

CMG ENVIRONMENTAL, INC.

IMMEDIATE RESPONSE ACTION STATUS REPORT #2 RELEASE TRACKING NUMBER 2-19665

RESIDENTIAL RELEASE

18 HAMMOND STREET
OXFORD, MASSACHUSETTS

AUGUST 2, 2016

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The undersigned employees of CMG Environmental, Inc. (CMG) prepared and reviewed this report. Please direct any requests for additional information regarding the content of this document to these individuals.

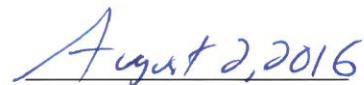


Sandra N. Rushlo
Environmental Scientist



Date


Benson R. Gould, LSP, LEP
Licensed Site Professional #9923



Date

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1.0 INTRODUCTION

CMG Environmental, Inc. (CMG) has prepared this Immediate Response Action (IRA) Status Report for the property located at 18 Hammond Street in Oxford, Massachusetts (the Site). Figure 1 (Site Location Map) depicts the Site in relation to streets and other topographic features.

This IRA Status Report addresses release tracking number (RTN) 2-19665. CMG followed regulations set forth by the Massachusetts Department of Environmental Protection (DEP) in the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000) in preparing this IRA Status Report.

1.1 PURPOSE

The purpose of an IRA is to address urgent releases or threats of release at a ‘disposal site’¹ that trigger two-hour notifications pursuant to 310 CMR 40.0311 or 40.0312, or 72-hour notifications per 40.0313 or 40.0314. This includes disposal sites where a Condition of Substantial Release Migration (SRM)² exists.

The purpose of an IRA Status Report is to document IRA activities completed since submittal of the last IRA Report (in this case, the February 5, 2016 Initial IRA Status Report), in accordance with 310 CMR 40.0425.

1.2 SITE LOCATION & IDENTIFICATION

The Site is located at 18 Hammond Street, Oxford MA 01540. It is on the northeasterly side of Hammond Street, approximately 350' east of its intersection with Foster Street. The Site is at 42°08'03" north latitude (42.13413 °N), 71°52'08" west longitude (-71.86890 °E). The UTM (Universal Transverse Mercator) coordinates in the middle of the Site are 4,668,650 meters north and 262,890 meters east in Zone 19.

Oxford Assessor’s Map 32A identifies the Site as Lot D29, which consists of 13,940 square feet (approximately 0.32 acres) of land. Figure 2 (Property Overview) shows the property in relation

¹ Defined at 310 CMR 40.0006 as “any structure, well, pit, pond, lagoon, impoundment, ditch, landfill or other place or area, excluding ambient air or surface water, where uncontrolled oil and/or hazardous material [OHM] has come to be located as a result of any spilling, leaking, pouring, abandoning, emitting, emptying, discharging, injecting, escaping, leaching, dumping, discarding or otherwise disposing of such [OHM].”

² Defined at 310 CMR 40.0006 as “a 72-hour notification condition at a disposal site that is further defined at 310 CMR 40.0313(4) and includes any of the following:

- (a) releases that have resulted in the discharge of separate-phase oil and/or separate-phase hazardous material to surface waters, subsurface structures, or underground utilities or conduits;
- (b) releases to the ground surface or to the vadose zone that, if not promptly removed or contained, are likely to significantly impact the underlying groundwater, or significantly exacerbate an existing condition of groundwater pollution;
- (c) releases to the groundwater that have migrated or are expected to migrate more than 200 feet per year;
- (d) releases to the groundwater that have been or are within one year likely to be detected in a public or private water supply well;
- (e) releases to the groundwater that have been or are within one year likely to be detected in a surface water body, wetland, or public water supply reservoir; or
- (f) releases to the groundwater that have resulted or have the potential to result in the discharge of vapors into a School, Daycare or Child Care Center or occupied Residential Dwelling.”

to abutting parcels and other geographic features. Figure 3 (Site Plan) depicts the limits of the RTN 2-19665 ‘disposal site’ in relation to Property boundaries and other features.

1.3 CURRENT SITE OCCUPANT & USE

A one-story single-family home has occupied the Site since circa 1960. The Property appears to have consisted of undeveloped land prior to that.

1.4 RELEASE AT SITE

According to the Site owner, Mr. Peter McCarthy, Peterson Oil Service (Peterson) of Worcester, Massachusetts filled a 275-gallon fuel oil aboveground storage tank (AST) located in the basement of the house in April 2015. The residents do not use the fuel oil during the warmer months. The occupant attempted to turn the heating system on in the fall of 2015 but it would not start. At approximately 5:00 p.m. on October 8, 2015, Peterson inspected the AST and found it to be empty.

CMG identified two 72-hour reporting conditions at the Site:

- Groundwater contamination in excess of RCGW-1 standards within 500' of private drinking water supply wells; and
- Non-aqueous phase liquid (NAPL) $>\frac{1}{2}$ " thick at a location $>30'$ from an occupied residential dwelling.

1.5 IRA APPROVAL

At 5:40 p.m. on October 8, 2015 Mr. Howard Peterson of Peterson Oil Company verbally reported the two-hour release identified as RTN 2-19665 to DEP on behalf of Mr. McCarthy. On October 22, 2015, Mr. Robert Dunne of DEP granted verbal approval to excavate up to 50 cubic yards of contaminated soil and recover NAPL from Site groundwater. On November 16, 2015, DEP approved increasing the total amount of soil removal to 100 cubic yards.

CMG prepared a written IRA Plan for RTN 2-19665, which Mr. McCarthy submitted via eDEP on December 4, 2015, that documented our approved verbal IRA Plan. CMG deemed this IRA Plan tacitly approved on December 25, 2015 following completion of the 21-day presumptive approval period set forth at 310 CMR 40.0420(9), since DEP did not issue any written denial of our plan during this interval.

1.6 POTENTIALLY RESPONSIBLE PARTY INFORMATION

PRP³ Name: Peter McCarthy (owner)

Address: 93 Tory Fort Lane
Worcester, MA 01602

Contact: Mr. Peter McCarthy
508-361-1617

³ “PRP” = Potentially Responsible Party, defined at 310 CMR 40.0006 as “a person who is potentially liable pursuant to M.G.L. c. 21E” (Massachusetts General Law Chapter 21E, the Massachusetts Oil and Hazardous Material Release Prevention Act).

1.7 PUBLIC NOTIFICATION [40.1403(3)(f) & 40.1406(3)]

Appendix A presents copies of the notification letters CMG sent to abutting homeowners to satisfy MCP public involvement requirements regarding drinking water sampling (see Section 2.1.2).

2.0 RESPONSE ACTION STATUS [40.0425]

The MCP requires submittal of additional IRA Status Reports every six months following submittal of the first such report. CMG submitted the initial IRA Status Report on February 5, 2016. This report is the second IRA Status Report for RTN 2-19665.

2.1 IRA ACTIVITIES CONDUCTED SINCE PREVIOUS STATUS REPORT [40.0425(3)(a)]

2.1.1 GROUNDWATER SAMPLING & ANALYSIS

On February 19 & May 26, 2016, CMG gauged depth to groundwater in Site monitoring wells MW-1 through MW-8. We used low-flow sampling techniques to collect groundwater samples from MW-1 through MW-5 on February 19, and wells MW-1 through MW-5 & MW-8 on May 26, 2016. CMG submitted these samples to Eurofins Spectrum Analytical, Inc. (Spectrum) of Agawam, Massachusetts for analysis of volatile petroleum hydrocarbons (VPH) with target volatile organic compound (VOC) identifications and extractable petroleum hydrocarbons (EPH) with target polynuclear aromatic hydrocarbon (PAH) identifications. Table 2 (following the Figures) summarizes groundwater analytical results CMG has obtained so far at the Site. Appendix C includes Spectrum certificates of analysis and chain-of-custody documentation.

Spectrum did not identify any of the tested parameters in either MW-2 or MW-3 above laboratory reporting limits. MW-1 exhibited low concentrations of xylenes on February 19 and EPH on February 19 & May 26, 2016, significantly below their applicable reportable concentrations.

The analytical results do not indicate the presence of any of the tested parameters above laboratory reporting limits in the sample collected from MW-4 on February 19, 2016. However, on May 26, 2016, this well exhibited low concentrations of the VOCs benzene, naphthalene & xylenes and VPH concentrations, all at levels below the applicable reportable concentrations. The analysis of the sample from MW-8 collected on May 26, 2016 also indicated a concentration of VPH C₉-C₁₀ aromatics below the applicable reportable concentration.

Monitoring well MW-5 was the only well with significant detections of multiple VOCs, VPH, and EPH. This well had concentrations of benzene and VPH C₉-C₁₀ aromatics above the reportable concentrations. Based on this information, CMG concludes that at least one more groundwater sampling event is necessary to demonstrate that groundwater contamination is naturally attenuating and approaching background conditions.

CMG collected groundwater samples from monitoring wells MW-1, MW-4, MW-5, and MW-8 on July 28, 2016. We submitted these samples to Spectrum for analysis of VPH and EPH; however, we did not receive laboratory analytical results for these samples prior to the date of this IRA Status Report. CMG will include analytical results in our next IRA Status Report.

CMG inspected recovery wells RW-1 & RW-2 at the Site on May 26, 2016. Both recovery wells had absorbent pads; CMG observed brown staining on each pad and a sheen on the surface of the water in the wells. We did not note any petroleum odor.

2.1.2 DRINKING WATER SAMPLING & ANALYSIS

On February 19, 2016, CMG collected tap samples from the kitchen sinks of both 10 Hammond Street and 22 Hammond Street. We removed the aerators and purged the taps for approximately 15 minutes each prior to obtaining drinking water samples. CMG submitted these samples to Spectrum for analysis of VOCs via EPA Method 524.2, EPH, and PAHs. Table 3 summarizes drinking water analytical results CMG has obtained so far at the Site. Appendix C includes Spectrum certificates of analysis and chain-of-custody documentation.

The laboratory results did not identify any parameters in the sample from 22 Hammond Street above laboratory reporting limits. The sample from 10 Hammond Street had low detections of VOCs chloroform and 1,1,1-trichlorethane (TCA). These concentrations are significantly below the DEP groundwater standards and the state and federal drinking water guidelines. The analysis did not identify any other concentrations above laboratory reporting limits in this sample.

CMG sent letters to the homeowners on March 8, 2016 regarding the results of drinking water sampling, along with copies of the laboratory results and Forms BWSC 123 (Notice of Environmental Sampling) & BWSC 124 (Informational Notice about IRAs). Appendix A includes copies of these letters and forms.

2.1.3 SURFACE WATER SAMPLING & ANALYSIS

On May 26 & June 10, 2016, CMG collected surface water samples from the pond adjoining the Site. In May, the distance from MW-2 to the edge of sediment/surface water was 19' and from MW-3 it was 6.5'. CMG noted there was a layer of scum on the pond in May, the majority of which appeared to be pine pollen. In June, we noted that the pond water was much clearer than on the previous Site visit, with almost no pollen or algae on the water. CMG collected the June surface water sample from the same location at Carbuncle Pond (about halfway along the dock at the rear of 18 Hammond Street). We submitted both surface water samples to Spectrum for EPH analysis with target PAH identifications on each date. Table 4 summarizes surface water analytical results CMG has obtained so far at the Site. Appendix C includes Spectrum certificates of analysis and chain-of-custody documentation.

CMG compared surface water analytical results to the DEP Ambient Water Quality Guide values and EPA Freshwater Ambient Water Quality Criteria. Laboratory analysis identified 173 µg/L EPH C₁₉-C₃₆ aliphatics and 171 µg/L EPH C₁₁-C₂₂ aromatics in the May sample. The only available guidance values for these EPH fractions are 2,100 µg/L for C₁₉-C₃₆ aliphatics (from the DEP Ambient Water Quality Guide) and 300 µg/L for C₁₁-C₂₂ aromatics (the marine acute screening value for total PAHs from the EPA Freshwater criteria). Therefore these detections are significantly below the existing guidance values. Spectrum did not detect any EPH or target PAH identifications in the June sample.

When CMG received the analytical results from our May 26 sampling (on 6/10/16), we opined that the detection of EPH C₁₉-C₃₆ aliphatics & C₁₁-C₂₂ aromatics in surface water might possibly constitute a condition of SRM pursuant to 310 CMR 40.0313(4)(e), hence an additional 72-hour reporting condition associated with RTN 2-19665. Therefore we called the DEP Central Region Emergency Response Branch at 1:11 on June 10, 2016 and left a message for Mr. Jason Ward regarding the surface water analytical results. Mr. Ward called CMG back at 2:40 p.m. that same day after having discussed this result with other DEP staff. We agreed to conduct additional

testing to determine if the surface water results were reproducible (and if so, whether they were attributable to the RTN 2-19665 fuel oil release).

CMG requested that Spectrum provide chromatograms of the May 26 surface water sample, chromatograms for the groundwater sample well collected from monitoring well MW-5 on May 26 (Spectrum ID SC21910-05), and a reference chromatogram of No. 2 fuel oil for comparison. Appendix B includes copies of these chromatograms. Comparison of these chromatograms indicates there is no similarity between EPH detected in the May 26 surface water sample and EPH detected from the sampling of monitoring well MW-5 on the same date. Furthermore, the aliphatics fraction chromatograms for the May 26 surface water sample exhibits six significant peaks at regular intervals after 8½ minutes that are well beyond the retention time for the ordinary constituents of No. 2 fuel oil; CMG opines that these are high-molecular weight *n*-alkanes associated with plant waxes.

CMG concludes that EPH detections in the May 26, 2016 surface water sample we collected from Carbuncle Pond behind 18 Hammond Street are not related to the RTN 2-19665 fuel oil release, nor were they reproducible. CMG opines that the initial (5/26/16 sampling) EPH results were the result of pond scum, including a significant amount of pine pollen, inadvertently collected with the surface water sample. Therefore CMG concludes that EPH detections in the May 26 surface water sample do not constitute a 72-hour reporting condition associated with RTN 2-19665. No release retraction is necessary, since DEP (Jason Ward) neither opened a new RTN on June 10 due to CMG's phone call, nor did he add our findings as an additional notification condition for RTN 2-19665 at that time. CMG summarized these activities in a letter dated July 6, 2016 to DEP. Appendix B includes a copy of the letter and DEP correspondence.

2.1.4 SEDIMENT SAMPLING & ANALYSIS

On May 26, 2016, CMG collected a sediment sample from the edge of the surface water and submitted it for EPH and PAH analysis. Spectrum did not identify any EPH or PAHs in this sample. Table 5 summarizes sediment analytical results CMG has obtained so far at the Site. Appendix C includes Spectrum certificates of analysis and chain-of-custody documentation.

2.2 SIGNIFICANT NEW INFORMATION OR DATA [40.0425(3)(b)]

CMG obtained the following significant new information or data:

- Additional groundwater monitoring and sampling is necessary to achieve a Permanent Solution at the Site,
- The RTN 2-19665 release has not significantly impacted drinking water at the Site or in the vicinity, and
- The release has not significantly impacted surface water at Carbuncle Pond.

2.3 REMEDIATION WASTE [40.0425(3)(c)]

Mr. McCarthy has not generated any remediation waste related to RTN 2-19665 since the date of our IRA Plan; CMG does not anticipate generating any during the remaining course of this IRA.

2.4 REMEDIATION SYSTEM MONITORING DATA [40.0425(3)(d)]

CMG has not operated any remedial systems at the Site to date.

2.5 MITIGATION OF CRITICAL EXPOSURE PATHWAY [40.0425(5)]

The MCP defines Critical Exposure Pathway (CEP) at 310 CMR 40.0006(12) as:

... those routes by which [OHM] released at a disposal site are transported, or are likely to be transported, to human receptors via:

- (a) vapor-phase emissions of measurable concentrations of [OHM] into the living or working space of a pre-school, daycare, school or occupied residential dwelling; or
- (b) ingestion, dermal absorption or inhalation of measurable concentrations of [OHM] from drinking water supply wells located at and servicing a pre-school, daycare, school or occupied residential dwelling.

DEP monitored indoor air in the residence at the time of the release (October 8, 2015) and did not detect any measurable vapor-phase emissions related to RTN 2-19665.

CMG has obtained drinking water samples from three nearby private drinking water supply source to date. The only detections in drinking water were of chloroform, methyl tertiary butyl ether, tertiary amyl methyl ether, and TCA, all of which were at concentrations significantly below all established standards.

Based on the above information, CMG has not identified evidence to suggest that a CEP exists as a result of the RTN 2-19665 release. However, we will attempt to sample drinking water at 3 Chaffee Lane, the only adjoining property with a private water supply which CMG has not yet sampled, to confirm that the release has not impacted any drinking water supply wells.

2.6 ADDITIONAL INFORMATION [40.0425(3)(d)]

CMG is not aware of any other information requested by DEP regarding the IRA for RTN 2-19665.

2.7 LICENSED SITE PROFESSIONAL (LSP) OPINION [40.0425(3)(e)]

CMG prepared a Form BWSC105 ["Immediate Response Action (IRA) Transmittal Form"] using the eDEP electronic submittal system. Section E of this form presents the LSP Opinion regarding this IRA Status Report for RTN 2-19665. Section I of this form presents the certification required by 310 CMR 40.0425(3)(e). CMG has attached a .pdf copy of this IRA Status Report to the Form BWSC105 submitted electronically.

