012 Quant Results File: AR30860.RES

Method : C:\HPCHEM\1\DATA\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	ENV2755A.D	Surrogate Amount		ENV2755A.D	
Data File Path	C:\HPCHEM\1\DATA\MS30860\	Naphthalene-d8	50.044	Procedural Blank	50.044
Operator	YM	Acenaphthene-d10	50.050		50.050
Date Acquired	04/ 5/20 -1:1:	Phenanthrene-d10	50.035		50.035
Method File	PAH-2010	Chrysene-d12	50.044		50.044
Sample Name	Procedural Blank	Perylene-d12	50.056		50.056
Misc Info		5(b)H-Cholane	49.500		49.500
Instrument Name	GC/MS Ins			04/ 5/20 -1:1:	
Vial Number	12			PAH-2010	
Sample Multiplier	1			1	
Sample Amount	0				

#	Compound	Ret Time (min)	Target Response (area)	Concentration	Surrogate Corrected Concentration
3)	cis/trans Decalin	0.00	0	0.0000	0.0000
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	0.00	0	0.0000	0.0000
9)+10)	C1-Naphthalenes	0.00	0	0.0000	0.0000
13)	C2-Naphthalenes	0.00	0	0.0000	0.0000
14)	C3-Naphthalenes	0.00	0	0.0000	0.0000
15)	C4-Naphthalenes	0.00	0	0.0000	0.0000
16)	Benzothiophene	0.00	0	0.0000	0.0000
17)	C1-Benzothiophenes	0.00	0	0.0000	0.0000
18)	C2-Benzothiophenes	0.00	0	0.0000	0.0000
19)	C3-Benzothiophenes	0.00	0	0.0000	0.0000
20)	C4-Benzothiophenes	0.00	0	0.0000	0.0000
22)	Biphenyl	0.00	0	0.0000	0.0000
23)	Acenaphthylene	0.00	0	0.0000	0.0000
24)	Acenaphthene	0.00	0	0.0000	0.0000
25)	Dibenzofuran	20.04	196	0.3372	0.3483
26)	Fluorene	21.22	120	0.2579	0.2664
28)	C1-Fluorenes	0.00	0	0.0000	0.0000
29)	C2-Fluorenes	0.00	0	0.0000	0.0000
30)	C3-Fluorenes	0.00	0	0.0000	0.0000
33)	Carbazole	0.00	0	0.0000	0.0000
42)	Anthracene	0.00	0	0.0000	0.0000
41)	Phenanthrene	0.00	0	0.0000	0.0000
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
50)	C2-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
51)	C3-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
52)	C4-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
34)	Dibenzothiophene	0.00	0	0.0000	0.0000
35)+36)+37)	C1-Dibenzothiophenes	0.00	0	0.0000	0.0000
38)	C2-Dibenzothiophenes	0.00	0	0.0000	0.0000
39)	C3-Dibenzothiophenes	0.00	0	0.0000	0.0000
40)	C4-Dibenzothiophenes	0.00	0	0.0000	0.0000
58)	Fluoranthene	0.00	0	0.0000	0.0000
59)	Pyrene	0.00	0	0.0000	0.0000
62)	C1-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
63)	C2-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
64)	C3-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
65)	C4-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
53)	Naphthobenzothiophene	0.00	0	0.0000	0.0000
54)	C1-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
55)	C2-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
56)	C3-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
57)	C4-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
67)	Benz(a)anthracene	0.00	0	0.0000	0.0000
66)	Chrysene/Triphenylene	0.00	0	0.0000	0.0000
69)	C1-Chrysenes	0.00	0	0.0000	0.0000
70)	C2-Chrysenes	0.00	0	0.0000	0.0000
71)	C3-Chrysenes	0.00	0	0.0000	0.0000
72)	C4-Chrysenes	0.00	0	0.0000	0.0000
77)	Benzo(b)fluoranthene	0.00	0	0.0000	0.0000
78)	Benzo(k,j)fluoranthene	0.00	0	0.0000	0.0000
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	0.00	0	0.0000	0.0000
81)	Benzo(a)pyrene	0.00	0	0.0000	0.0000
89)	Perylene	0.00	0	0.0000	0.0000
82)	Indeno(1,2,3-c,d)pyrene	0.00	0	0.0000	0.0000
83)	Dibenzo(a,h)anthracene	0.00	0	0.0000	0.0000
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	0.00	0	0.0000	0.0000
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	0.00	0	0.0000	0.0000
10)	1-Methylnaphthalene	0.00	0	0.0000	0.0000
11)	2,6-Dimethylnaphthalene	0.00	0	0.0000	0.0000
12)	1,6,7-Trimethylnaphthalene	0.00	0	0.0000	0.0000
27)	1-Methylfluorene	0.00	0	0.0000	0.0000
35)	4-Methyldibenzothiophene	0.00	0	0.0000	0.0000
36)	2/3-Methyldibenzothiophene	0.00	0	0.0000	0.0000
37)	1-Methyldibenzothiophene	0.00	0	0.0000	0.0000
43)	3-Methylphenanthrene	0.00	0	0.0000	0.0000
44)	2/4-Methylphenanthrene	0.00	0	0.0000	0.0000
45)	2-Methylanthracene	0.00	0	0.0000	0.0000
46)	9-Methylphenanthrene	0.00	0	0.0000	0.0000
47)	1-Methylphenanthrene	0.00	0	0.0000	0.0000
48)	3,6-Dimethylphenanthrene	0.00	0	0.0000	0.0000
49)	Retene	0.00	0	0.0000	0.0000
60)	2-Methylfluoranthene	0.00	0	0.0000	0.0000
61)	Benzo(b)fluorene	0.00	0	0.0000	0.0000
74)	C29-Hopane	0.00	0	0.0000	0.0000
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	0.00	0	0.0000	0.0000
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	0.00	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	0.00	0	0.0000	0.0000
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	0.00	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.52	26782	47.0444	94.0062
21)	Acenaphthene-d10	19.37	14607	46.5219	92.9508
32)	Phenanthrene-d10	24.44	30957	48.4469	96.8260
66)	Chrysene-d12	33.51	20769	30.7482	61.4423
88)	Perylene-d12	38.32	10512	38.5878	77.0893
90)	5(b)H-Cholane	33.91	4943	58.6981	118.5819
	Internal Standards				
1)	Fluorene-d10	21.14	17352	49.4610	
31)	Pyrene-d10	29.33	28617	49.4700	
73)	Benzo(a)pyrene-d12	38.01	11085	49.4120	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\ENV2755A.D Vial: 12
Acq On : 5 Apr 2012 11:19 pm Operator: YM
Sample : Procedural Blank Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 16:33 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	17352m	49.46	0.00
31) Pyrene-d10	29.33	212	28617m	49.47	0.00
73) Benzo(a)pyrene-d12	38.01	264	11085m	49.41	0.00
System Monitoring Compounds					
2) Naphthalene-d8	13.52	136	26782m	47.04	0.03
21) Acenaphthene-d10	19.37	164	14607m	46.52	0.03
32) Phenanthrene-d10	24.44	188	30957m	48.45	0.00
66) Chrysene-d12	33.51	240	20769m	30.75	0.00
88) Perylene-d12	38.32	264	10512	38.59	0.00
90) 5(b)H-Cholane	33.91	217	4943m	58.70	0.00

Target Compounds					Qvalue
3) cis/trans Decalin	0.00	138	0	N.D. d	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	0.00	128	0	N.D. d	
9) 2-Methylnaphthalene	0.00	142	0	N.D. d	
10) 1-Methylnaphthalene	0.00	142	0	N.D. d	
11) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) 1,6,7-Trimethylnaphthalene	0.00	170	0	N.D. d	
13) C2-Naphthalenes	0.00	156	0	N.D. d	
14) C3-Naphthalenes	0.00	170	0	N.D. d	
15) C4-Naphthalenes	0.00	184	0	N.D. d	
16) Benzothiophene	0.00	134	0	N.D. d	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	0.00	154	0	N.D. d	
23) Acenaphthylene	0.00	152	0	N.D. d	
24) Acenaphthene	0.00	154	0	N.D. d	
25) Dibenzofuran	20.04	168	196m	0.34	
26) Fluorene	21.22	166	120m	0.26	
27) 1-Methylfluorene	0.00	180	0	N.D. d	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	0.00	167	0	N.D. d	
34) Dibenzothiophene	0.00	184	0	N.D. d	
35) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
36) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
37) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
38) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	0.00	178	0	N.D. d	
42) Anthracene	0.00	178	0	N.D. d	
43) 3-Methylphenanthrene	0.00	192	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\ENV2755A.D Vial: 12
Acq On : 5 Apr 2012 11:19 pm Operator: YM
Sample : Procedural Blank Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 16:33 2012 Quant Results File: AR30860.RES

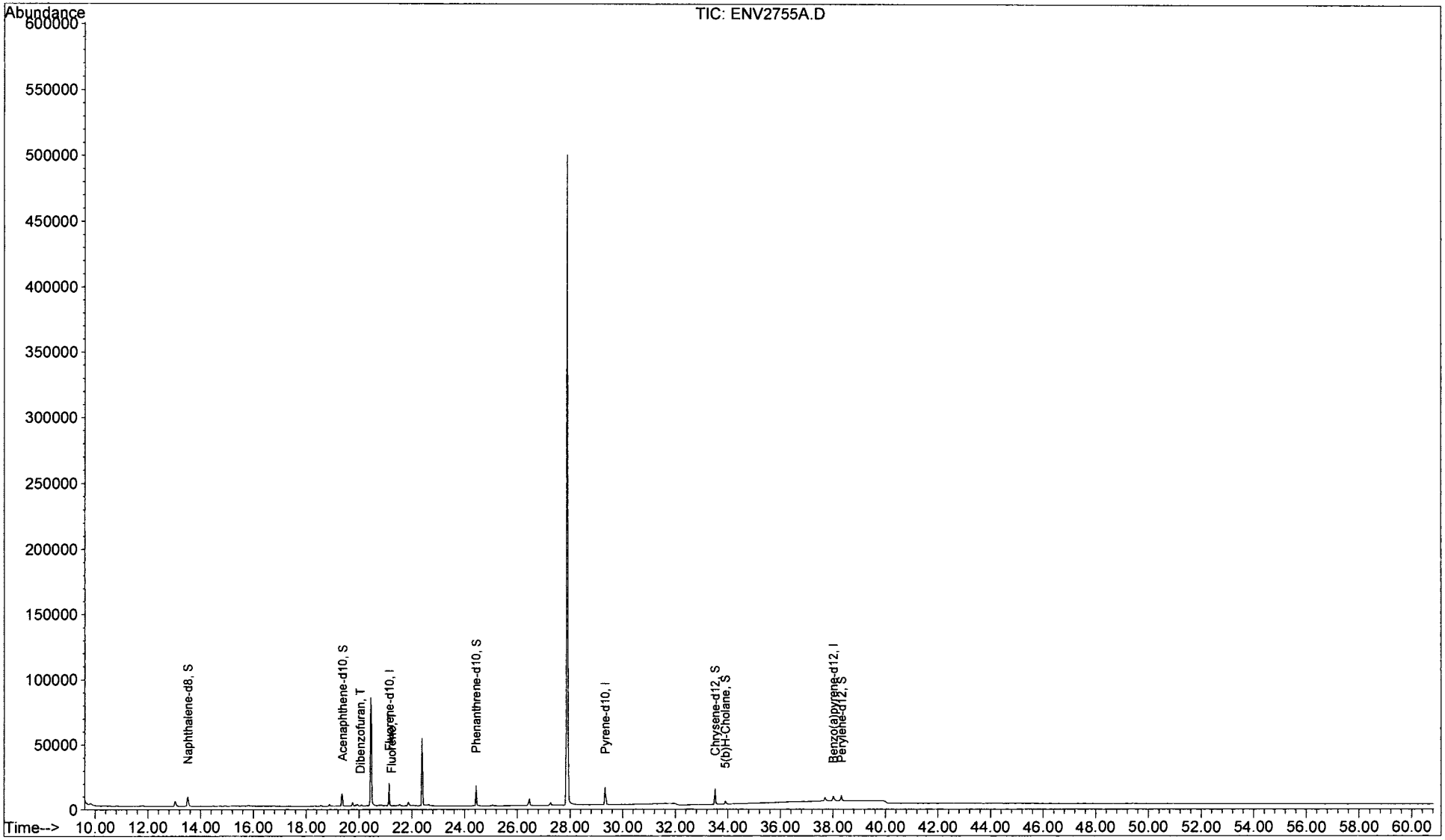
Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	0.00	192	0	N.D. d	
45)	2-Methylanthracene	0.00	192	0	N.D. d	
46)	9-Methylphenanthrene	0.00	192	0	N.D. d	
47)	1-Methylphenanthrene	0.00	192	0	N.D. d	
48)	3,6-Dimethylphenanthrene	0.00	206	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
53)	Naphthobenzothiophene	0.00	234	0	N.D. d	
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D. d	
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D. d	
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D. d	
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D. d	
58)	Fluoranthene	0.00	202	0	N.D. d	
59)	Pyrene	0.00	202	0	N.D. d	
60)	2-Methylfluoranthene	0.00	216	0	N.D. d	
61)	Benzo(b)fluorene	0.00	216	0	N.D. d	
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D. d	
67)	Benz(a)anthracene	0.00	228	0	N.D. d	
68)	Chrysene/Triphenylene	0.00	228	0	N.D. d	
69)	C1-Chrysenes	0.00	242	0	N.D. d	
70)	C2-Chrysenes	0.00	256	0	N.D. d	
71)	C3-Chrysenes	0.00	270	0	N.D. d	
72)	C4-Chrysenes	0.00	284	0	N.D. d	
74)	C29-Hopane	0.00	191	0	N.D. d	
75)	18a-Oleanane	0.00	191	0	N.D. d	
76)	C30-Hopane	0.00	191	0	N.D. d	
77)	Benzo(b)fluoranthene	0.00	252	0	N.D. d	
78)	Benzo(k,j)fluoranthene	0.00	252	0	N.D. d	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
80)	Benzo(e)pyrene	0.00	252	0	N.D. d	
81)	Benzo(a)pyrene	0.00	252	0	N.D. d	
82)	Indeno(1,2,3-c,d)pyrene	0.00	276	0	N.D. d	
83)	Dibenzo(a,h)anthracene	0.00	278	0	N.D. d	
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D. d	
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D. d	
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D. d	
87)	Benzo(g,h,i)perylene	0.00	276	0	N.D. d	
89)	Perylene	0.00	252	0	N.D. d	
91)	C20-TAS	0.00	231	0	N.D. d	
92)	C21-TAS	0.00	231	0	N.D. d	
93)	C26(20S)-TAS	0.00	231	0	N.D. d	
94)	C26(20R)/C27(20S)-TAS	0.00	231	0	N.D. d	
95)	C28(20S)-TAS	0.00	231	0	N.D. d	
96)	C27(20R)-TAS	0.00	231	0	N.D. d	
97)	C28(20R)-TAS	0.00	231	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Data File : C:\HPCHEM\1\DATA\MS30860\ENV2755A.D Vial: 12
Acq On : 5 Apr 2012 11:19 pm Operator: YM
Sample : Procedural Blank Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 16:33 2012 Quant Results File: AR30860.RES

Method : C:\HPCHEM\1\DATA\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	ENV2755B.D	Surrogate Amount		ENV2755B.D	
Data File Path	C:\HPCHEM\1\DATA\MS30860\	Naphthalene-d8	50.044	Blank Spike	50.044
Operator	YM	Acenaphthene-d10	50.050		50.050
Date Acquired	04/ 6/20 -1:2:	Phenanthrene-d10	50.035		50.035
Method File	PAH-2010	Chrysene-d12	50.044		50.044
Sample Name	Blank Spike	Perylene-d12	50.056		50.056
Misc Info		5(b)H-Cholane	49.500		49.500
Instrument Name	GC/MS Ins			04/ 6/20 -1:2:	
Vial Number	13			PAH-2010	
Sample Multiplier	1			1	
Sample Amount	0				

#	Compound	Ret Time (min)	Target Response (area)	Concentration	Surrogate Corrected Concentration
3)	cis/trans Decalin	10.85	9214	99.1999	111.0074
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	13.56	57410	104.3316	116.7499
9)+10)	C1-Naphthalenes	15.98	68978	125.3542	140.2747
13)	C2-Naphthalenes	0.00	0	0.0000	0.0000
14)	C3-Naphthalenes	0.00	0	0.0000	0.0000
15)	C4-Naphthalenes	0.00	0	0.0000	0.0000
16)	Benzothiophene	13.75	45835	104.4609	116.8947
17)	C1-Benzothiophenes	0.00	0	0.0000	0.0000
18)	C2-Benzothiophenes	0.00	0	0.0000	0.0000
19)	C3-Benzothiophenes	0.00	0	0.0000	0.0000
20)	C4-Benzothiophenes	0.00	0	0.0000	0.0000
22)	Biphenyl	17.38	40524	101.0912	113.1238
23)	Acenaphthylene	18.87	55321	103.7996	116.1546
24)	Acenaphthene	19.46	31554	104.7358	117.2023
25)	Dibenzofuran	20.05	50723	101.9238	114.0556
26)	Fluorene	21.23	42047	105.5379	118.0998
28)	C1-Fluorenes	0.00	0	0.0000	0.0000
29)	C2-Fluorenes	0.00	0	0.0000	0.0000
30)	C3-Fluorenes	0.00	0	0.0000	0.0000
33)	Carbazole	25.27	55100	100.5058	112.4687
42)	Anthracene	24.68	57357	99.7247	111.5947
41)	Phenanthrene	24.51	61436	102.7430	114.9722
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	5.33	55655	93.0751	104.1535
50)	C2-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
51)	C3-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
52)	C4-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
34)	Dibenzothiophene	24.09	74697	103.0090	115.2699
35)+36)+37)	C1-Dibenzothiophenes	8.53	47707	65.7892	73.6199
38)	C2-Dibenzothiophenes	0.00	0	0.0000	0.0000
39)	C3-Dibenzothiophenes	0.00	0	0.0000	0.0000
40)	C4-Dibenzothiophenes	0.00	0	0.0000	0.0000
58)	Fluoranthene	28.63	65490	83.4734	93.4091
59)	Pyrene	29.40	83255	92.2127	103.1885
62)	C1-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
63)	C2-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
64)	C3-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
65)	C4-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
53)	Naphthobenzothiophene	32.65	62798	86.0839	96.3302
54)	C1-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
55)	C2-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
56)	C3-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
57)	C4-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
67)	Benz(a)anthracene	33.47	63687	84.6324	94.7060
68)	Chrysene/Triphenylene	33.59	57444	83.9935	93.9910
69)	C1-Chrysenes	0.00	0	0.0000	0.0000
70)	C2-Chrysenes	0.00	0	0.0000	0.0000
71)	C3-Chrysenes	0.00	0	0.0000	0.0000
72)	C4-Chrysenes	0.00	0	0.0000	0.0000
77)	Benzo(b)fluoranthene	36.99	45196	90.1650	100.8971
78)	Benzo(k,j)fluoranthene	37.07	38526	83.9681	93.9626
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	37.93	45165	93.0787	104.1576
81)	Benzo(a)pyrene	38.09	35120	91.5978	102.5004
89)	Perylene	38.40	39603	92.6277	103.8529
82)	Indeno(1,2,3-c,d)pyrene	42.65	26072	92.4470	103.4507
83)	Dibenzo(a,h)anthracene	42.72	20368	92.3328	103.3229
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	43.94	22544	88.5937	99.1388
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	15.83	35662	103.3385	115.6386
10)	1-Methylnaphthalene	16.14	33316	104.9161	117.4040
11)	2,6-Dimethylnaphthalene	17.91	28788	105.3697	117.9116
12)	1,6,7-Trimethylnaphthalene	20.78	29640	94.7859	106.0680
27)	1-Methylfluorene	23.21	20327	90.5773	101.3584
35)	4-Methyldibenzothiophene	25.59	47707	93.3302	104.4390
36)	2/3-Methyldibenzothiophene	0.00	0	0.0000	0.0000
37)	1-Methyldibenzothiophene	0.00	0	0.0000	0.0000
43)	3-Methylphenanthrene	0.00	0	0.0000	0.0000
44)	2/4-Methylphenanthrene	0.00	0	0.0000	0.0000
45)	2-Methylanthracene	0.00	0	0.0000	0.0000
46)	9-Methylphenanthrene	0.00	0	0.0000	0.0000
47)	1-Methylphenanthrene	26.64	55655	98.9901	110.7726
48)	3,6-Dimethylphenanthrene	27.72	37749	78.1765	87.4816
49)	Retene	30.41	9660	79.4168	88.8696
60)	2-Methylfluoranthene	30.17	44243	82.7095	92.5542
61)	Benzo(b)fluorene	30.76	39955	99.5365	111.3841
74)	C29-Hopane	0.00	0	0.0000	0.0000
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.24	15312	93.9351	105.1160
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	0.00	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	39.03	65120	96.0931	107.5308
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	0.00	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.49	24163	49.5685	99.0497
21)	Acenaphthene-d10	19.34	13288	49.4248	98.7509
32)	Phenanthrene-d10	24.44	27974	44.7129	89.3633
66)	Chrysene-d12	33.51	24865	37.5979	75.1298
88)	Perylene-d12	38.32	16399	43.0791	86.0618
90)	5(b)H-Cholane	33.90	4697	39.9152	80.6367
	Internal Standards				
1)	Fluorene-d10	21.14	14858	49.4610	
31)	Pyrene-d10	29.33	28019	49.4700	
73)	Benzo(a)pyrene-d12	38.01	15490	49.4120	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\ENV2755B.D Vial: 13
Acq On : 6 Apr 2012 12:28 am Operator: YM
Sample : Blank Spike Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 16:46 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	14858m	49.46	0.00
31) Pyrene-d10	29.33	212	28019m	49.47	0.00
73) Benzo(a)pyrene-d12	38.01	264	15490m	49.41	0.00
System Monitoring Compounds					
2) Naphthalene-d8	13.49	136	24163	49.57	0.00
21) Acenaphthene-d10	19.34	164	13288m	49.42	0.00
32) Phenanthrene-d10	24.44	188	27974m	44.71	0.00
66) Chrysene-d12	33.51	240	24865m	37.60	0.00
88) Perylene-d12	38.32	264	16399m	43.08	0.00
90) 5(b)H-Cholane	33.90	217	4697m	39.92	0.00
Target Compounds					Qvalue
3) cis/trans Decalin	10.85	138	9214	99.20	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	13.58	128	57410	104.33	
9) 2-Methylnaphthalene	15.83	142	35662	103.34	
10) 1-Methylnaphthalene	16.14	142	33316	104.92	
11) 2,6-Dimethylnaphthalene	17.91	156	28788m	105.37	
12) 1,6,7-Trimethylnaphthalene	20.78	170	29640m	94.79	
13) C2-Naphthalenes	0.00	156	0	N.D. d	
14) C3-Naphthalenes	0.00	170	0	N.D. d	
15) C4-Naphthalenes	0.00	184	0	N.D. d	
16) Benzothiophene	13.75	134	45835m	104.46	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	17.38	154	40524m	101.09	
23) Acenaphthylene	18.87	152	55321m	103.80	
24) Acenaphthene	19.46	154	31554m	104.74	
25) Dibenzofuran	20.05	168	50723m	101.92	
26) Fluorene	21.23	166	42047m	105.54	
27) 1-Methylfluorene	23.21	180	20327m	90.58	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	25.27	167	55100m	100.51	
34) Dibenzothiophene	24.09	184	74697m	103.01	
35) 4-Methyldibenzothiophene	25.59	198	47707m	93.33	
36) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
37) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
38) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	24.51	178	61436m	102.74	
42) Anthracene	24.68	178	57357m	99.72	
43) 3-Methylphenanthrene	0.00	192	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\ENV2755B.D Vial: 13
Acq On : 6 Apr 2012 12:28 am Operator: YM
Sample : Blank Spike Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 16:46 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

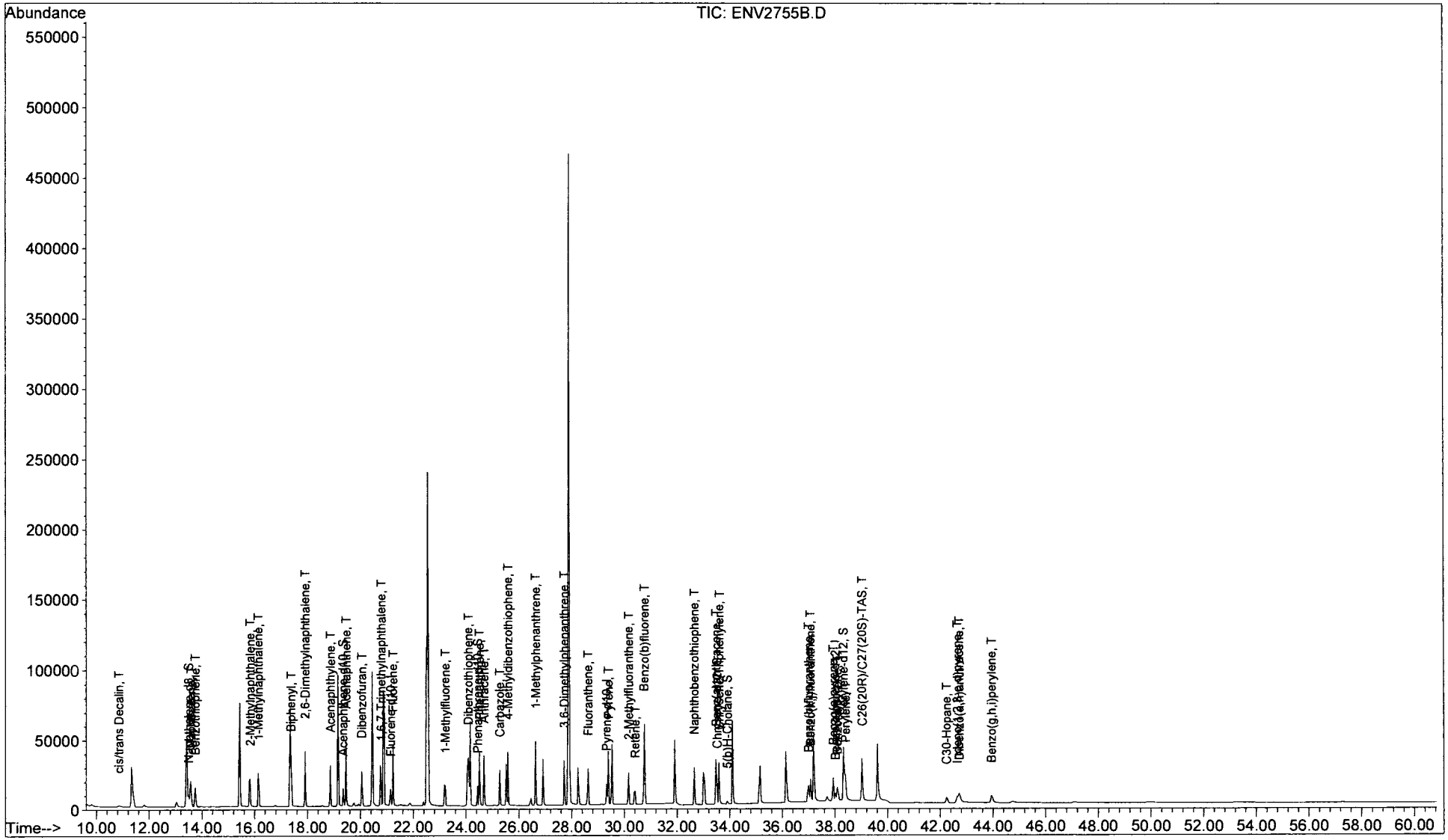
	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	0.00	192	0	N.D. d	
45)	2-Methylanthracene	0.00	192	0	N.D. d	
46)	9-Methylphenanthrene	0.00	192	0	N.D. d	
47)	1-Methylphenanthrene	26.64	192	55655m	98.99	
48)	3,6-Dimethylphenanthrene	27.72	206	37749m	78.18	
49)	Retene	30.41	234	9660m	79.42	
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
53)	Naphthobenzothiophene	32.65	234	62798m	86.08	
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D. d	
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D. d	
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D. d	
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D. d	
58)	Fluoranthene	28.63	202	65490m	83.47	
59)	Pyrene	29.40	202	83255m	92.21	
60)	2-Methylfluoranthene	30.17	216	44243m	82.71	
61)	Benzo(b)fluorene	30.76	216	39955m	99.54	
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D. d	
67)	Benz(a)anthracene	33.47	228	63687m	84.63	
68)	Chrysene/Triphenylene	33.59	228	57444m	83.99	
69)	C1-Chrysenes	0.00	242	0	N.D. d	
70)	C2-Chrysenes	0.00	256	0	N.D. d	
71)	C3-Chrysenes	0.00	270	0	N.D. d	
72)	C4-Chrysenes	0.00	284	0	N.D. d	
74)	C29-Hopane	0.00	191	0	N.D. d	
75)	18a-Oleanane	0.00	191	0	N.D. d	
76)	C30-Hopane	42.24	191	15312m	93.94	
77)	Benzo(b)fluoranthene	36.99	252	45196m	90.17	
78)	Benzo(k,j)fluoranthene	37.07	252	38526m	83.97	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
80)	Benzo(e)pyrene	37.93	252	45165m	93.08	
81)	Benzo(a)pyrene	38.09	252	35120m	91.60	
82)	Indeno(1,2,3-c,d)pyrene	42.65	276	26072m	92.45	
83)	Dibenzo(a,h)anthracene	42.72	278	20368m	92.33	
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D. d	
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D. d	
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D. d	
87)	Benzo(g,h,i)perylene	43.94	276	22544m	88.59	
89)	Perylene	38.40	252	39603m	92.63	
91)	C20-TAS	0.00	231	0	N.D. d	
92)	C21-TAS	0.00	231	0	N.D. d	
93)	C26(20S)-TAS	0.00	231	0	N.D. d	
94)	C26(20R)/C27(20S)-TAS	39.03	231	65120m	96.09	
95)	C28(20S)-TAS	0.00	231	0	N.D. d	
96)	C27(20R)-TAS	0.00	231	0	N.D. d	
97)	C28(20R)-TAS	0.00	231	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\MS30860\ENV2755B.D Vial: 13
Acq On : 6 Apr 2012 12:28 am Operator: YM
Sample : Blank Spike Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 16:46 2012 Quant Results File: AR30860.RES

Method : C:\HPCHEM\1\DATA\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	ENV2755C.D	Surrogate Amount		ENV2755C.D	
Data File Path	C:\GCMS3\MS30860\	Naphthalene-d8	50.044	Blank Spike Dupl.	50.044
Operator	YM	Acenaphthene-d10	50.050		50.050
Date Acquired	04/ 6/20 -1:1:	Phenanthrene-d10	50.035		50.035
Method File	PAH-2010	Chrysene-d12	50.044		50.044
Sample Name	Blank Spike Dupl.	Perylene-d12	50.056		50.056
Misc Info		5(b)H-Cholane	49.500		49.500
Instrument Name	GC/MS ins			04/ 6/20 -1:1:	
Vial Number	14			PAH-2010	
Sample Multiplier	1			1	
Sample Amount	0				

#	Compound	Ret Time (min)	Target Response (area)	Concentration	Surrogate Corrected Concentration
3)	cis/trans Decalin	11.81	10026	97.5135	109.1930
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	13.58	62604	102.7789	115.0890
9)+10)	C1-Naphthalenes	15.98	77570	127.3490	142.6020
13)	C2-Naphthalenes	0.00	0	0.0000	0.0000
14)	C3-Naphthalenes	0.00	0	0.0000	0.0000
15)	C4-Naphthalenes	0.00	0	0.0000	0.0000
16)	Benzothiophene	13.75	50517	104.0083	116.4657
17)	C1-Benzothiophenes	0.00	0	0.0000	0.0000
18)	C2-Benzothiophenes	0.00	0	0.0000	0.0000
19)	C3-Benzothiophenes	0.00	0	0.0000	0.0000
20)	C4-Benzothiophenes	0.00	0	0.0000	0.0000
22)	Biphenyl	17.38	45400	102.3129	114.5673
23)	Acenaphthylene	18.87	62470	105.8890	118.5716
24)	Acenaphthene	19.46	33048	99.0968	110.9660
25)	Dibenzofuran	20.05	57863	105.0378	117.6185
26)	Fluorene	21.23	43334	98.2598	110.0287
28)	C1-Fluorenes	0.00	0	0.0000	0.0000
29)	C2-Fluorenes	0.00	0	0.0000	0.0000
30)	C3-Fluorenes	0.00	0	0.0000	0.0000
33)	Carbazole	25.27	63355	103.5687	115.9734
42)	Anthracene	24.68	67561	105.2738	117.8828
41)	Phenanthrene	24.51	68569	102.7697	115.0787
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	5.33	62414	93.5447	104.7489
50)	C2-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
51)	C3-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
52)	C4-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
34)	Dibenzothiophene	24.09	82457	101.9079	114.1137
35)+36)+37)	C1-Dibenzothiophenes	8.53	51469	63.6101	71.2289
38)	C2-Dibenzothiophenes	0.00	0	0.0000	0.0000
39)	C3-Dibenzothiophenes	0.00	0	0.0000	0.0000
40)	C4-Dibenzothiophenes	0.00	0	0.0000	0.0000
58)	Fluoranthene	28.63	67933	77.6001	86.8945
59)	Pyrene	29.40	91619	90.9440	101.8366
62)	C1-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
63)	C2-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
64)	C3-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
65)	C4-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
53)	Naphthobenzothiophene	32.65	70551	86.6737	97.0549
54)	C1-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
55)	C2-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
56)	C3-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
57)	C4-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
87)	Benz(a)anthracene	33.47	69113	82.3102	92.1688
68)	Chrysene/Triphenylene	33.59	63473	83.1760	93.1383
69)	C1-Chrysenes	0.00	0	0.0000	0.0000
70)	C2-Chrysenes	0.00	0	0.0000	0.0000
71)	C3-Chrysenes	0.00	0	0.0000	0.0000
72)	C4-Chrysenes	0.00	0	0.0000	0.0000
77)	Benzo(b)fluoranthene	36.99	49296	94.8245	106.1819
78)	Benzo(k,j)fluoranthene	37.07	40555	85.2266	95.4345
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	37.93	48797	96.9644	108.5781
81)	Benzo(a)pyrene	38.09	38512	96.8495	108.4494
69)	Perylene	38.40	41860	94.4023	105.7092
82)	Indeno(1,2,3-c,d)pyrene	42.65	28705	98.1401	109.8947
83)	Dibenzo(a,h)anthracene	42.72	22626	98.8977	110.7429
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	43.94	24561	93.0655	104.2122
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	15.83	39998	104.7052	117.2461
10)	1-Methylnaphthalene	16.14	37572	106.8876	119.6899
11)	2,6-Dimethylnaphthalene	17.91	31847	105.3044	117.9170
12)	1,6,7-Trimethylnaphthalene	20.78	32670	94.3818	105.6862
27)	1-Methylfluorene	23.21	23043	92.7595	103.8696
35)	4-Methyldibenzothiophene	25.59	51469	90.2389	101.0471
36)	2/3-Methyldibenzothiophene	0.00	0	0.0000	0.0000
37)	1-Methyldibenzothiophene	0.00	0	0.0000	0.0000
43)	3-Methylphenanthrene	0.00	0	0.0000	0.0000
44)	2/4-Methylphenanthrene	0.00	0	0.0000	0.0000
45)	2-Methylanthracene	0.00	0	0.0000	0.0000
46)	9-Methylphenanthrene	0.00	0	0.0000	0.0000
47)	1-Methylphenanthrene	26.64	62414	99.4896	111.4058
48)	3,6-Dimethylphenanthrene	27.72	41489	77.0037	86.2267
49)	Retene	30.41	10553	77.7534	87.0662
60)	2-Methylfluoranthene	30.17	47419	79.4459	88.9614
61)	Benzo(b)fluorene	30.76	44487	99.3236	111.2199
74)	C29-Hopane	0.00	0	0.0000	0.0000
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	42.24	16995	100.5282	112.5688
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	38.21	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	39.03	70394	100.1576	112.1538
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	0.00	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.49	26791	49.6498	99.2122
21)	Acenaphthene-d10	19.34	14833	49.8411	99.5827
32)	Phenanthrene-d10	24.44	31193	44.6832	89.3038
66)	Chrysene-d12	33.51	27619	37.4276	74.7893
88)	Perylene-d12	38.32	17264	43.7282	87.3585
90)	5(b)H-Cholane	33.90	5548	45.4595	91.8374
	Internal Standards				
1)	Fluorene-d10	21.14	16447	49.4610	
31)	Pyrene-d10	29.33	31264	49.4700	
73)	Benzo(a)pyrene-d12	38.01	16065	49.4120	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\ENV2755C.D Vial: 14
Acq On : 6 Apr 2012 1:36 am Operator: YM
Sample : Blank Spike Dupl. Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 16:59 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	16447m	49.46	0.00
31) Pyrene-d10	29.33	212	31264m	49.47	0.00
73) Benzo(a)pyrene-d12	38.01	264	16065m	49.41	0.00
System Monitoring Compounds					
2) Naphthalene-d8	13.49	136	26791	49.65	0.00
21) Acenaphthene-d10	19.34	164	14833m	49.84	0.00
32) Phenanthrene-d10	24.44	188	31193m	44.68	0.00
66) Chrysene-d12	33.51	240	27619m	37.43	0.00
88) Perylene-d12	38.32	264	17264	43.73	0.00
90) 5(b)H-Cholane	33.90	217	5548	45.46	0.00
Target Compounds					Qvalue
3) cis/trans Decalin	11.81	138	10026	97.51	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	13.58	128	62604m	102.78	
9) 2-Methylnaphthalene	15.83	142	39998m	104.71	
10) 1-Methylnaphthalene	16.14	142	37572m	106.89	
11) 2,6-Dimethylnaphthalene	17.91	156	31847m	105.30	
12) 1,6,7-Trimethylnaphthalene	20.78	170	32670m	94.38	
13) C2-Naphthalenes	0.00	156	0	N.D. d	
14) C3-Naphthalenes	0.00	170	0	N.D. d	
15) C4-Naphthalenes	0.00	184	0	N.D. d	
16) Benzothiophene	13.75	134	50517m	104.01	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	17.38	154	45400m	102.31	
23) Acenaphthylene	18.87	152	62470m	105.89	
24) Acenaphthene	19.46	154	33048m	99.10	
25) Dibenzofuran	20.05	168	57863m	105.04	
26) Fluorene	21.23	166	43334m	98.26	
27) 1-Methylfluorene	23.21	180	23043m	92.76	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	25.27	167	63355m	103.57	
34) Dibenzothiophene	24.09	184	82457m	101.91	
35) 4-Methyldibenzothiophene	25.59	198	51469m	90.24	
36) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
37) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
38) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	24.51	178	68569m	102.77	
42) Anthracene	24.68	178	67561m	105.27	
43) 3-Methylphenanthrene	0.00	192	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\ENV2755C.D Vial: 14
Acq On : 6 Apr 2012 1:36 am Operator: YM
Sample : Blank Spike Dupl. Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 16:59 2012 Quant Results File: AR30860.RES

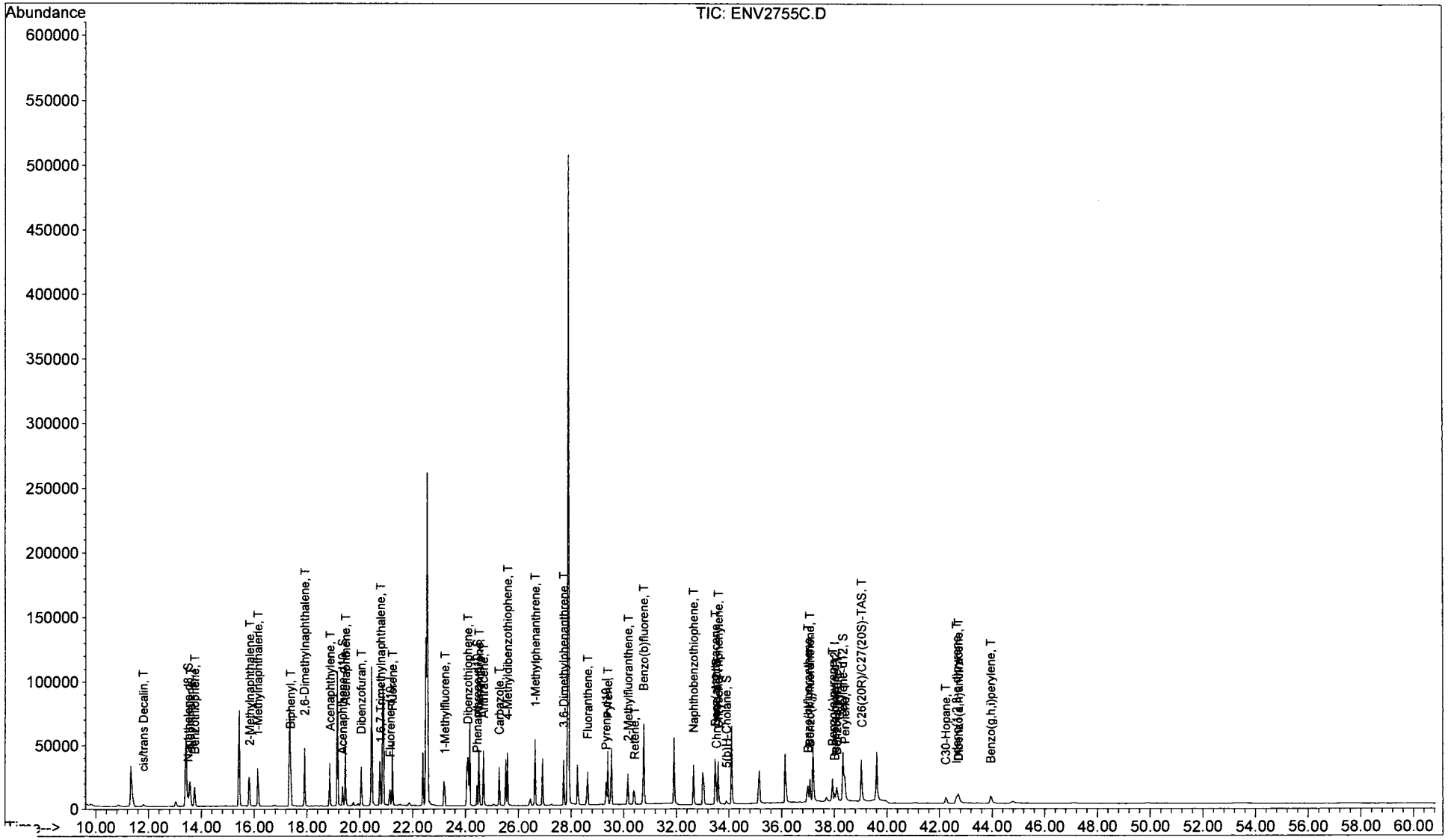
Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	0.00	192	0	N.D. d	
45)	2-Methylanthracene	0.00	192	0	N.D. d	
46)	9-Methylphenanthrene	0.00	192	0	N.D. d	
47)	1-Methylphenanthrene	26.64	192	62414m	99.49	
48)	3,6-Dimethylphenanthrene	27.72	206	41489m	77.00	
49)	Retene	30.41	234	10553m	77.75	
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
53)	Naphthobenzothiophene	32.65	234	70551m	86.67	
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D. d	
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D. d	
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D. d	
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D. d	
58)	Fluoranthene	28.63	202	67933m	77.60	
59)	Pyrene	29.40	202	91619m	90.94	
60)	2-Methylfluoranthene	30.17	216	47419m	79.45	
61)	Benzo(b)fluorene	30.76	216	44487m	99.32	
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D. d	
67)	Benz(a)anthracene	33.47	228	69113m	82.31	
68)	Chrysene/Triphenylene	33.59	228	63473m	83.18	
69)	C1-Chrysenes	0.00	242	0	N.D. d	
70)	C2-Chrysenes	0.00	256	0	N.D. d	
71)	C3-Chrysenes	0.00	270	0	N.D. d	
72)	C4-Chrysenes	0.00	284	0	N.D. d	
74)	C29-Hopane	0.00	191	0	N.D. d	
75)	18a-Oleanane	0.00	191	0	N.D. d	
76)	C30-Hopane	42.24	191	16995	100.53	
77)	Benzo(b)fluoranthene	36.99	252	49296	94.82	
78)	Benzo(k,j)fluoranthene	37.07	252	40555	85.23	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
80)	Benzo(e)pyrene	37.93	252	48797	96.96	
81)	Benzo(a)pyrene	38.09	252	38512	96.85	
82)	Indeno(1,2,3-c,d)pyrene	42.65	276	28705	98.14	
83)	Dibenzo(a,h)anthracene	42.72	278	22626	98.90	
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D. d	
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D. d	
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D. d	
87)	Benzo(g,h,i)perylene	43.94	276	24561	93.07	
89)	Perylene	38.40	252	41860	94.40	
91)	C20-TAS	0.00	231	0	N.D. d	
92)	C21-TAS	0.00	231	0	N.D. d	
93)	C26(20S)-TAS	38.21	231	0	N.D.	
94)	C26(20R)/C27(20S)-TAS	39.03	231	70394m	100.16	
95)	C28(20S)-TAS	0.00	231	0	N.D. d	
96)	C27(20R)-TAS	0.00	231	0	N.D. d	
97)	C28(20R)-TAS	0.00	231	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Data File : C:\HPCHEM\1\DATA\MS30860\ENV2755C.D Vial: 14
Acq On : 6 Apr 2012 1:36 am Operator: YM
Sample : Blank Spike Dupl. Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 16:59 2012 Quant Results File: AR30860.RES

Method : C:\HPCHEM\1\DATA\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	ARC1122.D	Surrogate Amount		ARC1122.D	
Data File Path	C:\HPCHEM\1\DATA\MS30860\	Naphthalene-d8	50.044	HUMT-P5-TN(031812)1-A	50.044
Operator	YM	Acenaphthene-d10	50.050		50.050
Date Acquired	04/ 6/20 -1:2:	Phenanthrene-d10	50.035		50.035
Method File	PAH-2010	Chrysene-d12	50.044		50.044
Sample Name	HUMT-P5-TN(031812)1-A	Perylene-d12	50.056		50.056
Misc Info		5(b)H-Cholane	49.500		49.500
Instrument Name	GC/MS Ins			04/ 6/20 -1:2:	
Vial Number	15			PAH-2010	
Sample Multiplier	1			1	
Sample Amount	0				

#	Compound	Ret Time (min)	Target Response (area)	Concentration	Surrogate Corrected Concentration
3)	cis/trans Decalin	0.00	0	0.0000	0.0000
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	13.58	3458	5.6609	7.0160
9)+10)	C1-Naphthalenes	15.97	3120	5.1076	6.3302
13)	C2-Naphthalenes	17.91	5142	8.4177	10.4327
14)	C3-Naphthalenes	20.19	3166	5.1829	6.4236
15)	C4-Naphthalenes	22.52	2996	4.9046	6.0786
16)	Benzothiophene	0.00	0	0.0000	0.0000
17)	C1-Benzothiophenes	0.00	0	0.0000	0.0000
18)	C2-Benzothiophenes	0.00	0	0.0000	0.0000
19)	C3-Benzothiophenes	0.00	0	0.0000	0.0000
20)	C4-Benzothiophenes	0.00	0	0.0000	0.0000
22)	Biphenyl	17.38	837	1.8809	2.3311
23)	Acenaphthylene	0.00	0	0.0000	0.0000
24)	Acenaphthene	19.46	1134	3.3907	4.2023
25)	Dibenzofuran	20.05	10638	19.2560	23.8653
28)	Fluorene	21.23	2707	8.1206	7.5857
28)	C1-Fluorenes	0.00	0	0.0000	0.0000
29)	C2-Fluorenes	0.00	0	0.0000	0.0000
30)	C3-Fluorenes	0.00	0	0.0000	0.0000
33)	Carbazole	25.27	241	0.3722	0.4613
42)	Anthracene	24.68	394	0.5801	0.7189
41)	Phenanthrene	24.51	19900	28.1807	34.9264
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.41	4595	6.5070	8.0647
50)	C2-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
51)	C3-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
52)	C4-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
34)	Dibenzothiophene	24.09	1553	1.8135	2.2476
35)+36)+37)	C1-Dibenzothiophenes	25.89	803	0.9377	1.1621
38)	C2-Dibenzothiophenes	26.99	991	1.1572	1.4342
39)	C3-Dibenzothiophenes	0.00	0	0.0000	0.0000
40)	C4-Dibenzothiophenes	0.00	0	0.0000	0.0000
58)	Fluoranthene	28.63	1572	1.6967	2.1028
59)	Pyrene	29.40	961	0.9201	1.1403
62)	C1-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
63)	C2-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
64)	C3-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
65)	C4-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
53)	Naphthobenzothiophene	0.00	0	0.0000	0.0000
54)	C1-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
55)	C2-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
56)	C3-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
57)	C4-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
67)	Benz(a)anthracene	33.47	270	0.3038	0.3765
68)	Chrysene/Triphenylene	33.59	603	0.7468	0.9253
69)	C1-Chrysenes	0.00	0	0.0000	0.0000
70)	C2-Chrysenes	0.00	0	0.0000	0.0000
71)	C3-Chrysenes	0.00	0	0.0000	0.0000
72)	C4-Chrysenes	0.00	0	0.0000	0.0000
77)	Benzo(b)fluoranthene	36.99	511	1.2998	1.6109
78)	Benzo(k,j)fluoranthene	37.07	115	0.3196	0.3961
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	37.93	284	0.7462	0.9249
81)	Benzo(a)pyrene	38.09	281	0.9344	1.1581
89)	Perylene	38.40	61	0.1819	0.2255
82)	Indeno(1,2,3-c,d)pyrene	42.64	131	0.5922	0.7340
83)	Dibenzo(a,h)anthracene	0.00	0	0.0000	0.0000
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	43.94	133	0.8664	0.8259
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	15.80	2050	5.3511	6.6320
10)	1-Methylnaphthalene	16.14	1070	3.0353	3.7619
11)	2,6-Dimethylnaphthalene	17.91	1629	5.3711	6.6567
12)	1,6,7-Trimethylnaphthalene	20.78	321	0.9247	1.1461
27)	1-Methylfluorene	0.00	0	0.0000	0.0000
35)	4-Methyldibenzothiophene	25.59	411	0.6808	0.8438
36)	2/3-Methyldibenzothiophene	25.87	270	0.4473	0.5543
37)	1-Methyldibenzothiophene	26.22	122	0.2021	0.2505
43)	3-Methylphenanthrene	26.18	713	1.0739	1.3309
44)	2/4-Methylphenanthrene	26.25	847	1.2757	1.5810
45)	2-Methylanthracene	26.46	2278	3.4309	4.2522
46)	9-Methylphenanthrene	26.53	331	0.4985	0.6179
47)	1-Methylphenanthrene	26.64	426	0.6416	0.7952
48)	3,6-Dimethylphenanthrene	0.00	0	0.0000	0.0000
49)	Retene	0.00	0	0.0000	0.0000
60)	2-Methylfluoranthene	0.00	0	0.0000	0.0000
61)	Benzo(b)fluorene	0.00	0	0.0000	0.0000
74)	C29-Hopane	0.00	0	0.0000	0.0000
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	0.00	0	0.0000	0.0000
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	0.00	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	0.00	0	0.0000	0.0000
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	41.38	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.49	26773	49.4750	98.8630
21)	Acenaphthene-d10	19.34	14377	48.1713	96.2463
32)	Phenanthrene-d10	24.44	29828	40.3712	80.6859
66)	Chrysene-d12	33.51	21764	27.8666	55.6841
88)	Perylene-d12	38.32	10968	36.7356	73.3891
90)	5(b)H-Cholane	33.90	5234	56.7103	114.5663
	Internal Standards				
1)	Fluorene-d10	21.14	16494	49.4610	
31)	Pyrene-d10	29.33	33089	49.4700	
73)	Benzo(a)pyrene-d12	38.01	12149	49.4120	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\ARC1122.D Vial: 15
Acq On : 6 Apr 2012 2:44 am Operator: YM
Sample : HUMT-P5-TN(031812)1-A Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 9 19:52 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	16494m	49.46	0.00
31) Pyrene-d10	29.33	212	33089m	49.47	0.00
73) Benzo(a)pyrene-d12	38.01	264	12149m	49.41	0.00
System Monitoring Compounds					
2) Naphthalene-d8	13.49	136	26773m	49.48	0.00
21) Acenaphthene-d10	19.34	164	14377m	48.17	0.00
32) Phenanthrene-d10	24.44	188	29828m	40.37	0.00
66) Chrysene-d12	33.51	240	21764m	27.87	0.00
88) Perylene-d12	38.32	264	10968m	36.74	0.00
90) 5(b)H-Cholane	33.90	217	5234m	56.71	0.00
Target Compounds					Qvalue
3) cis/trans Decalin	0.00	138	0	N.D. d	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	13.58	128	3458m	5.66	
9) 2-Methylnaphthalene	15.80	142	2050m	5.35	
10) 1-Methylnaphthalene	16.14	142	1070m	3.04	
11) 2,6-Dimethylnaphthalene	17.91	156	1629m	5.37	
12) 1,6,7-Trimethylnaphthalene	20.78	170	321m	0.92	
13) C2-Naphthalenes	17.91	156	5142m	8.42	
14) C3-Naphthalenes	20.19	170	3166m	5.18	
15) C4-Naphthalenes	22.52	184	2996m	4.90	
16) Benzothiophene	0.00	134	0	N.D. d	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	17.38	154	837m	1.88	
23) Acenaphthylene	0.00	152	0	N.D. d	
24) Acenaphthene	19.46	154	1134m	3.39	
25) Dibenzofuran	20.05	168	10638m	19.26	
26) Fluorene	21.23	166	2707m	6.12	
27) 1-Methylfluorene	0.00	180	0	N.D. d	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	25.27	167	241m	0.37	
34) Dibenzothiophene	24.09	184	1553m	1.81	
35) 4-Methyldibenzothiophene	25.59	198	411m	0.68	
36) 2/3-Methyldibenzothiophene	25.87	198	270m	0.45	
37) 1-Methyldibenzothiophene	26.22	198	122m	0.20	
38) C2-Dibenzothiophenes	26.99	212	991m	1.16	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	24.51	178	19900m	28.18	
42) Anthracene	24.68	178	394m	0.58	
43) 3-Methylphenanthrene	26.18	192	713m	1.07	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\ARC1122.D Vial: 15
Acq On : 6 Apr 2012 2:44 am Operator: YM
Sample : HUMT-P5-TN(031812)1-A Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 9 19:52 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

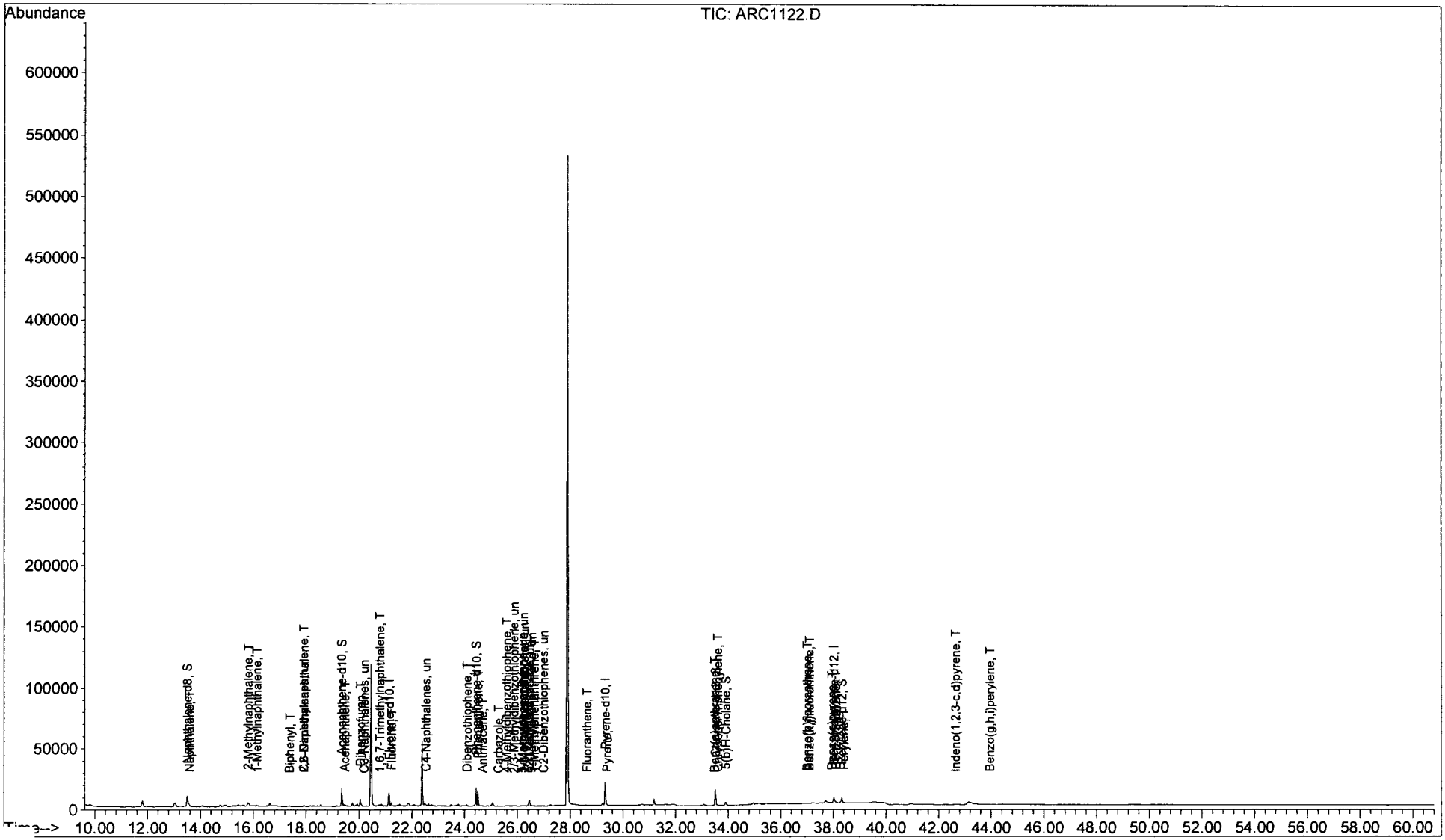
	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	26.25	192	847m	1.28	
45)	2-Methylanthracene	26.46	192	2278m	3.43	
46)	9-Methylphenanthrene	26.53	192	331m	0.50	
47)	1-Methylphenanthrene	26.64	192	426m	0.64	
48)	3,6-Dimethylphenanthrene	0.00	206	0	N.D.	d
49)	Retene	0.00	234	0	N.D.	d
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d
53)	Naphthobenzothiophene	0.00	234	0	N.D.	d
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D.	d
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D.	d
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D.	d
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D.	d
58)	Fluoranthene	28.63	202	1572m	1.70	
59)	Pyrene	29.40	202	981m	0.92	
60)	2-Methylfluoranthene	0.00	216	0	N.D.	d
61)	Benzo(b)fluorene	0.00	216	0	N.D.	d
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	d
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D.	d
67)	Benz(a)anthracene	33.47	228	270m	0.30	
68)	Chrysene/Triphenylene	33.59	228	603m	0.75	
69)	C1-Chrysenes	0.00	242	0	N.D.	d
70)	C2-Chrysenes	0.00	256	0	N.D.	d
71)	C3-Chrysenes	0.00	270	0	N.D.	d
72)	C4-Chrysenes	0.00	284	0	N.D.	d
74)	C29-Hopane	0.00	191	0	N.D.	d
75)	18a-Oleanane	0.00	191	0	N.D.	d
76)	C30-Hopane	0.00	191	0	N.D.	d
77)	Benzo(b)fluoranthene	36.99	252	511m	1.30	
78)	Benzo(k,j)fluoranthene	37.07	252	115m	0.32	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d
80)	Benzo(e)pyrene	37.93	252	284m	0.75	
81)	Benzo(a)pyrene	38.09	252	281m	0.93	
82)	Indeno(1,2,3-c,d)pyrene	42.64	276	131m	0.59	
83)	Dibenzo(a,h)anthracene	0.00	278	0	N.D.	d
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D.	d
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D.	d
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D.	d
87)	Benzo(g,h,i)perylene	43.94	276	133m	0.67	
89)	Perylene	38.40	252	61m	0.18	
91)	C20-TAS	0.00	231	0	N.D.	d
92)	C21-TAS	0.00	231	0	N.D.	d
93)	C26(20S)-TAS	0.00	231	0	N.D.	d
94)	C26(20R)/C27(20S)-TAS	0.00	231	0	N.D.	d
95)	C28(20S)-TAS	0.00	231	0	N.D.	d
96)	C27(20R)-TAS	0.00	231	0	N.D.	d
97)	C28(20R)-TAS	41.38	231	0	N.D.	

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\MS30860\ARC1122.D Vial: 15
Acq On : 6 Apr 2012 2:44 am Operator: YM
Sample : HUMT-P5-TN(031812)1-A Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 9 19:52 2012 Quant Results File: AR30860.RES

Method : C:\HPCHEM\1\DATA\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Tissues, Sediments and Water PAH Report (use Phenanthrene-d10 as surrogate correction)

Data File Name	ARC1123.D	Surrogate Amount		ARC1123.D	
Data File Path	C:\HPCHEM\1\DATA\MS30860\	Naphthalene-d8	50.044	HUMT-P5-TN(031812)2-A	50.044
Operator	YM	Acenaphthene-d10	50.050		50.050
Date Acquired	04/ 6/20 -1:3:	Phenanthrene-d10	50.035		50.035
Method File	PAH-2010	Chrysene-d12	50.044		50.044
Sample Name	HUMT-P5-TN(031812)2-A	Perylene-d12	50.056		50.056
Misc Info		5(b)H-Cholane	49.500		49.500
Instrument Name	GC/MS Ins			04/ 6/20 -1:3:	
Vial Number	16			PAH-2010	
Sample Multiplier	1			1	
Sample Amount	0				

#	Compound	Ret Time (min)	Target Response (area)	Concentration	Surrogate Corrected Concentration
3)	cis/trans Decalin	0.00	0	0.0000	0.0000
4)	C1-Decalins	0.00	0	0.0000	0.0000
5)	C2-Decalins	0.00	0	0.0000	0.0000
6)	C3-Decalins	0.00	0	0.0000	0.0000
7)	C4-Decalins	0.00	0	0.0000	0.0000
8)	Naphthalene	13.58	2729	5.1354	5.9742
9)+10)	C1-Naphthalenes	15.97	2743	5.1617	6.0048
13)	C2-Naphthalenes	17.91	4396	8.2723	9.6235
14)	C3-Naphthalenes	19.85	3227	6.0725	7.0644
15)	C4-Naphthalenes	22.52	2409	4.5332	5.2737
16)	Benzothiophene	0.00	0	0.0000	0.0000
17)	C1-Benzothiophenes	0.00	0	0.0000	0.0000
18)	C2-Benzothiophenes	0.00	0	0.0000	0.0000
19)	C3-Benzothiophenes	0.00	0	0.0000	0.0000
20)	C4-Benzothiophenes	0.00	0	0.0000	0.0000
22)	Biphenyl	17.38	975	2.5185	2.9299
23)	Acenaphthylene	0.00	0	0.0000	0.0000
24)	Acenaphthene	0.00	0	0.0000	0.0000
25)	Dibenzofuran	20.05	8597	17.8878	20.8096
26)	Fluorene	21.23	1988	5.1669	6.0109
28)	C1-Fluorenes	0.00	0	0.0000	0.0000
29)	C2-Fluorenes	0.00	0	0.0000	0.0000
30)	C3-Fluorenes	0.00	0	0.0000	0.0000
33)	Carbazole	25.27	222	0.4066	0.4731
42)	Anthracene	24.68	375	0.6547	0.7617
41)	Phenanthrene	24.51	15330	25.7447	29.9500
43)+44)+45)+46)+47)	C1-Phenanthrenes/Anthracenes	26.42	4203	7.0584	8.2113
50)	C2-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
51)	C3-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
52)	C4-Phenanthrenes/Anthracenes	0.00	0	0.0000	0.0000
34)	Dibenzothiophene	24.09	1153	1.5967	1.8575
35)+36)+37)	C1-Dibenzothiophenes	25.89	698	0.9666	1.1245
38)	C2-Dibenzothiophenes	26.99	1084	1.5011	1.7463
39)	C3-Dibenzothiophenes	0.00	0	0.0000	0.0000
40)	C4-Dibenzothiophenes	0.00	0	0.0000	0.0000
58)	Fluoranthene	28.63	2708	3.4661	4.0322
59)	Pyrene	29.40	2098	2.3335	2.7146
62)	C1-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
63)	C2-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
64)	C3-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
65)	C4-Fluoranthenes/Pyrenes	0.00	0	0.0000	0.0000
53)	Naphthobenzothiophene	0.00	0	0.0000	0.0000
54)	C1-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
55)	C2-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
56)	C3-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
57)	C4-Naphthobenzothiophenes	0.00	0	0.0000	0.0000
67)	Benz(a)anthracene	33.48	467	0.6232	0.7250
68)	Chrysene/Triphenylene	33.59	995	1.4610	1.6996
69)	C1-Chrysenes	0.00	0	0.0000	0.0000
70)	C2-Chrysenes	0.00	0	0.0000	0.0000
71)	C3-Chrysenes	0.00	0	0.0000	0.0000
72)	C4-Chrysenes	0.00	0	0.0000	0.0000
77)	Benzo(b)fluoranthene	36.99	767	2.1898	2.5474
78)	Benzo(k,j)fluoranthene	37.07	167	0.5209	0.6060
79)	Benzo(a)fluoranthene	0.00	0	0.0000	0.0000
80)	Benzo(e)pyrene	37.93	420	1.2387	1.4410
81)	Benzo(a)pyrene	38.09	340	1.2690	1.4763
89)	Perylene	38.40	80	0.2678	0.3115
82)	Indeno(1,2,3-c,d)pyrene	42.65	165	0.8373	0.9740
83)	Dibenzo(a,h)anthracene	0.00	0	0.0000	0.0000
84)	C1-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
85)	C2-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
86)	C3-Dibenzo(a,h)anthracenes	0.00	0	0.0000	0.0000
87)	Benzo(g,h,i)perylene	43.94	193	1.0854	1.2627
	Individual Alkyl Isomers and Hopanes				
9)	2-Methylnaphthalene	15.80	1897	5.6920	6.6217
10)	1-Methylnaphthalene	16.14	846	2.7587	3.2093
11)	2,6-Dimethylnaphthalene	17.91	1256	4.7603	5.5378
12)	1,6,7-Trimethylnaphthalene	20.78	483	1.5994	1.8606
27)	1-Methylfluorene	0.00	0	0.0000	0.0000
35)	4-Methyldibenzothiophene	25.59	354	0.6954	0.8090
36)	2/3-Methyldibenzothiophene	25.87	218	0.4283	0.4982
37)	1-Methyldibenzothiophene	26.22	126	0.2475	0.2880
43)	3-Methylphenanthrene	26.18	692	1.2360	1.4379
44)	2/4-Methylphenanthrene	26.29	788	1.4074	1.6373
45)	2-Methylanthracene	26.46	1905	3.4025	3.9583
46)	9-Methylphenanthrene	26.53	384	0.6859	0.7979
47)	1-Methylphenanthrene	26.64	434	0.7752	0.9018
48)	3,6-Dimethylphenanthrene	0.00	0	0.0000	0.0000
49)	Retene	0.00	0	0.0000	0.0000
60)	2-Methylfluoranthene	0.00	0	0.0000	0.0000
61)	Benzo(b)fluorene	0.00	0	0.0000	0.0000
74)	C29-Hopane	0.00	0	0.0000	0.0000
75)	18a-Oleanane	0.00	0	0.0000	0.0000
76)	C30-Hopane	0.00	0	0.0000	0.0000
91)	C20-TAS	0.00	0	0.0000	0.0000
92)	C21-TAS	0.00	0	0.0000	0.0000
93)	C26(20S)-TAS	0.00	0	0.0000	0.0000
94)	C26(20R)/C27(20S)-TAS	0.00	0	0.0000	0.0000
95)	C28(20S)-TAS	0.00	0	0.0000	0.0000
96)	C27(20R)-TAS	0.00	0	0.0000	0.0000
97)	C28(20R)-TAS	0.00	0	0.0000	0.0000
	Surrogate Standards				
2)	Naphthalene-d8	13.49	23149	49.1729	98.2593
21)	Acenaphthene-d10	19.34	12676	48.8210	97.5444
32)	Phenanthrene-d10	24.44	26796	43.0096	85.9591
66)	Chrysene-d12	33.52	19941	30.2789	60.5045
88)	Perylene-d12	38.32	9980	37.5183	74.9527
90)	5(b)H-Cholane	33.91	4753	57.8028	116.7733
	Internal Standards				
1)	Fluorene-d10	21.14	14349	49.4610	
31)	Pyrene-d10	29.33	27902	49.4700	
73)	Benzo(a)pyrene-d12	38.01	10824	49.4120	