3.0 LIMITATIONS & CONDITIONS

3.1 METHODOLOGY

CMG Environmental, Inc. followed guidelines set forth by the DEP in the MCP and employed a "level of diligence reasonably necessary to obtain the quantity and quality of information adequate to assess" the Site in accordance with the Response Action Performance Standard promulgated at 310 CMR 40.0191.

Moreover, CMG followed guidelines set forth by DEP in the MCP. We specifically complied with IRA requirements set forth at 310 CMR 40.0410 through 40.0429.

3.2 SCOPE OF SERVICES

Mr. Peter McCarthy authorized CMG to conduct IRA activities, including preparation of this IRA Status Report, on October 16, 2015. We performed the following scope of services between February and August 2016:

- Collected groundwater samples from Site monitoring wells on February 19 & May 26, 2016 and submitted them for laboratory analysis of VPH & EPH;
- Collected drinking water samples from abutting properties on February 19, 2016 and submitted them for laboratory analysis of VOCs & EPH;
- Collected surface water samples from the adjoining Carbuncle Pond on May 26 & June 10, 2016 and submitted them for laboratory analysis of EPH & PAHs;
- Collected a sediment sample from the edge of the pond on May 26, 2016 and submitted it for laboratory analysis of EPH & PAHs;
- Compared analytical results to available state and federal standards or guidelines;
- Inspected Carbuncle Pond and Site recovery wells for potential NAPL;
- Prepared abutter notification letters to inform adjoining property owners about environmental sampling conducted on their properties;
- Maintained correspondence with DEP to ensure that Mr. McCarthy has met all reporting requirements;
- Prepared an IRA Status Report transmittal form for Mr. McCarthy's electronic certification and eDEP submittal; and
- Prepared this IRA Status Report.

3.3 GENERAL LIMITATIONS

CMG conducted IRA response actions in accordance with generally accepted engineering and hydrogeologic practices. CMG makes no other warranty, express or implied. CMG cannot provide absolute assurance that we have identified any and all recognized environmental conditions (including DEP reportable conditions) at the Site.

Where CMG included visual or other observations in this report, they represent conditions visibly and/or physically observed at the time of the inspection, or verified through interviewing or by record review, and may not be indicative of past or future Site conditions.

Please be advised that environmental conditions at the Site and surrounding properties may change in time. CMG does not render an opinion as to environmental Site conditions that change after the date of the environmental studies reported herein.

3.4 SPECIFIC CONDITIONS OF THE IRA STATUS REPORT

CMG based the conclusions of this report, in large part, on information provided by the client, their agents, or third parties, including state or local officials. CMG assumes no responsibility for the accuracy and completeness of this information. CMG based the conclusions discussed herein solely and in reliance upon information collected during activities detailed in our Scope of Services (see Section 3.2 above).

CMG's subsurface investigation included the collection and laboratory analysis of soil, groundwater, and drinking water samples from a limited number of locations at the Site. However, CMG did not intend this study to be a definitive investigation of subsurface conditions at the Site. CMG restricted the scope of services for this investigation due to time and/or cost constraints, and though we did undertake a limited amount of analytical testing, currently unrecognized subsurface conditions may exist at the Site. Increasing exploration (such as placement of test pits, completion of additional soil borings with subsequent collection of soil samples for laboratory analysis, installation of additional groundwater monitoring wells with subsequent collection of groundwater samples for laboratory analysis, and conducting surface geophysical survey techniques) may better delineate subsurface conditions.

CMG's Site inspection included observing the Site and surrounding area. However not all Site boundaries were clearly delineated, making it difficult to distinguish certain Site features from those of the surrounding area. Therefore, the location of certain Site features described in this Report and depicted on the figures may be approximate.

3.5 RELIANCE

CMG prepared this IRA Plan for the sole use of Mr. McCarthy, his successors and assigns to address DEP reporting obligations regarding assessment and remediation activities associated with RTN 2-19665. CMG does not authorize use of this information by others for any reason, except with our prior written consent.

4.0 REFERENCES

OXFORD

Assessor's Office: records and mapping reviewed online at http://www.town.oxford.ma.us/Pages/OxfordMA_Assessor/index.

MASSACHUSETTS

Department of Environmental Protection: Massachusetts Contingency Plan regulations (310 CMR 40.0000), April 25, 2014 revision.

Division of Water Pollution Control regulations (314 CMR 4.00): December 27, 1996 revision.

Geographic Information Systems: MassDEP Priority Resource Map Viewer information downloaded December 1, 2015 from <http://maps.massgis.state.ma.us/21E/viewer.htm>.

UNITED STATES

Geological Survey: "Worcester South, Massachusetts" 7.5×15-minute metric series topographic quadrangle, dated 1983.

PREVIOUS ENVIRONMENTAL REPORTS PREPARED BY CMG:

- "Immediate Response Action Plan," dated December 4, 2015;
- "Initial Immediate Response Action Status Report," dated February 5, 2016; and
- "Carbuncle Pond Surface Water Sampling Results," dated July 6, 2016.

FIGURES

FIGURE 1 – SITE LOCATION

FIGURE 2 – PROPERTY OVERVIEW

FIGURE 3 – SITE PLAN

FIGURE 4 – PRIORITY RESOURCE MAP

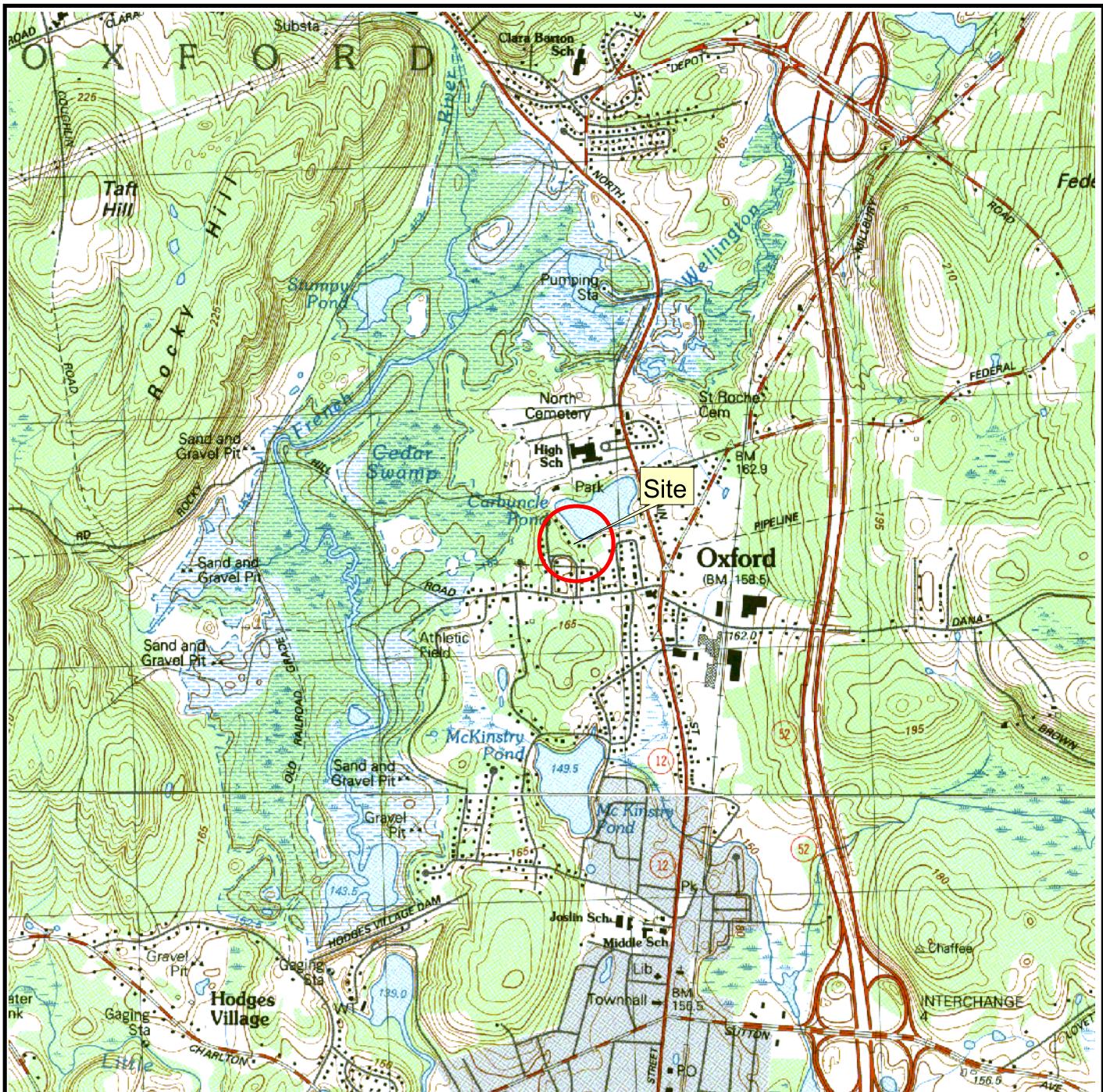
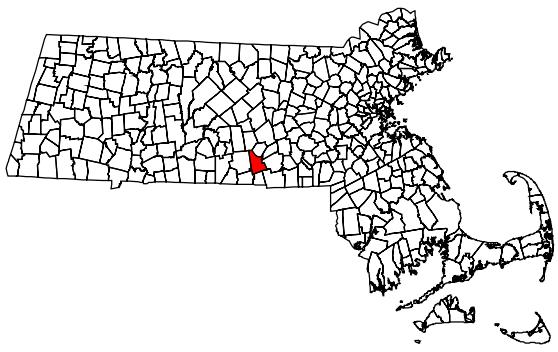


FIGURE 1
SITE LOCATION
18 Hammond Street
Oxford, Massachusetts
CMG ID 2015-120



TOWN LOCATION - OXFORD, MA

SCALE 1:24000

0.5 Miles



CMG ENVIRONMENTAL, INC.
67 HALL ROAD
STURBRIDGE, MA 01566



FIGURE 2: PROPERTY OVERVIEW
18 HAMMOND STREET, OXFORD MA
CMG ID 2015-120

CMG ENVIRONMENTAL, INC.
67 HALL ROAD
STURBRIDGE, MA 01566

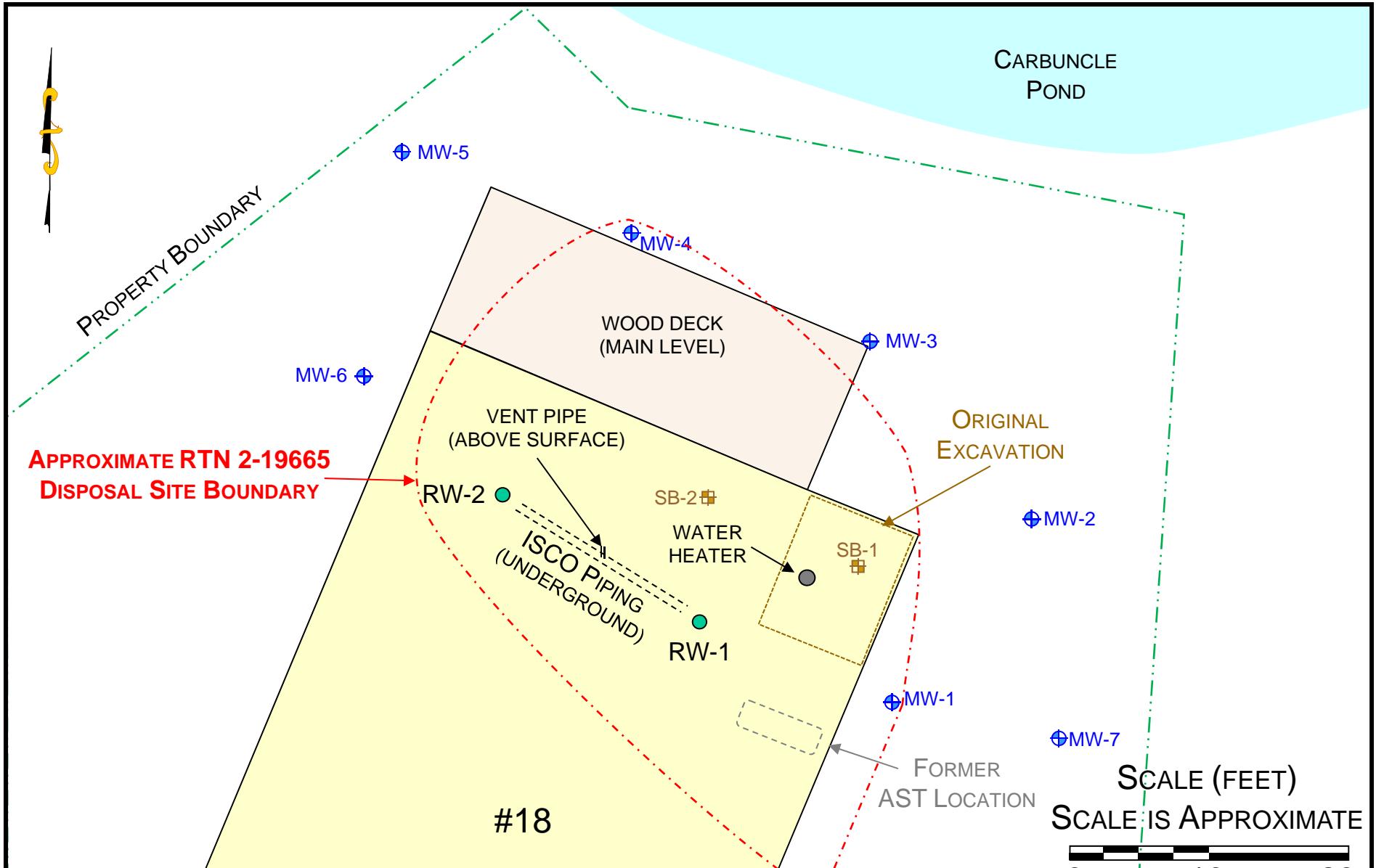


FIGURE 3: SITE PLAN
18 HAMMOND STREET, OXFORD MA
CMG ID 2015-120

CMG ENVIRONMENTAL, INC.
67 HALL ROAD
STURBRIDGE, MA 01566

MassDEP - Bureau of Waste Site Cleanup

Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

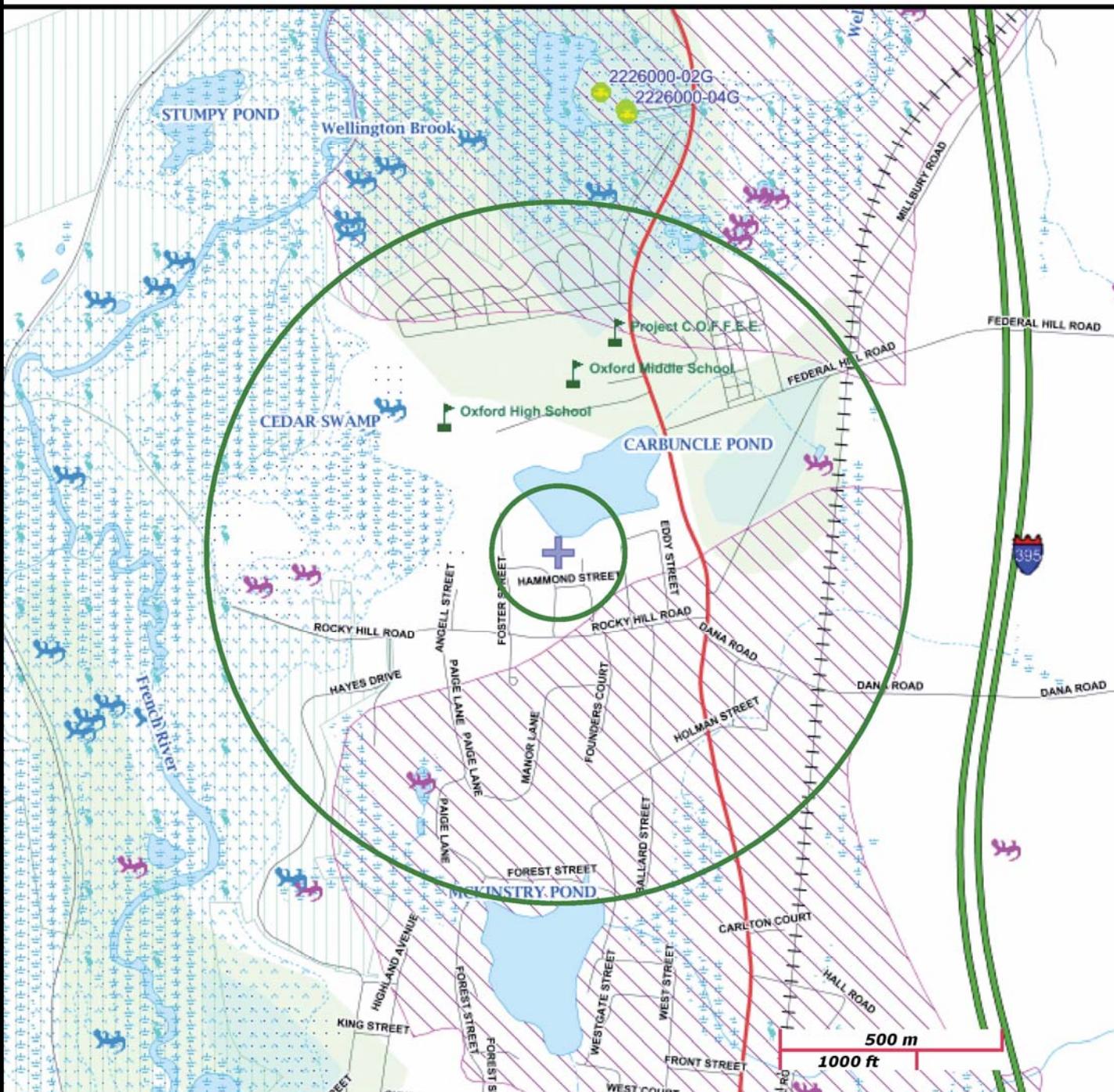
Site Information:

18 HAMMOND STREET OXFORD, MA
2-000019665
NAD83 UTM Meters:
4668845mN, 262883mE (Zone: 19)
December 1, 2015

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: <http://www.mass.gov/mqis/>.



MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

PWS Protection Areas: Zone II, ICPA, Zone A

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Wetlands: Freshwater, Saltwater, Cranberry Bog

Aquifers: Medium Yield, High Yield, EPA Sole Source

FEMA 100yr Floodplain; Protected Open Space; ACEC

Non Potential Drinking Water Source Area: Medium, High (Yield)

Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential

FIGURE 4: PRIORITY RESOURCE MAP
18 HAMMOND STREET, OXFORD MA
CMG ID 2015-120

CMG ENVIRONMENTAL, INC.
67 HALL ROAD
STURBRIDGE, MA 01566

TABLES

(NUMBERED IN ACCORDANCE WITH PREVIOUS SUBMITTALS FOR RTN 2-19665)

TABLE 2 – GROUNDWATER QUALITY DATA

TABLE 3 – DRINKING WATER QUALITY DATA

TABLE 4 – SURFACE WATER QUALITY DATA

TABLE 5 – SEDIMENT QUALITY DATA

TABLE 2

GROUNDWATER QUALITY DATA ($\mu\text{G/L}$)

RTN 2-19665

Test	Parameter	RCGW-1	RCGW-2	MW-1			MW-2		
		Reportable Concentrations		5.97' 11/11/15	4.90' 2/19/16	4.51' 5/26/16	3.97' 12/11/15	2.70' 2/19/16	2.11' 5/26/16
VOCs	Benzene	5	1,000	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00
	Ethylbenzene	700	5,000	11.9	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00
	Methyl Tertiary Butyl Ether	70	5,000	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00
	Naphthalene	140	700	16.1	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00
	Toluene	1,000	40,000	17.8	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00
	<i>m, p</i> -Xylenes	3,000	3,000	43.0	BRL<10.0	BRL<10.0	BRL<10.0	BRL<10.0	BRL<10.0
	<i>o</i> -Xylene	3,000	3,000	32.1	6.44	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00
	Xylenes (total)	3,000	3,000	75.1	6.44	BRL<10.0	BRL<5.00	BRL<5.00	BRL<10.0
VPH	C ₅ -C ₈ Aliphatics	300	3,000	107	BRL<75.0	BRL<75.0	BRL<75.0	BRL<75.0	BRL<75.0
	C ₉ -C ₁₂ Aliphatics	700	5,000	138	27.4	32.2	BRL<25.0	BRL<25.0	BRL<25.0
	C ₉ -C ₁₀ Aromatics	200	4,000	256	44.1	68.4	BRL<25.0	BRL<25.0	BRL<25.0
EPH	C ₉ -C ₁₈ Aliphatics	700	5,000	137	BRL<100	BRL<103	BRL<103	BRL<100	BRL<100
	C ₁₉ -C ₃₆ Aliphatics	14,000	50,000	BRL<102	BRL<100	BRL<103	BRL<103	BRL<100	BRL<100
	C ₁₁ -C ₂₂ Aromatics	200	5,000	234	BRL<100	BRL<103	BRL<103	BRL<100	BRL<100
PAHs	Naphthalene	140	700	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	2-Methylnaphthalene	10	2,000	5.59	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	Acenaphthylene	30	40	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	Acenaphthene	20	10,000	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	Fluorene	30	40	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	Phenanthrene	40	10,000	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	Anthracene	30	30	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	Fluoranthene	90	200	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	Pyrene	20	20	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	Benzo(a)anthracene	1	1,000	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	Chrysene	2	70	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	Benzo(b)fluoranthene	1	400	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	Benzo(k)fluoranthene	1	100	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00
	Benzo(a)pyrene	0.2	500	BRL<5.10	BRL<0.200	BRL<5.15	BRL<5.15	BRL<0.200	BRL<5.00
	Indeno(1,2,3-cd)pyrene	0.5	100	BRL<5.10	BRL<0.500	BRL<5.15	BRL<5.15	BRL<0.500	BRL<5.00
	Dibenzo(a,h)anthracene	0.5	40	BRL<5.10	BRL<0.500	BRL<5.15	BRL<5.15	BRL<0.500	BRL<5.00
	Benzo(g,h,i)perylene	20	20	BRL<5.10	BRL<1.00	BRL<5.15	BRL<5.15	BRL<1.00	BRL<5.00

Notes BRL = Below laboratory Reporting Limit

Yellow highlight = Exceeds RCGW-1 standard

TABLE 2

GROUNDWATER QUALITY DATA ($\mu\text{G/L}$)

RTN 2-19665

Test	Parameter	RCGW-1	RCGW-2	MW-3			MW-4		
		Reportable Concentrations		2.78' 12/11/15	9.65' 2/19/16	1.08' 5/26/16	2.02' 12/11/15	1.21' 2/19/16	0.74' 5/26/16
VOCs	Benzene	5	1,000	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00
	Ethylbenzene	700	5,000	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	5.25
	Methyl Tertiary Butyl Ether	70	5,000	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00
	Naphthalene	140	700	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	5.23
	Toluene	1,000	40,000	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00
	<i>m, p</i> -Xylenes	3,000	3,000	BRL<10.0	BRL<10.0	BRL<10.0	BRL<10.0	BRL<10.0	BRL<10.0
	<i>o</i> -Xylene	3,000	3,000	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	13.0
VPH	Xylenes (total)	3,000	3,000	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	BRL<5.00	13.0
	$\text{C}_5\text{-}\text{C}_8$ Aliphatics	300	3,000	BRL<75.0	BRL<75.0	BRL<75.0	BRL<75.0	BRL<75.0	BRL<75.0
	$\text{C}_9\text{-}\text{C}_{12}$ Aliphatics	700	5,000	BRL<25.0	BRL<25.0	BRL<25.0	BRL<25.0	BRL<25.0	25.8
EPH	$\text{C}_9\text{-}\text{C}_{10}$ Aromatics	200	4,000	BRL<25.0	BRL<25.0	BRL<25.0	BRL<25.0	BRL<25.0	68.1
	$\text{C}_9\text{-}\text{C}_{18}$ Aliphatics	700	5,000	BRL<101	BRL<100	BRL<103	BRL<100	BRL<100	BRL<104
	$\text{C}_{19}\text{-}\text{C}_{36}$ Aliphatics	14,000	50,000	BRL<101	BRL<100	BRL<103	BRL<100	BRL<100	BRL<104
PAHs	$\text{C}_{11}\text{-}\text{C}_{22}$ Aromatics	200	5,000	BRL<101	BRL<100	BRL<103	BRL<100	BRL<100	BRL<104
	Naphthalene	140	700	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	2-Methylnaphthalene	10	2,000	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	Acenaphthylene	30	40	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	Acenaphthene	20	10,000	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	Fluorene	30	40	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	Phenanthrene	40	10,000	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	Anthracene	30	30	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	Fluoranthene	90	200	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	Pyrene	20	20	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	Benzo(a)anthracene	1	1,000	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	Chrysene	2	70	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	Benzo(b)fluoranthene	1	400	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	Benzo(k)fluoranthene	1	100	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21
	Benzo(a)pyrene	0.2	500	BRL<5.05	BRL<0.200	BRL<5.15	BRL<5.00	BRL<0.200	BRL<5.21
	Indeno(1,2,3-cd)pyrene	0.5	100	BRL<5.05	BRL<0.500	BRL<5.15	BRL<5.00	BRL<0.500	BRL<5.21
	Dibenzo(a,h)anthracene	0.5	40	BRL<5.05	BRL<0.500	BRL<5.15	BRL<5.00	BRL<0.500	BRL<5.21
	Benzo(g,h,i)perylene	20	20	BRL<5.05	BRL<1.00	BRL<5.15	BRL<5.00	BRL<1.00	BRL<5.21

Notes BRL = Below laboratory Reporting Limit

Yellow highlight = Exceeds RCGW-1 standard

TABLE 2

GROUNDWATER QUALITY DATA ($\mu\text{G/L}$)

RTN 2-19665

Test	Parameter	RCGW-1	RCGW-2	MW-5	MW-8
		Reportable Concentrations		2.10' 2/19/16	1.48' 5/26/16
VOCs	Benzene	5	1,000	BRL<5.00	6.86
	Ethylbenzene	700	5,000	BRL<5.00	24.3
	Methyl Tertiary Butyl Ether	70	5,000	BRL<5.00	BRL<5.00
	Naphthalene	140	700	BRL<5.00	15.3
	Toluene	1,000	40,000	BRL<5.00	BRL<5.00
	<i>m, p</i> -Xylenes	3,000	3,000	BRL<10.0	BRL<10.0
	<i>o</i> -Xylene	3,000	3,000	BRL<5.00	BRL<5.00
	Xylenes (total)	3,000	3,000	BRL<5.00	BRL<5.00
VPH	C ₅ -C ₈ Aliphatics	300	3,000	BRL<75.0	126
	C ₉ -C ₁₂ Aliphatics	700	5,000	BRL<25.0	113
	C ₉ -C ₁₀ Aromatics	200	4,000	BRL<25.0	297
EPH	C ₉ -C ₁₈ Aliphatics	700	5,000	BRL<100	603
	C ₁₉ -C ₃₆ Aliphatics	14,000	50,000	BRL<100	BRL<104
	C ₁₁ -C ₂₂ Aromatics	200	5,000	BRL<100	BRL<104
PAHs	Naphthalene	140	700	BRL<1.00	BRL<5.21
	2-Methylnaphthalene	10	2,000	BRL<1.00	BRL<5.21
	Acenaphthylene	30	40	BRL<1.00	BRL<5.21
	Acenaphthene	20	10,000	BRL<1.00	BRL<5.21
	Fluorene	30	40	BRL<1.00	BRL<5.21
	Phenanthrene	40	10,000	BRL<1.00	BRL<5.21
	Anthracene	30	30	BRL<1.00	BRL<5.21
	Fluoranthene	90	200	BRL<1.00	BRL<5.21
	Pyrene	20	20	BRL<1.00	BRL<5.21
	Benzo(a)anthracene	1	1,000	BRL<1.00	BRL<5.21
	Chrysene	2	70	BRL<1.00	BRL<5.21
	Benzo(b)fluoranthene	1	400	BRL<1.00	BRL<5.21
	Benzo(k)fluoranthene	1	100	BRL<1.00	BRL<5.21
	Benzo(a)pyrene	0.2	500	BRL<0.200	BRL<5.21
	Indeno(1,2,3-cd)pyrene	0.5	100	BRL<0.500	BRL<5.21
	Dibenzo(a,h)anthracene	0.5	40	BRL<0.500	BRL<5.21
	Benzo(g,h,i)perylene	20	20	BRL<1.00	BRL<5.21

Notes BRL = Below laboratory Reporting Limit

Yellow highlight = Exceeds RCGW-1 standard

TABLE 3

DRINKING WATER QUALITY DATA ($\mu\text{G/L}$)

RTN 2-19665

Test	Parameter	MA Drinking Water Standards	DEP GW-1 Groundwater Standards	EPA Drinking Water Standards	19 Hammond Tap 11/11/15	10 Hammond Tap 2/19/16	22 Hammond Tap 2/19/16
VOCs	Chloroform	70	50	70*	4.07	1.64	BRL<0.50
	Methyl Tertiary Butyl Ether (MTBE)	70	70	70* (40 [†])	5.04	BRL<0.50	BRL<0.50
	1,1,1-Trichloroethane (TCA)	200	200	200	BRL<0.50	0.54	BRL<0.50
	Tertiary Amyl Methyl Ether (TAME)	90 [‡]	NE	NE	0.61	BRL<0.50	BRL<0.50
	All Other VOCs		Varies		All BRL	All BRL	All BRL
EPH	C ₉ -C ₁₈ Aliphatics	700 [‡]	700	NE	BRL<100	BRL<100	BRL<100
	C ₁₉ -C ₃₆ Aliphatics	14,000 [‡]	14,000	NE	BRL<100	BRL<100	BRL<100
	C ₁₁ -C ₂₂ Aromatics	200 [‡]	200	NE	BRL<100	BRL<100	BRL<100
PAHs	Naphthalene	140	140	140*	BRL<1.00	BRL<1.00	BRL<1.00
	2-Methylnaphthalene	NE	10	NE	BRL<1.00	BRL<1.00	BRL<1.00
	Acenaphthylene	NE	30	NE	BRL<1.00	BRL<1.00	BRL<1.00
	Acenaphthene	NE	20	NE	BRL<1.00	BRL<1.00	BRL<1.00
	Fluorene	NE	30	NE	BRL<1.00	BRL<1.00	BRL<1.00
	Phenanthrene	NE	40	NE	BRL<1.00	BRL<1.00	BRL<1.00
	Anthracene	NE	30	NE	BRL<1.00	BRL<1.00	BRL<1.00
	Fluoranthene	NE	90	NE	BRL<1.00	BRL<1.00	BRL<1.00
	Pyrene	NE	20	100*	BRL<1.00	BRL<1.00	BRL<1.00
	Benzo(a)anthracene	NE	1	NE	BRL<1.00	BRL<1.00	BRL<1.00
	Chrysene	NE	2	NE	BRL<1.00	BRL<1.00	BRL<1.00
	Benzo(b)fluoranthene	NE	1	NE	BRL<1.00	BRL<1.00	BRL<1.00
	Benzo(k)fluoranthene	NE	1	NE	BRL<1.00	BRL<1.00	BRL<1.00
	Benzo(a)pyrene	0.2	0.2	0.2*	BRL<0.200	BRL<0.200	BRL<0.200
	Indeno(1,2,3-cd)pyrene	NE	0.5	NE	BRL<0.500	BRL<0.500	BRL<0.500
	Dibenzo(a,h)anthracene	NE	0.5	NE	BRL<0.500	BRL<0.500	BRL<0.500
	Benzo(g,h,i)perylene	NE	20	NE	BRL<1.00	BRL<1.00	BRL<1.00

Notes BRL = Below laboratory Reporting Limit

NE = Not established

* EPA Drinking Water Primary Standard

† EPA Drinking Water Secondary Standard

‡ DEP Office of Research & Standards (ORSG) guideline value

TABLE 4

SURFACE WATER QUALITY DATA ($\mu\text{G/L}$)

RTN 2-19665

Test	Parameter	DEP Ambient Water Quality Guide Value	EPA Freshwater Ambient Water Quality Criteria		SW	
			Chronic	Acute	5/26/16	6/10/16
EPH	C ₉ -C ₁₈ Aliphatics	1,800		300 ^t	BRL<100	BRL<105
	C ₁₉ -C ₃₆ Aliphatics	2,100			173	BRL<105
	C ₁₁ -C ₂₂ Aromatics	—			171	BRL<105
PAHs	Naphthalene		420	2,300	BRL<5.00	BRL<5.00
	2-Methylnaphthalene		330*	—	BRL<5.00	BRL<5.00
	Acenaphthylene		4,840*	—	BRL<5.00	BRL<5.00
	Acenaphthene		520	1,700	BRL<5.00	BRL<5.00
	Fluorene		3.9*	70*	BRL<5.00	BRL<5.00
	Phenanthrene		3.6*	30*	BRL<5.00	BRL<5.00
	Anthracene		0.73*	13*	BRL<5.00	BRL<5.00
	Fluoranthene		0.04*	3,980	BRL<5.00	BRL<5.00
	Pyrene		0.025*	—	BRL<5.00	BRL<5.00
	Benzo(a)anthracene		0.027*	0.49*	BRL<5.00	BRL<5.00
	Chrysene		—	—	BRL<5.00	BRL<5.00
	Benzo(b)fluoranthene		9.07*	—	BRL<5.00	BRL<5.00
	Benzo(k)fluoranthene		—	—	BRL<5.00	BRL<5.00
	Benzo(a)pyrene		0.014*	0.24*	BRL<5.00	BRL<5.00
	Indeno(1,2,3-cd)pyrene		4.31*	—	BRL<5.00	BRL<5.00
	Dibenzo(a,h)anthracene		—	—	BRL<5.00	BRL<5.00
	Benzo(q,h,i)perylene		7.64*	—	BRL<5.00	BRL<5.00

Notes BRL = Below laboratory Reporting Limit

* NOAA screening value (2008)

^t Marine acute screening value for total PAHs

TABLE 5

SEDIMENT QUALITY DATA ($\mu\text{G/L}$)

RTN 2-19665

Test	Parameter	DEP Criteria TEC	NOAA Freshwater Sediment Benchmarks			Sediment 5/26/16
			TEL	PEL	UET (AET)	
EPH	C ₉ -C ₁₈ Aliphatics	[3.17] ¹	NE	NE	NE	BRL<13.2
	C ₁₉ -C ₃₆ Aliphatics	[9.88] ¹	NE	NE	NE	BRL<13.2
	C ₁₁ -C ₂₂ Aromatics	[0.09] ¹	1.684*	16.77*	12*	BRL<13.2
PAHs	Naphthalene	0.180	34.6 (C)	0.391 (C)	0.600 (I)	BRL<0.440
	2-Methylnaphthalene	NE	0.0202 (marine)	0.201 (marine)	0.064 (marine)	BRL<0.440
	Acenaphthylene	NE	0.00587	0.128	0.160	BRL<0.440
	Acenaphthene	NE	0.00671 (C)	0.0889 (C)	0.290 (M)	BRL<0.440
	Fluorene	0.077	0.0212	0.144	0.300	BRL<0.440
	Phenanthrene	0.200	0.0419	0.515	0.800 (I)	BRL<0.440
	Anthracene	0.057	0.010	NE	0.260	BRL<0.440
	Fluoranthene	0.420	0.111	2.355	1.50	BRL<0.440
	Pyrene	0.200	0.053	0.875	1.00	BRL<0.440
	Benzo(a)anthracene	0.110	0.0317	0.385	0.500	BRL<0.440
	Chrysene	0.170	0.0571	0.862	0.800	BRL<0.440
	Benzo(b)fluoranthene	NE	NE	NE	(1.80) ¹	BRL<0.440
	Benzo(k)fluoranthene	NE	0.0272	NE	13.4	BRL<0.440
	Benzo(a)pyrene	0.150	0.0319	0.782	0.700	BRL<0.440
	Indeno(1,2,3-cd)pyrene	NE	0.017	NE	0.330	BRL<0.440
Other	Dibenzo(a,h)anthracene	0.033	0.00622	0.135	0.100	BRL<0.440
	Benzo(g,h,i)perylene	NE	NE	NE	0.300	BRL<0.440
Other	Total Organic Carbon	—			2,420	
	Percent Solids	—			75.0%	

Notes: BRL = Below laboratory Reporting Limit

TEC = Threshold Effects Criteria (naphthalene & phenanthrene from 2006 Interim Technical Update)

TEL = Threshold Effects Level

PEL = Probable Effects Level

UET = Upper Effects Threshold

AET = Apparent Effects Threshold

NE = No Established benchmark criteria

¹ DEP Threshold Effects Criteria based on default assumption of $f_{OC} = 0.001$ (Total Organic Carbon = 1,000 mg/Kg)

* As "total PAHs" (TEL & PEL for marine sediment because no published freshwater criteria)

C = Canadian Sediment Quality Guidelines for the Protection of Aquatic Life (2002)

M = Microtox bioassay AET test

I = Infaunal community impact AET test

APPENDIX A

COPIES OF PUBLIC NOTIFICATIONS

CMG ENVIRONMENTAL, INC.