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\ARC1123.D Vial: 16
Acq On : 6 Apr 2012 3:52 am Operator: YM
Sample : HUMT-P5-TN(031812)2-A Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 9 19:54 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	14349m	49.46	0.00
31) Pyrene-d10	29.33	212	27902m	49.47	0.00
73) Benzo(a)pyrene-d12	38.01	264	10824m	49.41	0.00
System Monitoring Compounds					
2) Naphthalene-d8	13.49	136	23149m	49.17	0.00
21) Acenaphthene-d10	19.34	164	12676m	48.82	0.00
32) Phenanthrene-d10	24.44	188	26796m	43.01	0.00
66) Chrysene-d12	33.52	240	19941m	30.28	0.00
88) Perylene-d12	38.32	264	9980m	37.52	0.00
90) 5(b)H-Cholane	33.91	217	4753m	57.80	0.00
Target Compounds					Qvalue
3) cis/trans Decalin	0.00	138	0	N.D. d	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	13.58	128	2729m	5.14	
9) 2-Methylnaphthalene	15.80	142	1897m	5.69	
10) 1-Methylnaphthalene	16.14	142	846m	2.76	
11) 2,6-Dimethylnaphthalene	17.91	156	1256m	4.76	
12) 1,6,7-Trimethylnaphthalene	20.78	170	483	1.60	#
13) C2-Naphthalenes	17.91	156	4396m	8.27	
14) C3-Naphthalenes	19.85	170	3227m	6.07	
15) C4-Naphthalenes	22.52	184	2409m	4.53	
16) Benzothiophene	0.00	134	0	N.D. d	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	17.38	154	975m	2.52	
23) Acenaphthylene	0.00	152	0	N.D. d	
24) Acenaphthene	0.00	154	0	N.D. d	
25) Dibenzofuran	20.05	168	8597m	17.89	
26) Fluorene	21.23	166	1988m	5.17	
27) 1-Methylfluorene	0.00	180	0	N.D. d	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	25.27	167	222m	0.41	
34) Dibenzothiophene	24.09	184	1153m	1.60	
35) 4-Methyldibenzothiophene	25.59	198	354m	0.70	
36) 2/3-Methyldibenzothiophene	25.87	198	218m	0.43	
37) 1-Methyldibenzothiophene	26.22	198	126m	0.25	
38) C2-Dibenzothiophenes	26.99	212	1084m	1.50	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	24.51	178	15330m	25.74	
42) Anthracene	24.68	178	375m	0.65	
43) 3-Methylphenanthrene	26.18	192	692m	1.24	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\MS30860\ARC1123.D Vial: 16
Acq On : 6 Apr 2012 3:52 am Operator: YM
Sample : HUMT-P5-TN(031812)2-A Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 9 19:54 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

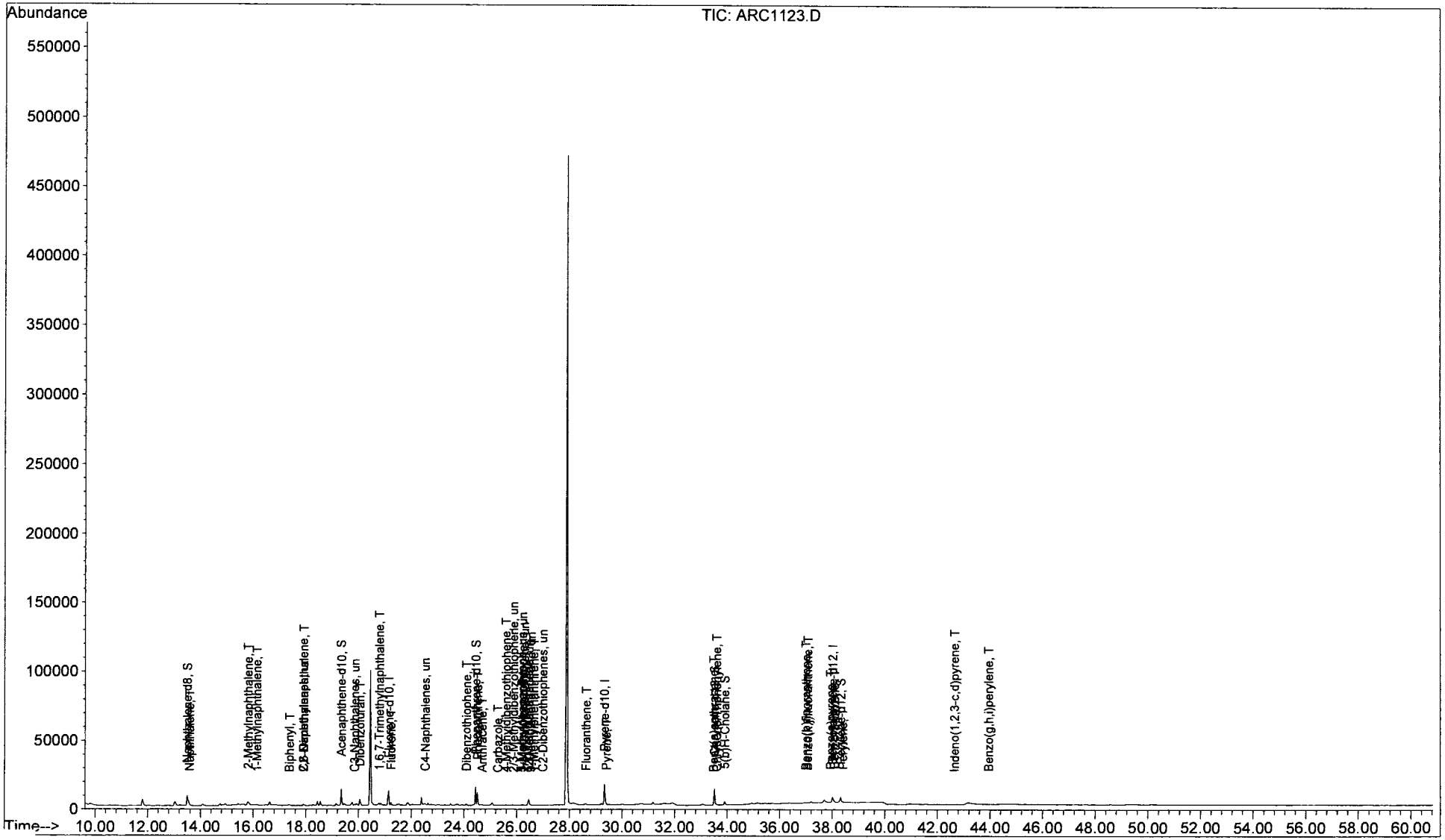
	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	26.29	192	788m	1.41	
45)	2-Methylanthracene	26.46	192	1905m	3.40	
46)	9-Methylphenanthrene	26.53	192	384m	0.69	
47)	1-Methylphenanthrene	26.64	192	434m	0.78	
48)	3,6-Dimethylphenanthrene	0.00	206	0	N.D.	d
49)	Retene	0.00	234	0	N.D.	d
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d
53)	Naphthobenzothiophene	0.00	234	0	N.D.	d
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D.	d
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D.	d
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D.	d
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D.	d
58)	Fluoranthene	28.63	202	2708m	3.47	
59)	Pyrene	29.40	202	2098m	2.33	
60)	2-Methylfluoranthene	0.00	216	0	N.D.	d
61)	Benzo(b)fluorene	0.00	216	0	N.D.	d
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	d
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D.	d
67)	Benz(a)anthracene	33.48	228	467m	0.62	
68)	Chrysene/Triphenylene	33.59	228	995m	1.46	
69)	C1-Chrysenes	0.00	242	0	N.D.	d
70)	C2-Chrysenes	0.00	256	0	N.D.	d
71)	C3-Chrysenes	0.00	270	0	N.D.	d
72)	C4-Chrysenes	0.00	284	0	N.D.	d
74)	C29-Hopane	0.00	191	0	N.D.	d
75)	18a-Oleanane	0.00	191	0	N.D.	d
76)	C30-Hopane	0.00	191	0	N.D.	d
77)	Benzo(b)fluoranthene	36.99	252	767m	2.19	
78)	Benzo(k,j)fluoranthene	37.07	252	167m	0.52	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d
80)	Benzo(e)pyrene	37.93	252	420m	1.24	
81)	Benzo(a)pyrene	38.09	252	340m	1.27	
82)	Indeno(1,2,3-c,d)pyrene	42.65	276	165m	0.84	
83)	Dibenzo(a,h)anthracene	0.00	278	0	N.D.	d
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D.	d
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D.	d
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D.	d
87)	Benzo(g,h,i)perylene	43.94	276	193m	1.09	
89)	Perylene	38.40	252	80m	0.27	
91)	C20-TAS	0.00	231	0	N.D.	d
92)	C21-TAS	0.00	231	0	N.D.	d
93)	C26(20S)-TAS	0.00	231	0	N.D.	d
94)	C26(20R)/C27(20S)-TAS	0.00	231	0	N.D.	d
95)	C28(20S)-TAS	0.00	231	0	N.D.	d
96)	C27(20R)-TAS	0.00	231	0	N.D.	d
97)	C28(20R)-TAS	0.00	231	0	N.D.	d

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\MS30860\ARC1123.D Vial: 16
Acq On : 6 Apr 2012 3:52 am Operator: YM
Sample : HUMT-P5-TN(031812)2-A Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 9 19:54 2012 Quant Results File: AR30860.RES

Method : C:\HPCHEM\1\DATA\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Aliphatic Hydrocarbons/
Total Petroleum Hydrocarbons/
Initial Calibration Data

TEH/Aliphatic

ICAL
C08F0323.M

GC/FID 3- Front

Calibration Status Report GC3

Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:45:09 2012
Response via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	1.23	20.01	C:\HPCHEM\1\DATA\GC31938\GC31938C.D
2	2	9.83	20.01	C:\HPCHEM\1\DATA\GC31938\GC31938D.D
3	3	24.59	20.01	C:\HPCHEM\1\DATA\GC31938\GC31938E.D
4	4	39.34	20.01	C:\HPCHEM\1\DATA\GC31938\GC31938F.D
5	5	49.17	20.01	C:\HPCHEM\1\DATA\GC31938\GC31938G.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Mar 22 20:25 2012	Mar 22 20:25 2012	22 Mar 2012 2:51 pm
2	2	Mar 22 20:29 2012	Mar 22 20:29 2012	22 Mar 2012 3:56 pm
3	3	Mar 22 20:43 2012	Mar 22 20:43 2012	22 Mar 2012 5:02 pm
4	4	Mar 22 20:45 2012	Mar 22 20:44 2012	22 Mar 2012 6:08 pm
5	5	Mar 22 20:41 2012	Mar 22 20:41 2012	22 Mar 2012 7:14 pm

C08F0323.M Mon Mar 26 16:45:49 2012

Response Factor Report GC3

Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:45:09 2012

Calibration Files
1 =GC31938C.D 2 =GC31938D.D 3 =GC31938E.D
4 =GC31938F.D 5 =GC31938G.D

		Compound	1	2	3	4	5	Avg		%RSD
1)	I	n-hexadecane-d34	----------ISTD----------							
2)		n-C8	0.907	0.889	0.888	0.915	0.890	0.898	0	1.40
3)		n-C9	0.916	0.879	0.884	0.913	0.891	0.897	0	1.90
4)		n-C10	0.919	0.914	0.924	0.950	0.933	0.928	0	1.55
5)		n-C11	0.915	0.932	0.950	0.968	0.956	0.944	0	2.21
6)	S	n-dodecane-d26	0.884	0.828	0.861	0.865	0.860	0.860	0	2.33
7)		n-C12	0.928	0.966	0.983	1.005	0.991	0.974	0	3.03
8)		i-13	0.977	0.991	0.999	1.025	1.007	1.000	0	1.79
9)		i-14	1.050	1.042	1.046	1.062	1.046	1.049	0	0.74
10)		n-C13	0.977	0.991	0.999	1.025	1.007	1.000	0	1.79
11)		i-15	1.022	1.048	1.043	1.056	1.042	1.042	0	1.21
12)		n-C14	1.050	1.042	1.046	1.062	1.046	1.049	0	0.74
13)		i-16	1.068	1.071	1.071	1.074	1.060	1.069	0	0.50
14)		n-C15	1.022	1.048	1.043	1.056	1.042	1.042	0	1.21
15)		n-C16	1.068	1.071	1.071	1.074	1.060	1.069	0	0.50
16)	I	5a-androstane	----------ISTD----------							
17)		i-18	0.929	0.920	0.910	0.926	0.916	0.920	0	0.84
18)		n-C17	0.890	0.900	0.890	0.906	0.898	0.897	0	0.76
19)		Pristane	0.920	0.932	0.922	0.938	0.928	0.928	0	0.80
20)		n-C18	0.929	0.920	0.910	0.926	0.916	0.920	0	0.84
21)		Phytane	0.918	0.916	0.908	0.921	0.913	0.915	0	0.56
22)		n-C19	0.946	0.927	0.914	0.930	0.921	0.927	0	1.30
23)	S	n-eicosane-d42	0.850	0.790	0.795	0.794	0.787	0.803	0	3.27
24)		n-C20	0.991	0.937	0.920	0.933	0.923	0.941	0	3.06
25)		n-C21	0.945	0.936	0.918	0.932	0.923	0.931	0	1.15
26)		n-C22	0.974	0.953	0.936	0.950	0.942	0.951	0	1.53
27)		n-C23	0.951	0.943	0.927	0.939	0.932	0.938	0	0.99
28)		n-C24	0.970	0.940	0.924	0.932	0.928	0.939	0	1.96
29)		n-C25	1.010	0.972	0.955	0.962	0.959	0.971	0	2.29
30)		n-C26	1.003	0.969	0.953	0.960	0.963	0.969	0	2.02
31)		n-C27	0.975	0.945	0.932	0.935	0.947	0.947	0	1.78
32)		n-C28	0.982	0.951	0.932	0.937	0.955	0.951	0	2.04
33)		n-C29	1.049	0.949	0.935	0.941	0.965	0.968	0	4.83
34)	S	n-triacontane-d62	0.945	0.836	0.865	0.835	0.859	0.868	0	5.20
35)		n-C30	0.978	0.933	0.911	0.918	0.949	0.938	0	2.88
36)		n-C31	0.993	0.941	0.922	0.928	0.977	0.952	0	3.27
37)		n-C32	1.013	0.952	0.935	0.942	1.021	0.973	0	4.23
38)		n-C33	0.950	0.895	0.877	0.883	0.979	0.917	0	4.96
39)		n-C34	1.023	0.923	0.906	0.912	1.046	0.962	0	6.98
40)		n-C35	1.009	0.963	0.932	0.937	1.111	0.990	0	7.45
41)		n-C36	1.024	0.974	0.947	0.950	1.171	1.013	0	9.24
42)		n-C37	0.994	0.938	0.915	0.916	1.158	0.984	0	10.38
43)		n-C38	0.982	0.941	0.904	0.899	1.173	0.980	0	11.54
44)		n-C39	0.945	0.883	0.857	0.851	1.131	0.933	0	12.52
45)		n-C40	0.917	0.833	0.817	0.810	1.100	0.895	0	13.63
46)		TPH	0.923	0.900	0.889	0.901	0.944	0.911	0	2.40
47)		TRH1	0.923	0.900	0.889	0.901	0.944	0.911	0	2.40
48)		TRH2	0.923	0.900	0.889	0.901	0.944	0.911	0	2.40
49)		TRH3	0.923	0.900	0.889	0.901	0.944	0.911	0	2.40
50)		TRH4	0.923	0.900	0.889	0.901	0.944	0.911	0	2.40
51)		TRH5	0.923	0.900	0.889	0.901	0.944	0.911	0	2.40
52)		TRH6	0.923	0.900	0.889	0.901	0.944	0.911	0	2.40
53)		GRO	0.923	0.900	0.889	0.901	0.944	0.911	0	2.40
54)		DRO	0.923	0.900	0.889	0.901	0.944	0.911	0	2.40
55)		RRO	0.923	0.900	0.889	0.901	0.944	0.911	0	2.40

(#) = Out of Range

Area for TPH Calculations

C08F0323.M (GC/FID #3 (Front Channel)

	Level 1 GC31938C.D	Level 2 GC31938D.D	Level 3 GC31938E.D	Level 4 GC31938F.D	Level 5 GC31938G.D
n-C8	6910	47902	116686	186696	232960
n-C9	7128	48351	118559	190063	238069
n-C10	7096	49919	123085	196513	247805
n-C11	7058	50884	126455	199958	253505
n-C12	7174	52795	131036	207991	263209
n-C13	7568	54307	133409	212529	267944
n-C14	8044	56429	138121	217706	275219
n-C15	7913	57373	139252	218982	277354
n-C16	8286	58766	143271	223130	282656
n-C17	8429	58929	141763	222059	281470
Pristane	8679	60693	146036	228873	289472
n-C18	8871	60702	146048	228695	289182
Phytane	8727	60207	145082	226668	287265
n-C19	9017	61015	146452	229218	290248
n-C20	9493	61996	148139	231359	292559
n-C21	9038	61908	147599	230816	292243
n-C22	9212	62331	148818	232608	294834
n-C23	9106	62379	149285	232608	295152
n-C24	9308	62307	148961	231408	294537
n-C25	9590	63759	152414	236280	301334
n-C26	9405	62791	150221	233034	298700
n-C27	9238	61882	148448	229177	296865
n-C28	9369	62692	149478	231329	301597
n-C29	9986	62484	149628	231945	304023
n-C30	9397	61941	147147	228129	301818
n-C31	9509	62218	148406	229931	309348
n-C32	9502	61672	147320	228500	316639
n-C33	9065	59004	140654	218122	309318
n-C34	9729	60655	144819	224378	329195
n-C35	9456	62370	146755	227208	344281
n-C36	9591	63110	149109	230302	363166
n-C37	9417	61449	145787	224543	363009
n-C38	9345	61845	144470	221278	369110
n-C40	8799	55225	131823	201025	349133
Average Area (use for TPH, TRPH, GRO, DRO, RRO)	8778	59185	142192	221855	297154
Average of n-C38 and n-C40 (use for n-C39)	9072	58535	138147	211152	359122
n-C36/n-C20	1.01	1.02	1.01	1.00	1.24

For isoprenoids (other than Pristane and Phytane) use area for normal alkane; i-C13 use n-C13

Quantitation Report (QT Reviewed)

Data File : L:\1\DATA\GC31938\GC31938C.D Vial: 3
Acq On : 22 Mar 2012 2:51 pm Operator: MAG
Sample : AL-WKC1-1.25-018 (CS1) Inst : GC3
Misc : Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Mar 22 20:25 2012 Quant Results File: C08F0323.RES

Quant Method : C:\HPCHEM\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Wed Mar 14 11:42:06 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.25	124049	20.012	ug/mlm
16)	I	5a-androstane	18.66	152453	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.94	6854	1.278	ug/ml
23)	S	n-eicosane-d42	18.01	8086	1.327	ug/ml
34)	S	n-triacontane-d62	29.98	9006	1.380	ug/ml
		Target Compounds				
2)		n-C8	3.80	6911	1.222	ug/ml
3)		n-C9	5.13	7129	1.264	ug/ml
4)		n-C10	6.54	7096	1.205	ug/ml
5)		n-C11	7.89	7058	1.181	ug/ml
7)		n-C12	9.14	7175	1.170	ug/ml
10)		n-C13	10.31	7569	1.215	ug/ml
12)		n-C14	11.41	8045	1.241	ug/ml
14)		n-C15	12.44	7913	1.216	ug/ml
15)		n-C16	13.51	8287	1.242	ug/ml
18)		n-C17	14.65	8430	1.236	ug/ml
19)		Pristane	14.77	8679	1.238	ug/ml
20)		n-C18	15.85	8871	1.271	ug/ml
21)		Phytane	16.02	8727	1.256	ug/ml
22)		n-C19	17.12	9017	1.283	ug/ml
24)		n-C20	18.41	9493	1.340	ug/ml
25)		n-C21	19.73	9039	1.272	ug/ml
26)		n-C22	21.04	9212	1.272	ug/ml
27)		n-C23	22.34	9106	1.267	ug/ml
28)		n-C24	23.61	9308	1.296	ug/ml
29)		n-C25	24.84	9590	1.296	ug/ml
30)		n-C26	26.05	9405	1.271	ug/ml
31)		n-C27	27.22	9238	1.280	ug/ml
32)		n-C28	28.35	9369	1.300	ug/ml
33)		n-C29	29.45	9987	1.382	ug/ml
35)		n-C30	30.51	9397	1.319	ug/ml
36)		n-C31	31.54	9510	1.324	ug/ml
37)		n-C32	32.56	9503	1.311	ug/ml
38)		n-C33	33.68	9065	1.333	ug/ml
39)		n-C34	34.97	9729	1.376	ug/ml
40)		n-C35	36.48	9457	1.305	ug/ml
41)		n-C36	38.25f	9592	1.298	ug/ml
42)		n-C37	40.37f	9417	1.317	ug/ml
43)		n-C38	42.89f	9346	1.328	ug/ml
45)		n-C40	49.56f	8799	1.389	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

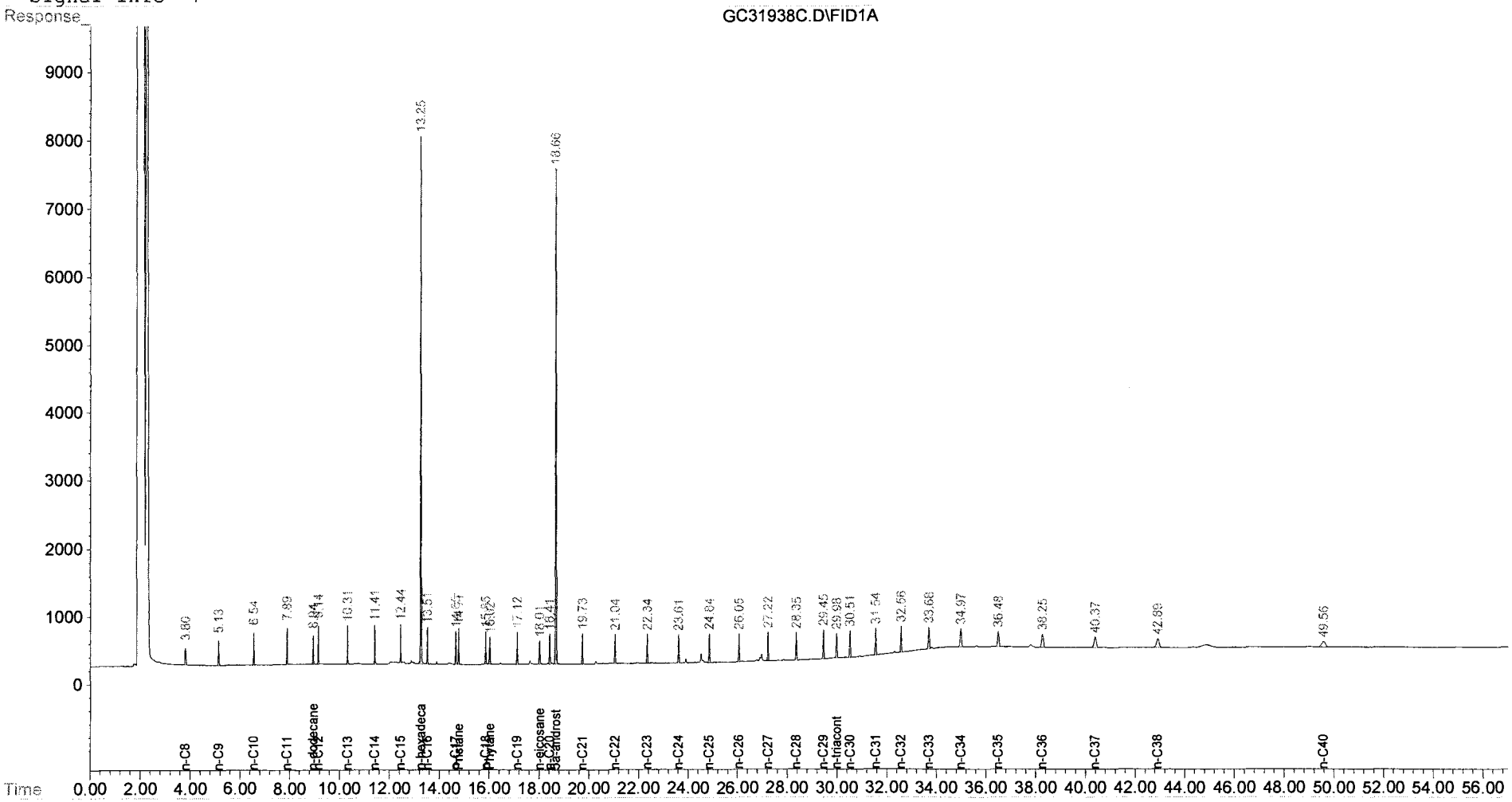
Quantitation Report

Data File : L:\1\DATA\GC31938\GC31938C.D
Acq On : 22 Mar 2012 2:51 pm
Sample : AL-WKC1-1.25-018 (CS1)
Misc :
IntFile : autoint1.e
Quant Time: Mar 22 20:25 2012 Quant Results File: C08F0323.RES

Vial: 3
Operator: MAG
Inst : GC3
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Wed Mar 14 11:42:06 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data File : L:\1\DATA\GC31938\GC31938D.D
Vial: 4
Acq On : 22 Mar 2012 3:56 pm
Operator: MAG
Sample : AL-WKC2-10-018 (CS2)
Inst : GC3
Misc :
Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Mar 22 20:29 2012 Quant Results File: C08F0323.RES

Quant Method : C:\HPCHEM\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:25:45 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.24	109675	20.012	ug/mlm
16)	I	5a-androstane	18.65	131698	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	45448	9.588	ug/ml
23)	S	n-eicosane-d42	18.00	51988	9.865	ug/ml
34)	S	n-triacontane-d62	29.97	55093	9.719	ug/ml
		Target Compounds				
2)		n-C8	3.80	47903	9.578	ug/ml
3)		n-C9	5.13	48351	9.686	ug/ml
4)		n-C10	6.54	49919	9.646	ug/ml
5)		n-C11	7.88	50884	9.706	ug/ml
7)		n-C12	9.14	52796	9.824	ug/ml
10)		n-C13	10.31	54308	9.889	ug/ml
12)		n-C14	11.40	56430	9.838	ug/ml
14)		n-C15	12.44	57373	10.062	ug/ml
15)		n-C16	13.50	58766	10.046	ug/ml
18)		n-C17	14.64	58930	10.043	ug/ml
19)		Pristane	14.76	60694	10.015	ug/ml
20)		n-C18	15.85	60702	10.047	ug/ml
21)		Phytane	16.01	60208	10.032	ug/ml
22)		n-C19	17.11	61015	10.031	ug/ml
24)		n-C20	18.41	61997	10.035	ug/ml
25)		n-C21	19.72	61908	10.116	ug/ml
26)		n-C22	21.04	62332	9.965	ug/ml
27)		n-C23	22.33	62379	10.095	ug/ml
28)		n-C24	23.60	62307	10.072	ug/ml
29)		n-C25	24.84	63760	9.970	ug/ml
30)		n-C26	26.04	62792	9.843	ug/ml
31)		n-C27	27.21	61883	9.944	ug/ml
32)		n-C28	28.34	62693	10.030	ug/ml
33)		n-C29	29.44	62485	9.842	ug/ml
35)		n-C30	30.51	61941	10.048	ug/ml
36)		n-C31	31.54	62218	9.993	ug/ml
37)		n-C32	32.55	61673	9.740	ug/ml
38)		n-C33	33.68	59004	9.945	ug/ml
39)		n-C34	34.97	60655	9.782	ug/ml
40)		n-C35	36.47	62371	9.893	ug/ml
41)		n-C36	38.25	63111	9.832	ug/ml
42)		n-C37	40.36	61450	9.909	ug/ml
43)		n-C38	42.88	61845	10.097	ug/ml
45)		n-C40	49.54	55225	9.910	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

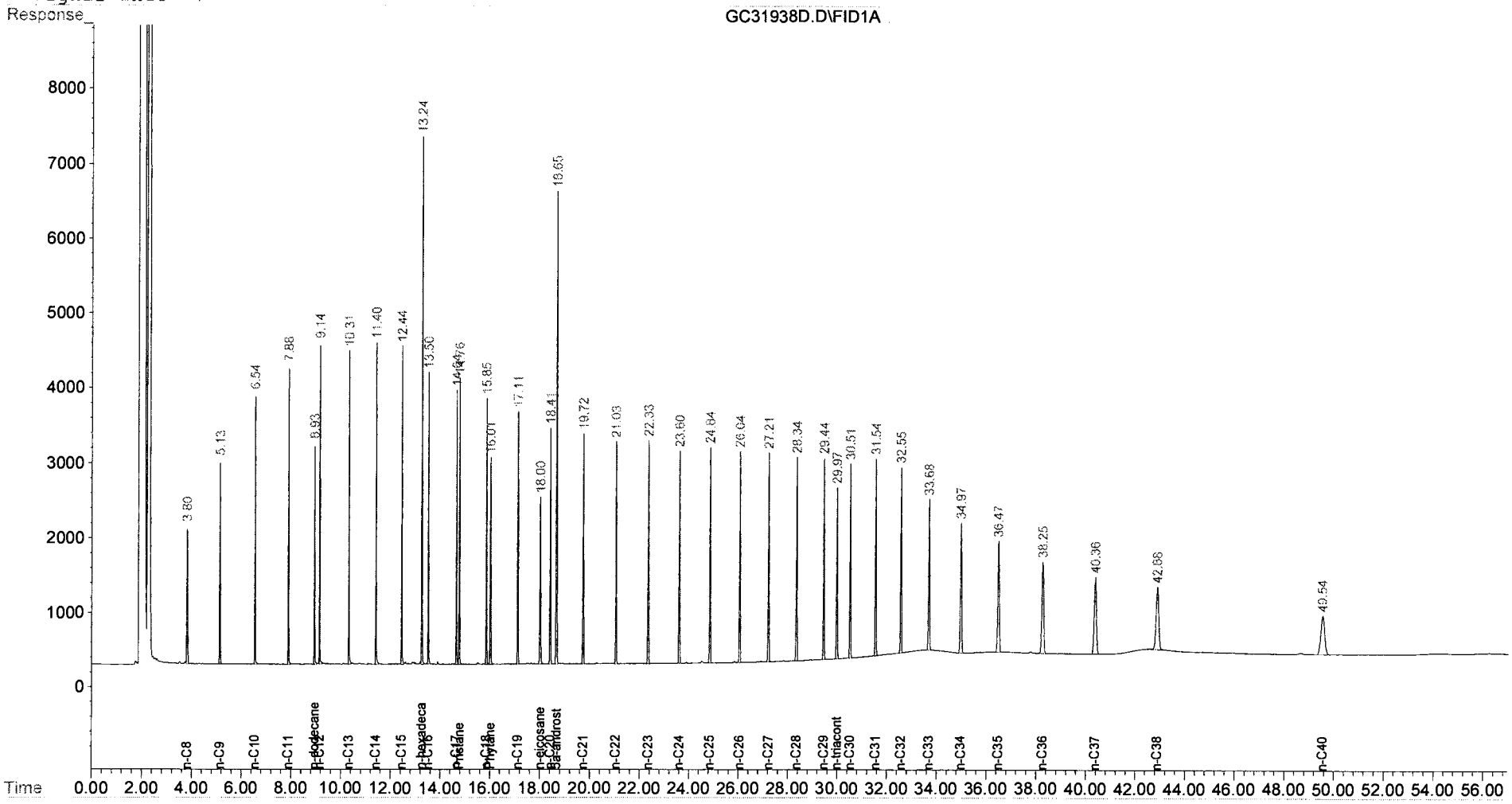
Quantitation Report

Data File : L:\1\DATA\GC31938\GC31938D.D
Acq On : 22 Mar 2012 3:56 pm
Sample : AL-WKC2-10-018 (CS2)
Misc :
IntFile : autoint1.e
Quant Time: Mar 22 20:29 2012 Quant Results File: C08F0323.RES

Vial: 4
Operator: MAG
Inst : GC3
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:25:45 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data File : L:\1\DATA\GC31938\GC31938E.D
Acq On : 22 Mar 2012 5:02 pm
Sample : AL-WKC3-25-018 (CS3)
Misc :
IntFile : autoint1.e
Quant Time: Mar 22 20:43 2012 Quant Results File: C08F0323.RES

Vial: 5
Operator: MAG
Inst : GC3
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:29:52 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.24	106978	20.012	ug/mlm
16)	I	5a-androstane	18.65	128138	20.030	ug/ml
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	115196	24.996	ug/ml
23)	S	n-eicosane-d42	18.00	127149	24.786	ug/ml
34)	S	n-triacontane-d62	29.97	138577	25.232	ug/ml
		Target Compounds				
2)		n-C8	3.81	116687	24.080	ug/ml
3)		n-C9	5.13	118560	24.497	ug/ml
4)		n-C10	6.54	123085	24.523	ug/ml
5)		n-C11	7.89	126455	24.849	ug/ml
7)		n-C12	9.14	131036	25.093	ug/ml
10)		n-C13	10.31	133410	24.944	ug/ml
12)		n-C14	11.40	138122	24.699	ug/ml
14)		n-C15	12.44	139252	25.037	ug/ml
15)		n-C16	13.51	143272	25.129	ug/ml
18)		n-C17	14.64	141763	24.790	ug/ml
19)		Pristane	14.76	146036	24.716	ug/ml
20)		n-C18	15.85	146049	24.850	ug/ml
21)		Phytane	16.01	145083	24.844	ug/ml
22)		n-C19	17.11	146452	24.737	ug/ml
24)		n-C20	18.41	148139	24.644	ug/ml
25)		n-C21	19.72	147599	24.783	ug/ml
26)		n-C22	21.04	148818	24.457	ug/ml
27)		n-C23	22.33	149285	24.849	ug/ml
28)		n-C24	23.60	148962	24.765	ug/ml
29)		n-C25	24.84	152414	24.514	ug/ml
30)		n-C26	26.04	150221	24.225	ug/ml
31)		n-C27	27.21	148448	24.548	ug/ml
32)		n-C28	28.35	149479	24.625	ug/mlm
33)		n-C29	29.44	149628	24.245	ug/mlm
35)		n-C30	30.51	147147	24.566	ug/mlm
36)		n-C31	31.54	148406	24.510	ug/mlm
37)		n-C32	32.56	147320	23.964	ug/mlm
38)		n-C33	33.68	140654	24.397	ug/mlm
39)		n-C34	34.97	144820	24.047	ug/mlm
40)		n-C35	36.48	146756	23.886	ug/mlm
41)		n-C36	38.26	149110	23.918	ug/mlm
42)		n-C37	40.37	145788	24.187	ug/mlm
43)		n-C38	42.88	144471	24.201	ug/mlm
45)		n-C40	49.55	131823	24.363	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

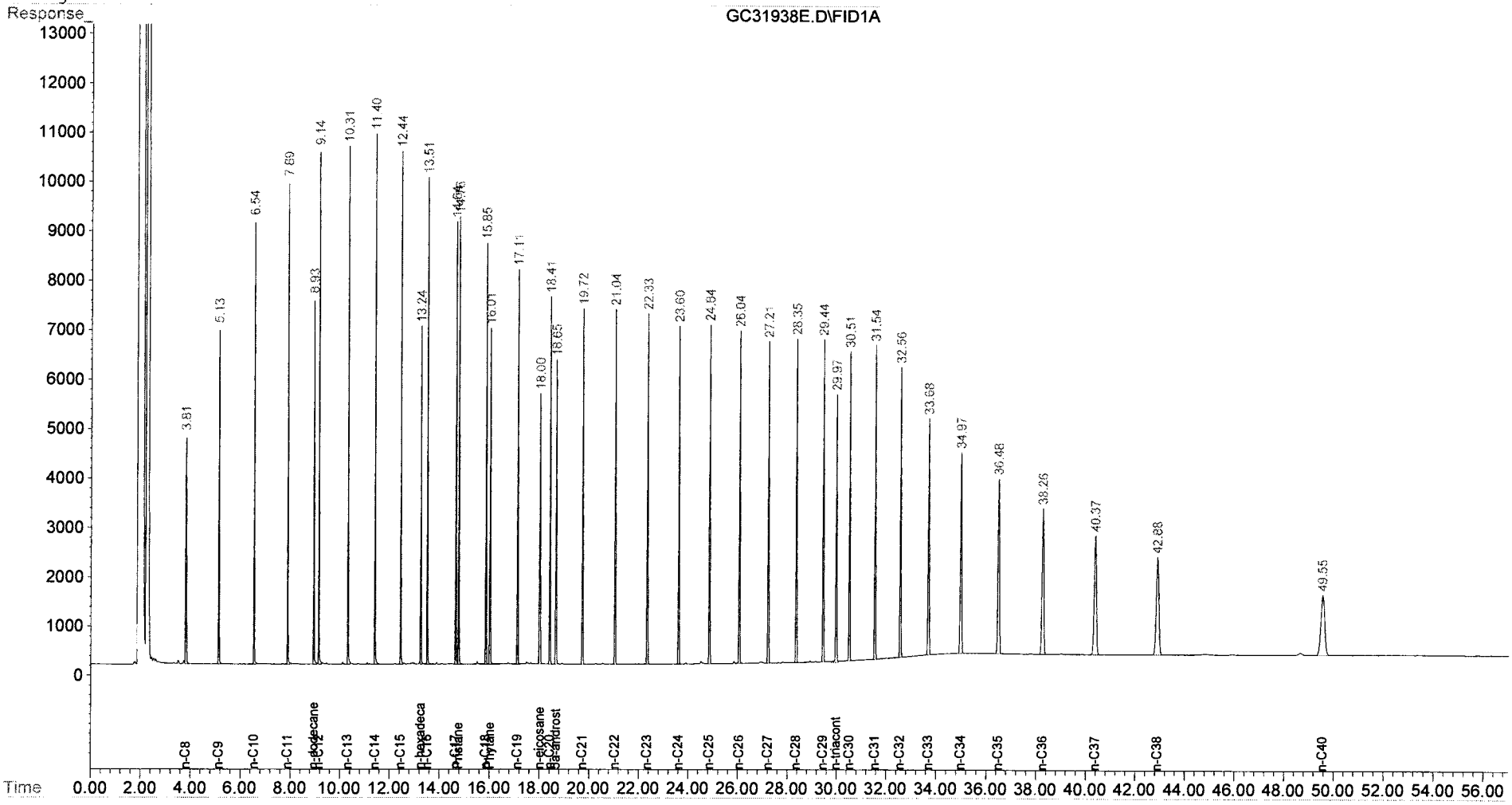
Quantitation Report

Data File : L:\1\DATA\GC31938\GC31938E.D
Acq On : 22 Mar 2012 5:02 pm
Sample : AL-WKC3-25-018 (CS3)
Misc :
IntFile : autoint1.e
Quant Time: Mar 22 20:43 2012 Quant Results File: C08F0323.RES

Vial: 5
Operator: MAG
Inst : GC3
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:29:52 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data File : L:\1\DATA\GC31938\GC31938F.D Vial: 6
Acq On : 22 Mar 2012 6:08 pm Operator: MAG
Sample : AL-WKC4-40-018 (CS4) Inst : GC3
Misc : Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Mar 22 20:44 2012 Quant Results File: C08F0323.RES

Quant Method : C:\HPCHEM\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:32:40 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.24	103791	20.012	ug/mlm
16)	I	5a-androstane	18.65	123277	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	179664	40.282	ug/ml
23)	S	n-eicosane-d42	18.01	195638	39.649	ug/ml
34)	S	n-triacontane-d62	29.97	205848	38.754	ug/ml
		Target Compounds				
2)		n-C8	3.81	186697	39.863	ug/ml
3)		n-C9	5.13	190063	40.698	ug/ml
4)		n-C10	6.54	196513	40.610	ug/ml
5)		n-C11	7.88	199959	40.658	ug/ml
7)		n-C12	9.14	207991	41.142	ug/ml
10)		n-C13	10.31	212529	41.025	ug/ml
12)		n-C14	11.40	217707	40.100	ug/ml
14)		n-C15	12.44	218983	40.570	ug/ml
15)		n-C16	13.51	223131	40.291	ug/ml
18)		n-C17	14.64	222060	40.332	ug/ml
19)		Pristane	14.76	228874	40.214	ug/ml
20)		n-C18	15.85	228695	40.450	ug/ml
21)		Phytane	16.02	226668	40.332	ug/ml
22)		n-C19	17.11	229219	40.239	ug/ml
24)		n-C20	18.41	231359	40.013	ug/ml
25)		n-C21	19.73	230817	40.325	ug/ml
26)		n-C22	21.04	232608	39.773	ug/ml
27)		n-C23	22.33	232609	40.289	ug/ml
28)		n-C24	23.60	231409	40.039	ug/ml
29)		n-C25	24.84	236281	39.519	ug/ml
30)		n-C26	26.05	233034	39.089	ug/ml
31)		n-C27	27.21	229177	39.414	ug/ml
32)		n-C28	28.35	231329	39.646	ug/ml
33)		n-C29	29.45	231946	39.106	ug/ml
35)		n-C30	30.51	228130	39.720	ug/ml
36)		n-C31	31.54	229931	39.534	ug/ml
37)		n-C32	32.56	228501	38.716	ug/ml
38)		n-C33	33.68	218123	39.344	ug/ml
39)		n-C34	34.98	224378	38.788	ug/ml
40)		n-C35	36.48	227208	38.500	ug/ml
41)		n-C36	38.26	230303	38.442	ug/ml
42)		n-C37	40.38	224544	38.731	ug/ml
43)		n-C38	42.90	221279	38.613	ug/ml
45)		n-C40	49.58	201026	38.678	ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

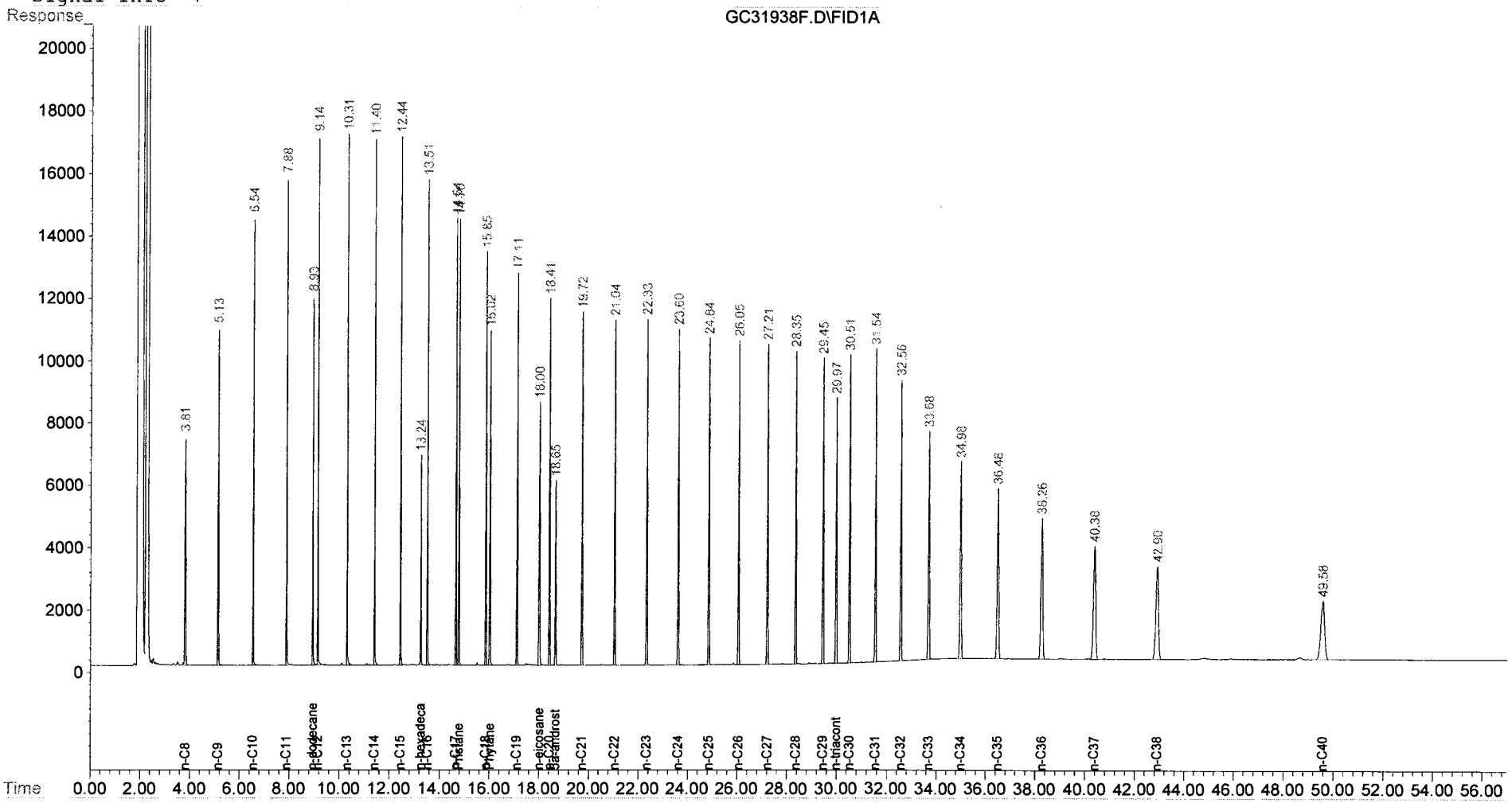
Quantitation Report

Data File : L:\1\DATA\GC31938\GC31938F.D
Acq On : 22 Mar 2012 6:08 pm
Sample : AL-WKC4-40-018 (CS4)
Misc :
IntFile : autoint1.e
Quant Time: Mar 22 20:44 2012 Quant Results File: C08F0323.RES

Vial: 6
Operator: MAG
Inst : GC3
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:32:40 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data File : L:\1\DATA\GC31938\GC31938G.D Vial: 7
Acq On : 22 Mar 2012 7:14 pm Operator: MAG
Sample : AL-WKC5-50-018 (CS5) Inst : GC3
Misc : Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Mar 22 20:41 2012 Quant Results File: C08F0323.RES

Quant Method : C:\HPCHEM\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:35:37 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	n-hexadecane-d34	13.24	106582	20.012 ug/mlm
16) I	5a-androstane	18.65	126106	20.030 ug/mlm
	System Monitoring Compounds			
6) S	n-dodecane-d26	8.93	229208	50.061 ug/ml
23) S	n-eicosane-d42	18.01	247792	49.046 ug/ml
34) S	n-triacontane-d62	29.98	271000	49.933 ug/ml
	Target Compounds			
2)	n-C8	3.81	232961	48.632 ug/ml
3)	n-C9	5.13	238069	49.733 ug/ml
4)	n-C10	6.54	247805	50.007 ug/ml
5)	n-C11	7.89	253506	50.306 ug/ml
7)	n-C12	9.14	263209	50.687 ug/ml
10)	n-C13	10.31	267945	50.300 ug/ml
12)	n-C14	11.40	275220	49.287 ug/ml
14)	n-C15	12.44	277355	49.982 ug/ml
15)	n-C16	13.51	282656	49.669 ug/ml
18)	n-C17	14.64	281470	49.924 ug/ml
19)	Pristane	14.76	289473	49.645 ug/ml
20)	n-C18	15.85	289183	49.972 ug/ml
21)	Phytane	16.02	287266	49.937 ug/ml
22)	n-C19	17.11	290249	49.785 ug/ml
24)	n-C20	18.41	292560	49.437 ug/ml
25)	n-C21	19.73	292243	49.907 ug/ml
26)	n-C22	21.04	294835	49.291 ug/ml
27)	n-C23	22.33	295153	49.995 ug/ml
28)	n-C24	23.60	294537	49.877 ug/ml
29)	n-C25	24.84	301335	49.324 ug/ml
30)	n-C26	26.05	298701	49.039 ug/ml
31)	n-C27	27.22	296866	49.990 ug/ml
32)	n-C28	28.35	301598	50.616 ug/ml
33)	n-C29	29.45	304024	50.188 ug/ml
35)	n-C30	30.51	301818	51.477 ug/ml
36)	n-C31	31.55	309349	52.135 ug/ml
37)	n-C32	32.56	316640	52.633 ug/ml
38)	n-C33	33.69	309318	54.726 ug/ml
39)	n-C34	34.98	329196	55.840 ug/ml
40)	n-C35	36.49	344282	57.251 ug/ml
41)	n-C36	38.28	363166	59.508 ug/ml
42)	n-C37	40.38	363009	61.597 ug/ml
43)	n-C38	42.92	369111	63.360 ug/ml
45)	n-C40	49.59	349133	66.109 ug/ml

(f)=RT Delta > 1/2 Window (m)=manual int.

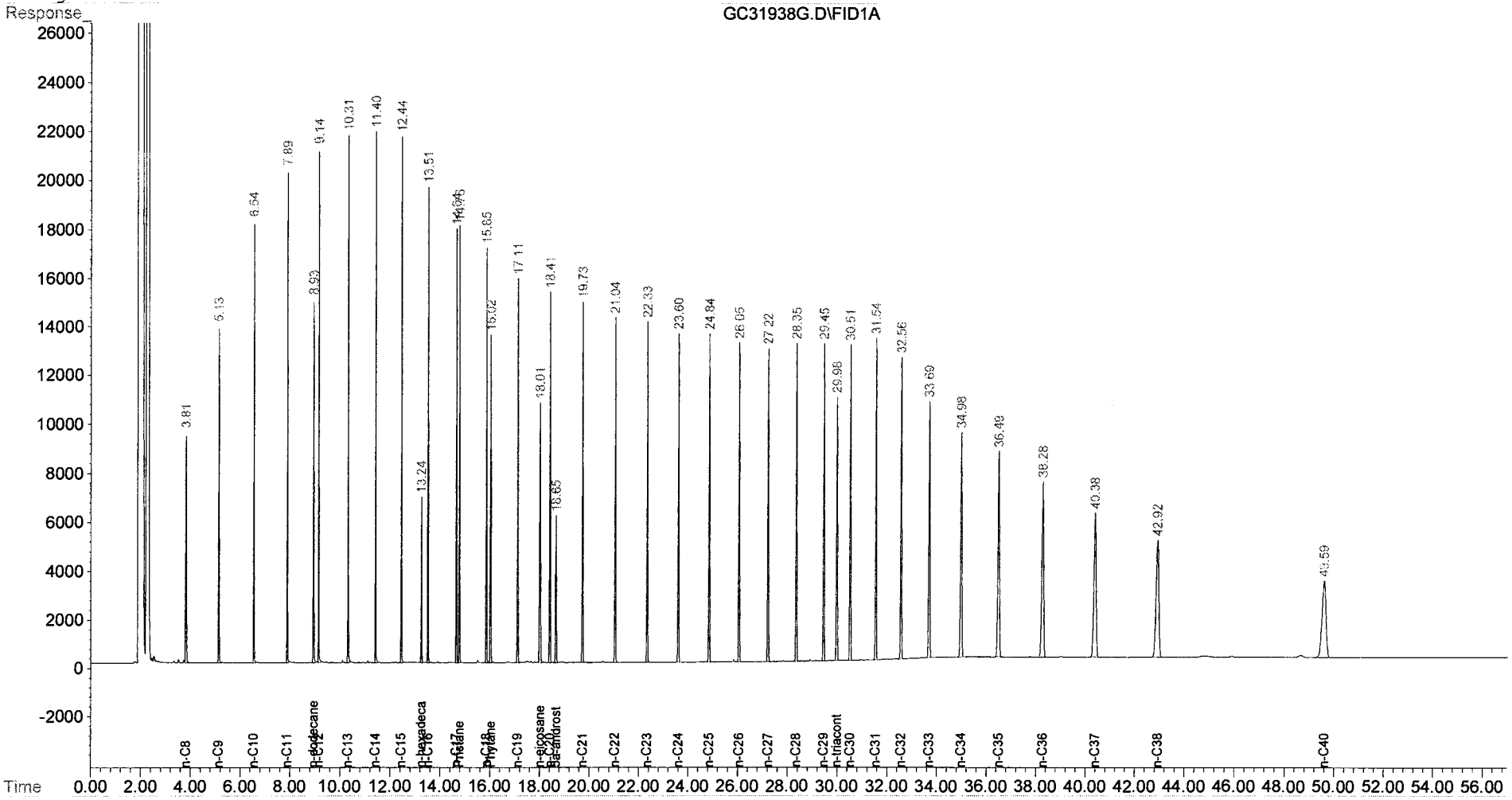
Quantitation Report

Data File : L:\1\DATA\GC31938\GC31938G.D
Acq On : 22 Mar 2012 7:14 pm
Sample : AL-WKC5-50-018 (CS5)
Misc :
IntFile : autoint1.e
Quant Time: Mar 22 20:41 2012 Quant Results File: C08F0323.RES

Vial: 7
Operator: MAG
Inst : GC3
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:35:37 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



B&B Laboratories
Project J11913
Report 12-2824

Arcadis/ExxonMobil.
Yellowstone Oil Spill Project
n-Alkane Mass Discrimination Sheet

File Name	Sample Name	n-C20 (Area)	n-C36 (Area)	n-C36/n-C20 ratio	Q
GC31938G.D	ICV	161730	165148	1.02	

Qualifiers (Q): Ratio of n-C36 to n-C20 needs to be > 0.70.

Evaluate Continuing Calibration Report

Data File : L:\1\DATA\GC31938\GC31938H.D
Acq On : 22 Mar 2012 8:19 pm
Sample : AL-WKCC-25-018 (ICV)
Misc :
IntFile : autoint1.e

Vial: 8
Operator: MAG
Inst : GC3
Multiplr: 1.00

Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:45:09 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	n-hexadecane-d34	1.000	1.000	0.0	104	0.00
2		n-C8	0.898	0.900	-0.2	106	0.00
3		n-C9	0.897	0.926	-3.2	109	0.00
4		n-C10	0.928	0.972	-4.7	110	0.00
5		n-C11	0.944	0.988	-4.7	109	0.00
6	S	n-dodecane-d26	0.860	0.862	-0.2	104	0.00
7		n-C12	0.974	1.010	-3.7	107	0.00
10		n-C13	1.000	1.057	-5.7	110	0.00
12		n-C14	1.049	1.102	-5.1	110	0.00
14		n-C15	1.042	1.113	-6.8	111	0.00
15		n-C16	1.069	1.128	-5.5	110	0.00
16	I	5a-androstane	1.000	1.000	0.0	104	0.00
18		n-C17	0.897	0.962	-7.2	112	0.00
19		Pristane	0.928	0.945	-1.8	106	0.00
20		n-C18	0.920	0.966	-5.0	110	0.00
21		Phytane	0.915	0.942	-3.0	108	0.00
22		n-C19	0.927	0.965	-4.1	110	0.00
23	S	n-eicosane-d42	0.803	0.804	-0.1	105	0.00
24		n-C20	0.941	0.968	-2.9	109	0.00
25		n-C21	0.931	0.972	-4.4	110	0.00
26		n-C22	0.951	0.990	-4.1	110	0.00
27		n-C23	0.938	0.963	-2.7	108	0.00
28		n-C24	0.939	0.961	-2.3	108	0.00
29		n-C25	0.971	0.930	4.2	101	0.00
30		n-C26	0.969	0.994	-2.6	108	0.00
31		n-C27	0.947	0.977	-3.2	109	0.00
32		n-C28	0.951	0.968	-1.8	108	0.00
33		n-C29	0.968	0.972	-0.4	108	0.00
34	S	n-triacontane-d62	0.868	0.847	2.4	102	0.00
35		n-C30	0.938	0.961	-2.5	109	0.00
36		n-C31	0.952	0.934	1.9	105	0.00
37		n-C32	0.973	0.974	-0.1	108	0.00
38		n-C33	0.917	0.961	-4.8	114	0.00
39		n-C34	0.962	0.965	-0.3	111	0.00
40		n-C35	0.990	0.954	3.6	106	0.00
41		n-C36	1.013	1.010	0.3	111	0.00
42		n-C37	0.984	0.934	5.1	106	-0.01
43		n-C38	0.980	0.913	6.8	105	-0.02
44		n-C39	0.933	0.899	3.6	109	0.00
45		n-C40	0.895	0.906	-1.2	115	-0.02

Evaluate Continuing Calibration Report - Not Founds

Data File : L:\1\DATA\GC31938\GC31938H.D Vial: 8
Acq On : 22 Mar 2012 8:19 pm Operator: MAG
Sample : AL-WKCC-25-018 (ICV) Inst : GC3
Misc : Multiplr: 1.00
IntFile : autoint1.e

Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Thu Mar 22 20:45:09 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
8	i-13	0.042	0.000	100.0#	0#	-9.69#
9	i-14	0.044	0.000	100.0#	0#	-9.90#
11	i-15	0.043	0.000	100.0#	0#	-11.18#
13	i-16	0.045	0.000	100.0#	0#	-12.07#
17	i-18	0.046	0.000	100.0#	0#	-14.08#
46	TPH	0.046	0.000	100.0#	0#	-37.12#
47	TRH1	0.046	0.000	100.0#	0#	-5.33#
48	TRH2	0.046	0.000	100.0#	0#	-11.90#
49	TRH3	0.046	0.000	100.0#	0#	-17.83#
50	TRH4	0.046	0.000	100.0#	0#	-24.43#
51	TRH5	0.046	0.000	100.0#	0#	-30.60#
52	TRH6	0.046	0.000	100.0#	0#	-38.73#
53	GRO	0.046	0.000	100.0#	0#	-5.33#
54	DRO	0.046	0.000	100.0#	0#	-14.46#
55	RRO	0.046	0.000	100.0#	0#	-33.36#

Quantitation Report (QT Reviewed)

Data File : L:\1\DATA\GC31938\GC31938H.D
Vial: 8
Acq On : 22 Mar 2012 8:19 pm
Operator: MAG
Sample : AL-WKCC-25-018 (ICV)
Inst : GC3
Misc :
Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Mar 26 17:19 2012 Quant Results File: C08F0323.RES

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Initial Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
		Internal Standards				
1)	I	n-hexadecane-d34	13.24	111638	20.012	ug/mlm
16)	I	5a-androstane	18.65	133016	20.030	ug/mlm
		System Monitoring Compounds				
6)	S	n-dodecane-d26	8.93	120296	25.085	ug/mlm
23)	S	n-eicosane-d42	18.00	133553	25.037	ug/ml
34)	S	n-triacontane-d62	29.97	140801	24.426	ug/mlm
		Target Compounds				
2)		n-C8	3.81	123500	24.661	ug/ml
3)		n-C9	5.13	129663	25.923	ug/ml
4)		n-C10	6.54	135206	26.119	ug/ml
5)		n-C11	7.88	137212	26.054	ug/mlm
7)		n-C12	9.14	140495	25.844	ug/mlm
10)		n-C13	10.31	147354	26.424	ug/mlm
12)		n-C14	11.40	151843	25.949	ug/mlm
14)		n-C15	12.44	155084	26.672	ug/mlm
15)		n-C16	13.51	157459	26.409	ug/mlm
18)		n-C17	14.64	158900	26.671	ug/ml
19)		Pristane	14.76	155507	25.233	ug/ml
20)		n-C18	15.85	160832	26.315	ug/ml
21)		Phytane	16.01	156306	25.712	ug/mlm
22)		n-C19	17.11	160539	26.066	ug/ml
24)		n-C20	18.41	161730	25.888	ug/ml
25)		n-C21	19.72	162230	26.243	ug/ml
26)		n-C22	21.04	163486	25.891	ug/ml
27)		n-C23	22.33	160891	25.820	ug/ml
28)		n-C24	23.60	160916	25.815	ug/ml
29)		n-C25	24.84	154166	23.898	ug/ml
30)		n-C26	26.04	162738	25.277	ug/ml
31)		n-C27	27.21	161422	25.669	ug/mlm
32)		n-C28	28.34	161198	25.514	ug/mlm
33)		n-C29	29.44	161522	25.132	ug/mlm
35)		n-C30	30.51	161116	25.868	ug/mlm
36)		n-C31	31.54	156066	24.678	ug/mlm
37)		n-C32	32.56	159417	24.683	ug/mlm
38)		n-C33	33.68	160126	26.302	ug/mlm
39)		n-C34	34.97	160192	25.070	ug/mlm
40)		n-C35	36.48	155960	23.712	ug/mlm
41)		n-C36	38.25	165148	24.546	ug/mlm
42)		n-C37	40.36	154492	23.641	ug/mlm
43)		n-C38	42.88	151563	23.296	ug/mlm
44)		n-C39	45.91	150535	24.288	ug/mlm
45)		n-C40	49.55	151745	25.521	ug/mlm

(f)=RT Delta > 1/2 Window (m)=manual int.