March 8, 2016

Mark & Michael Conlon
10 Hammond Street
Oxford, MA 01540

**Re: Drinking Water Testing Results
10 Hammond Street, Oxford MA**

Dear Conlon Family:

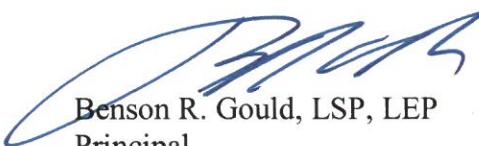
As you know, CMG Environmental, Inc. (CMG) collected drinking water samples from your property at 10 Hammond Street on February 19, 2016 to verify that contamination identified at 18 Hammond Street has not impacted your private drinking water supply.

CMG collected samples for certified laboratory analysis of volatile organic compounds (VOCs) via EPA Method 524.2 and extractable petroleum hydrocarbons (EPH) by DEP methodology. This letter is to inform you of the results of this testing, which identified very low concentrations of chloroform (1.64 micrograms per liter, µg/L) and 1,1,1-trichloroethane (TCA; 0.54 µg/L). For comparison, the EPA drinking water standards for these compounds are 70 µg/L and 200 µg/L, respectively.

CMG has included a copy of the analytical laboratory certificate of analysis and chain-of-custody documentation for this testing for your records. We have also included copies of form BWSC 123 (Notice of Environmental Sampling) and BWSC 124 (Informational Notice About Immediate Response Actions), as required by DEP regulations. In addition, CMG is providing you with ToxFAQs™ sheets for chloroform and TCA for your information.

Please feel free to contact CMG with questions regarding this testing, or if we can be of any other assistance to you.

Thank You,
CMG ENVIRONMENTAL, INC.



Benson R. Gould, LSP, LEP
Principal

cc: Mr. Peter McCarthy
DEP Central Region BWSC

Attachments: Laboratory Results (Spectrum Analytical, Inc. ID SC18359)
Form BWSC 123 (Notice of Environmental Sampling)
Form BWSC 124 (Informational Notice About Immediate Response Actions)
ToxFAQs™ - Chloroform, TCA

2015-120\DW Sampling\DW Sampling Results - 10 Hammond.doc

67 HALL ROAD
STURBRIDGE, MA 01566
PHONE (774) 241-0901
FAX (774) 241-0906

560 SOUTH MAIN STREET
NEW BRITAIN, CT 06051
PHONE (866) 304-7625
FAX (860) 223-5454



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC123

This Notice is Related to:
Release Tracking Number

2 - 19665

NOTICE OF ENVIRONMENTAL SAMPLING

As required by 310 CMR 40.1403(10) of the Massachusetts Contingency Plan

A. The address of the disposal site related to this Notice and Release Tracking Number (provided above):

1. Street Address: 18 Hammond Street

City/Town: Oxford Zip Code: 01540

B. This notice is being provided to the following party:

1. Name: Mark & Michael Conlon

2. Street Address: 10 Hammond Street

City/Town: Oxford Zip Code: 01540

C. This notice is being given to inform its recipient (the party listed in Section B):

- 1. That environmental sampling will be/has been conducted at property owned by the recipient of this notice.
- 2. Of the results of environmental sampling conducted at property owned by the recipient of this notice.
- 3. Check to indicate if the analytical results are attached. (If item 2. above is checked, the analytical results from the environmental sampling must be attached to this notice.)

D. Location of the property where the environmental sampling will be/has been conducted:

1. Street Address: 10 Hammond Street

City/Town: Oxford Zip Code: 01540

2. MCP phase of work during which the sampling will be/has been conducted:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Immediate Response Action | <input type="checkbox"/> Phase III Feasibility Evaluation |
| <input type="checkbox"/> Release Abatement Measure | <input type="checkbox"/> Phase IV Remedy Implementation Plan |
| <input type="checkbox"/> Utility-related Abatement Measure | <input type="checkbox"/> Phase V/Remedy Operation Status |
| <input type="checkbox"/> Phase I Initial Site Investigation | <input type="checkbox"/> Post-Temporary Solution Operation, Maintenance and Monitoring |
| <input type="checkbox"/> Phase II Comprehensive Site Assessment | <input type="checkbox"/> Other _____
(specify) |

3. Description of property where sampling will be/has been conducted:

residential commercial industrial school/playground Other _____
(specify)

4. Description of the sampling locations and types (e.g., soil, groundwater, indoor air, soil gas) to the extent known at the time of this notice.

Sampling was conducted at private water supply (kitchen tap). Results show no issues of concern.

E. Contact information related to the party providing this notice:

Contact Name: CMG Environmental, Inc.

Street Address: 67 Hall Road

City/Town: Sturbridge Zip Code: 01566

Telephone: (774) 241-0901 Email: BGould@cmgenv.com



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC123

This Notice is Related to:
Release Tracking Number

2

- **19665**

NOTICE OF ENVIRONMENTAL SAMPLING

As required by 310 CMR 40.1403(10) of the Massachusetts Contingency Plan

MASSACHUSETTS REGULATIONS THAT REQUIRE THIS NOTICE

This notice is being provided pursuant to the Massachusetts Contingency Plan and the notification requirement at 310 CMR 40.1403(10). The Massachusetts Contingency Plan is a state regulation that specifies requirements for parties who are taking actions to address releases of chemicals (oil or hazardous material) to the environment.

THE PERSON(S) PROVIDING THIS NOTICE

This notice has been sent to you by the party who is addressing a release of oil or hazardous material to the environment at the location listed in **Section A** on the reverse side of this form. (The regulations refer to the area where the oil or hazardous material is present as the "disposal site".)

PURPOSE OF THIS NOTICE

When environmental samples are taken as part of an investigation of a release for which a notification to MassDEP has been made under the Massachusetts Contingency Plan (310 CMR 40.0300) on behalf of someone other than the owner of the property, the regulations require that the property owner (listed in **Section B** on the reverse side of this form) be given notice of the environmental sampling. The regulations also require that the property owner subsequently receive the analytical results following the analysis of the environmental samples.

Section C on the reverse side of this form indicates the circumstance under which you are receiving this notice at this time. If you are receiving this notice to inform you of the analytical results following the analysis of the environmental samples, you should also have received, as an attachment, a copy of analytical results. These results should indicate the number and type(s) of samples (e.g., soil, groundwater) analyzed, any chemicals identified, and the measured concentrations of those chemicals.

Section D on the reverse side of this form identifies the property where the environmental sampling will be/has been conducted, provides a description of the sampling locations within the property, and indicates the phase of work under the Massachusetts Contingency Plan regulatory process during which the samples will be/were collected.

FOR MORE INFORMATION

Information about the general process for addressing releases of oil or hazardous material under the Massachusetts Contingency Plan and related public involvement opportunities may be found at <http://www.mass.gov/eea/agencies/massdep/cleanup>. For more information regarding this notice, you may contact the party listed in **Section E** on the reverse side of this form. Information about the disposal site identified in Section A is also available in files at the Massachusetts Department of Environmental Protection. See <http://public.dep.state.ma.us/SearchableSites2/Search.aspx> to view site-specific files on-line or <http://mass.gov/eea/agencies/massdep/about/contacts/conduct-a-file-review.html> if you would like to make an appointment to see these files in person. Please reference the **Release Tracking Number** listed in the upper right hand corner on the reverse side of this form when making file review appointments.



INFORMATIONAL NOTICE ABOUT IMMEDIATE RESPONSE ACTIONS

As required by 310 CMR 40.1403(11) of the Massachusetts Contingency Plan

BWSC 124

This Notice is Related to
Release Tracking Number

2 19665

A. The address of the disposal site related to this Notice and Release Tracking Number (provided above):

1. Street Address: 18 Hammond Street

City/Town: Oxford Zip Code: 01540

B. This Notice is being provided to the following party:

1. Name: Mark & Michael Conlon

2. Street Address: 10 Hammond Street

City/Town: Oxford Zip Code: 01540

C. This notice is being given to notify the party listed in Section B that:

1. Immediate Response Actions are to be/have been taken at the disposal site identified in Section A.
2. Immediate Response Actions taken at the disposal site identified in Section A have been completed. For notices given upon completion of Immediate Response Actions, attach a copy of the Immediate Response Action Completion Statement with the Notice.
- Check here if an Immediate Response Action Completion Statement is attached.

D. Description of purpose, nature and expected duration of the Immediate Response Actions:

1. Describe the conditions that are to be/have been addressed by the Immediate Response Actions (i.e., Imminent Hazard, Critical Exposure Pathway), including any potential risks to human health or safety:

IRA activities are addressing a release of fuel oil at #18. Drinking water sampling has been conducted to confirm that the release did not impact private drinking water supplies in the vicinity.

2. Describe the activities that are to be/have been conducted as Immediate Response Actions, including any excavation, removal and/or management of contaminated media, monitoring, use of respirators or other protective equipment:

Soil excavation has been completed. Current IRA activities include drinking water sampling and groundwater sampling.

3. Describe the specific location(s) where the Immediate Response Actions are to be/have been taken (attach map, as appropriate):

The IRA applies to the release Site (18 Hammond Street) and any impacted properties in the immediate area.

4. Provide the approximate start date and completion date for the Immediate Response Actions:

Ongoing

E. Contact information related to the party providing this notice:

1. Contact Name: CMG Environmental, Inc.

Street Address: 67 Hall Road

City/Town: Sturbridge Zip Code: 01566

Telephone: (774) 241-0901 Email: BGould@cmgenv.com

INFORMATIONAL NOTICE ABOUT IMMEDIATE RESPONSE ACTIONS

As required by 310 CMR 40.1403(11) of the Massachusetts Contingency Plan

MASSACHUSETTS REGULATIONS THAT REQUIRE THIS NOTICE

This notice is being provided pursuant to the Massachusetts Contingency Plan and the notification requirement at 310 CMR 40.1403(11). The Massachusetts Contingency Plan is a state regulation that specifies requirements for parties who are taking actions to address releases of chemicals (oil or hazardous material) to the environment.

THE PERSON(S) PROVIDING THIS NOTICE

This notice has been sent to you by the person who is addressing a release of oil or hazardous material to the environment at the location listed in **Section A** on the reverse side of this form. (The regulations refer to the area where the oil or hazardous material is present as the “disposal site”.)

PURPOSE OF THIS NOTICE

Parties who are taking an Immediate Response Action to assess, and eliminate or mitigate conditions that could pose a risk to human health or safety or the environment, if unaddressed in the short-term, are required by state regulations to notify persons who are in close proximity to the area where the Immediate Response Action is occurring (i.e., “Affected Individuals”). The purpose of the notice is to inform its recipient (identified in **Section B** on the reverse side of this notice) of the purpose, scope and nature of the Immediate Response Action and how to obtain more information.

The regulations also required that the same “Affected Individuals” receive notice upon the completion of the Immediate Response Action. **Section C** on the reverse side of this form indicates the circumstance under which you are receiving this notice at this time. If you are receiving this notice upon completion of the Immediate Response Action, you should also be receiving a copy of the Immediate Response Action Completion Statement that summarizes the work that has been done.

Section D on the reverse side of this form provides specific information about the conditions that are to be/have been addressed by the Immediate Response Action, the types of activities that are to be/have been conducted (e.g., excavation of contaminated soil) and the expected start date and completion date for these activities.

POSTING THIS NOTICE

Recipients of this notice who own or operate a multi-unit or commercial or industrial building at which or near the location where the Immediate Response Action is occurring should post a copy of **both sides** of this notice at a central bulletin board, sign in area or other location where it will be visible to people who are routinely present in the building (e.g., residents, workers). The purpose of this posting is to inform these people of the purpose, scope and nature of the Immediate Response Action that they may be observing and/or about which they may wish to obtain more information.

FOR MORE INFORMATION

Information about the general process for addressing releases of oil or hazardous material under the Massachusetts Contingency Plan and related public involvement opportunities may be found at <http://www.mass.gov/dep/cleanup/oview.htm>. For more information regarding this notice, you may contact the party listed in **Section E** on the reverse side of this form. Information about the disposal site identified in Section A is also available in files at the Massachusetts Department of Environmental Protection. See <http://mass.gov/dep/about/region/schedule.htm> if you would like to make an appointment to see these files. Please reference the **Release Tracking Number** listed in the upper right hand corner on the reverse side of this form when making file review appointments.



Energy and Environmental Affairs

Current Regulatory Limit: Tertiary-Amyl Methyl Ether (TAME)

[Return to Standards Table](#)

TERTIARY-AMYL METHYL ETHER (TAME)

CASRN: 994058

Update: April 2006

Current Massachusetts Regulatory Limit

ORSGL = 0.09 mg/L.

Federal Regulatory Limit

No MCL available

Basis for Criteria

The ORS guideline for TAME was derived based on the RfD (presented below) derived by ORS for this chemical and assumes that a 70 kg adult ingests 2 L/day of drinking water. A relative source contribution factor of 20% and a relative source contribution factor to account for potential carcinogenicity are incorporated into the final value.

RfD: 0.125 mg/kg/day (MassDEP, 2006)

UF: 1000 (10 = subchronic to chronic; 10 = interspecies; 10 = intraspecies)

MF: 1

Critical Effects

Exposure to high concentrations of TAME has produced effects on the central nervous system, liver and kidney. In a 28-day subchronic oral study, 10 Sprague-Dawley rats per group were administered 125, 500 or 1000 mg/kg/day of TAME via gavage 7 days per week for 28 days. Dose-related, statistically significant increases in adrenal and kidney weights were seen at the 500 and 1000 mg/kg/day doses in male rats. ORS identified a NOAEL of 125 mg/kg/day from this study (MassDEP, 2006).

Cancer Assessment: The U.S. EPA has not classified TAME under either the old U.S. EPA carcinogen classification system or under their Proposed Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999a). Using the 1999 proposed guidelines, ORS would tentatively classify TAME as having suggestive evidence of carcinogenicity but not sufficient to assess human carcinogenic potential.

Class

VOC

Analytical Information

PQL: 5 ug/L

Analytical Methods

U.S. EPA Method 8260 and 524.2

PQLs and analytical methods may have been updated since this guidance value was last revised. Updated analytical methods for drinking water and their associated PQLs may be found at [US EPA Drinking Water Analytical Methods](#).

Other Regulatory Data

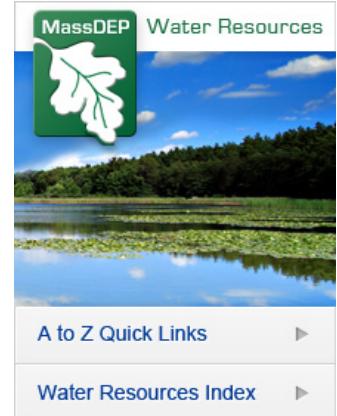
Any Health Advisories, Reference Doses (RfDs), cancer assessments or Cancer Potency Factors (CPFs) referenced in this document pertain to the derivation of the current guidance value. Updated information may be obtained from the following sources:

Health Advisories - The U.S. EPA provides guidance for shorter-term exposures for chemicals based on their non-cancer effects. Current health advisories may be more current than those used to derive MCLs and may be found at [US EPA Current Drinking Water Health Advisories](#).