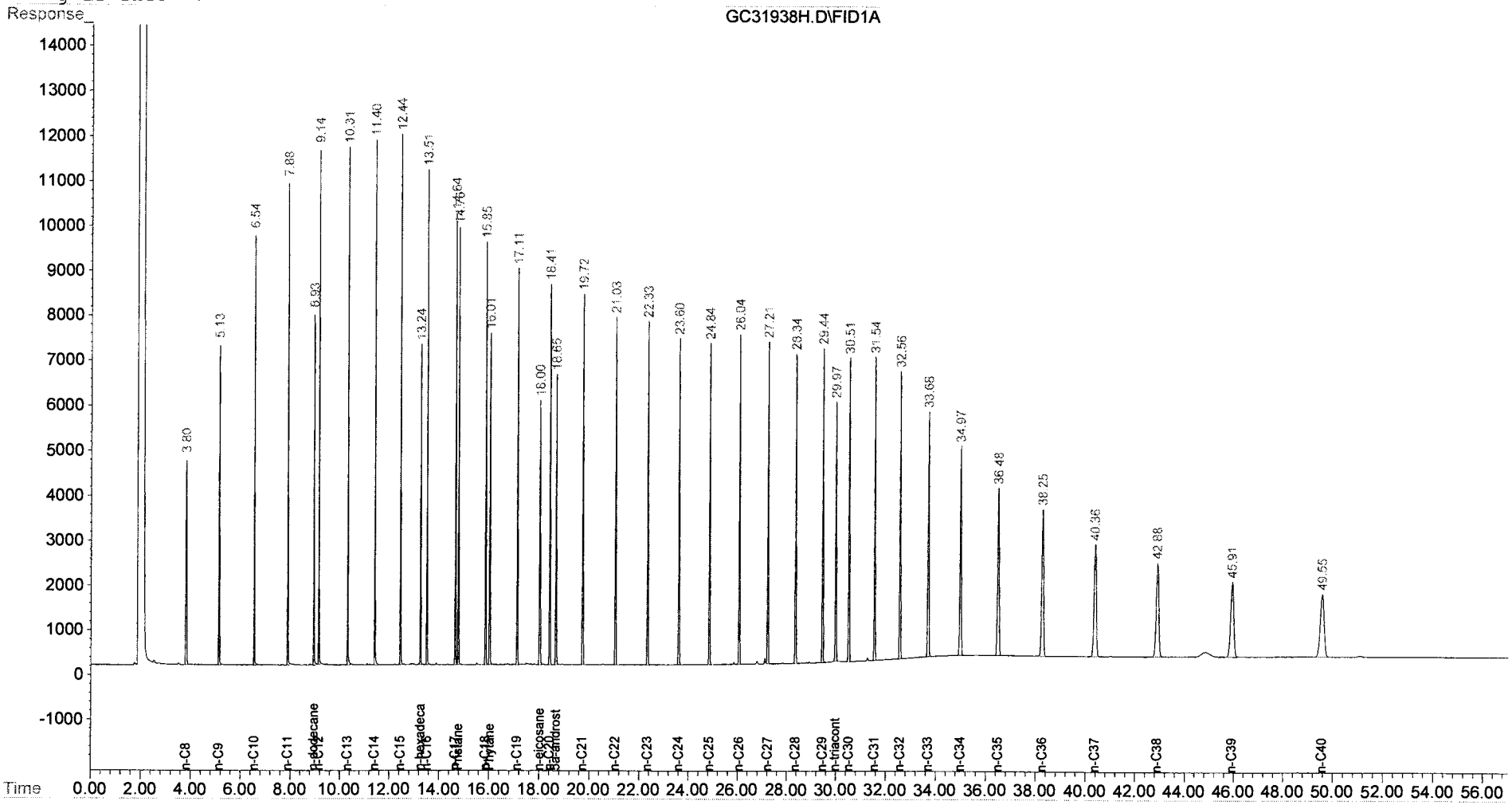
Quantitation Report

Data File : L:\1\DATA\GC31938\GC31938H.D
Acq On : 22 Mar 2012 8:19 pm
Sample : AL-WKCC-25-018 (ICV)
Misc :
IntFile : autoint1.e
Quant Time: Mar 26 17:19 2012 Quant Results File: C08F0323.RES

Vial: 8
Operator: MAG
Inst : GC3
Multiplr: 1.00

Quant Method : L:\1\METHODS\C08F0323.M (Chemstation Integrator)
Title : C8 - C40 aliphatic
Last Update : Mon Mar 26 17:11:12 2012
Response via : Multiple Level Calibration
DataAcq Meth : ALI.M

Volume Inj. :
Signal Phase :
Signal Info :



Polycyclic Aromatic Hydrocarbon Initial Calibration Data and Initial Calibration Verification Data

PAH ICAL
AR 30860.M

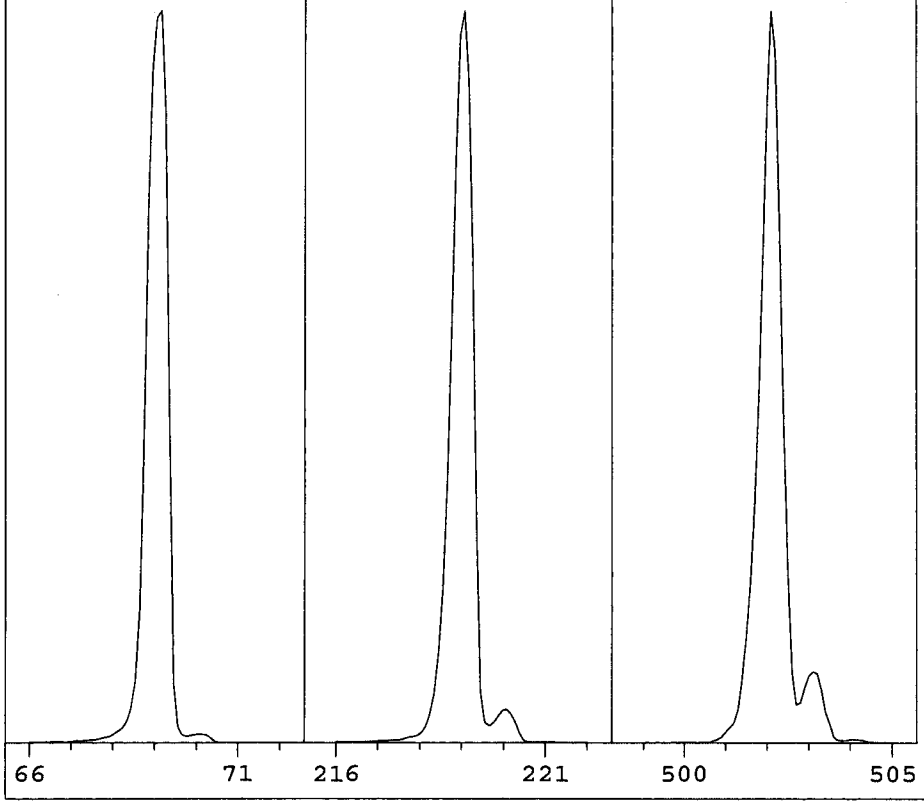
GC/MS 3
(PAH-2010)

HP5972 Standard Spectra AutoTune

Instrument: GC/MS Instrument #1

Thu Apr 05 10:40:50 2012 C:\HPCHEM\1\5972\ATUNE.U

Mass	69.10	Mass	219.00	Mass	502.05
Ab	359898	Ab	155448	Ab	16141
Pw50	0.56	Pw50	0.58	Pw50	0.56

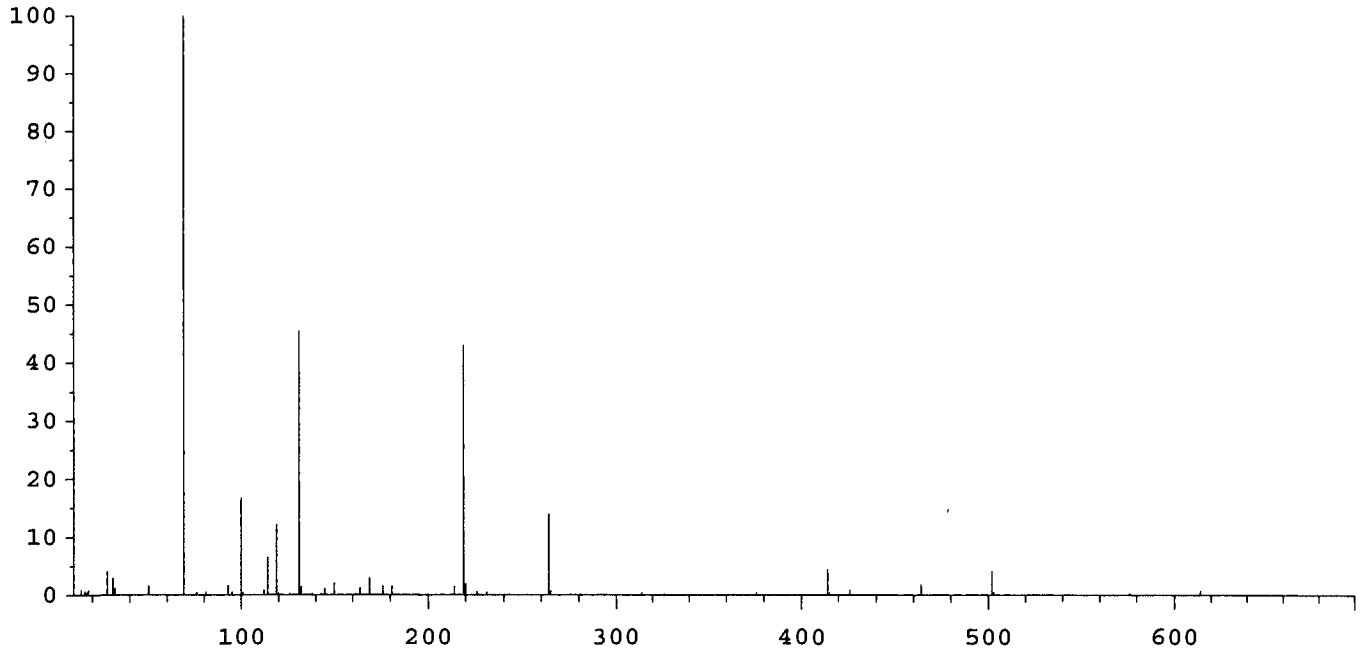


EMVolts	2200	AmuGain	481
Xray	55.6	AmuOffs	65
Emission	35.0	Wid219	-0.085
MS Temp	167	TTI	OFF
Vacuum	53	DC Pol	NEG
Samples	8	Repeller	25.03
Averages	3	IonFocus	87.0
StepSize	0.10	EntLens	7.03
MassGain	-134	EntOffs	18.57
MassOffs	2	Filament	1

PFTBA OPEN

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100

109 peaks Base: 69.00 Abundance: 328960



Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	328960	100.00	0.00	0	0.00
219.00	141568	43.04	220.00	6357	4.49
502.05	13593	4.13	503.05	1412	10.39

MS 30860

Response Factor Report GC/MS Ins

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration

Calibration Files
1 =MS30860B.D 2 =MS30860C.D 3 =MS30860D.D
4 =MS30860E.D 5 =MS30860F.D

		Compound	1	2	3	4	5	Avg	%RSD
1)	I	Fluorene-d10	----------ISTD----------						
2)	S	Naphthalene-d8	1.564	1.617	1.572	1.632	1.729	1.623	4.06
3)	T	cis/trans Decalin	0.356	0.308	0.288	0.291	0.303	0.309	8.88
4)	un	C1-Decalins	0.356	0.308	0.288	0.291	0.303	0.309	8.88
5)	un	C2-Decalins	0.356	0.308	0.288	0.291	0.303	0.309	8.88
6)	un	C3-Decalins	0.356	0.308	0.288	0.291	0.303	0.309	8.88
7)	un	C4-Decalins	0.356	0.308	0.288	0.291	0.303	0.309	8.88
8)	T	Naphthalene	1.782	1.817	1.791	1.863	1.905	1.832	2.82
9)	T	2-Methylnaphthalene	1.090	1.131	1.151	1.168	1.205	1.149	3.72
10)	T	1-Methylnaphthalene	0.990	1.026	1.065	1.085	1.120	1.057	4.79
11)	T	2,6-Dimethylnaphthale	0.808	0.887	0.918	0.940	0.994	0.909	7.57
12)	T	1,6,7-Trimethylnaphth	1.009	0.990	1.024	1.065	1.117	1.041	4.87
13)	un	C2-Naphthalenes	1.782	1.817	1.791	1.863	1.905	1.832	2.82
14)	un	C3-Naphthalenes	1.782	1.817	1.791	1.863	1.905	1.832	2.82
15)	un	C4-Naphthalenes	1.782	1.817	1.791	1.863	1.905	1.832	2.82
16)	T	Benzothiophene	1.364	1.462	1.465	1.509	1.504	1.461	3.97
17)	un	C1-Benzothiophenes	1.364	1.462	1.465	1.509	1.504	1.461	3.97
18)	un	C2-Benzothiophenes	1.364	1.462	1.465	1.509	1.504	1.461	3.97
19)	un	C3-Benzothiophenes	1.364	1.462	1.465	1.509	1.504	1.461	3.97
20)	un	C4-Benzothiophenes	1.364	1.462	1.465	1.509	1.504	1.461	3.97
21)	S	Acenaphthene-d10	0.882	0.885	0.864	0.889	0.955	0.895	3.92
22)	T	Biphenyl	1.316	1.321	1.342	1.323	1.370	1.334	1.66
23)	T	Acenaphthylene	1.602	1.746	1.748	1.849	1.926	1.774	6.91
24)	T	Acenaphthene	0.898	0.977	1.006	1.049	1.084	1.003	7.11
25)	T	Dibenzofuran	1.558	1.608	1.650	1.689	1.778	1.657	5.03
26)	T	Fluorene	1.176	1.298	1.323	1.397	1.438	1.326	7.63
27)	T	1-Methylfluorene	0.772	0.704	0.702	0.739	0.818	0.747	6.51
28)	un	C1-Fluorenes	1.176	1.298	1.323	1.397	1.438	1.326	7.63
29)	un	C2-Fluorenes	1.176	1.298	1.323	1.397	1.438	1.326	7.63
30)	un	C3-Fluorenes	1.176	1.298	1.323	1.397	1.438	1.326	7.63
31)	I	Pyrene-d10	----------ISTD----------						
32)	S	Phenanthrene-d10	1.088	1.112	1.047	1.113	1.163	1.105	3.80
33)	T	Carbazole	0.841	0.930	0.911	1.022	1.136	0.968	11.75
34)	T	Dibenzothiophene	1.208	1.258	1.239	1.308	1.389	1.280	5.51
35)	T	4-Methyldibenzothioph	0.860	0.910	0.896	0.926	0.921	0.903	2.91
36)	un	2/3-Methyldibenzothio	0.860	0.910	0.896	0.926	0.921	0.903	2.91
37)	un	1-Methyldibenzothioph	0.860	0.910	0.896	0.926	0.921	0.903	2.91
38)	un	C2-Dibenzothiophenes	1.208	1.258	1.239	1.308	1.389	1.280	5.51
39)	un	C3-Dibenzothiophenes	1.208	1.258	1.239	1.308	1.389	1.280	5.51
40)	un	C4-Dibenzothiophenes	1.208	1.258	1.239	1.308	1.389	1.280	5.51
41)	T	Phenanthrene	0.957	1.043	1.036	1.107	1.136	1.056	6.62
42)	T	Anthracene	0.901	0.992	0.997	1.062	1.126	1.015	8.30
43)	un	3-Methylphenanthrene	0.930	0.989	0.971	1.013	1.060	0.993	4.86
44)	un	2/4-Methylphenanthren	0.930	0.989	0.971	1.013	1.060	0.993	4.86
45)	un	2-Methylanthracene	0.930	0.989	0.971	1.013	1.060	0.993	4.86
46)	un	9-Methylphenanthrene	0.930	0.989	0.971	1.013	1.060	0.993	4.86
47)	T	1-Methylphenanthrene	0.930	0.989	0.971	1.013	1.060	0.993	4.86
48)	T	3,6-Dimethylphenanthr	0.850	0.837	0.822	0.843	0.910	0.853	3.97
49)	T	Retene	0.243	0.207	0.191	0.200	0.234	0.215	10.39
50)	un	C2-Phenanthrenes/Anth	0.957	1.043	1.036	1.107	1.136	1.056	6.62
51)	un	C3-Phenanthrenes/Anth	0.957	1.043	1.036	1.107	1.136	1.056	6.62
52)	un	C4-Phenanthrenes/Anth	0.957	1.043	1.036	1.107	1.136	1.056	6.62

(#) = Out of Range

Response Factor Report GC/MS Ins

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration

Calibration Files
1 =MS30860B.D 2 =MS30860C.D 3 =MS30860D.D
4 =MS30860E.D 5 =MS30860F.D

		Compound	1	2	3	4	5	Avg	%RSD
53)	T	Naphthobenzothiophene	1.157	1.290	1.272	1.346	1.376	1.288	6.55
54)	un	C1-Naphthobenzothioph	1.157	1.290	1.272	1.346	1.376	1.288	6.55
55)	un	C2-Naphthobenzothioph	1.157	1.290	1.272	1.346	1.376	1.288	6.55
56)	un	C3-Naphthobenzothioph	1.157	1.290	1.272	1.346	1.376	1.288	6.55
57)	un	C4-Naphthobenzothioph	1.157	1.290	1.272	1.346	1.376	1.288	6.55
58)	T	Fluoranthene	1.466	1.319	1.251	1.348	1.542	1.385	8.48
59)	T	Pyrene	1.531	1.583	1.513	1.605	1.738	1.594	5.57
60)	T	2-Methylfluoranthene	0.987	0.948	0.872	0.932	0.984	0.944	4.98
61)	T	Benzo(b)fluorene	0.683	0.701	0.686	0.712	0.761	0.709	4.48
62)	un	C1-Fluoranthenes/Pyre	1.466	1.319	1.251	1.348	1.542	1.385	8.48
63)	un	C2-Fluoranthenes/Pyre	1.466	1.319	1.251	1.348	1.542	1.385	8.48
64)	un	C3-Fluoranthenes/Pyre	1.466	1.319	1.251	1.348	1.542	1.385	8.48
65)	un	C4-Fluoranthenes/Pyre	1.466	1.319	1.251	1.348	1.542	1.385	8.48
66)	S	Chrysene-d12	1.068	1.162	1.136	1.209	1.264	1.168	6.34
67)	T	Benz(a)anthracene	1.264	1.283	1.265	1.320	1.510	1.329	7.82
68)	T	Chrysene/Triphenylene	1.021	1.200	1.220	1.297	1.299	1.208	9.38
69)	un	C1-Chrysenes	1.021	1.200	1.220	1.297	1.299	1.208	9.38
70)	un	C2-Chrysenes	1.021	1.200	1.220	1.297	1.299	1.208	9.38
71)	un	C3-Chrysenes	1.021	1.200	1.220	1.297	1.299	1.208	9.38
72)	un	C4-Chrysenes	1.021	1.200	1.220	1.297	1.299	1.208	9.38
73)	I	Benzo(a)pyrene-d12	----------ISTD----------						
74)	un	C29-Hopane	0.634	0.503	0.481	0.479	0.502	0.520	12.46
75)	un	18a-Oleanane	0.634	0.503	0.481	0.479	0.502	0.520	12.46
76)	T	C30-Hopane	0.634	0.503	0.481	0.479	0.502	0.520	12.46
77)	T	Benzo(b)fluoranthene	1.534	1.556	1.577	1.647	1.681	1.599	3.89
78)	T	Benzo(k,j)fluoranthen	1.440	1.323	1.322	1.491	1.742	1.464	11.76
79)	un	Benzo(a)fluoranthene	1.440	1.323	1.322	1.491	1.742	1.464	11.76
80)	T	Benzo(e)pyrene	1.574	1.473	1.479	1.616	1.597	1.548	4.34
81)	T	Benzo(a)pyrene	1.117	1.159	1.191	1.303	1.346	1.223	7.98
82)	T	Indeno(1,2,3-c,d)pyre	0.808	0.834	0.862	0.961	1.033	0.900	10.50
83)	T	Dibenzo(a,h)anthracen	0.689	0.648	0.663	0.735	0.784	0.704	7.89
84)	un	C1-Dibenzo(a,h)anthra	0.689	0.648	0.663	0.735	0.784	0.704	7.89
85)	un	C2-Dibenzo(a,h)anthra	0.689	0.648	0.663	0.735	0.784	0.704	7.89
86)	un	C3-Dibenzo(a,h)anthra	0.689	0.648	0.663	0.735	0.784	0.704	7.89
87)	T	Benzo(g,h,i)perylene	0.751	0.762	0.772	0.846	0.928	0.812	9.22
88)	S	Perylene-d12	1.178	1.127	1.127	1.245	1.395	1.214	9.21
89)	T	Perylene	1.275	1.272	1.350	1.455	1.467	1.364	6.91
90)	S	5(b)H-Cholane	0.420	0.401	0.379	0.358	0.319	0.375	10.46
91)	un	C20-TAS	2.582	2.009	1.918	2.088	2.212	2.162	11.97
92)	un	C21-TAS	2.582	2.009	1.918	2.088	2.212	2.162	11.97
93)	un	C26(20S)-TAS	2.582	2.009	1.918	2.088	2.212	2.162	11.97
94)	T	C26(20R)/C27(20S)-TAS	2.582	2.009	1.918	2.088	2.212	2.162	11.97
95)	un	C28(20S)-TAS	2.582	2.009	1.918	2.088	2.212	2.162	11.97
96)	un	C27(20R)-TAS	2.582	2.009	1.918	2.088	2.212	2.162	11.97
97)	un	C28(20R)-TAS	2.582	2.009	1.918	2.088	2.212	2.162	11.97

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860B.D Vial: 2
Acq On : 5 Apr 2012 11:56 am Operator: YM
Sample : AR-WKC1-020-026 Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 7:33 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Thu Mar 22 18:22:29 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	4220m	49.46	0.00
31) Pyrene-d10	29.33	212	7858m	49.47	-0.03
73) Benzo(a)pyrene-d12	38.01	264	4082m	49.41	-0.04
System Monitoring Compounds					
2) Naphthalene-d8	13.52	136	2673m	16.96	0.00
21) Acenaphthene-d10	19.37	164	1507m	16.37	0.00
32) Phenanthrene-d10	24.44	188	3459m	20.42	0.00
66) Chrysene-d12	33.51	240	3397m	27.60	0.00
88) Perylene-d12	38.32	264	1947m	17.68	0.00
90) 5(b)H-Cholane	33.90	217	687m	12.36	-0.04
Target Compounds					Qvalue
3) cis/trans Decalin	10.87	138	608m	20.10	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	13.57	128	3043m	17.66	
9) 2-Methylnaphthalene	15.83	142	1863m	16.73	
10) 1-Methylnaphthalene	16.16	142	1693m	16.16	
11) 2,6-Dimethylnaphthalene	17.93	156	1380m	15.03	
12) 1,6,7-Trimethylnaphthalene	20.78	170	1725m	19.38	
13) C2-Naphthalenes	0.00	156	0	N.D. d	
14) C3-Naphthalenes	0.00	170	0	N.D. d	
15) C4-Naphthalenes	0.00	184	0	N.D. d	
16) Benzothiophene	13.74	134	2331m	16.73	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	17.40	154	2253m	16.57	
23) Acenaphthylene	18.86	152	2735m	17.10	
24) Acenaphthene	19.45	154	1534m	15.61	
25) Dibenzofuran	20.07	168	2661m	16.15	
26) Fluorene	21.23	166	2007m	16.41	
27) 1-Methylfluorene	23.21	180	1314m	15.90	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	25.27	167	2674m	16.52	
34) Dibenzothiophene	24.09	184	3842m	19.60	
35) 4-Methyldibenzothiophene	25.59	198	2719m	22.67	
36) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
37) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
38) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	24.51	178	3040m	17.12	
42) Anthracene	24.68	178	2863m	17.65	
43) 3-Methylphenanthrene	0.00	192	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860B.D Vial: 2
Acq On : 5 Apr 2012 11:56 am Operator: YM
Sample : AR-WKC1-020-026 Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 7:33 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Thu Mar 22 18:22:29 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	0.00	192	0	N.D. d	
45)	2-Methylanthracene	0.00	192	0	N.D. d	
46)	9-Methylphenanthrene	0.00	192	0	N.D. d	
47)	1-Methylphenanthrene	26.64	192	2958m	22.61	
48)	3,6-Dimethylphenanthrene	27.72	206	2696m	25.76	
49)	Retene	30.41	234	757m	20.96	
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
53)	Naphthobenzothiophene	32.65	234	3700m	28.66	
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D. d	
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D. d	
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D. d	
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D. d	
58)	Fluoranthene	28.63	202	4659m	18.50	
59)	Pyrene	29.40	202	4865m	22.81	
60)	2-Methylfluoranthene	30.17	216	3079m	21.33	
61)	Benzo(b)fluorene	30.76	216	2241m	19.53	
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D. d	
67)	Benz(a)anthracene	33.47	228	4019m	30.56	
68)	Chrysene/Triphenylene	33.59	228	3247m	26.23	
69)	C1-Chrysenes	0.00	242	0	N.D. d	
70)	C2-Chrysenes	0.00	256	0	N.D. d	
71)	C3-Chrysenes	0.00	270	0	N.D. d	
72)	C4-Chrysenes	0.00	284	0	N.D. d	
74)	C29-Hopane	0.00	191	0	N.D. d	
75)	18a-Oleanane	0.00	191	0	N.D. d	
76)	C30-Hopane	42.24	191	1032m	22.35	
77)	Benzo(b)fluoranthene	36.99	252	2536m	18.14	
78)	Benzo(k,j)fluoranthene	37.07	252	2381m	15.27	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
80)	Benzo(e)pyrene	37.93	252	2604m	17.69	
81)	Benzo(a)pyrene	38.09	252	1846m	18.24	
82)	Indeno(1,2,3-c,d)pyrene	42.65	276	1336m	26.77	
83)	Dibenzo(a,h)anthracene	42.72	278	1139m	37.56	
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D. d	
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D. d	
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D. d	
87)	Benzo(g,h,i)perylene	43.94	276	1241m	22.51	
89)	Perylene	38.40	252	2111m	18.25	
91)	C20-TAS	0.00	231	0	N.D. d	
92)	C21-TAS	0.00	231	0	N.D. d	
93)	C26(20S)-TAS	0.00	231	0	N.D. d	
94)	C26(20R)/C27(20S)-TAS	39.03	231	4258	25.18	
95)	C28(20S)-TAS	0.00	231	0	N.D. d	
96)	C27(20R)-TAS	0.00	231	0	N.D. d	
97)	C28(20R)-TAS	0.00	231	0	N.D. d	

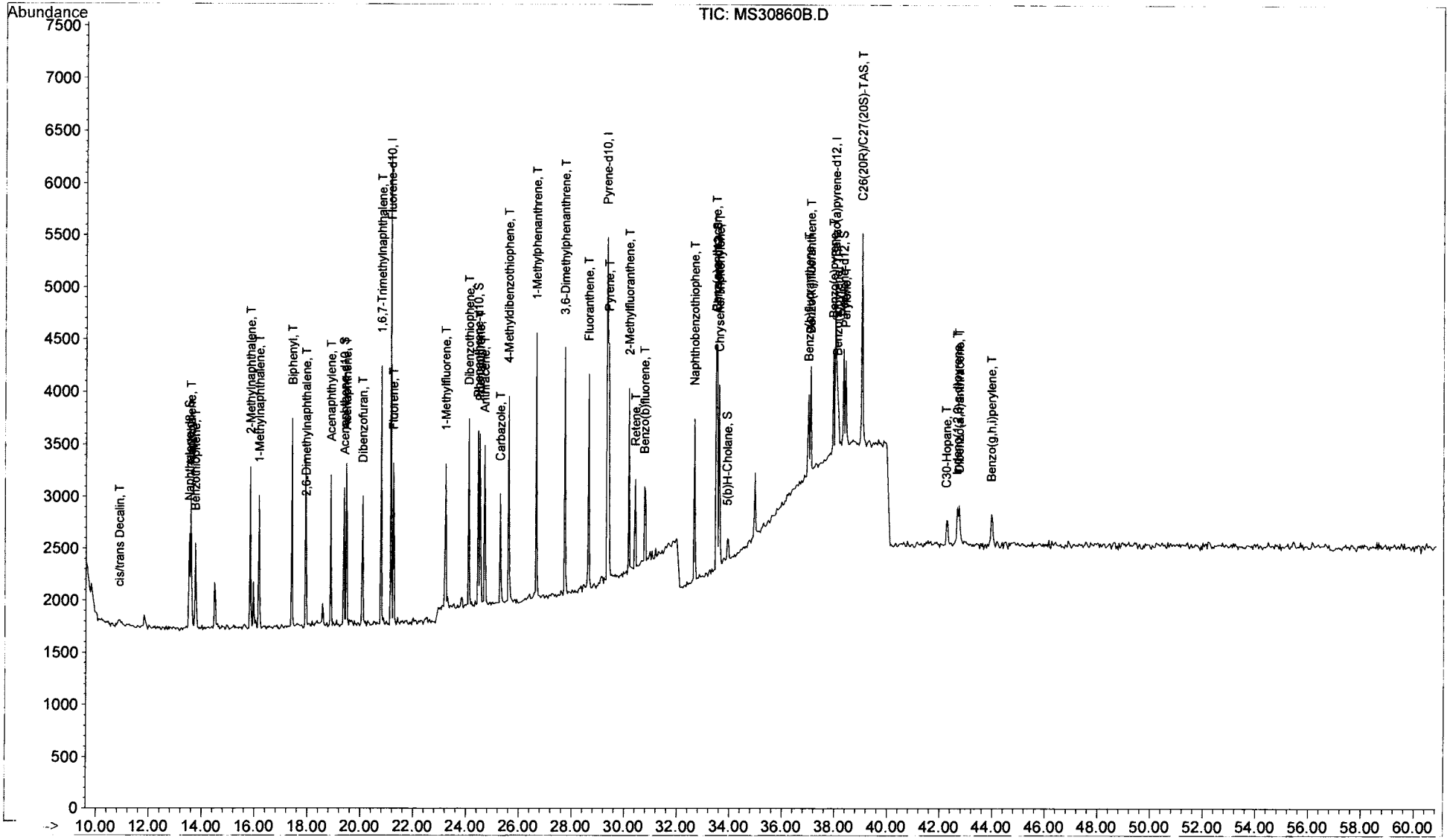
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\GCMS3\MS30860\MS30860B.D
Acq On : 5 Apr 2012 11:56 am
Sample : AR-WKC1-020-026
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 7:33 2012

Vial: 2
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860C.D
Acq On : 5 Apr 2012 1:05 pm
Sample : AR-WKC2-100-026
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 7:33 2012

Vial: 3
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Thu Mar 22 18:22:29 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	4781m	49.46	0.00
31) Pyrene-d10	29.33	212	9413m	49.47	-0.03
73) Benzo(a)pyrene-d12	38.01	264	4936m	49.41	-0.04
System Monitoring Compounds					
2) Naphthalene-d8	13.52	136	15651m	87.65	0.00
21) Acenaphthene-d10	19.37	164	8562m	82.11	0.00
32) Phenanthrene-d10	24.44	188	21177m	104.34	0.00
66) Chrysene-d12	33.52	240	22132m	150.12	0.00
88) Perylene-d12	38.32	264	11270	84.62	0.00
90) 5(b)H-Cholane	33.91	217	3965	59.00	-0.04
Target Compounds					Qvalue
3) cis/trans Decalin	10.85	138	2984m	87.06	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	13.57	128	17579m	90.06	
9) 2-Methylnaphthalene	15.82	142	10954m	86.81	
10) 1-Methylnaphthalene	16.16	142	9944m	83.77	
11) 2,6-Dimethylnaphthalene	17.91	156	8585m	82.56	
12) 1,6,7-Trimethylnaphthalene	20.77	170	9586m	95.06	
13) C2-Naphthalenes	0.00	156	0	N.D. d	
14) C3-Naphthalenes	0.00	170	0	N.D. d	
15) C4-Naphthalenes	0.00	184	0	N.D. d	
16) Benzothiophene	13.74	134	14146m	89.62	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	17.40	154	12806m	83.11	
23) Acenaphthylene	18.86	152	16890m	93.22	
24) Acenaphthene	19.45	154	9451m	84.90	
25) Dibenzofuran	20.07	168	15558m	83.36	
26) Fluorene	21.22	166	12557m	90.60	
27) 1-Methylfluorene	23.21	180	6794m	72.55	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	25.27	167	17694m	91.23	
34) Dibenzothiophene	24.09	184	23964m	102.05	
35) 4-Methyldibenzothiophene	25.59	198	17233m	119.93	
36) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
37) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
38) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	24.51	178	19845m	93.32	
42) Anthracene	24.68	178	18887m	97.19	
43) 3-Methylphenanthrene	0.00	192	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860C.D
Acq On : 5 Apr 2012 1:05 pm
Sample : AR-WKC2-100-026
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 7:33 2012

Vial: 3
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Thu Mar 22 18:22:29 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	0.00	192	0	N.D. d	
45)	2-Methylanthracene	0.00	192	0	N.D. d	
46)	9-Methylphenanthrene	0.00	192	0	N.D. d	
47)	1-Methylphenanthrene	26.64	192	18844	120.25	
48)	3,6-Dimethylphenanthrene	27.72	206	15887m	126.73	
49)	Retene	30.41	234	3859m	89.20	
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
53)	Naphthobenzothiophene	32.66	234	24699m	159.71	
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D. d	
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D. d	
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D. d	
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D. d	
58)	Fluoranthene	28.63	202	25100m	83.20	
59)	Pyrene	29.40	202	30124m	117.89	
60)	2-Methylfluoranthene	30.17	216	17711m	102.43	
61)	Benzo(b)fluorene	30.76	216	13777m	100.21	
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D. d	
67)	Benz(a)anthracene	33.48	228	24434m	155.09	
68)	Chrysene/Triphenylene	33.59	228	22841m	154.03	
69)	C1-Chrysenes	0.00	242	0	N.D. d	
70)	C2-Chrysenes	0.00	256	0	N.D. d	
71)	C3-Chrysenes	0.00	270	0	N.D. d	
72)	C4-Chrysenes	0.00	284	0	N.D. d	
74)	C29-Hopane	0.00	191	0	N.D. d	
75)	18a-Oleanane	0.00	191	0	N.D. d	
76)	C30-Hopane	42.24	191	4954	88.73	
77)	Benzo(b)fluoranthene	37.00	252	15552	91.98	
78)	Benzo(k,j)fluoranthene	37.07	252	13222	70.11	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
80)	Benzo(e)pyrene	37.93	252	14734	82.78	
81)	Benzo(a)pyrene	38.09	252	11580	94.61	
82)	Indeno(1,2,3-c,d)pyrene	42.65	276	8332	138.08	
83)	Dibenzo(a,h)anthracene	42.72	278	6478	176.64	
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D. d	
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D. d	
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D. d	
87)	Benzo(g,h,i)perylene	43.94	276	7614	114.24	
89)	Perylene	38.40	252	12732	91.00	
91)	C20-TAS	0.00	231	0	N.D. d	
92)	C21-TAS	0.00	231	0	N.D. d	
93)	C26(20S)-TAS	0.00	231	0	N.D. d	
94)	C26(20R)/C27(20S)-TAS	39.03	231	20032	97.97	
95)	C28(20S)-TAS	0.00	231	0	N.D. d	
96)	C27(20R)-TAS	0.00	231	0	N.D. d	
97)	C28(20R)-TAS	0.00	231	0	N.D. d	

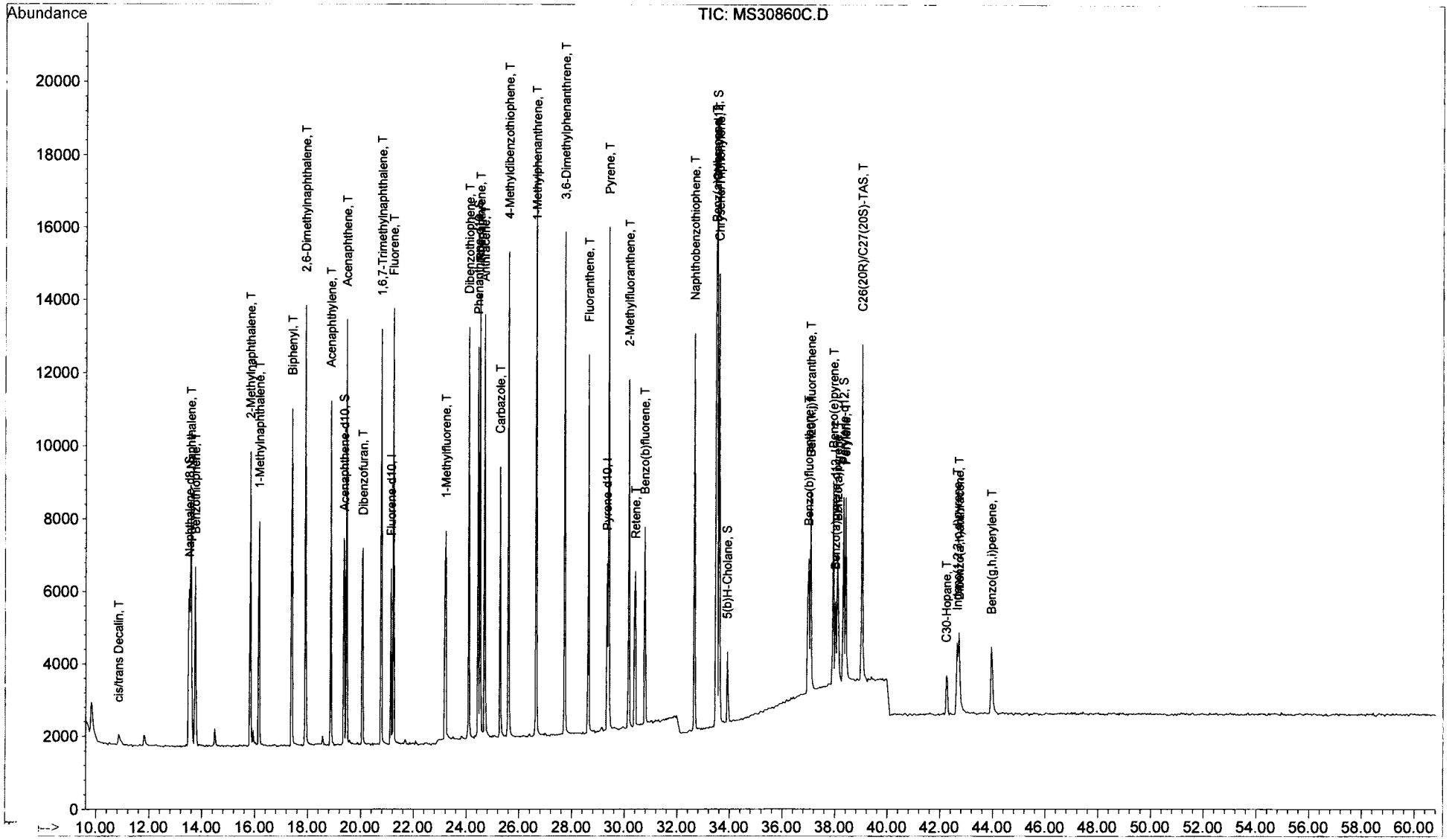
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\GCMS3\MS30860\MS30860C.D
Acq On : 5 Apr 2012 1:05 pm
Sample : AR-WKC2-100-026
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 7:33 2012