RfDs, cancer assessments and CPFs - For specific information pertaining to derivation of drinking water criteria, consult the Federal Register notice that announces the availability of the most current guidance for that chemical. In addition, information on other current RfDs and CPFs as well as cancer assessments for specific chemicals may be found in the U.S. EPA Integrated Risk Information System (IRIS) at <http://www.epa.gov/iris/>. Please note that the information in IRIS may differ from that used in the derivation process as published in the Federal Register notice.

References

Massachusetts Department of Environmental Protection (MassDEP). March 27, 2006. Drinking Water Guideline for



Did you find the information you were looking for on this page? *

- Yes
 No

[Send Feedback](#)

CMG ENVIRONMENTAL, INC.

March 8, 2016

Peter & Lisa Hitchings
19 Hammond Street
Oxford, MA 01540

**Re: Drinking Water Testing Results
19 Hammond Street, Oxford MA**

Dear Mr. & Mrs. Hitchings:

As you know, CMG Environmental, Inc. (CMG) collected drinking water samples from your property at 19 Hammond Street on November 11, 2015 to verify that contamination identified at 18 Hammond Street has not impacted your private drinking water supply.

CMG collected samples for certified laboratory analysis of volatile organic compounds (VOCs) via EPA Method 524.2 and extractable petroleum hydrocarbons (EPH) by DEP methodology. This letter is to inform you of the results of this testing, which identified very low concentrations of chloroform (4.07 micrograms per liter, µg/L), methyl tertiary butyl ether (MTBE; 5.04 µg/L) and tertiary amyl methyl ether (TAME; 0.61 µg/L). For comparison, the EPA drinking water standards for these compounds are 70 µg/L, 70 µg/L, and 90 µg/L, respectively.

CMG has included a copy of the analytical laboratory certificate of analysis and chain-of-custody documentation for this testing for your records. We have also included copies of form BWSC 123 (Notice of Environmental Sampling) and BWSC 124 (Informational Notice About Immediate Response Actions), as required by DEP regulations. In addition, CMG is providing you with fact sheets for chloroform, MTBE, and TAME for your information.

Please feel free to contact CMG with questions regarding this testing, or if we can be of any other assistance to you.

Thank You,
CMG ENVIRONMENTAL, INC.



Benson R. Gould, LSP, LEP
Principal

cc: Mr. Peter McCarthy
DEP Central Region BWSC

Attachments: Laboratory Results (Spectrum Analytical, Inc. ID SC14971)
Form BWSC 123 (Notice of Environmental Sampling)
Form BWSC 124 (Informational Notice About Immediate Response Actions)
Fact Sheets - Chloroform, MTBE, & TAME

2015-120\DW Sampling\DW Sampling Results - 19 Hammond.doc

67 HALL ROAD
STURBRIDGE, MA 01566
PHONE (774) 241-0901
FAX (774) 241-0906

560 SOUTH MAIN STREET
NEW BRITAIN, CT 06051
PHONE (866) 304-7625
FAX (860) 223-5454



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC123

This Notice is Related to:
Release Tracking Number

2 - 19665

NOTICE OF ENVIRONMENTAL SAMPLING

As required by 310 CMR 40.1403(10) of the Massachusetts Contingency Plan

A. The address of the disposal site related to this Notice and Release Tracking Number (provided above):

1. Street Address: 18 Hammond Street

City/Town: Oxford Zip Code: 01540

B. This notice is being provided to the following party:

1. Name: Peter & Lisa Hitchings

2. Street Address: 19 Hammond Street

City/Town: Oxford Zip Code: 01540

C. This notice is being given to inform its recipient (the party listed in Section B):

- 1. That environmental sampling will be/has been conducted at property owned by the recipient of this notice.
- 2. Of the results of environmental sampling conducted at property owned by the recipient of this notice.
- 3. Check to indicate if the analytical results are attached. (If item 2. above is checked, the analytical results from the environmental sampling must be attached to this notice.)

D. Location of the property where the environmental sampling will be/has been conducted:

1. Street Address: 19 Hammond Street

City/Town: Oxford Zip Code: 01540

2. MCP phase of work during which the sampling will be/has been conducted:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Immediate Response Action | <input type="checkbox"/> Phase III Feasibility Evaluation |
| <input type="checkbox"/> Release Abatement Measure | <input type="checkbox"/> Phase IV Remedy Implementation Plan |
| <input type="checkbox"/> Utility-related Abatement Measure | <input type="checkbox"/> Phase V/Remedy Operation Status |
| <input type="checkbox"/> Phase I Initial Site Investigation | <input type="checkbox"/> Post-Temporary Solution Operation, Maintenance and Monitoring |
| <input type="checkbox"/> Phase II Comprehensive Site Assessment | <input type="checkbox"/> Other _____
(specify) |

3. Description of property where sampling will be/has been conducted:

residential commercial industrial school/playground Other _____
(specify)

4. Description of the sampling locations and types (e.g., soil, groundwater, indoor air, soil gas) to the extent known at the time of this notice.

Sampling was conducted at private water supply (kitchen tap). Results show no issues of concern.

E. Contact information related to the party providing this notice:

Contact Name: CMG Environmental, Inc.

Street Address: 67 Hall Road

City/Town: Sturbridge Zip Code: 01566

Telephone: (774) 241-0901 Email: BGould@cmgenv.com



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC123

This Notice is Related to:
Release Tracking Number

2

- **19665**

NOTICE OF ENVIRONMENTAL SAMPLING

As required by 310 CMR 40.1403(10) of the Massachusetts Contingency Plan

MASSACHUSETTS REGULATIONS THAT REQUIRE THIS NOTICE

This notice is being provided pursuant to the Massachusetts Contingency Plan and the notification requirement at 310 CMR 40.1403(10). The Massachusetts Contingency Plan is a state regulation that specifies requirements for parties who are taking actions to address releases of chemicals (oil or hazardous material) to the environment.

THE PERSON(S) PROVIDING THIS NOTICE

This notice has been sent to you by the party who is addressing a release of oil or hazardous material to the environment at the location listed in **Section A** on the reverse side of this form. (The regulations refer to the area where the oil or hazardous material is present as the "disposal site".)

PURPOSE OF THIS NOTICE

When environmental samples are taken as part of an investigation of a release for which a notification to MassDEP has been made under the Massachusetts Contingency Plan (310 CMR 40.0300) on behalf of someone other than the owner of the property, the regulations require that the property owner (listed in **Section B** on the reverse side of this form) be given notice of the environmental sampling. The regulations also require that the property owner subsequently receive the analytical results following the analysis of the environmental samples.

Section C on the reverse side of this form indicates the circumstance under which you are receiving this notice at this time. If you are receiving this notice to inform you of the analytical results following the analysis of the environmental samples, you should also have received, as an attachment, a copy of analytical results. These results should indicate the number and type(s) of samples (e.g., soil, groundwater) analyzed, any chemicals identified, and the measured concentrations of those chemicals.

Section D on the reverse side of this form identifies the property where the environmental sampling will be/has been conducted, provides a description of the sampling locations within the property, and indicates the phase of work under the Massachusetts Contingency Plan regulatory process during which the samples will be/were collected.

FOR MORE INFORMATION

Information about the general process for addressing releases of oil or hazardous material under the Massachusetts Contingency Plan and related public involvement opportunities may be found at <http://www.mass.gov/eea/agencies/massdep/cleanup>. For more information regarding this notice, you may contact the party listed in **Section E** on the reverse side of this form. Information about the disposal site identified in Section A is also available in files at the Massachusetts Department of Environmental Protection. See <http://public.dep.state.ma.us/SearchableSites2/Search.aspx> to view site-specific files on-line or <http://mass.gov/eea/agencies/massdep/about/contacts/conduct-a-file-review.html> if you would like to make an appointment to see these files in person. Please reference the **Release Tracking Number** listed in the upper right hand corner on the reverse side of this form when making file review appointments.



INFORMATIONAL NOTICE ABOUT IMMEDIATE RESPONSE ACTIONS

As required by 310 CMR 40.1403(11) of the Massachusetts Contingency Plan

BWSC 124

This Notice is Related to
Release Tracking Number

2 19665

A. The address of the disposal site related to this Notice and Release Tracking Number (provided above):

1. Street Address: 18 Hammond Street

City/Town: Oxford Zip Code: 01540

B. This Notice is being provided to the following party:

1. Name: Peter & Lisa Hitchings

2. Street Address: 19 Hammond Street

City/Town: Oxford Zip Code: 01540

C. This notice is being given to notify the party listed in Section B that:

1. Immediate Response Actions are to be/have been taken at the disposal site identified in Section A.
2. Immediate Response Actions taken at the disposal site identified in Section A have been completed. For notices given upon completion of Immediate Response Actions, attach a copy of the Immediate Response Action Completion Statement with the Notice.
- Check here if an Immediate Response Action Completion Statement is attached.

D. Description of purpose, nature and expected duration of the Immediate Response Actions:

1. Describe the conditions that are to be/have been addressed by the Immediate Response Actions (i.e., Imminent Hazard, Critical Exposure Pathway), including any potential risks to human health or safety:

IRA activities are addressing a release of fuel oil at #18. Drinking water sampling has been conducted to confirm that the release did not impact private drinking water supplies in the vicinity.

2. Describe the activities that are to be/have been conducted as Immediate Response Actions, including any excavation, removal and/or management of contaminated media, monitoring, use of respirators or other protective equipment:

Soil excavation has been completed. Current IRA activities include drinking water sampling and groundwater sampling.

3. Describe the specific location(s) where the Immediate Response Actions are to be/have been taken (attach map, as appropriate):

The IRA applies to the release Site (18 Hammond Street) and any impacted properties in the immediate area.

4. Provide the approximate start date and completion date for the Immediate Response Actions:

Ongoing

E. Contact information related to the party providing this notice:

1. Contact Name: CMG Environmental, Inc.

Street Address: 67 Hall Road

City/Town: Sturbridge Zip Code: 01566

Telephone: (774) 241-0901 Email: BGould@cmgenv.com

INFORMATIONAL NOTICE ABOUT IMMEDIATE RESPONSE ACTIONS

As required by 310 CMR 40.1403(11) of the Massachusetts Contingency Plan

MASSACHUSETTS REGULATIONS THAT REQUIRE THIS NOTICE

This notice is being provided pursuant to the Massachusetts Contingency Plan and the notification requirement at 310 CMR 40.1403(11). The Massachusetts Contingency Plan is a state regulation that specifies requirements for parties who are taking actions to address releases of chemicals (oil or hazardous material) to the environment.

THE PERSON(S) PROVIDING THIS NOTICE

This notice has been sent to you by the person who is addressing a release of oil or hazardous material to the environment at the location listed in **Section A** on the reverse side of this form. (The regulations refer to the area where the oil or hazardous material is present as the “disposal site”.)

PURPOSE OF THIS NOTICE

Parties who are taking an Immediate Response Action to assess, and eliminate or mitigate conditions that could pose a risk to human health or safety or the environment, if unaddressed in the short-term, are required by state regulations to notify persons who are in close proximity to the area where the Immediate Response Action is occurring (i.e., “Affected Individuals”). The purpose of the notice is to inform its recipient (identified in **Section B** on the reverse side of this notice) of the purpose, scope and nature of the Immediate Response Action and how to obtain more information.

The regulations also required that the same “Affected Individuals” receive notice upon the completion of the Immediate Response Action. **Section C** on the reverse side of this form indicates the circumstance under which you are receiving this notice at this time. If you are receiving this notice upon completion of the Immediate Response Action, you should also be receiving a copy of the Immediate Response Action Completion Statement that summarizes the work that has been done.

Section D on the reverse side of this form provides specific information about the conditions that are to be/have been addressed by the Immediate Response Action, the types of activities that are to be/have been conducted (e.g., excavation of contaminated soil) and the expected start date and completion date for these activities.

POSTING THIS NOTICE

Recipients of this notice who own or operate a multi-unit or commercial or industrial building at which or near the location where the Immediate Response Action is occurring should post a copy of **both sides** of this notice at a central bulletin board, sign in area or other location where it will be visible to people who are routinely present in the building (e.g., residents, workers). The purpose of this posting is to inform these people of the purpose, scope and nature of the Immediate Response Action that they may be observing and/or about which they may wish to obtain more information.

FOR MORE INFORMATION

Information about the general process for addressing releases of oil or hazardous material under the Massachusetts Contingency Plan and related public involvement opportunities may be found at <http://www.mass.gov/dep/cleanup/oview.htm>. For more information regarding this notice, you may contact the party listed in **Section E** on the reverse side of this form. Information about the disposal site identified in Section A is also available in files at the Massachusetts Department of Environmental Protection. See <http://mass.gov/dep/about/region/schedule.htm> if you would like to make an appointment to see these files. Please reference the **Release Tracking Number** listed in the upper right hand corner on the reverse side of this form when making file review appointments.

CMG ENVIRONMENTAL, INC.

March 8, 2016

Emerson & Earlene Smith
22 Hammond Street
Oxford, MA 01540

**Re: Drinking Water Testing Results
22 Hammond Street, Oxford MA**

Dear Mr. & Mrs. Smith:

As you know, CMG Environmental, Inc. (CMG) collected drinking water samples from your property at 22 Hammond Street on February 19, 2016 to verify that contamination identified at 18 Hammond Street has not impacted your private drinking water supply.

CMG collected samples for certified laboratory analysis of volatile organic compounds (VOCs) via EPA Method 524.2 and extractable petroleum hydrocarbons (EPH) by DEP methodology. This letter is to inform you of the results of this testing, which did not identify any analytical parameters above laboratory reporting limits.

CMG has included a copy of the analytical laboratory certificate of analysis and chain-of-custody documentation for this testing for your records. We have also included copies of form BWSC 123 (Notice of Environmental Sampling) and BWSC 124 (Informational Notice About Immediate Response Actions), as required by DEP regulations.

Please feel free to contact CMG with questions regarding this testing, or if we can be of any other assistance to you.

Thank You,
CMG ENVIRONMENTAL, INC.



Benson R. Gould, LSP, LEP
Principal

cc: Mr. Peter McCarthy
 DEP Central Region BWSC

Attachments: Laboratory Results (Spectrum Analytical, Inc. ID SC18364)
Form BWSC 123 (Notice of Environmental Sampling)
Form BWSC 124 (Informational Notice About Immediate Response Actions)

2015-120\DW Sampling\DW Sampling Results - 22 Hammond.doc

67 HALL ROAD
STURBRIDGE, MA 01566
PHONE (774) 241-0901
FAX (774) 241-0906

560 SOUTH MAIN STREET
NEW BRITAIN, CT 06051
PHONE (866) 304-7625
FAX (860) 223-5454



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC123

This Notice is Related to:
Release Tracking Number

2 - 19665

NOTICE OF ENVIRONMENTAL SAMPLING

As required by 310 CMR 40.1403(10) of the Massachusetts Contingency Plan

A. The address of the disposal site related to this Notice and Release Tracking Number (provided above):

1. Street Address: 18 Hammond Street

City/Town: Oxford Zip Code: 01540

B. This notice is being provided to the following party:

1. Name: Emerson & Earlene Smith

2. Street Address: 22 Hammond Street

City/Town: Oxford Zip Code: 01540

C. This notice is being given to inform its recipient (the party listed in Section B):

- 1. That environmental sampling will be/has been conducted at property owned by the recipient of this notice.
- 2. Of the results of environmental sampling conducted at property owned by the recipient of this notice.
- 3. Check to indicate if the analytical results are attached. (If item 2. above is checked, the analytical results from the environmental sampling must be attached to this notice.)

D. Location of the property where the environmental sampling will be/has been conducted:

1. Street Address: 22 Hammond Street

City/Town: Oxford Zip Code: 01540

2. MCP phase of work during which the sampling will be/has been conducted:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Immediate Response Action | <input type="checkbox"/> Phase III Feasibility Evaluation |
| <input type="checkbox"/> Release Abatement Measure | <input type="checkbox"/> Phase IV Remedy Implementation Plan |
| <input type="checkbox"/> Utility-related Abatement Measure | <input type="checkbox"/> Phase V/Remedy Operation Status |
| <input type="checkbox"/> Phase I Initial Site Investigation | <input type="checkbox"/> Post-Temporary Solution Operation, Maintenance and Monitoring |
| <input type="checkbox"/> Phase II Comprehensive Site Assessment | <input type="checkbox"/> Other _____
(specify) |

3. Description of property where sampling will be/has been conducted:

residential commercial industrial school/playground Other _____
(specify)

4. Description of the sampling locations and types (e.g., soil, groundwater, indoor air, soil gas) to the extent known at the time of this notice.

Sampling was conducted at private water supply (kitchen tap). Results show no issues of concern.

E. Contact information related to the party providing this notice:

Contact Name: CMG Environmental, Inc.

Street Address: 67 Hall Road

City/Town: Sturbridge Zip Code: 01566

Telephone: (774) 241-0901 Email: BGould@cmgenv.com



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC123

This Notice is Related to:
Release Tracking Number

2

- 19665

NOTICE OF ENVIRONMENTAL SAMPLING

As required by 310 CMR 40.1403(10) of the Massachusetts Contingency Plan

MASSACHUSETTS REGULATIONS THAT REQUIRE THIS NOTICE

This notice is being provided pursuant to the Massachusetts Contingency Plan and the notification requirement at 310 CMR 40.1403(10). The Massachusetts Contingency Plan is a state regulation that specifies requirements for parties who are taking actions to address releases of chemicals (oil or hazardous material) to the environment.

THE PERSON(S) PROVIDING THIS NOTICE

This notice has been sent to you by the party who is addressing a release of oil or hazardous material to the environment at the location listed in **Section A** on the reverse side of this form. (The regulations refer to the area where the oil or hazardous material is present as the "disposal site".)

PURPOSE OF THIS NOTICE

When environmental samples are taken as part of an investigation of a release for which a notification to MassDEP has been made under the Massachusetts Contingency Plan (310 CMR 40.0300) on behalf of someone other than the owner of the property, the regulations require that the property owner (listed in **Section B** on the reverse side of this form) be given notice of the environmental sampling. The regulations also require that the property owner subsequently receive the analytical results following the analysis of the environmental samples.

Section C on the reverse side of this form indicates the circumstance under which you are receiving this notice at this time. If you are receiving this notice to inform you of the analytical results following the analysis of the environmental samples, you should also have received, as an attachment, a copy of analytical results. These results should indicate the number and type(s) of samples (e.g., soil, groundwater) analyzed, any chemicals identified, and the measured concentrations of those chemicals.

Section D on the reverse side of this form identifies the property where the environmental sampling will be/has been conducted, provides a description of the sampling locations within the property, and indicates the phase of work under the Massachusetts Contingency Plan regulatory process during which the samples will be/were collected.

FOR MORE INFORMATION

Information about the general process for addressing releases of oil or hazardous material under the Massachusetts Contingency Plan and related public involvement opportunities may be found at <http://www.mass.gov/eea/agencies/massdep/cleanup>. For more information regarding this notice, you may contact the party listed in **Section E** on the reverse side of this form. Information about the disposal site identified in Section A is also available in files at the Massachusetts Department of Environmental Protection. See <http://public.dep.state.ma.us/SearchableSites2/Search.aspx> to view site-specific files on-line or <http://mass.gov/eea/agencies/massdep/about/contacts/conduct-a-file-review.html> if you would like to make an appointment to see these files in person. Please reference the **Release Tracking Number** listed in the upper right hand corner on the reverse side of this form when making file review appointments.



INFORMATIONAL NOTICE ABOUT IMMEDIATE RESPONSE ACTIONS

As required by 310 CMR 40.1403(11) of the Massachusetts Contingency Plan

BWSC 124

This Notice is Related to
Release Tracking Number

2 19665

A. The address of the disposal site related to this Notice and Release Tracking Number (provided above):

1. Street Address: 18 Hammond Street

City/Town: Oxford Zip Code: 01540

B. This Notice is being provided to the following party:

1. Name: Emerson & Earlene Smith

2. Street Address: 22 Hammond Street

City/Town: Oxford Zip Code: 01540

C. This notice is being given to notify the party listed in Section B that:

1. Immediate Response Actions are to be/have been taken at the disposal site identified in Section A.
2. Immediate Response Actions taken at the disposal site identified in Section A have been completed. For notices given upon completion of Immediate Response Actions, attach a copy of the Immediate Response Action Completion Statement with the Notice.
- Check here if an Immediate Response Action Completion Statement is attached.

D. Description of purpose, nature and expected duration of the Immediate Response Actions:

1. Describe the conditions that are to be/have been addressed by the Immediate Response Actions (i.e., Imminent Hazard, Critical Exposure Pathway), including any potential risks to human health or safety:

IRA activities are addressing a release of fuel oil at #18. Drinking water sampling has been conducted to confirm that the release did not impact private drinking water supplies in the vicinity.

2. Describe the activities that are to be/have been conducted as Immediate Response Actions, including any excavation, removal and/or management of contaminated media, monitoring, use of respirators or other protective equipment:

Soil excavation has been completed. Current IRA activities include drinking water sampling and groundwater sampling.

3. Describe the specific location(s) where the Immediate Response Actions are to be/have been taken (attach map, as appropriate):

The IRA applies to the release Site (18 Hammond Street) and any impacted properties in the immediate area.

4. Provide the approximate start date and completion date for the Immediate Response Actions:

Ongoing

E. Contact information related to the party providing this notice:

1. Contact Name: CMG Environmental, Inc.

Street Address: 67 Hall Road

City/Town: Sturbridge Zip Code: 01566

Telephone: (774) 241-0901 Email: BGould@cmgenv.com

INFORMATIONAL NOTICE ABOUT IMMEDIATE RESPONSE ACTIONS

As required by 310 CMR 40.1403(11) of the Massachusetts Contingency Plan

MASSACHUSETTS REGULATIONS THAT REQUIRE THIS NOTICE

This notice is being provided pursuant to the Massachusetts Contingency Plan and the notification requirement at 310 CMR 40.1403(11). The Massachusetts Contingency Plan is a state regulation that specifies requirements for parties who are taking actions to address releases of chemicals (oil or hazardous material) to the environment.

THE PERSON(S) PROVIDING THIS NOTICE

This notice has been sent to you by the person who is addressing a release of oil or hazardous material to the environment at the location listed in **Section A** on the reverse side of this form. (The regulations refer to the area where the oil or hazardous material is present as the “disposal site”.)

PURPOSE OF THIS NOTICE

Parties who are taking an Immediate Response Action to assess, and eliminate or mitigate conditions that could pose a risk to human health or safety or the environment, if unaddressed in the short-term, are required by state regulations to notify persons who are in close proximity to the area where the Immediate Response Action is occurring (i.e., “Affected Individuals”). The purpose of the notice is to inform its recipient (identified in **Section B** on the reverse side of this notice) of the purpose, scope and nature of the Immediate Response Action and how to obtain more information.

The regulations also required that the same “Affected Individuals” receive notice upon the completion of the Immediate Response Action. **Section C** on the reverse side of this form indicates the circumstance under which you are receiving this notice at this time. If you are receiving this notice upon completion of the Immediate Response Action, you should also be receiving a copy of the Immediate Response Action Completion Statement that summarizes the work that has been done.

Section D on the reverse side of this form provides specific information about the conditions that are to be/have been addressed by the Immediate Response Action, the types of activities that are to be/have been conducted (e.g., excavation of contaminated soil) and the expected start date and completion date for these activities.

POSTING THIS NOTICE

Recipients of this notice who own or operate a multi-unit or commercial or industrial building at which or near the location where the Immediate Response Action is occurring should post a copy of **both sides** of this notice at a central bulletin board, sign in area or other location where it will be visible to people who are routinely present in the building (e.g., residents, workers). The purpose of this posting is to inform these people of the purpose, scope and nature of the Immediate Response Action that they may be observing and/or about which they may wish to obtain more information.

FOR MORE INFORMATION

Information about the general process for addressing releases of oil or hazardous material under the Massachusetts Contingency Plan and related public involvement opportunities may be found at <http://www.mass.gov/dep/cleanup/oview.htm>. For more information regarding this notice, you may contact the party listed in **Section E** on the reverse side of this form. Information about the disposal site identified in Section A is also available in files at the Massachusetts Department of Environmental Protection. See <http://mass.gov/dep/about/region/schedule.htm> if you would like to make an appointment to see these files. Please reference the **Release Tracking Number** listed in the upper right hand corner on the reverse side of this form when making file review appointments.

APPENDIX B

DEP CORRESPONDENCE

CMG ENVIRONMENTAL, INC.

July 6, 2016

Bureau of Waste Site Cleanup
Department of Environmental Protection
8 New Bond Street
Worcester, MA 01606

**Re: Carbuncle Pond Surface Water Sampling Results
McCarthy Residence, 18 Hammond Street, Oxford MA
Release Tracking Number (RTN) 2-19665
CMG ID 2015-120**

Dear DEP:

CMG Environmental, Inc. prepared this letter as a follow-up to the surface water sampling results we discussed with you on June 10, 2016.

RTN 2-19665 pertains to a release of fuel oil at the Peter McCarty residence addressed as 18 Hammond Street, Oxford MA 01540. This was a release of an estimated 250 gallons of No. 2 fuel oil. Mr. Howard Peterson of Peterson Oil verbally reported this release to DEP at 5:40 p.m. on October 8, 2015 as a potential sudden release of more than 10 gallons of oil, hence a two-hour notification condition. CMG conducted additional environmental investigation that identified >½" non-aqueous phase liquid (NAPL) floating on the groundwater surface, and also groundwater contamination above RCGW-1 standards within 500' of private drinking water supply wells (both of which are 72-hour notification conditions).

Carbuncle Pond abuts the northerly side of the 18 Hammond Street residence. CMG collected a surface water sample and a sediment sample from Carbuncle Pond on May 26, 2016 during the course of environmental investigation. Field notes indicate there was a layer of scum on the pond at the time of sampling, the majority of which appeared to be pine pollen. We submitted these samples to Eurofins Spectrum Analytical, Inc. (Spectrum) of Agawam, Massachusetts for extractable petroleum hydrocarbons (EPH) analysis. Testing identified 173 µg/L of EPH C₁₉-C₃₆ aliphatics and 171 µg/L of C₁₁-C₂₂ aromatics in the surface water sample (Spectrum did not identify any EPH parameters above laboratory reporting limits in the sediment sample that CMG collected on 5/26/16). We have attached a copy of the laboratory certificates of analysis and chain-of-custody information for the May 26 surface water sample to this letter (Spectrum ID SC21897-01).

When CMG received the analytical results from our May 26 sampling (on 6/10/16), we opined that the detection of EPH C₁₉-C₃₆ aliphatics & C₁₁-C₂₂ aromatics in surface water might possibly constitute a Condition of Substantial Release Migration (SRM) pursuant to 310 CMR 40.0313(4)(e), hence a new 72-hour reporting condition associated with RTN 2-19665. Therefore we called Mr. Jason Ward of the DEP Central Region Emergency Response Branch at 1:11 on June 10, 2016 and left a message regarding the surface water analytical results. Mr. Ward called CMG back at 2:40 p.m. that same day after having discussed this result with other DEP staff. We agreed to conduct additional testing to determine if the surface water results were reproducible – and if so, whether they were attributable to the RTN 2-19665 fuel oil release.

67 HALL ROAD
STURBRIDGE, MA 01566
PHONE (508) 241-0901
FAX (508) 241-0906

560 SOUTH MAIN STREET
NEW BRITAIN, CT 06051
PHONE (860) 304-7625
FAX (860) 223-5454

On the afternoon of June 10, 2016 CMG collected a second surface water sample from the same location at Carbuncle Pond (about halfway along the dock at the rear of 18 Hammond Street). Field notes indicate that there was far less surface scum on the pond on June 10 than there was on May 26; we also opened and closed this EPH sample bottle beneath the water surface to prevent any surface scum from entering the sample bottle. CMG submitted this surface water sample to Spectrum for EPH analysis; testing did not identify any EPH parameters in this second sample above laboratory reporting limits. We also attached a copy of the laboratory data sheets for second surface water testing to this letter (Spectrum ID SC22430-01).

CMG also requested that Spectrum provide chromatograms of the May 26 surface water sample, chromatograms for the groundwater sample well collected from monitoring well MW-5 on May 26 (Spectrum ID SC21910-05), and a reference chromatogram of No. 2 fuel oil for comparison. CMG has attached copies of these chromatograms to this letter as well. Comparison of these chromatograms indicates there is essentially no similarity between EPH detected in the May 26 surface water sample and EPH detected from the sampling of monitoring well MW-5 on the same date. Furthermore, the aliphatics fraction chromatograms for the May 26 surface water sample exhibits six significant peaks at regular intervals after 8½ minutes that are well beyond the retention time for the ordinary constituents of No. 2 fuel oil; CMG opines that these are high-molecular weight *n*-alkanes associated with plant waxes.

CMG concludes that EPH detections in the May 26, 2016 surface water sample we collected from Carbuncle Pond behind 18 Hammond Street are not related to the RTN 2-19665 fuel oil release, nor were they reproducible. CMG opines that the initial (5/26/16 sampling) EPH results were the result of pond scum, including a significant amount of pine pollen, inadvertently collected with the surface water sample. Therefore CMG concludes that EPH detections in the May 26 surface water sample do not constitute a 72-hour reporting condition associated with RTN 2-19665. No release retraction is necessary, since DEP (Jason Ward) neither opened a new RTN on June 10 due to CMG's phone call, nor did he add our findings as an additional notification condition for RTN 2-19665 at that time.

Please contact the undersigned if you have any questions regarding the information presented in this letter, or if CMG can otherwise be of assistance to you.

Sincerely,
CMG ENVIRONMENTAL, INC.