Vial: 3
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860D.D
Acq On : 5 Apr 2012 2:13 pm
Sample : AR-WKC3-250-026
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 7:35 2012

Vial: 4
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Thu Mar 22 18:22:29 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	5657m	49.46	0.00
31) Pyrene-d10	29.33	212	11881m	49.47	-0.03
73) Benzo(a)pyrene-d12	38.01	264	6287m	49.41	-0.04
System Monitoring Compounds					
2) Naphthalene-d8	13.52	136	45009m	213.04	0.00
21) Acenaphthene-d10	19.34	164	24727m	200.42	-0.03
32) Phenanthrene-d10	24.44	188	62941m	245.69	0.00
66) Chrysene-d12	33.52	240	68290m	366.99	0.00
88) Perylene-d12	38.32	264	35870	211.45	0.00
90) 5(b)H-Cholane	33.91	217	11943	139.52	-0.04
Target Compounds					Qvalue
3) cis/trans Decalin	10.85	138	8237m	203.12	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	13.57	128	51260m	221.95	
9) 2-Methylnaphthalene	15.82	142	32957m	220.74	
10) 1-Methylnaphthalene	16.16	142	30511m	217.22	
11) 2,6-Dimethylnaphthalene	17.91	156	26261m	213.43	
12) 1,6,7-Trimethylnaphthalene	20.77	170	29332m	245.82	
13) C2-Naphthalenes	0.00	156	0	N.D. d	
14) C3-Naphthalenes	0.00	170	0	N.D. d	
15) C4-Naphthalenes	0.00	184	0	N.D. d	
16) Benzothiophene	13.74	134	41930	224.50	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	17.40	154	38479m	211.05	
23) Acenaphthylene	18.86	152	50002m	233.24	
24) Acenaphthene	19.45	154	28776m	218.46	
25) Dibenzofuran	20.04	168	47211m	213.79	
26) Fluorene	21.22	166	37836m	230.73	
27) 1-Methylfluorene	23.21	180	20042m	180.89	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	25.27	167	54714m	223.51	
34) Dibenzothiophene	24.09	184	74480m	251.29	
35) 4-Methyldibenzothiophene	25.59	198	53522m	295.11	
36) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
37) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
38) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	24.51	178	62190m	231.69	
42) Anthracene	24.68	178	59925m	244.31	
43) 3-Methylphenanthrene	0.00	192	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860D.D
Acq On : 5 Apr 2012 2:13 pm
Sample : AR-WKC3-250-026
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 7:35 2012

Vial: 4
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Thu Mar 22 18:22:29 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	0.00	192	0	N.D. d	
45)	2-Methylanthracene	0.00	192	0	N.D. d	
46)	9-Methylphenanthrene	0.00	192	0	N.D. d	
47)	1-Methylphenanthrene	26.64	192	58353	295.02	
48)	3,6-Dimethylphenanthrene	27.72	206	49270m	311.38	
49)	Retene	30.41	234	11267m	206.33	
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
53)	Naphthobenzothiophene	32.66	234	76876m	393.85	
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D. d	
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D. d	
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D. d	
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D. d	
58)	Fluoranthene	28.63	202	75102m	197.23	
59)	Pyrene	29.40	202	90889m	281.80	
60)	2-Methylfluoranthene	30.17	216	51385m	235.44	
61)	Benzo(b)fluorene	30.76	216	42498m	244.91	
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D. d	
67)	Benz(a)anthracene	33.48	228	76013m	382.24	
68)	Chrysene/Triphenylene	33.59	228	73296m	391.61	
69)	C1-Chrysenes	0.00	242	0	N.D. d	
70)	C2-Chrysenes	0.00	256	0	N.D. d	
71)	C3-Chrysenes	0.00	270	0	N.D. d	
72)	C4-Chrysenes	0.00	284	0	N.D. d	
74)	C29-Hopane	0.00	191	0	N.D. d	
75)	18a-Oleanane	0.00	191	0	N.D. d	
76)	C30-Hopane	42.24	191	15080	212.05	
77)	Benzo(b)fluoranthene	37.00	252	50181	233.01	
78)	Benzo(k,j)fluoranthene	37.07	252	42076	175.16	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
80)	Benzo(e)pyrene	37.93	252	47077	207.66	
81)	Benzo(a)pyrene	38.09	252	37893	243.07	
82)	Indeno(1,2,3-c,d)pyrene	42.65	276	27432	356.93	
83)	Dibenzo(a,h)anthracene	42.72	278	21084	451.38	
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D. d	
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D. d	
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D. d	
87)	Benzo(g,h,i)perylene	43.94	276	24563	289.34	
89)	Perylene	38.40	252	43040	241.53	
91)	C20-TAS	0.00	231	0	N.D. d	
92)	C21-TAS	0.00	231	0	N.D. d	
93)	C26(20S)-TAS	0.00	231	0	N.D. d	
94)	C26(20R)/C27(20S)-TAS	39.03	231	60876	233.76	
95)	C28(20S)-TAS	0.00	231	0	N.D. d	
96)	C27(20R)-TAS	0.00	231	0	N.D. d	
97)	C28(20R)-TAS	0.00	231	0	N.D. d	

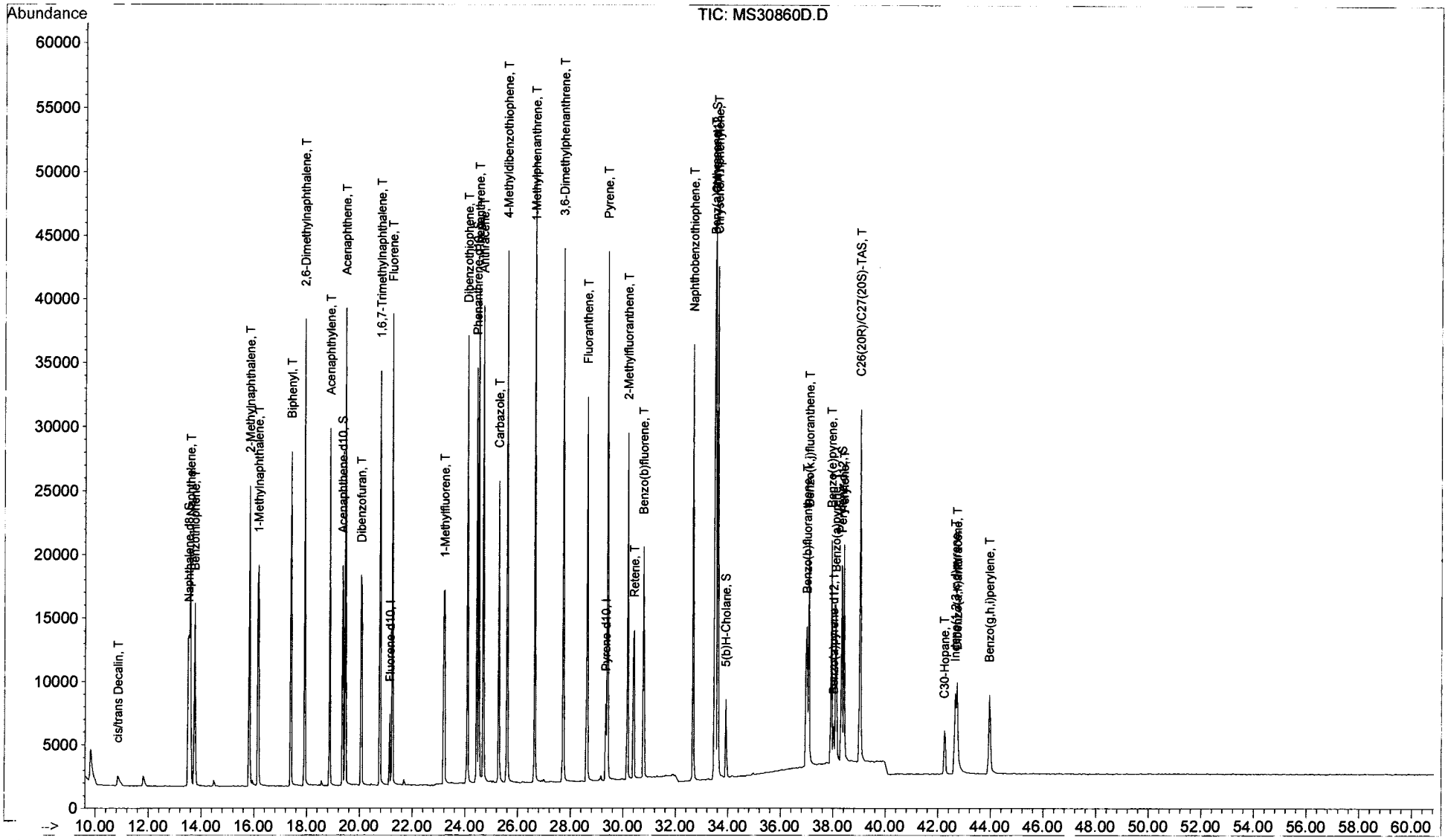
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\GCMS3\MS30860\MS30860D.D
Acq On : 5 Apr 2012 2:13 pm
Sample : AR-WKC3-250-026
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 7:35 2012

Vial: 4
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860E.D
Acq On : 5 Apr 2012 3:21 pm
Sample : AR-WKC4-500-026
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 7:36 2012

Vial: 5
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Thu Mar 22 18:22:29 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	7161m	49.46	0.00
31) Pyrene-d10	29.33	212	14830m	49.47	-0.04
73) Benzo(a)pyrene-d12	38.01	264	8429m	49.41	-0.04
System Monitoring Compounds					
2) Naphthalene-d8	13.49	136	118279m	442.26	-0.03
21) Acenaphthene-d10	19.34	164	64417m	412.46	-0.03
32) Phenanthrene-d10	24.44	188	166953m	522.11	0.00
66) Chrysene-d12	33.51	240	181372m	780.88	0.00
88) Perylene-d12	38.32	264	106257	467.20	0.00
90) 5(b)H-Cholane	33.91	217	30221	263.33	-0.04
Target Compounds					Qvalue
3) cis/trans Decalin	10.85	138	21075m	410.54	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	13.57	128	134972m	461.67	
9) 2-Methylnaphthalene	15.82	142	84677m	448.03	
10) 1-Methylnaphthalene	16.16	142	78752m	442.90	
11) 2,6-Dimethylnaphthalene	17.91	156	68093m	437.18	
12) 1,6,7-Trimethylnaphthalene	20.77	170	77215m	511.20	
13) C2-Naphthalenes	0.00	156	0	N.D. d	
14) C3-Naphthalenes	0.00	170	0	N.D. d	
15) C4-Naphthalenes	0.00	184	0	N.D. d	
16) Benzothiophene	13.74	134	109363m	462.57	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	17.40	154	96074m	416.27	
23) Acenaphthylene	18.86	152	133967m	493.66	
24) Acenaphthene	19.45	154	75977m	455.66	
25) Dibenzofuran	20.04	168	122400m	437.87	
26) Fluorene	21.22	166	101182m	487.43	
27) 1-Methylfluorene	23.21	180	53423m	380.90	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	25.27	167	153247m	501.53	
34) Dibenzothiophene	24.09	184	196230m	530.40	
35) 4-Methyldibenzothiophene	25.59	198	138038m	609.76	
36) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
37) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
38) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	24.51	178	165992m	495.44	
42) Anthracene	24.68	178	159259m	520.17	
43) 3-Methylphenanthrene	0.00	192	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860E.D
Acq On : 5 Apr 2012 3:21 pm
Sample : AR-WKC4-500-026
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 7:36 2012

Vial: 5
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Thu Mar 22 18:22:29 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	0.00	192	0	N.D. d	
45)	2-Methylanthracene	0.00	192	0	N.D. d	
46)	9-Methylphenanthrene	0.00	192	0	N.D. d	
47)	1-Methylphenanthrene	26.64	192	152010m	615.71	
48)	3,6-Dimethylphenanthrene	27.72	206	126167m	638.81	
49)	Retene	30.41	234	29405m	431.41	
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
53)	Naphthobenzothiophene	32.65	234	203049m	833.39	
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D. d	
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D. d	
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D. d	
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D. d	
58)	Fluoranthene	28.63	202	202026m	425.06	
59)	Pyrene	29.40	202	240801m	598.13	
60)	2-Methylfluoranthene	30.16	216	137179m	503.56	
61)	Benzo(b)fluorene	30.76	216	110235m	508.95	
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D. d	
67)	Benz(a)anthracene	33.48	228	197904m	797.29	
68)	Chrysene/Triphenylene	33.59	228	194580m	832.89	
69)	C1-Chrysenes	0.00	242	0	N.D. d	
70)	C2-Chrysenes	0.00	256	0	N.D. d	
71)	C3-Chrysenes	0.00	270	0	N.D. d	
72)	C4-Chrysenes	0.00	284	0	N.D. d	
74)	C29-Hopane	0.00	191	0	N.D. d	
75)	18a-Oleanane	0.00	191	0	N.D. d	
76)	C30-Hopane	42.24	191	40244	422.10	
77)	Benzo(b)fluoranthene	36.99	252	140514	486.65	
78)	Benzo(k,j)fluoranthene	37.07	252	127215	395.02	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
80)	Benzo(e)pyrene	37.93	252	137942	453.85	
81)	Benzo(a)pyrene	38.09	252	111219	532.12	
82)	Indeno(1,2,3-c,d)pyrene	42.65	276	82038	796.18	
83)	Dibenzo(a,h)anthracene	42.72	278	62674	1000.79	
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D. d	
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D. d	
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D. d	
87)	Benzo(g,h,i)perylene	43.94	276	72188	634.24	
89)	Perylene	38.40	252	124400	520.70	
91)	C20-TAS	0.00	231	0	N.D. d	
92)	C21-TAS	0.00	231	0	N.D. d	
93)	C26(20S)-TAS	0.00	231	0	N.D. d	
94)	C26(20R)/C27(20S)-TAS	39.03	231	177714	508.99	
95)	C28(20S)-TAS	0.00	231	0	N.D. d	
96)	C27(20R)-TAS	0.00	231	0	N.D. d	
97)	C28(20R)-TAS	0.00	231	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

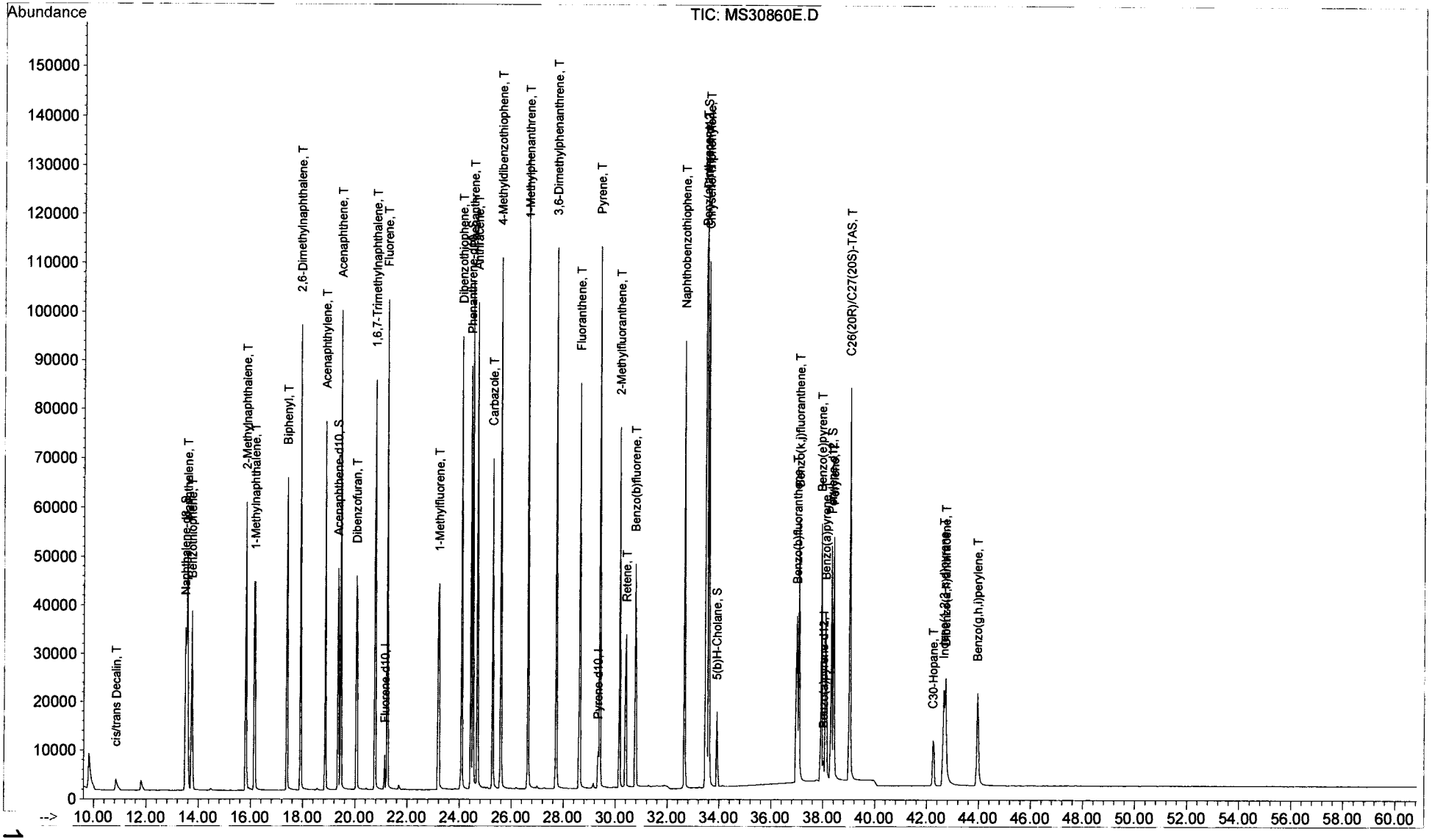
Quantitation Report

Data File : C:\GCMS3\MS30860\MS30860E.D
Acq On : 5 Apr 2012 3:21 pm
Sample : AR-WKC4-500-026
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 7:36 2012

Vial: 5
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00

Quant Results File: AR30860.RES

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860F.D Vial: 6
Acq On : 5 Apr 2012 4:30 pm Operator: YM
Sample : AR-WKC5-1000-026 Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 6 7:37 2012 Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Thu Mar 22 18:22:29 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	8552m	49.46	0.00
31) Pyrene-d10	29.33	212	16591m	49.47	-0.04
73) Benzo(a)pyrene-d12	38.01	264	10676m	49.41	-0.04
System Monitoring Compounds					
2) Naphthalene-d8	13.49	136	299299m	937.08	-0.03
21) Acenaphthene-d10	19.34	164	165388m	886.72	-0.03
32) Phenanthrene-d10	24.43	188	390296m	1091.02	0.00
66) Chrysene-d12	33.51	240	424349m	1633.08	0.00
88) Perylene-d12	38.32	264	301574m	1046.90	0.00
90) 5(b)H-Cholane	33.90	217	68189m	469.11	-0.04
Target Compounds					Qvalue
3) cis/trans Decalin	10.85	138	52527m	856.80	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	13.57	128	329590m	944.00	
9) 2-Methylnaphthalene	15.83	142	208698m	924.62	
10) 1-Methylnaphthalene	16.13	142	194052m	913.84	
11) 2,6-Dimethylnaphthalene	17.91	156	172066m	925.04	
12) 1,6,7-Trimethylnaphthalene	20.78	170	193499m	1072.70	
13) C2-Naphthalenes	0.00	156	0	N.D. d	
14) C3-Naphthalenes	0.00	170	0	N.D. d	
15) C4-Naphthalenes	0.00	184	0	N.D. d	
16) Benzothiophene	13.74	134	260281m	921.84	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	17.40	154	237605m	862.05	
23) Acenaphthylene	18.86	152	333293m	1028.40	
24) Acenaphthene	19.45	154	187585m	942.02	
25) Dibenzofuran	20.04	168	307593m	921.39	
26) Fluorene	21.23	166	248708m	1003.24	
27) 1-Methylfluorene	23.21	180	141092m	842.35	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	25.27	167	380945m	1114.38	
34) Dibenzothiophene	24.09	184	466232m	1126.45	
35) 4-Methyldibenzothiophene	25.59	198	307221m	1213.06	
36) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
37) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
38) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	24.50	178	381223m	1017.07	
42) Anthracene	24.68	178	377831m	1103.08	
43) 3-Methylphenanthrene	0.00	192	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860F.D
Acq On : 5 Apr 2012 4:30 pm
Sample : AR-WKC5-1000-026
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 7:37 2012

Vial: 6
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Thu Mar 22 18:22:29 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
44)	2/4-Methylphenanthrene	0.00	192	0	N.D.	d	
45)	2-Methylanthracene	0.00	192	0	N.D.	d	
46)	9-Methylphenanthrene	0.00	192	0	N.D.	d	
47)	1-Methylphenanthrene	26.64	192	355765m	1288.06		
48)	3,6-Dimethylphenanthrene	27.72	206	304622m	1378.65		
49)	Retene	30.41	234	76984m	1009.58		
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d	
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d	
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d	
53)	Naphthobenzothiophene	32.65	234	464468m	1704.01		
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D.	d	
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D.	d	
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D.	d	
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D.	d	
58)	Fluoranthene	28.63	202	517285m	972.83		
59)	Pyrene	29.40	202	583179m	1294.82		
60)	2-Methylfluoranthene	30.16	216	324046m	1063.25		
61)	Benzo(b)fluorene	30.76	216	263624m	1087.95		
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d	
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d	
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	d	
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D.	d	
67)	Benz(a)anthracene	33.47	228	506720m	1824.73		
68)	Chrysene/Triphenylene	33.59	228	435899m	1667.79		
69)	C1-Chrysenes	0.00	242	0	N.D.	d	
70)	C2-Chrysenes	0.00	256	0	N.D.	d	
71)	C3-Chrysenes	0.00	270	0	N.D.	d	
72)	C4-Chrysenes	0.00	284	0	N.D.	d	
74)	C29-Hopane	0.00	191	0	N.D.	d	
75)	18a-Oleanane	0.00	191	0	N.D.	d	
76)	C30-Hopane	42.27	191	106831m	884.67		
77)	Benzo(b)fluoranthene	36.99	252	363278m	993.36		
78)	Benzo(k,j)fluoranthene	37.07	252	376526m	923.08		
79)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d	
80)	Benzo(e)pyrene	37.93	252	345437m	897.33		
81)	Benzo(a)pyrene	38.09	252	290963m	1099.10		
82)	Indeno(1,2,3-c,d)pyrene	42.64	276	223293m	1710.95		
83)	Dibenzo(a,h)anthracene	42.72	278	169381m	2135.45		
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D.	d	
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D.	d	
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D.	d	
87)	Benzo(g,h,i)perylene	43.94	276	200501m	1390.84		
89)	Perylene	38.40	252	317569m	1049.48		
91)	C20-TAS	0.00	231	0	N.D.	d	
92)	C21-TAS	0.00	231	0	N.D.	d	
93)	C26(20S)-TAS	0.00	231	0	N.D.	d	
94)	C26(20R)/C27(20S)-TAS	39.03	231	476907m	1078.42		
95)	C28(20S)-TAS	0.00	231	0	N.D.	d	
96)	C27(20R)-TAS	0.00	231	0	N.D.	d	
97)	C28(20R)-TAS	0.00	231	0	N.D.	d	

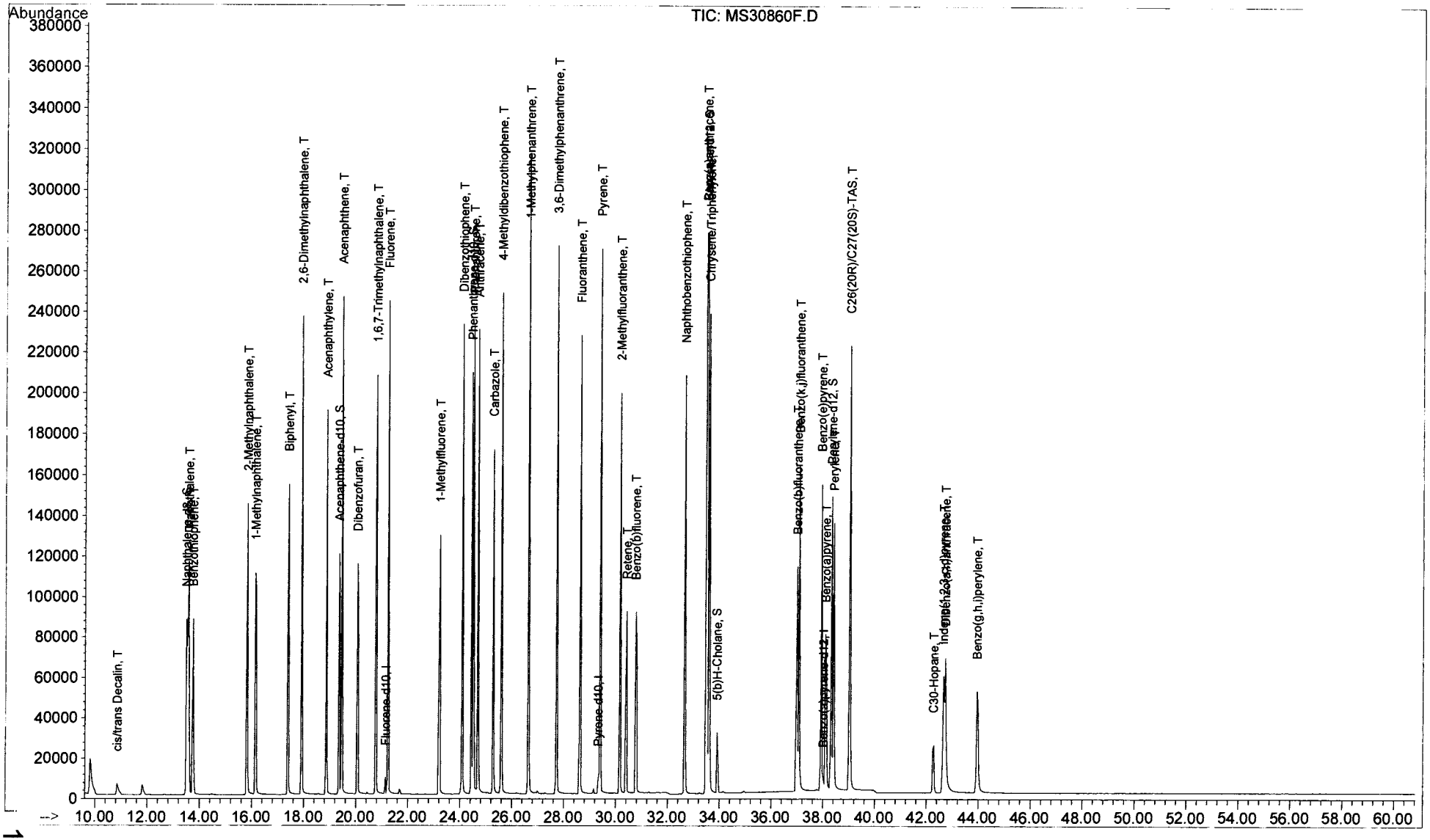
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\GCMS3\MS30860\MS30860F.D
Acq On : 5 Apr 2012 4:30 pm
Sample : AR-WKC5-1000-026
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 7:37 2012

Vial: 6
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Evaluate Continuing Calibration Report

Data File : C:\GCMS3\MS30860\MS30860G.D
Acq On : 5 Apr 2012 5:38 pm
Sample : AR-WKICV-250-001
Misc :
MS Integration Params: rteint.p

Vial: 7
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 25% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorene-d10	1.000	1.000	0.0	175	0.00
2	S	Naphthalene-d8	1.623	1.687	-3.9	188	0.03
3	T	cis/trans Decalin	0.309	0.303	1.9	185	0.00
4	un	C1-Decalins	0.309	0.000	100.0#	0#	-12.39#
5	un	C2-Decalins	0.309	0.000	100.0#	0#	-13.20#
6	un	C3-Decalins	0.309	0.000	100.0#	0#	-15.53#
7	un	C4-Decalins	0.309	0.000	100.0#	0#	-18.39#
8	T	Naphthalene	1.832	1.819	0.7	178	0.00
9	T	2-Methylnaphthalene	1.149	1.135	1.2	173	0.00
10	T	1-Methylnaphthalene	1.057	1.037	1.9	171	0.03
11	T	2,6-Dimethylnaphthalene	0.909	0.890	2.1	170	0.00
12	T	1,6,7-Trimethylnaphthalene	1.041	0.979	6.0	167	0.00
13	un	C2-Naphthalenes	1.832	0.000	100.0#	0#	-18.28#
14	un	C3-Naphthalenes	1.832	0.000	100.0#	0#	-20.56#
15	un	C4-Naphthalenes	1.832	0.000	100.0#	0#	-22.52#
16	T	Benzothiophene	1.461	1.472	-0.8	176	0.00
17	un	C1-Benzothiophenes	1.461	0.000	100.0#	0#	-15.34#
18	un	C2-Benzothiophenes	1.461	0.000	100.0#	0#	-18.34#
19	un	C3-Benzothiophenes	1.461	0.000	100.0#	0#	-20.02#
20	un	C4-Benzothiophenes	1.461	0.000	100.0#	0#	-21.79#
21	S	Acenaphthene-d10	0.895	0.929	-3.8	188	0.03
22	T	Biphenyl	1.334	1.345	-0.8	176	0.00
23	T	Acenaphthylene	1.774	1.714	3.4	172	0.00
24	T	Acenaphthene	1.003	0.990	1.3	172	0.00
25	T	Dibenzofuran	1.657	1.598	3.6	170	0.03
26	T	Fluorene	1.326	1.260	5.0	167	0.00
27	T	1-Methylfluorene	0.747	0.000	100.0#	0#	-23.21#
28	un	C1-Fluorenes	1.326	0.000	100.0#	0#	-23.17#
29	un	C2-Fluorenes	1.326	0.000	100.0#	0#	-24.94#
30	un	C3-Fluorenes	1.326	0.000	100.0#	0#	-26.58#
31	I	Pyrene-d10	1.000	1.000	0.0	145	0.00
32	S	Phenanthrene-d10	1.105	1.199	-8.5	166	0.00
33	T	Carbazole	0.968	1.012	-4.5	161	0.00
34	T	Dibenzothiophene	1.280	1.360	-6.3	159	0.00
35	T	4-Methyldibenzothiophene	0.903	0.000	100.0#	0#	-25.59#
36	un	2/3-Methyldibenzothiophene	0.903	0.000	100.0#	0#	-25.91#
37	un	1-Methyldibenzothiophene	0.903	0.000	100.0#	0#	-26.26#
38	un	C2-Dibenzothiophenes	1.280	0.000	100.0#	0#	-27.34#
39	un	C3-Dibenzothiophenes	1.280	0.000	100.0#	0#	-28.68#
40	un	C4-Dibenzothiophenes	1.280	0.000	100.0#	0#	-29.64#
41	T	Phenanthrene	1.056	1.148	-8.7	160	0.00
42	T	Anthracene	1.015	1.045	-3.0	152	0.00
43	un	3-Methylphenanthrene	0.993	0.000	100.0#	0#	-26.22#
44	un	2/4-Methylphenanthrene	0.993	0.000	100.0#	0#	-26.29#
45	un	2-Methylanthracene	0.993	0.000	100.0#	0#	-26.47#
46	un	9-Methylphenanthrene	0.993	0.000	100.0#	0#	-26.57#
47	T	1-Methylphenanthrene	0.993	1.010	-1.7	151	0.00
48	T	3,6-Dimethylphenanthrene	0.853	0.000	100.0#	0#	-27.72#
49	T	Retene	0.215	0.000	100.0#	0#	-30.41#
50	un	C2-Phenanthrenes/Anthracene	1.056	0.000	100.0#	0#	-28.11#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\GCMS3\MS30860\MS30860G.D Vial: 7
Acq On : 5 Apr 2012 5:38 pm Operator: YM
Sample : AR-WKICV-250-001 Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 25% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
51	un	C3-Phenanthrenes/Anthracene	1.056	0.000	100.0#	0#	-30.76#
52	un	C4-Phenanthrenes/Anthracene	1.056	0.000	100.0#	0#	-31.52#
53	T	Naphthobenzothiophene	1.288	0.000	100.0#	0#	-32.65#
54	un	C1-Naphthobenzothiophenes	1.288	0.000	100.0#	0#	-34.45#
55	un	C2-Naphthobenzothiophenes	1.288	0.000	100.0#	0#	-35.48#
56	un	C3-Naphthobenzothiophenes	1.288	0.000	100.0#	0#	-36.83#
57	un	C4-Naphthobenzothiophenes	1.288	0.000	100.0#	0#	-37.53#
58	T	Fluoranthene	1.385	1.323	4.5	153	0.00
59	T	Pyrene	1.594	1.591	0.2	152	0.00
60	T	2-Methylfluoranthene	0.944	0.000	100.0#	0#	-30.16#
61	T	Benzo(b)fluorene	0.709	0.000	100.0#	0#	-30.76#
62	un	C1-Fluoranthenes/Pyrenes	1.385	0.000	100.0#	0#	-31.25#
63	un	C2-Fluoranthenes/Pyrenes	1.385	0.000	100.0#	0#	-32.07#
64	un	C3-Fluoranthenes/Pyrenes	1.385	0.000	100.0#	0#	-33.70#
65	un	C4-Fluoranthenes/Pyrenes	1.385	0.000	100.0#	0#	-34.96#
66	S	Chrysene-d12	1.168	1.132	3.1	144	0.00
67	T	Benz(a)anthracene	1.329	1.147	13.7	131	0.00
68	T	Chrysene/Triphenylene	1.208	1.075	11.0	127	0.00
69	un	C1-Chrysenes	1.208	0.000	100.0#	0#	-34.90#
70	un	C2-Chrysenes	1.208	0.000	100.0#	0#	-36.36#
71	un	C3-Chrysenes	1.208	0.000	100.0#	0#	-39.10#
72	un	C4-Chrysenes	1.208	0.000	100.0#	0#	-39.10#
73	I	Benzo(a)pyrene-d12	1.000	1.000	0.0	116	0.00
74	un	C29-Hopane	0.520	0.000	100.0#	0#	-40.34#
75	un	18a-Oleanane	0.520	0.000	100.0#	0#	-41.79#
76	T	C30-Hopane	0.520	0.000	100.0#	0#	-42.27#
77	T	Benzo(b)fluoranthene	1.599	1.580	1.2	117	0.00
78	T	Benzo(k,j)fluoranthene	1.464	1.588	-8.5	140	0.00
79	un	Benzo(a)fluoranthene	1.464	0.000	100.0#	0#	-37.50#
80	T	Benzo(e)pyrene	1.548	1.742	-12.5	137	0.00
81	T	Benzo(a)pyrene	1.223	1.230	-0.6	120	0.00
82	T	Indeno(1,2,3-c,d)pyrene	0.900	0.826	8.2	111	0.00
83	T	Dibenzo(a,h)anthracene	0.704	0.597	15.2	105	0.00
84	un	C1-Dibenzo(a,h)anthracenes	0.704	0.000	100.0#	0#	-45.27#
85	un	C2-Dibenzo(a,h)anthracenes	0.704	0.000	100.0#	0#	-47.25#
86	un	C3-Dibenzo(a,h)anthracenes	0.704	0.000	100.0#	0#	-47.74#
87	T	Benzo(g,h,i)perylene	0.812	0.773	4.8	116	0.04
88	S	Perylene-d12	1.214	1.352	-11.4	140	0.00
89	T	Perylene	1.364	1.405	-3.0	121	0.00
90	S	5(b)H-Cholane	0.375	0.406	-8.3	124	0.00
91	un	C20-TAS	2.162	0.000	100.0#	0#	-33.06#
92	un	C21-TAS	2.162	0.000	100.0#	0#	-34.15#
93	un	C26(20S)-TAS	2.162	0.000	100.0#	0#	-38.21#
94	T	C26(20R)/C27(20S)-TAS	2.162	0.000	100.0#	0#	-39.03#
95	un	C28(20S)-TAS	2.162	0.000	100.0#	0#	-39.89#
96	un	C27(20R)-TAS	2.162	0.000	100.0#	0#	-40.30#
97	un	C28(20R)-TAS	2.162	0.000	100.0#	0#	-41.38#