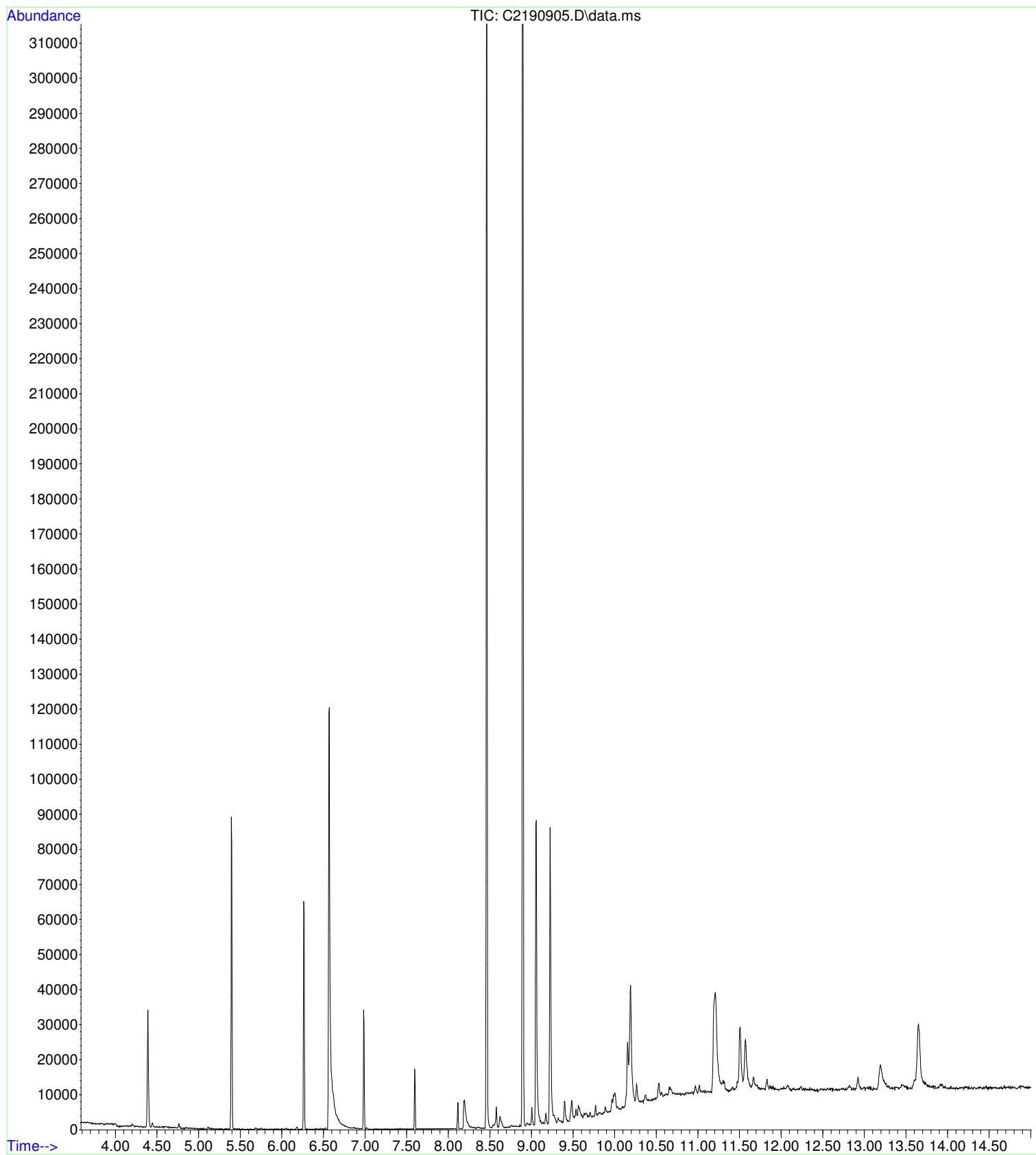


Benson R. Gould, LSP, LEP
Principal

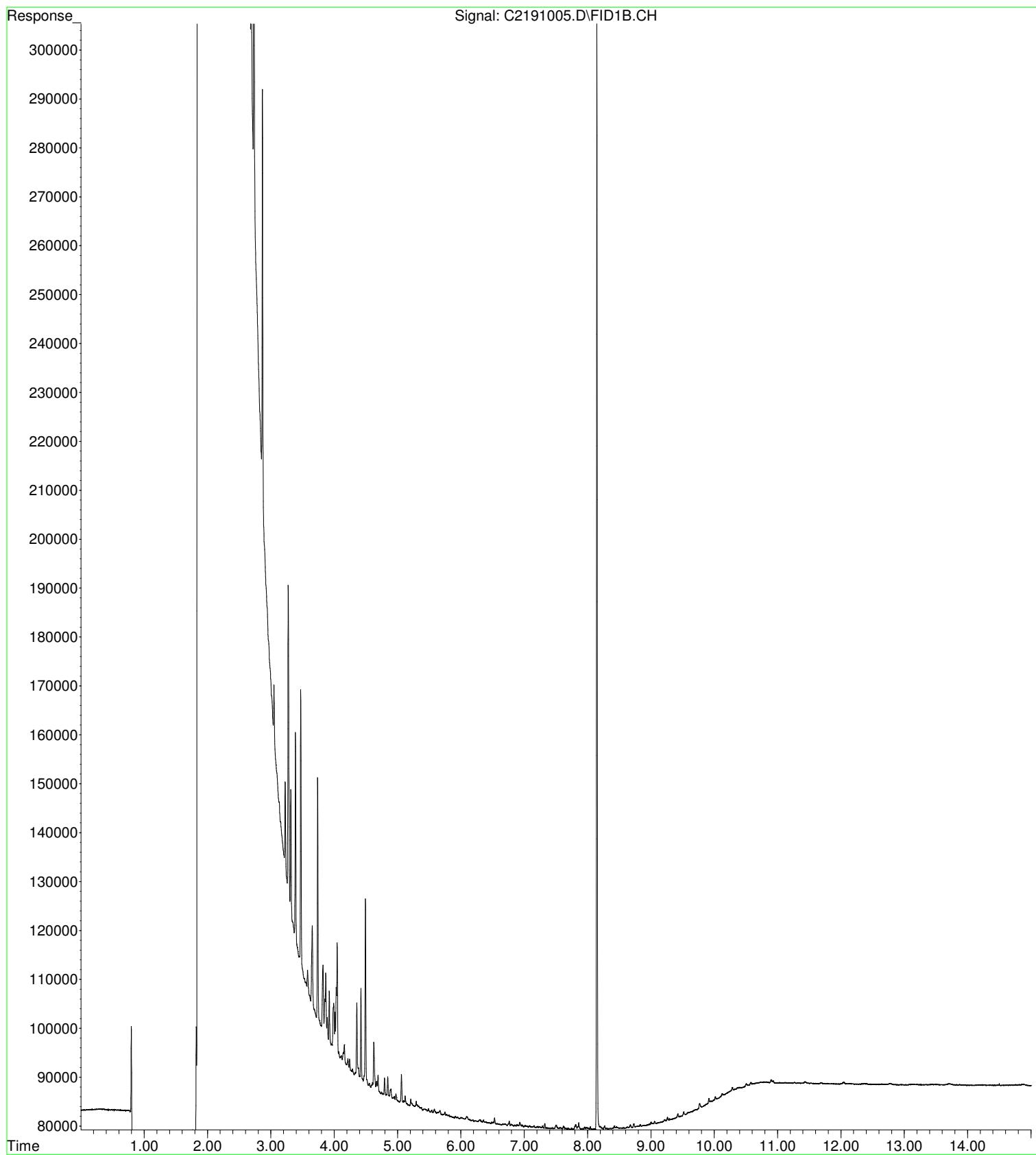
Attachments: Spectrum Data Packages SC21897 & SC22430
Aliphatic & aromatic fraction chromatograms for sample SC21897-01
Aliphatic & aromatic fraction chromatograms for sample SC21910-05
No. 2 Fuel Oil chromatogram (2FO1)

cc: Mr. Peter McCarthy
Scott Masse, LSP (Independent Claims Services, Inc.)

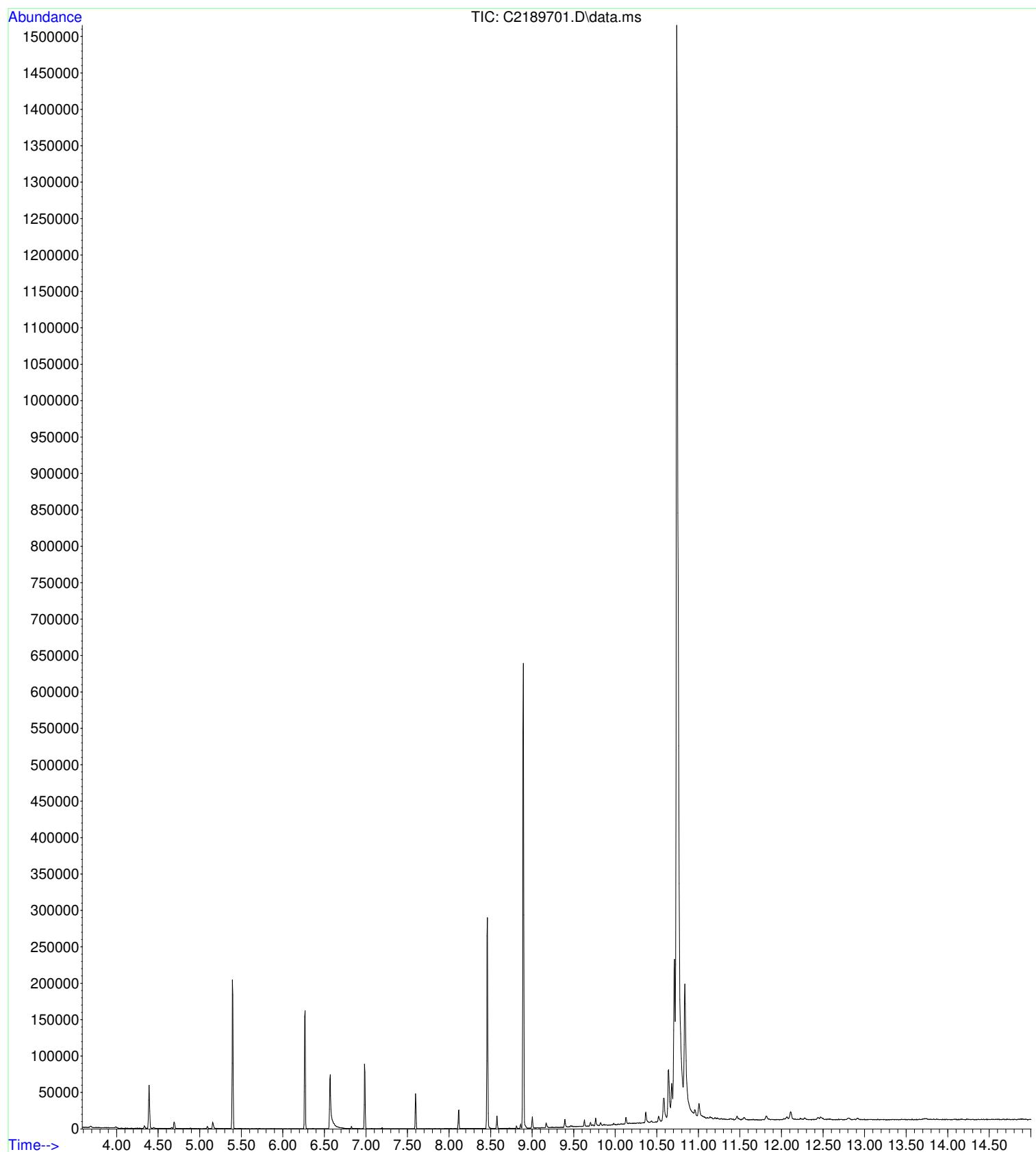
File : G:\Jun2016\HPS2\EPH2060816.S\C2190905.D
Operator : NAA
Acquired : 9 Jun 2016 7:43 am using AcqMethod MAE0730.M
Instrument : HPS2
Sample Name: SC21909-05
Misc Info :
Vial Number: 46



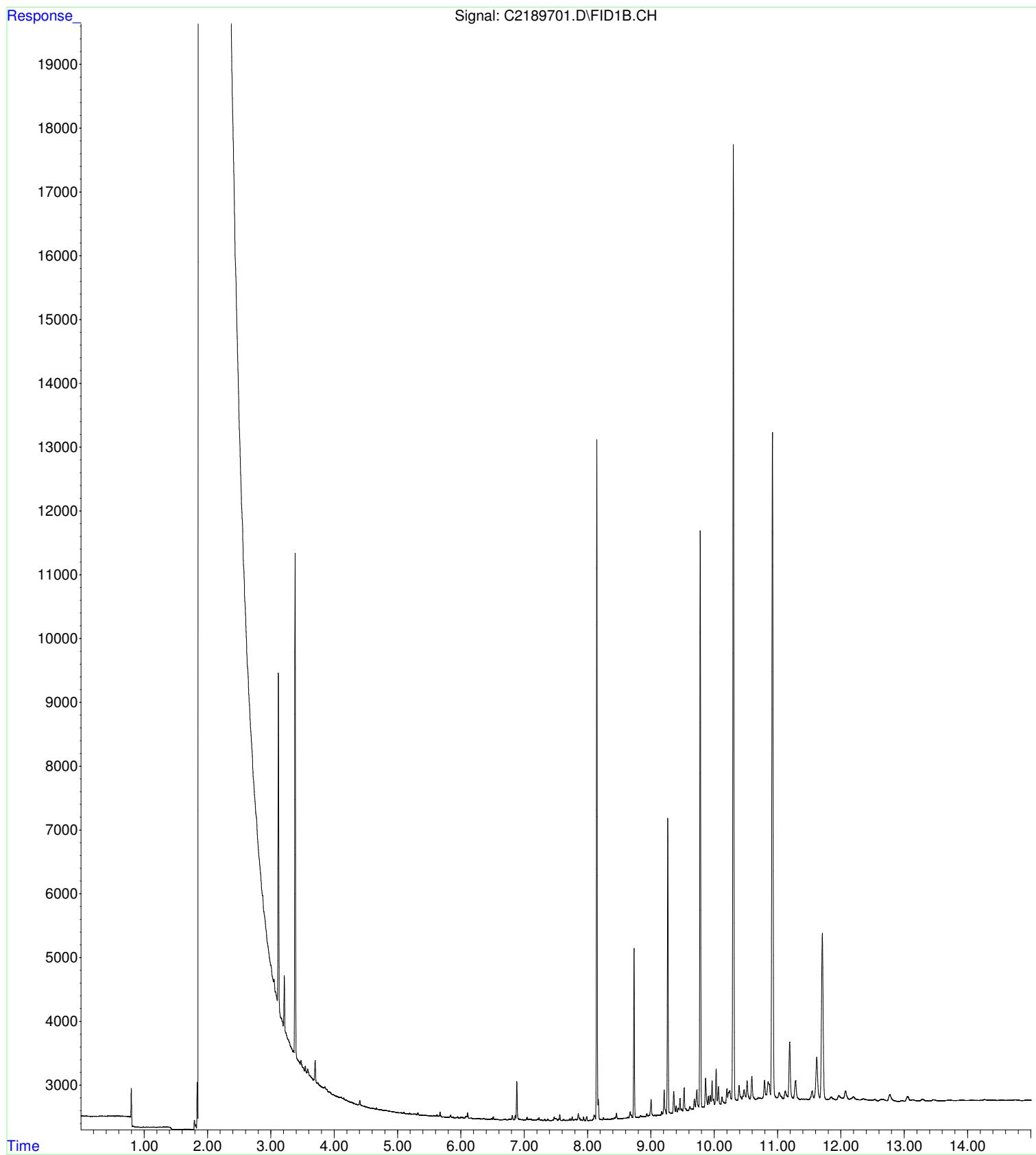
File : C:\MSDChem\1\DATA\JUNE2016\EPH2060816.S.SEC\C2191005.D
Operator : NAA
Acquired : 09 Jun 2016 2:53 am using AcqMethod MAE0730.M
Instrument : HPS2
Sample Name: SC21910-05
Misc Info :
Vial Number: 37



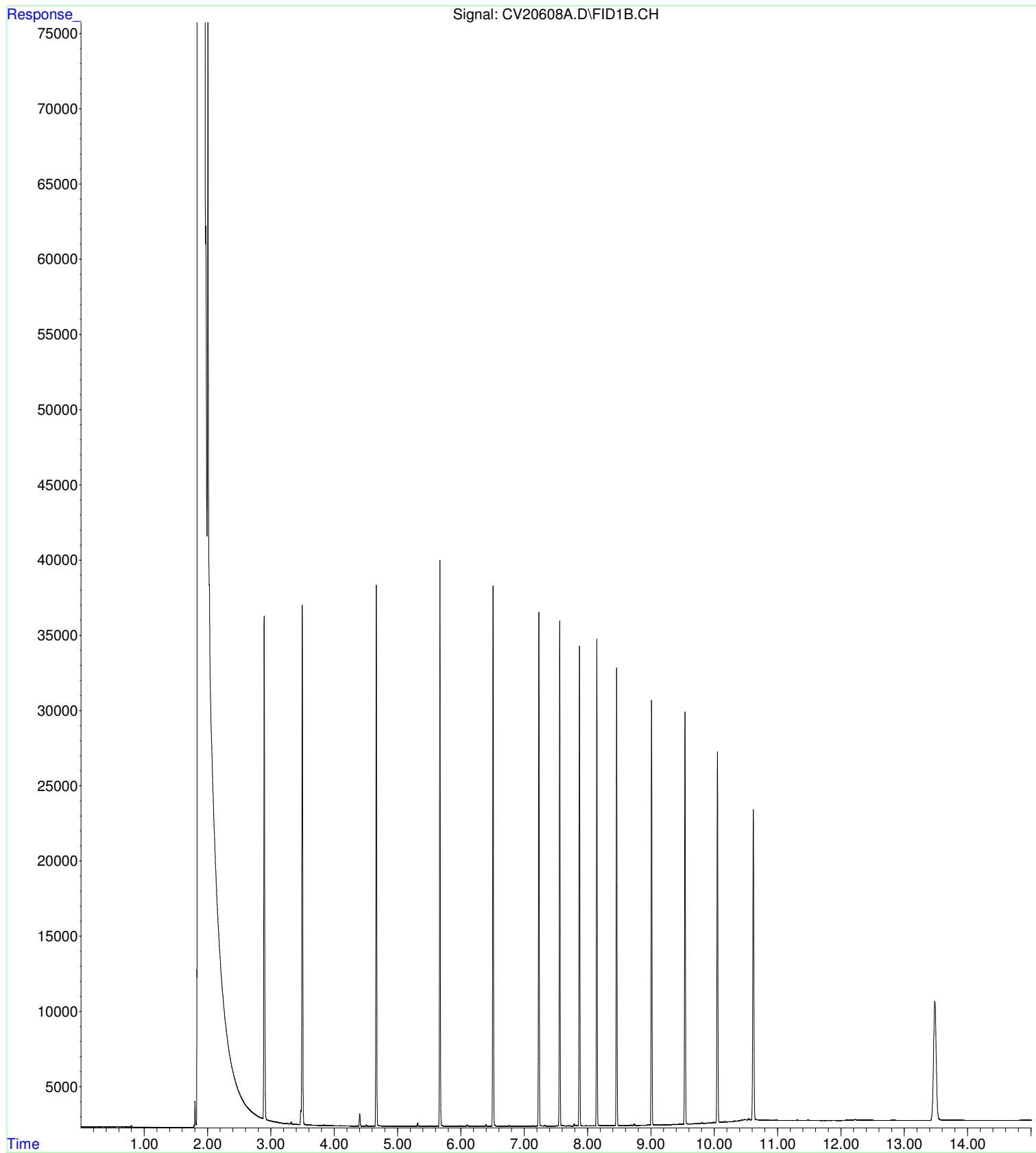
File : G:\Jun2016\HPS2\EPH2060816.S\C2189701.D
Operator : NAA
Acquired : 9 Jun 2016 8:51 am using AcqMethod MAE0730.M
Instrument : HPS2
Sample Name: SC21897-01
Misc Info :
Vial Number: 49