(#) = Out of Range SPCC's out = 0 CCC's out = 0
MS30860G.D AR30860.M Mon Apr 09 07:20:59 2012

Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860G.D
Acq On : 5 Apr 2012 5:38 pm
Sample : AR-WKICV-250-001
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 8:26 2012

Vial: 7
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	21.14	176	9904m	49.46	0.00
31) Pyrene-d10	29.33	212	17195m	49.47	0.00
73) Benzo(a)pyrene-d12	38.01	264	7310m	49.41	0.00
System Monitoring Compounds					
2) Naphthalene-d8	13.52	136	84552m	260.21	0.03
21) Acenaphthene-d10	19.37	164	46544m	259.72	0.03
32) Phenanthrene-d10	24.44	188	104310m	271.68	0.00
66) Chrysene-d12	33.51	240	98495m	242.68	0.00
88) Perylene-d12	38.32	264	50047m	278.59	0.00
90) 5(b)H-Cholane	33.91	217	14867m	267.72	0.00
Target Compounds					Qvalue
3) cis/trans Decalin	10.85	138	15207m	245.62	
4) C1-Decalins	0.00	152	0	N.D. d	
5) C2-Decalins	0.00	166	0	N.D. d	
6) C3-Decalins	0.00	180	0	N.D. d	
7) C4-Decalins	0.00	194	0	N.D. d	
8) Naphthalene	13.57	128	91105m	248.38	
9) 2-Methylnaphthalene	15.82	142	56897m	247.34	
10) 1-Methylnaphthalene	16.16	142	52056m	245.93	
11) 2,6-Dimethylnaphthalene	17.91	156	44578m	244.78	
12) 1,6,7-Trimethylnaphthalene	20.77	170	49110m	235.61	
13) C2-Naphthalenes	0.00	156	0	N.D. d	
14) C3-Naphthalenes	0.00	170	0	N.D. d	
15) C4-Naphthalenes	0.00	184	0	N.D. d	
16) Benzothiophene	13.74	134	73752m	252.16	
17) C1-Benzothiophenes	0.00	148	0	N.D. d	
18) C2-Benzothiophenes	0.00	162	0	N.D. d	
19) C3-Benzothiophenes	0.00	176	0	N.D. d	
20) C4-Benzothiophenes	0.00	190	0	N.D. d	
22) Biphenyl	17.40	154	67546m	252.78	
23) Acenaphthylene	18.86	152	85865m	241.70	
24) Acenaphthene	19.45	154	49577m	246.87	
25) Dibenzofuran	20.07	168	80078m	241.40	
26) Fluorene	21.22	166	63098m	237.60	
27) 1-Methylfluorene	0.00	180	0	N.D. d	
28) C1-Fluorenes	0.00	180	0	N.D. d	
29) C2-Fluorenes	0.00	194	0	N.D. d	
30) C3-Fluorenes	0.00	208	0	N.D. d	
33) Carbazole	25.27	167	87973m	261.48	
34) Dibenzothiophene	24.09	184	118266m	265.76	
35) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
36) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
37) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
38) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
39) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
40) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
41) Phenanthrene	24.51	178	99796m	271.95	
42) Anthracene	24.68	178	90845m	257.38	
43) 3-Methylphenanthrene	0.00	192	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\GCMS3\MS30860\MS30860G.D
Acq On : 5 Apr 2012 5:38 pm
Sample : AR-WKICV-250-001
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 8:26 2012

Vial: 7
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Quant Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration
DataAcq Meth : PAH-2010

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
44)	2/4-Methylphenanthrene	0.00	192	0	N.D. d	
45)	2-Methylanthracene	0.00	192	0	N.D. d	
46)	9-Methylphenanthrene	0.00	192	0	N.D. d	
47)	1-Methylphenanthrene	26.64	192	87831m	254.56	
48)	3,6-Dimethylphenanthrene	0.00	206	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
51)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
52)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
53)	Naphthobenzothiophene	0.00	234	0	N.D. d	
54)	C1-Naphthobenzothiophenes	0.00	248	0	N.D. d	
55)	C2-Naphthobenzothiophenes	0.00	262	0	N.D. d	
56)	C3-Naphthobenzothiophenes	0.00	276	0	N.D. d	
57)	C4-Naphthobenzothiophenes	0.00	290	0	N.D. d	
58)	Fluoranthene	28.63	202	114992m	238.83	
59)	Pyrene	29.40	202	138269m	249.55	
60)	2-Methylfluoranthene	0.00	216	0	N.D. d	
61)	Benzo(b)fluorene	0.00	216	0	N.D. d	
62)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
63)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
64)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
65)	C4-Fluoranthenes/Pyrenes	0.00	258	0	N.D. d	
67)	Benz(a)anthracene	33.48	228	99735m	215.97	
68)	Chrysene/Triphenylene	33.59	228	93436m	222.62	
69)	C1-Chrysenes	0.00	242	0	N.D. d	
70)	C2-Chrysenes	0.00	256	0	N.D. d	
71)	C3-Chrysenes	0.00	270	0	N.D. d	
72)	C4-Chrysenes	0.00	284	0	N.D. d	
74)	C29-Hopane	0.00	191	0	N.D. d	
75)	18a-Oleanane	0.00	191	0	N.D. d	
76)	C30-Hopane	0.00	191	0	N.D. d	
77)	Benzo(b)fluoranthene	36.99	252	58476m	247.20	
78)	Benzo(k,j)fluoranthene	37.07	252	58765m	271.40	
79)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
80)	Benzo(e)pyrene	37.93	252	64502m	281.68	
81)	Benzo(a)pyrene	38.09	252	45515m	251.55	
82)	Indeno(1,2,3-c,d)pyrene	42.65	276	30565m	229.66	
83)	Dibenzo(a,h)anthracene	42.72	278	22088m	212.18	
84)	C1-Dibenzo(a,h)anthracenes	0.00	292	0	N.D. d	
85)	C2-Dibenzo(a,h)anthracenes	0.00	306	0	N.D. d	
86)	C3-Dibenzo(a,h)anthracenes	0.00	320	0	N.D. d	
87)	Benzo(g,h,i)perylene	43.98	276	28609m	238.24	
89)	Perylene	38.40	252	52086m	258.15	
91)	C20-TAS	0.00	231	0	N.D. d	
92)	C21-TAS	0.00	231	0	N.D. d	
93)	C26(20S)-TAS	0.00	231	0	N.D. d	
94)	C26(20R)/C27(20S)-TAS	0.00	231	0	N.D. d	
95)	C28(20S)-TAS	0.00	231	0	N.D. d	
96)	C27(20R)-TAS	0.00	231	0	N.D. d	
97)	C28(20R)-TAS	0.00	231	0	N.D. d	

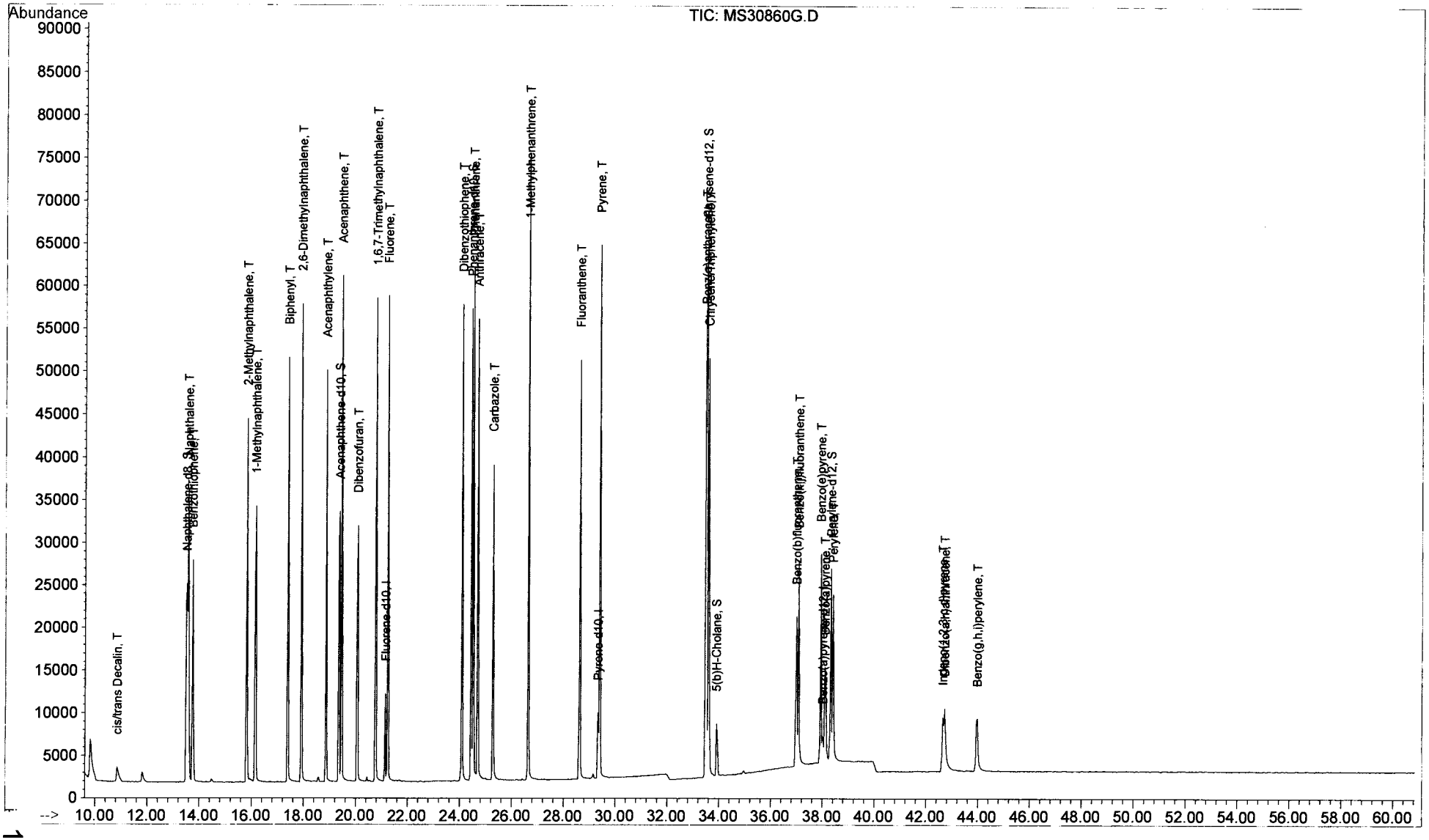
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\GCMS3\MS30860\MS30860G.D
Acq On : 5 Apr 2012 5:38 pm
Sample : AR-WKICV-250-001
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 6 8:26 2012

Vial: 7
Operator: YM
Inst : GC/MS Ins
Multiplr: 1.00
Quant Results File: AR30860.RES

Method : C:\GCMS3\MS30860\AR30860.M (RTE Integrator)
Title : PAH Calibration Table (PAH-2010)
Last Update : Fri Apr 06 07:40:02 2012
Response via : Initial Calibration



Supporting Documents

Shipping, Sample Receiving, and Project Initiation Documents

B&B LABORATORIES RECEIVING/INTEGRITY REPORT

Job: J11913 Date Received: 3/20/12 SDG#: 12032001

Sender: Arcadis- Exxon Mobil- yellowstone
Arcadis- gordon Levin

1. Number of Shipping Containers: 5

Comments: 1 of 5, large blue Cooler

2. Airbill Present? Yes/No Shipping Company: FedEx

Airbill Number: 8000 4802 6143

Comments: PON

3. Custody Seals on Container?
No Yes Intact Not Intact

Comments: None

4. Chain of Custody Records?
No Yes

Comments: COC documents for samples in Cooler 1- in Cooler 1

5. General Sample Conditions:
Frozen Cool Unrefrigerated
Dry Ice Blue Ice Ice

Temperature/Comments: 7.0°C / temp blank 6.4°C
Cooler outside temp range

6. List of Broken Containers:

None

7. Number of Samples Expected: 5 coolers Number of Samples Received: Cooler 1:

8 seds (8oz)
2 nets (8oz)

8. Problems/Discrepancies:

NET: HUMT- P5-TN (031812) 2-A
Collection time on label 17:25
collection time on COC 16:25

9. ~~Resolution~~s:

SED: HUMT- P1- SE (0.0-0.5) 2-A
Collection time on label 17:05
collection time on COC 17:15

10. Checked in by: amanda Brewster Date: 3/20/12

- cooler outside temp range
- sample labels & COC are handwritten & difficult to read.

Will contact client for clarification.

Sdg 12032001
Cooler 1 of 5
~~Large~~ Medium red code

FedEx Express **NEW Package US Airbill**

FedEx Tracking Number 8000 4802 6143

0200 Form ID No.

FedEx Retrieval Copy

From
Date 3/19/12 [redacted]
Sender's Name John Delany Phone 408 772-5714
Company Arcadis
Address 2310 N Molter Rd 101 Dept./Floor/Suite/Room
City Liberty Lake State WA ZIP 99019

Your Internal Billing Reference

To
Recipient's Name Sample Rec Phone 979 693-3446
Company B+B Laboratories
Address 1902 Pinon Dept./Floor/Suite/Room
We cannot deliver to P.O. boxes or P.O. ZIP Codes.
Address
Use this line for the HOLD location address or for continuation of your shipping address.
City College Station State TX ZIP 77845

01 ☐ HOLD Weekday — FedEx location address REQUIRED. NOT available for FedEx First Overnight.
31 ☐ HOLD Saturday — FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

8000 4802 6143

4 Express Package Service * To most locations.
NOTE: Service order has changed. Please select carefully.
Packages up to 150 lbs. For packages over 150 lbs., use the new FedEx Express Freight US Airbill.

Next Business Day
06 ☐ FedEx First Overnight — Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
01 ☑ FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
05 ☐ FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available

2 or 3 Business Days
49 ☐ NEW FedEx 2Day A.M. — Second business morning.* Saturday Delivery NOT available.
03 ☐ FedEx 2Day — Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
20 ☐ FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.
06 ☐ FedEx Envelope* 02 ☐ FedEx Pak* 03 ☐ FedEx Box 04 ☐ FedEx Tube 01 ☑ Other

6 Special Handling and Delivery Signature Options
03 ☐ **SATURDAY DELIVERY**
☐ No Signature Required — Package may be left without obtaining a signature for delivery
10 ☐ Direct Signature — Someone at recipient's address may sign for delivery. Fee applies.
34 ☐ Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods?
One box must be checked.
☑ No 04 ☐ Yes — As per attached Shipper's Declaration. ☐ Yes — Shipper's Declaration not required. 06 ☐ Dry Ice — Dry Ice, 9, UN 1845 ____ kg
Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.
☐ Cargo Aircraft Only

7 Payment *Bill to:*
Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No. ☐
1 ☐ Sender — Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash/Check
[redacted]
Total Packages 5 Total Weight 24 lbs. [redacted] Credit Card Auth.
Your liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

612

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12567 ARCADIS
Se[illegible]
Date [illegible] Time [illegible] By
[illegible] Solids [illegible]
Lancaster [illegible] 36 [illegible] 9474
Laboratories

7.0°C
temp blank
6.4°C

Cooler 1 w/ COC (not legible)

Sediment 8oz

1) 8oz ✓ HUMT-P0-SE (0.0-0.3) 1-A 3/17/12 15:30

1) 8oz ✓ HUMT-P1-SE (0.0-0.5) 1-A 3/17/12 16:45

1) 8oz ✓ HUMT-P1-SE (0.0-0.5) 2-A 3/17/12 17:05

1) 8oz ✓ HUMT-P1 (0.0-0.2) 3-A 3/18/12 09:30

1) 8oz ✓ HUMT-SE-P3 (0.0-0.2) 1-A 3/18/12 13:15

1) 8oz ✓ HUMT-SE-P3 (0.0-0.5?) 2-A 3/18/12 15:0

1) 8oz ✓ HUMT-SE-P5 (0.0-0.2) 1-A 3/18/12 16:2

1) 8oz ✓ HUMT-SE-P6 (0.0-0.3) 1-A 3/18/12 17:45

Net 8oz

1) 8oz ✓ HUMT-P5-TN (031812) 1-A 3/18/12 16:00

1) 8oz ✓ HUMT-P5-TN (031812) 2-A 3/18/12 17:25

CHAIN OF CUSTODY RECORD

B&B Laboratories, Inc

Home Office 1902 Pinon College Station TX 77845 phone (979) 693-3446 fax (979) 693-6389 http://www.tdi-bi.com

TDI Brooks

Client: XOM

Project ID: Silvertip Project Huntly Channel

B&B Contact: Report to Ted Sawyer - ARCADIS in Cary NC

Sampler Signature:

Analyses: Sdg 12032001

Other Instructions: Cooler 1 of 5 (1)

Sample ID	Sample Date	Sample Time	Sample Matrix	Preservative	Containers Type	Containers No.	PAH	TPH/SHC					Comments
HUNT-P0-SE(0.0-0.3)1-A	3/17/12	1530	S			1	X	X					Report As: Correct as Listed
HUNT-P1-SE(0.0-0.5)1-A	3/17/12	1645				1							Correct as Listed
HUNT-P1-SE(0.0-0.5)2-A	3/17/12	1715		label: 17:05		1							Correct as Listed
HUNT-P1(0.0-0.2)3-A	3/18/12	0930				1							HUNT-P1-SE(0.0-0.2)3-A
HUNT-SE-P3(0.0-0.2)1-A		1315				1							HUNT-P3-SE(0.0-0.2)1-A
HUNT-SE-P3(0.0-0.5)2-A		1500				1							HUNT-P3-SE(0.0-0.5)2-A
HUNT-SE-P5(0.0-0.2)1-A		1625				1							HUNT-P5-SE(0.0-0.2)1-A
HUNT-SE-P6(0.0-0.3)1-A		1745				1							HUNT-P6-SE(0.0-0.3)1-A
HUNT-P5-TN(03/13/12)1-A		1600	Net			1							Correct as Listed
HUNT-P5-TN(03/18/12)2-A		1625	Net	label:	17:25	1							Correct as Listed
					Total # of Containers	10							

Relinquished By	Company Name	Date	Time	Received By	Company Name	Date	Time
Printed Name: Gordon Levin	ARCADIS	3/19/12	1500	Printed Name: Amanda Brewster	B&B labs	3/20/12	14:50
Signature:				Signature: Amanda Brewster			
Printed Name:				Printed Name:			
Signature:				Signature:			

Matrix:

T=Tissue
:Soil/Sediment
:Rinseate
:Product

G=Gas
Ws=Waste
HW=Hazardous Waste
W=Water

Sample Container: Vol/material

G=Glass
P=Plastic

C=Core
B=Bag

B&B LABORATORIES RECEIVING/INTEGRITY REPORT

Job: J11913 Date Received: 3/20/12 SDG#: 12032001

Sender: Arcadis- Exxon Mobil- yellowstone

1. Number of Shipping Containers: 5 Arcadis- gordon Levin

Comments: 2of5, large blue Cooler

2. Airbill Present? Yes/No Shipping Company: FedEx

Airbill Number: 7955 4399 3729

Comments: PON

3. Custody Seals on Container?
No Yes Intact Not Intact

Comments: None

4. Chain of Custody Records?
No Yes

Comments: no COC documents in Cooler 2. these samples listed on COC in Cooler 4

5. General Sample Conditions:
Frozen Cool Unrefrigerated
Dry Ice Blue Ice Ice

Temperature/Comments: 5.3°C / temp blank 4.5°C

6. List of Broken Containers:

None

7. Number of Samples Expected: 5 coolers Number of Samples Received: Cooler 2: 6 waters (1L)

8. Problems/Discrepancies:
Sample labels & COC are handwritten & difficult to read.

9. Resolutions:
will contact client for clarification

10. Checked in by: Amanda Brewster Date: 3/20/12

sdg 12032001
Cooler 2 of 5
~~Medium~~ large blue cooler

5.3°C
wet ice

temp blank
4.5°C

ORIGIN ID: BILA (509) 535-7225
ARCADIS
2310 N MOLTER RD. STE 101
LIBERTY LAKE, WA 99019-9621
UNITED STATES US

SHIP DATE: 19MAR12
ACTWGT: 46.0 LB MAN
CAD: /POS1302
DIMS: 26x13x14 IN
BILL SENDER

TO SAMPLE REC
B & B LABORATORIES
1902 PINON DR

COLLEGE STATION TX 77845
(979) 693-3446
INV:
PO:
REF:
DEPT:

FedEx Express

4 of 5
MPS# 0681 7955 4399 3729
Mstr# 8000 4802 6143
0200

TUE - 20 MAR A1
PRIORITY OVERNIGHT

XH CLLA

77845
TX-US IAH

I-OF-CUSTODY SEAL • CHAIN-OF CUSTODY SEAL
ARCADIS ARCADIS
N7k
OF-CUSTODY SEAL • CHAIN-OF CUSTODY SEAL

RT 817 2 A 3729 03.20
FZ

Cooler 2 - No COC

2) 1L ✓✓ HUMT - P2n (031812) 2-A 3/13/12 11:11

4) 1L ✓✓ HUMT - SW-P6 (031312) 1-A 3/18/12 16:4

B&B LABORATORIES RECEIVING/INTEGRITY REPORT

Job: J11913 Date Received: 3/20/12 SDG#: 12032001

Sender: Arcadis- Exxon Mobil - yellowstone

1. Number of Shipping Containers: 5 Arcadis- gordon Levin

Comments: 3 of 5, large blue cooler

2. Airbill Present? (Yes) No Shipping Company: Fed Ex

Airbill Number: 7955 4399 3730 Comments: PON

3. Custody Seals on Container?
No (Yes) (Intact) Not Intact

Comments:

4. Chain of Custody Records?
(No) Yes

Comments
no COC documents in Cooler 3.
these samples listed on COC in Cooler 4.

5. General Sample Conditions:
Frozen (Cool) Unrefrigerated
Dry Ice Blue Ice (Ice)

Temperature/Comments:
2.4°C / temp blank 2.3°C

6. List of Broken Containers:

None

7. Number of Samples Expected: 5 coolers Number of Samples Received: Cooler 3:

8. Problems/Discrepancies:

sample labels & COC are handwritten & difficult to read

10 waters (1L)

9. Resolutions:

will contact client for clarification

10. Checked in by: Amanda Brewster Date: 3/20/12

Sdg 12032001
Cooler 3 of 5
~~Medium~~ large blue cooler

ORIGIN ID: BILA (509) 535-7225
ARCADIS
2310 N MOLTER RD STE 101
LIBERTY LAKE, WA 990198621
UNITED STATES US

SHIP DATE: 19MAR12
ACTWGT: 54.0 LB MAN
CAD: /P061302
DIMS: 26x13x14 IN
BILL SENDER

TO SAMPLE REC
B & B LABORATORIES
1902 PINON DR

COLLEGE STATION TX 77845
(979) 693-3446 REF:
INV:
PO: DEPT:

FedEx Express

5 of 5
MPS# 0681 7955 4399 3730
Mstr# 8000 4802 6143 0200

TUE - 20 MAR A1
PRIORITY OVERNIGHT

XH CLLA

77845
TX-US IAH

Cooler temp
2.4°C

temp blank
2.3°C

Project Name: ES
Sample Name:
Date Time Sampler
Analysis
Preservative: pH
Comments:

Lab Label #2

Cooler 3 - No COC

1) 1L ✓ HUMT- P0- SW (031712) 1-A 3/17/12 14:3

1) 1L ✓ HUMT- P1 - SW (031712) 1-A 3/17/12 16:1

2) 1L ✓✓ HUMT - P1 (031812) 3-A 3/18/12 10:20

2) 1L ✓✓ HUMT- P1 (031812) 2-A 3/18/12 09:15

2) 1L ✓✓ HUMT - P2S (031812) 2-A 3/18/12 12:07

2) 1L ✓✓ HUMT- SW-P3 (031812) 2-A 3/18/12 13:45

B&B LABORATORIES RECEIVING/INTEGRITY REPORT

Job: J11913 Date Received: 3/20/12 SDG#: 1203 2001

Sender: Arcadis - Exxon Mobil - yellowstone

1. Number of Shipping Containers: 5 Arcadis - gordon Levin

Comments: 4 of 5, large red cooler

2. Airbill Present? Yes/No Shipping Company: Fed EX

Airbill Number: 7955 4399 3718

Comments: PON

3. Custody Seals on Container?
No Yes Intact Not Intact

Comments: none

4. Chain of Custody Records?
No Yes

Comments: COC in Cooler 4 for samples in Coolers 2-5

5. General Sample Conditions:
Frozen Cool Unrefrigerated
Dry Ice Blue Ice Ice

Temperature/Comments: 1.1°C / temp blank 3.3°C

6. List of Broken Containers:

None

7. Number of Samples Expected: 5 coolers Number of Samples Received: Cooler 4: [8 waters (1L)

8. Problems/Discrepancies:
[sample labels: COC are handwritten & difficult to read
COC relinquishes samples to Fed Ex (not B:B)

9. Resolutions:
will contact client for clarification

10. Checked in by: Amanda Brewster Date: 3/20/12

Sdg 12032001
Cooler 4 of 5
~~Medium~~ Large Red cooler

Cooler temp:
11 °C

temp blank:
3.3°C

ORIGIN ID: BILA (509) 535-7225
ARCADIS
2310 N MOLTER RD STE 101
LIBERTY LAKE, WA 990198521
UNITED STATES US

SHIP DATE: 19MAR12
ACTWGT: 48.0 LB MAN
CAD: /POS1302
DIMS: 27x14x14 IN
BILL SENDER

TO SAMPLE REC
B & B LABORATORIES
1902 PINON DR

COLLEGE STATION TX 77845
(979) 693-3446 REF:
INV:
PO: DEPT:

FedEx Express

3 of 5
MPS# 0681 7955 4399 3718
Mstr# 8000 4802 6143 0200

TUE - 20 MAR A1
PRIORITY OVERNIGHT

XH CLLA

77845
TX-US IAH

125[illegible] ARCADIS
Sediment
D[illegible] By
Moisture [illegible]OC Solids/Sludge [illegible]C
Lancaster Laboratories 36 119474

Cooler 4 -(w/ COC for multiple coolers)

2) 1L ✓✓ HUMT - SW - P4 (031312) 1-A 3/18/12 15:4

2) 1L ✓✓ HUMT - SW - P5 (031312) 1-A 3/18/12 16:10

2) 1L ✓✓ HUMT - SW - P6 (031312) 1-A-DUP 3/18/12 16

2) 1L ✓✓ HUMT - SW - P6 (031812) 1-A 3/18/12 16:45

B&B LABORATORIES RECEIVING/INTEGRITY REPORT

Job: J11913 Date Received: 3/20/12 SDG#: 12032001

Sender: Arcadis- Exxon Mobil- yellowstone

1. Number of Shipping Containers: 5 Arcadis- gordon Levin

Comments: 5 of 5, large blue cooler

2. Airbill Present? Yes/No Shipping Company: Fed Ex

Airbill Number: 7955 4399 3707

Comments: PON

3. Custody Seals on Container?
No Yes Intact Not Intact

Comments:

4. Chain of Custody Records?
No Yes

Comments: no COC documents in Cooler 5
these samples listed on the COC in Cooler 4

5. General Sample Conditions:
Frozen Cool Unrefrigerated
Dry Ice Blue Ice Ice

Temperature/Comments: 4.2°C / temp blank 1.1°C

6. List of Broken Containers:

None

7. Number of Samples Expected: 5 coolers Number of Samples Received: Cooler 5: 8 waters 1L

8. Problems/Discrepancies:

Sample labels & COC are handwritten & difficult to read

9. Resolutions:

will contact client for clarification

10. Checked in by: amanda Brewster Date: 3/20/12

Sdg 1203 2001
Cooler 5 of 5
Large blue cooler

ORIGIN ID: BILA (509) 535-7225
ARCADIS
2310 N MOLTER RD STE 101
LIBERTY LAKE, WA 990198621
UNITED STATES US

SHIP DATE: 19MAR12
ACTWGT: 49.0 LB MAN
CAD: /P0S1302
DIMS: 26x13x14 IN
BILL SENDER

TO SAMPLE REC
B & B LABORATORIES
1902 PINON DR

COLLEGE STATION TX 77845
(979) 693-3466
REF:
INVO
POS#
DEPT:

FedEx Express

2 of 5
MPS# 0681 7955 4399 3707
Mstr# 8000 4802 6143
0200

TUE - 20 MAR A1
PRIORITY OVERNIGHT

XH CLLA

77845
TX-US IAH

Cooler temp:
4.2°C

temp blank:
1.1°C

CHAIN-OF-CUSTODY SEAL • CHAIN-OF CUSTODY SEAL
ARCADIS ARCADIS
NJK
CHAIN-OF-CUSTODY SEAL • CHAIN-OF CUSTODY SEAL

Cooler 5 No COC

2) 1L	✓✓	HUMT- P2N (031812) -4	3/18/12	10:50
2) 1L	✓✓	HUMT- P2S (031812) 1-A	3/18/12	11:37
2) 1L	✓✓	HUMT- P3 (031812) 1-A	3/18/12	12:33
2) 1L	✓✓	HUMT- SW-P3 (031812) 3-A	3/18/12	14:39

B&B Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Home Office 1902 Pinon College Station TX 77845 phone (979) 693-3446 fax (979) 693-6389 http://www.tdi-bi.com

TDI Brooks

Client: XOM

Project ID: Silvertip Huntley Channel

B&B Contact: Report to ARCADIS - Ted Sauer in Cary, NC

Sampler Signature:

Other Instructions: Sdg 12032001 Cooler 4 of 5 (1)

Sample ID	Sample Date	Sample Time	Sample Matrix	Preservative	Containers Type	Containers No.	PAH	TPH/SHC					Comments
HUMT-P0-SW(031712)1-A	3/17/12	1430	W	RAW	1-1.2 L G	1	X	X					Report As: OK As submitted
HUMT-P1-SW(031712)1-A	3/17/12	1615				1	X	X					OK As submitted
HUMT-P1(031312)3-A	3/13/12	1020				2	X	X					HUMT-P1-SW(031312)3-A
HUMT-P1(031312)2-A	3/13/12	0915				2	X	X					HUMT-P1-SW(031312)2-A
HUMT-P2S(031312)2-A	3/13/12	1207				2	X	X					HUMT-P2S-SW(031312)2-A
Humt-SW-P3(031312)2-A	3/13/12	1345				2	X	X					HUMT-P3-SW(031312)2-A
HUMT-P2N(031312)1-A	3/13/12	1050				2	X	X					HUMT-P2N-SW(031312)1-A
HUMT-P2N(031312)2-A	3/13/12	1111				2	X	X					Humt-P2N-SW(031312)2-A
HUMT-P2S(031312)1-A	3/13/12	1137				2	X	X					HUMT-P2S-SW(031312)1-A
HUMT-P3(031312)1-A	3/13/12	1233				2	X	X					HUMT-P3-SW(031312)1-A
Cooler 2	Cooler 3	Cooler 4	Cooler 5	Total # of Containers									

Relinquished By	Company Name	Date	Time	Received By	Company Name	Date	Time
Printed Name:				Printed Name: John DeJong			
Signature:				Signature:			
Printed Name: John DeJong		3-19-12	1500	Printed Name: FedEx			
Signature:				Signature:			

Received by B&B
Amanda Brewster 3/20/12
amanda Brewster 15:30

Matrix:
=Tissue G=Gas
=Soil/Sediment Ws=Waste
:=Rinseate HW=Hazardous Waste
=Product W=Water

Sample Container: Vol/material
G=Glass C=Core
P=Plastic B=Bag

CHAIN OF CUSTODY RECORD

B&B Laboratories, Inc.

Home Office 1902 Pinon College Station TX 77845 phone (979) 693-3446 fax (979) 693-6389 http://www.tdi-bi.com

TDI Brooks

Client: XOM

Project ID: Silvertip Huntley Channel

B&B Contact: Report to Ted Sauer - ARCADIS Cary, NC

Sampler Signature:

Other Instructions: sdg 1203 2001 Cooler 4 of 5 (2)

	Sample ID	Sample Date	Sample Time	Sample Matrix	Preservative	Containers Type	Containers No.	PAH	TPH/SHC	Metals				Comments
														Report As:
vv	HUMT-SW-P3(03/18/12)3-A	3/18/12	1439	W	RAW	1-liter b	2	X	X		Report	As		HUMT-P3-SW(03/18/12)3-A
vv	HUMT-SW-P4(03/13/12)1-A	3/13/12	1545				2	X	X					HUMT-P4-SW(03/13/12)1-A
vv	HUMT-SW-P5(03/13/12)1-A	3/13/12	1610				2	X	X					HUMT-P5-SW(03/13/12)1-A
vv	HUMT-SW-P6(03/13/12)1-A DUP	3/13/12	1650				2	X	X					HUMT-P6-SW(03/18/12)1-A DUP
vvv vv	HUMT-SW-P6(03/13/12)1-A	3/13/12	1645				6	X	X	X				HUMT-P6-SW(03/13/12)1-A

Cooler 2 Cooler 3 Cooler 4 Cooler 5 Total # of Containers

Relinquished By	Company Name	Date	Time	Received By	Company Name	Date	Time
Printed Name: Gordon Levin	ARCADIS			Printed Name:			
Signature:				Signature:			
Printed Name: John DeJong		3-19-12	1500	Printed Name: Fed Ex			
Signature:				Signature:			

Received by B&B
Amanda Brewster 3/20/12
Amanda Brewster 15:30

Matrix:
=Tissue G=Gas
=Soil/Sediment Ws=Waste
=Rinseate HW=Hazardous Waste
=Product W=Water

Sample Container: Vol/material
G=Glass C=Core
P=Plastic B=Bag

amanda brewster

From: Juan Ramirez [juanramirez@tdi-bi.com]
Sent: Tuesday, March 20, 2012 1:54 PM
To: 'Sauer, Ted'; 'Tom McDonald'
Cc: 'Jones, Michael'; 'Donell Frank'; 'Amanda J. Brewster'
Subject: RE: Address for shipping to Billings, MT for March 17 Delivery

Ted,

In that case we will do the following:

As MD/MSD/Original of Sample

HUMT-P6-SW-(031812)1-A	**Water**	**3/18/2012**	**1645**

Duplicate/Original

HUMT-P6-SW-(031812)1-A-DUP	**Water**	**3/18/2012**	**1650**

No Blank Spike or Blank Spike Duplicate

Juan

Juan Ramirez
Environmental Lab Manager
TDI-BI/B&B Labs
1902 Pinon
College Station, TX 77845
Office - (979) 693-3446
Fax - (979) 693-6389
Cell – (979) 777-0793

Web Site: http://tdi-bi.com/

From: Sauer, Ted [mailto:Ted.Sauer@arcadis-us.com]
Sent: Tuesday, March 20, 2012 1:35 PM
To: Juan Ramirez; 'Tom McDonald'
Cc: Jones, Michael; Donell Frank; Amanda J. Brewster
Subject: RE: Address for shipping to Billings, MT for March 17 Delivery

Juan

I see that you have received two sample containers (1 & 2) for each sample. The field people did not realize that you do both the PAH and TPH/SHC analyses from the same bottle. So, just analyze one sample container (1) of each sample and archive the other sample container (2) after you add solvent and surrogates just in case the sample container 2 needs to analyzed because of problem with the sample container 1 analysis. Also, select another one of the Hunt-SW-P6 (03/32)1-A sample containers and analyze as a duplicate.

Use the MS and MSD water samples provided as your blank spike and blank spike duplicate samples. As you do with blank spike and blank spike duplicate, spike the provided MS and MSD with your spike standard and correct recoveries

based on the sample that is marked Hunt-SW-P6 (03/32)1-A. For sediments, select one sample with sufficient quantity and analyze as MS and MSD, as usual.

Ted

NEW ADDRESS!

Ted Sauer, Ph.D. | Principal Scientist | Ted.Sauer@arcadis-us.com
ARCADIS U.S., Inc. | 801 Corporate Center Dr., Suite 300, Raleigh, NC 27607-5073
T. 919.415.2262| M. 781.254.7243| F. 919.854.5448
www.arcadis-us.com

ARCADIS, Imagine the result

Please consider the environment before printing this email.

From: Juan Ramirez [mailto:juanramirez@tdi-bi.com]
Sent: Tuesday, March 20, 2012 1:42 PM
To: Sauer, Ted; 'Tom McDonald'
Cc: Jones, Michael; Donell Frank; Amanda J. Brewster
Subject: RE: Address for shipping to Billings, MT for March 17 Delivery

Ted/Mike,

We normally run Procedural Blanks and Blank Spike and Blank Spike Duplicates. On the COC, there are samples designated as MS/MSD and DUPs. Do we need to analyze those as well? They would be considered billable samples.

Juan

Juan Ramirez
Environmental Lab Manager
TDI-BI/B&B Labs
1902 Pinon
College Station, TX 77845
Office - (979) 693-3446
Fax - (979) 693-6389
Cell – (979) 777-0793

Web Site: http://tdi-bi.com/

From: Sauer, Ted [mailto:Ted.Sauer@arcadis-us.com]
Sent: Tuesday, March 20, 2012 11:49 AM
To: Juan Ramirez; 'Tom McDonald'
Cc: Jones, Michael
Subject: RE: Address for shipping to Billings, MT for March 17 Delivery

Juan

Mike Jones will call you to clarify and answer your questions

Ted

NEW ADDRESS!

Ted Sauer, Ph.D. | Principal Scientist | Ted.Sauer@arcadis-us.com
ARCADIS U.S., Inc. | 801 Corporate Center Dr., Suite 300, Raleigh, NC 27607-5073
T. 919.415.2262| M. 781.254.7243| F. 919.854.5448
www.arcadis-us.com

ARCADIS, Imagine the result

Please consider the environment before printing this email.

From: Juan Ramirez [mailto:juanramirez@tdi-bi.com]
Sent: Tuesday, March 20, 2012 12:12 PM
To: Sauer, Ted; 'Tom McDonald'
Cc: Jones, Michael
Subject: RE: Address for shipping to Billings, MT for March 17 Delivery

Ted,

We just got the samples. Is there a way we can get a typed list of sample IDs. The writing on both the bottle labels and COC are hard to read and we want to make sure we have this checked in without any further transcription issues.

Thanks,

Juan

Juan Ramirez
Environmental Lab Manager
TDI-BI/B&B Labs
1902 Pinon
College Station, TX 77845
Office - (979) 693-3446
Fax - (979) 693-6389
Cell – (979) 777-0793

Web Site: http://tdi-bi.com/

From: Sauer, Ted [mailto:Ted.Sauer@arcadis-us.com]
Sent: Tuesday, March 20, 2012 7:46 AM
To: juanramirez@tdi-bi.com; Tom McDonald
Cc: Jones, Michael
Subject: FW: Address for shipping to Billings, MT for March 17 Delivery

Juan

Exxon would like your quickest TAT on these samples. Please confirm to me the date in which we will receive the results.

Thanks

Ted

NEW ADDRESS!

Ted Sauer, Ph.D. | Principal Scientist | Ted.Sauer@arcadis-us.com
ARCADIS U.S., Inc. | 801 Corporate Center Dr., Suite 300, Raleigh, NC 27607-5073
T. 919.415.2262| M. 781.254.7243| F. 919.854.5448
www.arcadis-us.com

ARCADIS, Imagine the result

Please consider the environment before printing this email.

From: Jones, Michael
Sent: Monday, March 19, 2012 8:51 PM
To: amanda brewster
Cc: Sauer, Ted
Subject: RE: Address for shipping to Billings, MT for March 17 Delivery

Amanda:

The attached pdf is the COC and Fed Ex tracking info for coolers that will be delivered to your laboratory tomorrow AM. Please let me know if there are any questions or issues

Thanks,

Mike

Michael Jones |Vice President| michael.jones@arcadis-us.com

ARCADIS U.S., Inc. | 6723 Towpath Road, Box 66 |Syracuse, NY 13214
T. 315.671.9211| M. 315.247.3244| F.315.449.4111
www.arcadis-us.com

Professional Affiliate/ ARCADIS of New York, Inc.

ARCADIS, Imagine the result

Please consider the environment before printing this email.

From: Jones, Michael
Sent: Friday, March 16, 2012 12:28 PM
To: 'amanda brewster'
Subject: RE: Address for shipping to Billings, MT for March 17 Delivery

No

Michael Jones |Vice President| michael.jones@arcadis-us.com

ARCADIS U.S., Inc. | 6723 Towpath Road, Box 66 |Syracuse, NY 13214
T. 315.671.9211| M. 315.247.3244| F.315.449.4111
www.arcadis-us.com

Professional Affiliate/ ARCADIS of New York, Inc.

ARCADIS, Imagine the result

Please consider the environment before printing this email.

From: amanda brewster [mailto:amandabrewster@tdi-bi.com]
Sent: Friday, March 16, 2012 12:23 PM
To: Jones, Michael
Subject: RE: Address for shipping to Billings, MT for March 17 Delivery

Do you still need the containers to collect BTEX?

From: Jones, Michael [mailto:Michael.Jones@arcadis-us.com]
Sent: Friday, March 16, 2012 11:19 AM
To: 'amandabrewster@tdi-bi.com'
Cc: Sauer, Ted; Barrick, Stephen
Subject: RE: Address for shipping to Billings, MT for March 17 Delivery

Amanda:

Sorry for the confusion – our chemist for this project (Ted Sauer) pointed out that we do not need TDI Brooks to analyze Forensic BTEX for this project. The 24 water and 24 solid samples will be analyzed for Forensic PAH and TPH/SHC. Let me know if you have any questions

Thanks,

Mike

Michael Jones |Vice President| michael.jones@arcadis-us.com
ARCADIS U.S., Inc. | 6723 Towpath Road, Box 66 |Syracuse, NY 13214
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www.arcadis-us.com
Professional Affiliate/ ARCADIS of New York, Inc.

ARCADIS, Imagine the result
Please consider the environment before printing this email.

From: Jones, Michael
Sent: Friday, March 16, 2012 12:04 PM
To: amandabrewster@tdi-bi.com
Subject: Address for shipping to Billings, MT for March 17 Delivery

Amanda:

Forgot to indicate we also need Forensic BTEX analysis for the water and soil/sediment samples. So to recap - need to send glassware for 24 water and 24 soil samples (for Forensic PAH/TPH and Forensic BTEX analysis) for Saturday delivery to the following address:

Gordon Levin
ARCADIS c/o Best Western Kelly Inn
4915 Southgate Dr.
Billings, MT 59101
406-256-9400

Please let me know if you have any problems getting these out

Thanks,

Mike

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ARCADIS, Imagine the result
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From: Barrick, Stephen
Sent: Thursday, March 15, 2012 8:12 PM
To: Kingsley, David
Cc: Jones, Michael
Subject: FW: Address for shipping to Billings for March 16

Address for shipping is below. Gordon will be on the ground by noon tomorrow.

From: Levin, Gordon
Sent: Thursday, March 15, 2012 6:11 PM
To: Barrick, Stephen
Subject: Address for shipping to Billings for March 16

Will be at the
Best Western Kelly Inn
4915 Southgate Dr.
Billings, MT 59101
406-256-9400

Gordon Levin PG | Hydrogeologist | gordon.levin@arcadis-us.com
ARCADIS U.S., Inc. | 1610 B Street | Helena, MT 59601
T. 406 449 7001 x14 | M. 406 949 1777 | F. 406 449 3063
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ARCADIS, Imagine the result
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B&B LABORATORIES SAMPLE INITIATION FORM-ENV

Job #: J11913
SDG: 1203 2001
Client: Arcadis - Exxon Mobil - yellowstone
Initiation Date: 3/20/12

Number of Samples: 18
Matrix: Waters
Due Date: RTAT
Comments:

Analyses

☒ PAHs	☐ OCs/PCBs	☒ Aliphatics/TPH	☒ EOM
☐ Dry Wt.	☐ %Lipid	☐ TOC/TIC	☐ _____
☒ Short Columns	☐ Long Columns	☐ _____	☐ _____

Requested QA/QC (per batch of _____ Client Samples)

☒ Blank	☐ SRM/LCS _____	☐ Blank Spike
☐ Blank Spike Duplicate		☒ Matrix Spike ARC1092
☒ Matrix Spike Duplicate ARC1093		☒ Duplicate ARC ~~1094~~ 1112

SEE BACK FOR SPECIFIC STANDARDS TO USE

Surrogate(s): PAH, AC1 Volume(s): 100 ml

Spike Standard(s): PAH, AC1 Volume(s): 100 µl

Internal Standard(s): PAH, AC Volume(s): 100 ml

Final Extract Volume (ml): 1.0 Final Solvent: DCM

Comments: Original of MS/MSD - ARC1094
Original of Dup - ARC1113

Sample Custodian Signature: Amanda Brewster Date: 3/20/12

Project Administrator Signature: Date: 3/20/12

Sample Initiation – general Rev 0.doc
Rev 0

cc: COC Book
Extraction Lab

Log #	Job #	CLIENT NAME	FILENAME	CLIENT ID	COL. DATE	RECVD	Analysis	MATRIX	COMMENTS	B&B SDG	Cooler #	Sent by	Container	ot	Project #	Additional Comments
82898	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1090	HUMT-P2N-SW(031812)2-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 2	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1201	label & COC: HUMT-P2N(031312)2-A
82900	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1092	HUMT-P6-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 6	12032001	Cooler 2	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1201	label & COC: HUMT-SW-P6(031312)1-A
82901	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1093	HUMT-P6-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	2 of 6	12032001	Cooler 2	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1201	label & COC: HUMT-SW-P6(031312)1-A
82902	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1094	HUMT-P6-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	3 of 6	12032001	Cooler 2	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1201	label & COC: HUMT-SW-P6(031312)1-A
82906	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1098	HUMT-PO-SW(031712)1-A	03/17/12	03/20/12	PAH, TPH, ALI	WATER	1 of 1	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	use id as listed on label & COC
82907	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1099	HUMT-P1-SW(031712)1-A	03/17/12	03/20/12	PAH, TPH, ALI	WATER	1 of 1	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	use id as listed on label & COC
82908	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1100	HUMT-P1-SW(031812)3-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P1(031812)3-A
82910	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1102	HUMT-P1-SW(031812)2-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P1(031812)2-A
82912	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1104	HUMT-P2S-SW(031812)2-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P2S(031812)2-A
82914	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1106	HUMT-P3-SW(031812)2-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P3(031812)2-A
82916	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1108	HUMT-P4-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 4	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P4(031812)1-A
82918	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1110	HUMT-P5-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 4	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P5(031312)1-A
82920	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1112	HUMT-P6-SW(031812)1-A-DUP	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 4	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P6(031812)1-A-DUP
82921	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1113	HUMT-P6-SW(031812)1-A-DUP	03/18/12	03/20/12	PAH, TPH, ALI	WATER	2 of 2	12032001	Cooler 4	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P6(031812)1-A-DUP
82922	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1114	HUMT-P2N-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 5	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P2N(031812)1-A
82924	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1116	HUMT-P2S-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 5	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P2S(031812)1-A
82926	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1118	HUMT-P3-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 5	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P3(031312)1-A
82928	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1120	HUMT-P3-SW(031812)3-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 5	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P3(031812)3-A

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B&B LABORATORIES SAMPLE INITIATION FORM-ENV

Job #: J11913
SDG: 12032001
Client: Arcadis- Exxon Mobil Yellowstone
Initiation Date: 3/20/12

Number of Samples: 2
Matrix: Nets
Due Date: RTAT
Comments:

Analyses

☑	PAHs	☐	OCs/PCBs	☑	Aliphatics/TPH	☑	EOM
☐	Dry Wt.	☐	%Lipid	☐	TOC/TIC	☐	_____
☑	Short Columns	☐	Long Columns	☐	_____	☐	_____

Requested QA/QC (per batch of _____ Client Samples)

☑	Blank	☐	SRM/LCS_____	☑	Blank Spike
☑	Blank Spike Duplicate			☐	Matrix Spike _____
☐	Matrix Spike Duplicate _____			☐	Duplicate_____

SEE BACK FOR SPECIFIC STANDARDS TO USE

Surrogate(s): PAH, AU Volume(s): 100 µl

Spike Standard(s): PAH, AU Volume(s): 100 µl

Internal Standard(s): PAH, AU Volume(s): 100 µl

Final Extract Volume (ml): 1.0 Final Solvent: DCM

Comments:

Sample Custodian Signature: Amanda Brewster Date: 3/20/12

Project Administrator Signature: [signature] Date: 3/20/12

Log #	Job #	CLIENT NAME	FILENAME	CLIENT ID	COL. DATE	RECVD	Analysis	MATRIX	COMMENTS	B&B SDG	Cooler #	Sent by	Container	ol	Project #	Additional Comments
82930	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1122	HUMT-P5-TN(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	NET	1 of 1	12032001	Cooler 1	Arcadis: Gordon Levin	8oz clear jar		B0085904.1202	use id as listed on label & COC
82931	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1123	HUMT-P5-TN(031812)2-A	03/18/12	03/20/12	PAH, TPH, ALI	NET	1 of 1	12032001	Cooler 1	Arcadis: Gordon Levin	8oz clear jar		B0085904.1202	use id as listed on label & COC

Log #	Job #	CLIENT NAME	FILENAME	CLIENT ID	COL. DATE	RECVD	Analysis	MATRIX	COMMENTS	B&B SDG	Cooler #	Sent by	Container	ct	Project #	Additional Comments
82898	J11813	Arcadis - ExxonMobil - Yellowstone	ARC1090	HUMT-P2N-SW(031812)2-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 2	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1201	label & COC: HUMT-P2N(031312)2-A
82899	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1091	HUMT-P2N-SW(031812)2-A	03/18/12	03/20/12	HOLD	WATER	2 of 2	12032001	Cooler 2	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1201	label & COC: HUMT-P2N(031312)2-A
82900	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1092	HUMT-P6-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 6	12032001	Cooler 2	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1201	label & COC: HUMT-SW-P6(031312)1-A
82901	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1093	HUMT-P6-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	2 of 6	12032001	Cooler 2	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1201	label & COC: HUMT-SW-P6(031312)1-A
82902	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1094	HUMT-P6-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	3 of 6	12032001	Cooler 2	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1201	label & COC: HUMT-SW-P6(031312)1-A
82903	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1095	HUMT-P6-SW(031812)1-A	03/18/12	03/20/12	HOLD	WATER	4 of 6	12032001	Cooler 2	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1201	label & COC: HUMT-SW-P6(031312)1-A
82904	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1096	HUMT-P6-SW(031812)1-A	03/18/12	03/20/12	HOLD	WATER	5 of 6	12032001	Cooler 4	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1201	label & COC: HUMT-SW-P6(031312)1-A
82905	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1097	HUMT-P6-SW(031812)1-A	03/18/12	03/20/12	HOLD	WATER	6 of 6	12032001	Cooler 4	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1201	label & COC: HUMT-SW-P6(031312)1-A
82906	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1098	HUMT-PO-SW(031712)1-A	03/17/12	03/20/12	PAH, TPH, ALI	WATER	1 of 1	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	use id as listed on label & COC
82907	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1099	HUMT-P1-SW(031712)1-A	03/17/12	03/20/12	PAH, TPH, ALI	WATER	1 of 1	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	use id as listed on label & COC
82908	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1100	HUMT-P1-SW(031812)3-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P1(031812)3-A
82909	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1101	HUMT-P1-SW(031812)3-A	03/18/12	03/20/12	HOLD	WATER	2 of 2	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P1(031812)3-A
82910	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1102	HUMT-P1-SW(031812)2-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P1(031812)2-A
82911	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1103	HUMT-P1-SW(031812)2-A	03/18/12	03/20/12	HOLD	WATER	2 of 2	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P1(031812)2-A
82912	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1104	HUMT-P2S-SW(031812)2-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P2S(031812)2-A
82913	J11813	Arcadis - ExxonMobil - Yellowstone	ARC1105	HUMT-P2S-SW(031812)2-A	03/18/12	03/20/12	HOLD	WATER	2 of 2	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P2S(031812)2-A
82914	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1106	HUMT-P3-SW(031812)2-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P3(031812)2-A
82915	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1107	HUMT-P3-SW(031612)2-A	03/18/12	03/20/12	HOLD	WATER	2 of 2	12032001	Cooler 3	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P3(031812)2-A
82918	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1108	HUMT-P4-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 4	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P4(031812)1-A
82917	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1109	HUMT-P4-SW(031612)1-A	03/18/12	03/20/12	HOLD	WATER	2 of 2	12032001	Cooler 4	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P4(031812)1-A
82918	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1110	HUMT-P5-SW(031612)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 4	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P5(031312)1-A
82918	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1111	HUMT-P5-SW(031812)1-A	03/18/12	03/20/12	HOLD	WATER	2 of 2	12032001	Cooler 4	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P5(031312)1-A
82920	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1112	HUMT-P6-SW(031812)1-A-DUP	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 4	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P6(031612)1-A-DUP
82921	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1113	HUMT-P6-SW(031812)1-A-DUP	03/18/12	03/20/12	PAH, TPH, ALI	WATER	2 of 2	12032001	Cooler 4	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P6(031812)1-A-DUP
82922	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1114	HUMT-P2N-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 5	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P2N(031812)1-A
82923	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1115	HUMT-P2N-SW(031812)1-A	03/18/12	03/20/12	HOLD	WATER	2 of 2	12032001	Cooler 5	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P2N(031812)1-A
82924	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1118	HUMT-P2S-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 5	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P2S(031812)1-A
82925	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1117	HUMT-P2S-SW(031812)1-A	03/18/12	03/20/12	HOLD	WATER	2 of 2	12032001	Cooler 5	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P2S(031812)1-A
82926	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1118	HUMT-P3-SW(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 5	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P3(031312)1-A
82927	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1119	HUMT-P3-SW(031812)1-A	03/18/12	03/20/12	HOLD	WATER	2 of 2	12032001	Cooler 5	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-P3(031312)1-A
82928	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1120	HUMT-P3-SW(031812)3-A	03/18/12	03/20/12	PAH, TPH, ALI	WATER	1 of 2	12032001	Cooler 5	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P3(031812)3-A
82929	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1121	HUMT-P3-SW(031612)3-A	03/18/12	03/20/12	HOLD	WATER	2 of 2	12032001	Cooler 5	Arcadis: Gordon Levin	1L amber BR bottle		B0085904.1202	label & COC: HUMT-SW-P3(031612)3-A
82930	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1122	HUMT-P5-TN(031812)1-A	03/18/12	03/20/12	PAH, TPH, ALI	NET	1 of 1	12032001	Cooler 1	Arcadis: Gordon Levin	8oz clear jar		B0085904.1202	use id as listed on label & COC
82931	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1123	HUMT-P5-TN(031812)2-A	03/18/12	03/20/12	PAH, TPH, ALI	NET	1 of 1	12032001	Cooler 1	Arcadis: Gordon Levin	8oz clear jar		B0085904.1202	use id as listed on label & COC
82932	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1124	HUMT-P0-SE(0.0-0.3)1-A	03/17/12	03/20/12	PAH, TPH, ALI	SED	1 of 1	12032001	Cooler 1	Arcadis: Gordon Levin	8oz clear jar		B0085904.1202	use id as listed on label & COC
82933	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1125	HUMT-P1-SE(0.0-0.5)1-A	03/17/12	03/20/12	PAH, TPH, ALI	SED	1 of 1	12032001	Cooler 1	Arcadis: Gordon Levin	8oz clear jar		B0085904.1202	use id as listed on label & COC
82934	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1126	HUMT-P1-SE(0.0-0.5)2-A	03/17/12	03/20/12	PAH, TPH, ALI	SED	1 of 1	12032001	Cooler 1	Arcadis: Gordon Levin	8oz clear jar		B0085904.1202	use id as listed on label & COC
82935	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1127	HUMT-P1-SE(0.0-0.2)3-A	03/18/12	03/20/12	PAH, TPH, ALI	SED	1 of 1	12032001	Cooler 1	Arcadis: Gordon Levin	8oz clear jar		B0085904.1202	label & COC: HUMT-P1(0.0-0.2)3-A
82936	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1128	HUMT-P3-SE(0.0-0.2)1-A	03/18/12	03/20/12	PAH, TPH, ALI	SED	1 of 1	12032001	Cooler 1	Arcadis: Gordon Levin	8oz clear jar		B0085904.1202	label & COC: HUMT-SE-P3(0.0-0.2)1-A
82937	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1129	HUMT-P3-SE(0.0-0.5)2-A	03/18/12	03/20/12	PAH, TPH, ALI	SED	1 of 1	12032001	Cooler 1	Arcadis: Gordon Levin	8oz clear jar		B0085904.1202	label & COC: HUMT-SE-P3(0.0-0.5)2-A
82938	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1130	HUMT-P5-SE(0.0-0.2)1-A	03/18/12	03/20/12	PAH, TPH, ALI	SED	1 of 1	12032001	Cooler 1	Arcadis: Gordon Levin	8oz clear jar		B0085904.1202	label & COC: HUMT-SE-P5(0.0-0.2)1-A
82939	J11913	Arcadis - ExxonMobil - Yellowstone	ARC1131	HUMT-P6-SE(0.0-0.3)1-A	03/18/12	03/20/12	PAH, TPH, ALI	SED	1 of 1	12032001	Cooler 1	Arcadis: Gordon Levin	8oz clear jar		B0085904.1202	label & COC: HUMT-SE-P6(0.0-0.3)1-A

Laboratory Bench Sheet Logs

B&B LABORATORIES ENVIRONMENTAL EXTRACTION LOG

MATRIX
- [x] OTHER
- [ ] WATER
- [ ] SEDIMENT
- [ ] TISSUE

NEts

Job #: J11913 SDG #: 12032001

Client: Arcadis - ExxonMobil - Yellow Stone

Analysis: [x] PAH [ ] PESTS [ ] PCB [x] ALI

Other:

Extraction Solvent: DCM Lot # 51035

Final Solvent: DCM Lot # 51035 Final Vol: 1.0mL

Lipids Y/(N)
Dry Wt. Y/(N)
Copper Y/(N)
EOM (Y)/N

Surrogate: 100 µL
PAH: AL-WRSU-500-031
Pest/PCB: —
Aliphatic: AL-WRSU-20-013
Other: —

Spike: 100 µL
PAH: AL-WRSU-1000-023
Pest/PCB: —
Aliphatic: AL-WRSU-100-017
Other: —

GC Int Std: 100 µL
PAH: AL-WRIS-500-021
Pest/PCB: —
Aliphatic: AL-WRIS-200-01
Other: —

Turbo Vap II
Bath T (C):
Pressure (>20psi):
Check Water Level:
Turbo Vap Date:

General Comments:

3x 50mL Rinses

Short Columns

	Added	Witness
Surrogate:	3/21/12 CBD	3/21/12 CK
Spike:	3/21/12 CBS	3/21/12 CK
Internal:	3/21/12 CBS	3/21/12 CK

	Sample Name	Client ID	Wet Wt. (g or L)	Dry Wt. %	Dry Wt. (g)	Hydromatrix (g)	Extraction Comments	Internal Chain of Custody	
1	ENV2755A	Procedural Blank						Extraction Prep	
2	ENV2755B	Blank Spike						Date: 3/21/12	Date: 3/21/12
3	ENV2755C	Blank Spike Dup						From: CBS	To: CBS
4	ALL1122	HUMT-PS-TN(031812)1-A						Extraction	
5	ALL1123	HUMT-PS-TN(031812)2-A						Date: 3/21/12	Date: 3/21/12
6								From: CBS	To: CBS
7								Concentration	
8								Date: 3/21/12	Date: 3/21/12
9								From: CBS	To: CBS
10								Columns SA2	
11								Date:	Date:
12								From:	To:

3/21/12

ENV 2755

12-2824

B&B LABORATORIES ENVIRONMENTAL EXTRACTION LOG

	Sample Name	Client ID	Wet Wt. (g or L)	Dry Wt. %	Dry Wt. (g)	Hydromatrix (g)	Extraction Comments
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

3/21/12 CBS

DATE	INITIALS
Columns SA1	
Date:	Date:
From:	To:
Concentration SA2	
Date:	Date:
From:	To:
Concentration SA1	
Date:	Date:
From:	To:
Transfer	
Date:	Date:
From:	To:
HPLC	
Date:	Date:
From:	To:
Concentration	
Date: 3/21/12	Date: 3/21/12
From: CBS	To: CBS
Pest/PCB Int Std Added	
PAH Int Std Added	
3/21/12	CBS
Aliphatic Int Std Added	
3/21/12	CBS
Transfer	
3/21/12	CBS
Internal Chain of Custody Information	

Dry Weight Page
—

Lipid/EOM Page
EOM 875

Clean-up/Separation/Other Columns
3/21/12 CBS

Sample Storage Box #
#386

HPLC Storage Box #
—

QC Review	
Date	Initials
3/21/12	[illegible]

Copied to Folders
3/21/12 CBS

ENV 2755

B&B LABORATORIES EOM LOGBOOK

MATRIX: OTHER (circled) / SEDIMENT / WATER

Net

Job #: J11913 SDG #: 12032001

Client: Arcadis-Exxon Mobil-yellowstone

General comments: Solvent Blank 0.000

Lab Manager	Transferred by Date/Int:	Date/Int:	Bal. Cal.	Date/Int:
Date/Int: 3/21/12	From ~~ENV~~ Pg: 3/21/12 UK From DRY Pg:	3-21-12 EN		3/21/12 UK

	Sample Name	Client ID	Smpl Wt./Vol (g/L) Wet Wt. Dry Wt.	Dry Wt. (%)	Final Extract Vol (mL)	Wt. of 100 µl EOM Wt. (mg)	EOM µg/g (Wet Wt. Basis)	EOM µg/g (Dry Wt. Basis)	Comments
1	ENV2755A	Procedural Blank			3	0.000			
2	ENV2755B	Blank Spike			3	0.008			
3	ENV2755C	Blank Spike Dup			3	0.007			
4	ARC1122	HUMT-PS-TN(031812)1-A			3	0.015			
5	ARC1123	HUMT-PS-TN (031812)2-A			3	0.018			
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									

3/21/12 UK

3/21/12 UK

EOM 875

B&B LABORATORIES EOM LOGBOOK

	Sample Name	Client ID	Smpl Wt./Vol (g/L) Wet Wt. Dry Wt.	Dry Wt. (%)	Final Extract Vol (mL)	Wt. of 100 µl EOM Wt. (mg)	EOM µg/g (Wet Wt. Basis)	EOM µg/g (Dry Wt. Basis)	Comments
17									
18									
19									
20									
21									
22									
23									
24									

3/21/12 ok

$$\text{EOM} = \frac{(\text{EOM Wt. (mg)})\,(\text{Final Extract Vol. (ml)})}{(\text{Smpl Wt/Vol. (g/L)})\,(0.10\text{ ml})} \times 1000$$

$$\%\text{RPD} = \frac{(\text{EOM}_1 - \text{EOM}_2)}{(\text{EOM}_1 + \text{EOM}_2) \times 0.5} \times 100\%$$

The Relative Percent Difference (RPD) between duplicates must be ≤ 25%.

Date/Int:	RPD
Sample:	
Duplicate:	

3/21/12 ok

EOM 875

Last Page