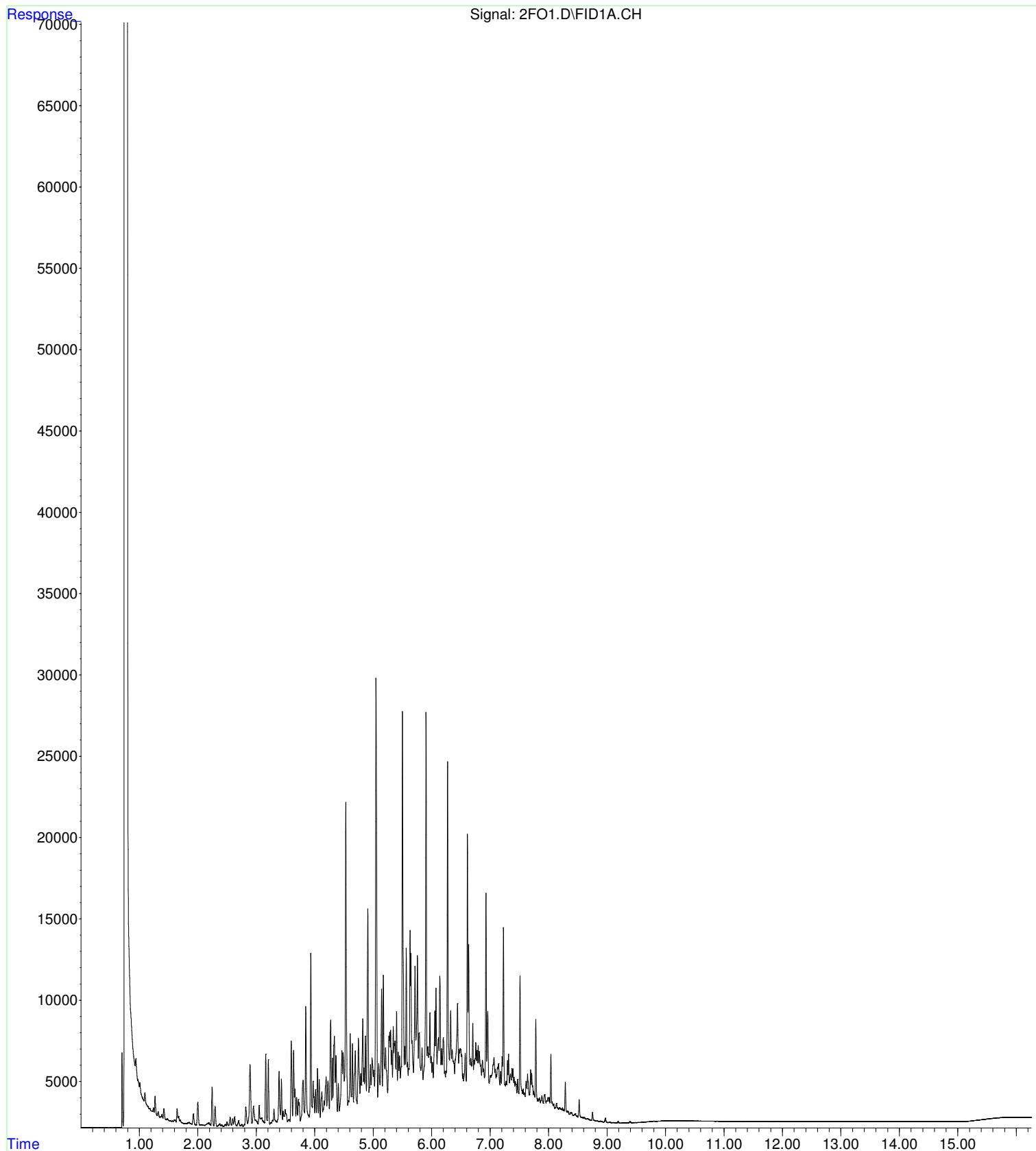
File : G:\Jun2016\HPS2\EPH2060816.S.SEC\C2189701.D
Operator : NAA
Acquired : 09 Jun 2016 8:51 am using AcqMethod MAE0730.M
Instrument : HPS2
Sample Name: SC21897-01
Misc Info :
Vial Number: 49



File : G:\Jun2016\HPS2\EPH2060816.S.SEC\CV20608A.D
Operator : NAA
Acquired : 08 Jun 2016 9:56 am using AcqMethod MAE0730.M
Instrument : HPS2
Sample Name: CCV0608A
Misc Info : 50ppm AR and AL CCV E16E0439
Vial Number: 4



File : G:\TPHComparisons\HPS15\Feb2016\2FO1.D
Operator : SEP
Acquired : 10 Feb 2016 5:58 am using AcqMethod T5091015.M
Instrument : HP G1530A
Sample Name: 2FO1
Misc Info : 16A1307
ExpBarcode:





Miscellaneous Document Transmittal Form

A. DISPOSAL SITE LOCATION:

1. Disposal Site Name: RESIDENCE
2. Street Address: 18 HAMMOND ST
3. City/Town: OXFORD
4. Zip Code: _____

B. THIS FORM IS BEING USED TO: (check all that apply)

1. Correct typographical errors and/or make corrections that do not materially affect the nature or complexity of the response actions. If changes are materially significant, then a revised or modified submittal must be made to the Department. List the report/form that is being corrected that is associated with the above Release Tracking Number (RTN). Attach an errata sheet containing a description of the errors and/or corrections.

Form/Report

Submittal Date

(mm/dd/yyyy)

Transaction ID

2. Submit other documents associated with this RTN that cannot be submitted to the Department using any other BWSC transmittal form. Do not submit documents that are of a time-critical nature and/or that require a direct response from the Department and/or that require an LSP Opinion pursuant to 310 CMR 40.0015. (Section C is not required).

Description of Submittal CARBUNCLE POND SURFACE WATER SAMPLING RESULTS

3. Resign as LSP-of-Record for the above Release Tracking Number (RTN). Attach a copy of the LSP resignation letter. (Section D, E, and F are not required).

4. Submit copies of Public Notices required pursuant to 310 CMR 40.1400: (check all that apply)
(Section C is not required)

a. Tier I Classification

Check here if submitting a copy of a legal notice

b. Tier II Classification

Check here if submitting a copy of a legal notice

c. Immediate Response Action (IRA)

d. Release Abatement Measure (RAM)

e. Downgradient Property Status (DPS)

f. Utility-related Abatement Measure (URAM)

g. Comprehensive Response Actions

h. Activities related to
recording/registering an Activity and
Use Limitation (AUL)

Check here if submitting a copy of a legal notice

i. Permanent or Temporary Solution

(All sections of this transmittal form must be filled out unless otherwise noted)



B. THIS FORM IS BEING USED TO(cont.): (check all that apply)

5. Submit Public Involvement Petition documents. (check all that apply). (Section C is not required).

- a. Submit a Public Involvement Petition
- b. Submit a Public Involvement Petition Retraction
- c. Submit a Positive Public Involvement Petition Designation Letter
- d. Submit a Negative Public Involvement Designation Letter
- e. Submit a Draft Public Involvement Petition Plan
- f. Submit a Revised Public Involvement Petition Plan
- g. Submit a Final Public Involvement Petition Plan

h. Submit a Notice of Public Comment Period
Date of Close of Comment Period : _____
(mm/dd/yyyy)

- i. Submit a copy of a Public Involvement Petition legal notice
- j. Submit a Notice of Public Meeting
Meeting Date: _____
(mm/dd/yyyy)

k. Submit other Public Involvement Petition related documents not specified above:

Describe: _____

6. Submit a RCRA Contained-In-Determination to document that soil and/or groundwater is no longer considered a hazardous waste pursuant to state (310 CMR 30.00) and federal (Title 40, Chapter I, Part 261 of the Code of Federal Regulations) hazardous waste regulations.

7. Submit notification and documentation of Reclamation Soil Reuse pursuant to 310 CMR 40.0031(2).

C. LSP SIGNATURE:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP #: _____

2. First Name: _____ 3. Last Name: _____

4. Telephone: _____ 5. Ext.: _____ 6. Email: _____

7. Signature: _____

8. Date: _____

(mm/dd/yyyy)



D. PERSON MAKING A SUBMITTAL:

1. Check all that apply: a. Change in contact name b. Change of address c. Change in person undertaking response actions

2. Name of Organization: CMG ENVIRONMENTAL, INC.

3. Contact First Name: BENSON R. 4. Last Name: GOULD, LSP, LEP

5. Street: 67 HALL ROAD 6. Title: PRINCIPAL

7. City/Town: STURBRIDGE 8. State: MA 9. ZIP Code: 015661472

10. Telephone: 774-241-0901 11. Ext.: 104 12. Email: BGould@CMEnv.com

13. Check here if the person is a Public Involvement Petitioner

E. RELATIONSHIP TO SITE OF PERSON MAKING SUBMITTAL:

Check here to change relationship

1. RP or PRP a. Owner b. Operator c. Generator d. Transporter

e. Other RP or PRP Specify: _____

2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c.21E, s.2)

3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c.21E, s.5(j))

4. Any Other Person Undertaking Response Actions Specify Relationship: LSP OF RECORD

F. CERTIFICATION OF PERSON MAKING SUBMITTAL:

1. I, BENSON R. GOULD, LSP, LEP, attest under the pains and penalties or perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: BENSON R. GOULD, LSP, LEP 3. Title: PRINCIPAL
Signature

4. For: CMG ENVIRONMENTAL, INC. 5. Date: 7/6/2016
(Name of person or entity recorded in Section D) mm/dd/yyyy

6. Check here if the address of the person providing certification is different from address recorded in Section D.

7. Street: _____

8. City/Town: _____ 9. State: _____ 10. ZIP Code: _____

11. Telephone: _____ 12. Ext.: _____ 13. Email: _____



Massachusetts Department of Environmental Protection

Bureau of Waste Site Cleanup

Miscellaneous Document Transmittal Form

BWSC 126

Release Tracking Number

2

- 19665

Check here if any non-updatable information provided on this form is incorrect, e. g. property address. Send corrections to BWSC.eDEP@state.ma.us

YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

Date Stamp (DEP USE ONLY):

Received by DEP on
7/6/2016 5:07:52 PM

APPENDIX C

LABORATORY CERTIFICATES OF ANALYSIS & CHAIN-OF-CUSTODY DOCUMENTATION

Final Report
 Re-Issued Report
 Revised Report

Report Date:
 02-Mar-16 12:10

Laboratory Report

CMG Environmental, Inc.
 67 Hall Road
 Sturbridge, MA 01566
 Attn: Jerry Clark

Project: 18 Ham - Oxford, MA
 Project #: 2015-120

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SC18359-01	#10 Tap	Drinking Water	19-Feb-16 17:09	22-Feb-16 15:45

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
 Connecticut # PH-0777
 Florida # E87936
 Maine # MA138
 New Hampshire # 2538
 New Jersey # MA011
 New York # 11393
 Pennsylvania # 68-04426/68-02924
 Rhode Island # LAO00098
 USDA # S-51435



Authorized by:

June O'Connor
 Laboratory Director

Eurofins Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 22 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our Quality web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

The following outlines the condition of all EPH samples contained within this report upon laboratory receipt.

Matrices	Drinking Water		
Containers	<input checked="" type="checkbox"/> Satisfactory		
Aqueous Preservative	N/A	<input checked="" type="checkbox"/> pH≤2	pH>2 pH adjusted to <2 in lab
Temperature	Received on ice <input checked="" type="checkbox"/> Received at 4 ± 2 °C		

Were all QA/QC procedures followed as required by the EPH method? *Yes*

Were any significant modifications made to the EPH method as specified in Section 11.3? *No*

Were all performance/acceptance standards for required QA/QC procedures achieved? *Yes*

I attest that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Authorized by:



June O'Connor
Laboratory Director

MassDEP Analytical Protocol Certification Form

Laboratory Name: Eurofins Spectrum Analytical, Inc.		Project #: 2015-120			
Project Location: 18 Ham - Oxford, MA		RTN:			
This form provides certifications for the following data set:		SC18359-01			
Matrices: Drinking Water					
CAM Protocol					
8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	✓ MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9012 Total Cyanide/PAC CAM VI A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B
<i>Affirmative responses to questions A through F are required for Presumptive Certainty'status</i>					
A	Were all samples received in a condition consistent with those described on the Chain of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?				Yes ✓ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?				✓ Yes No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?				✓ Yes No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?				✓ Yes No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?				✓ Yes No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to questions A through E)?				✓ Yes No
<i>Responses to questions G, H and I below are required for Presumptive Certainty'status</i>					
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?				✓ Yes No
<i>Data User Note: Data that achieve Presumptive Certainty'status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.</i>					
H	Were all QC performance standards specified in the CAM protocol(s) achieved?				Yes ✓ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?				✓ Yes No
<i>All negative responses are addressed in a case narrative on the cover page of this report.</i>					
<i>I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.</i>					
					
June O'Connor Laboratory Director Date: 3/2/2016					

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CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as “<” (less than) the reporting limit in this report.

The samples were received 4.1 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method. Regulatory limits may not be achieved if specific method and/or technique was not requested on the Chain of Custody.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

This work order contains 1 drinking water sample and the required field QC was not submitted.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

EPA 524.2

Calibration:

1602051

Analyte quantified by quadratic equation type calibration.

1,2,3-Trichlorobenzene
1,2,4-Trichlorobenzene
Naphthalene
n-Butylbenzene

This affected the following samples:

S601511-ICV1

S601511-ICV1

Analyte percent recovery is outside individual acceptance criteria.

2,2-Dichloropropane (79%)

This affected the following samples:

#10 Tap
1603231-BLK1
1603231-BS1
S601521-CCV1

Laboratory Control Samples:

1603231 BS

EPA 524.2

Laboratory Control Samples:

1603231 BS

1,2-Dibromo-3-chloropropane percent recovery 77 (80-120) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

#10 Tap

Bromomethane percent recovery 133 (80-120) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

#10 Tap

Carbon tetrachloride percent recovery 77 (80-120) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

#10 Tap

Methylene chloride percent recovery 75 (80-120) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

#10 Tap

Spikes:

1603231-MS1 *Source: SC18359-01*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

1,1-Dichloroethene
Benzene
Trichloroethene

1603231-MSD1 *Source: SC18359-01*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

1,1-Dichloroethene
Benzene
Toluene
Trichloroethene

Samples:

SC18359-01 #10 Tap

Data confirmed with duplicate analysis.

MADEP EPH 5/2004 R

Calibration:

1602003

Analyte quantified by quadratic equation type calibration.

Benzo (a) pyrene
Benzo (g,h,i) perylene
Dibenzo (a,h) anthracene
Indeno (1,2,3-cd) pyrene

This affected the following samples:

S600801-ICV1
S600801-ICV2

MADEP EPH 5/2004 R

Laboratory Control Samples:

1603533 BSD

Naphthalene RPD 28% (25%) is outside individual acceptance criteria.

Sample Acceptance Check Form

Client: CMG Environmental, Inc.
Project: 18 Ham - Oxford, MA / 2015-120
Work Order: SC18359
Sample(s) received on: 2/22/2016

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples refrigerated upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Summary of Hits

Lab ID: SC18359-01

Client ID: #10 Tap

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
1,1,1-Trichloroethane	0.54		0.50	µg/l	EPA 524.2
Chloroform	1.64		0.50	µg/l	EPA 524.2

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification

#10 Tap

SC18359-01

Client Project #

2015-120

Matrix

Drinking Water

Collection Date/Time

19-Feb-16 17:09

Received

22-Feb-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Purgeable Organic Compounds													
			V11										
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 0.50		µg/l	0.50	0.35	1	EPA 524.2	24-Feb-16	25-Feb-16	EK	1603231	
67-64-1	Acetone	< 10.0		µg/l	10.0	0.98	1	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 0.50		µg/l	0.50	0.25	1	"	"	"	"	"	X
71-43-2	Benzene	< 0.50		µg/l	0.50	0.17	1	"	"	"	"	"	X
108-86-1	Bromobenzene	< 0.50		µg/l	0.50	0.11	1	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 0.50		µg/l	0.50	0.13	1	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 0.50		µg/l	0.50	0.18	1	"	"	"	"	"	X
75-25-2	Bromoform	< 0.50		µg/l	0.50	0.29	1	"	"	"	"	"	X
74-83-9	Bromomethane	< 0.50		µg/l	0.50	0.36	1	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 10.0		µg/l	10.0	0.58	1	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 0.50		µg/l	0.50	0.26	1	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 0.50		µg/l	0.50	0.16	1	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 0.50		µg/l	0.50	0.21	1	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 0.50		µg/l	0.50	0.25	1	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 0.50		µg/l	0.50	0.23	1	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 0.50		µg/l	0.50	0.20	1	"	"	"	"	"	X
75-00-3	Chloroethane	< 0.50		µg/l	0.50	0.31	1	"	"	"	"	"	X
67-66-3	Chloroform	1.64		µg/l	0.50	0.19	1	"	"	"	"	"	X
74-87-3	Chloromethane	< 0.50		µg/l	0.50	0.34	1	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 0.50		µg/l	0.50	0.17	1	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 0.50		µg/l	0.50	0.20	1	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 0.50		µg/l	0.50	0.48	1	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 0.50		µg/l	0.50	0.24	1	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 0.50		µg/l	0.50	0.16	1	"	"	"	"	"	X
74-95-3	Dibromomethane	< 0.50		µg/l	0.50	0.19	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 0.50		µg/l	0.50	0.15	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 0.50		µg/l	0.50	0.22	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 0.50		µg/l	0.50	0.25	1	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 0.50		µg/l	0.50	0.49	1	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 0.50		µg/l	0.50	0.17	1	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 0.50		µg/l	0.50	0.15	1	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 0.50		µg/l	0.50	0.28	1	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 0.50		µg/l	0.50	0.20	1	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 0.50		µg/l	0.50	0.21	1	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 0.50		µg/l	0.50	0.15	1	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 0.50		µg/l	0.50	0.22	1	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 0.50		µg/l	0.50	0.36	1	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 0.50		µg/l	0.50	0.28	1	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 0.50		µg/l	0.50	0.18	1	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 0.50		µg/l	0.50	0.20	1	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 0.50		µg/l	0.50	0.17	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 0.50		µg/l	0.50	0.40	1	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 10.0		µg/l	10.0	0.54	1	"	"	"	"	"	X

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Sample Identification

#10 Tap

SC18359-01

Client Project #

2015-120

Matrix

Drinking Water

Collection Date/Time

19-Feb-16 17:09

Received

22-Feb-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.		
Volatile Organic Compounds															
Purgeable Organic Compounds															
			V11												
98-82-8	Isopropylbenzene	< 0.50		µg/l	0.50	0.24	1	EPA 524.2	24-Feb-16	25-Feb-16	EK	1603231	X		
99-87-6	4-Isopropyltoluene	< 0.50		µg/l	0.50	0.22	1	"	"	"	"	"	X		
1634-04-4	Methyl tert-butyl ether	< 0.50		µg/l	0.50	0.13	1	"	"	"	"	"	X		
108-10-1	4-Methyl-2-pentanone (MIBK)	< 10.0		µg/l	10.0	0.26	1	"	"	"	"	"	X		
75-09-2	Methylene chloride	< 0.50		µg/l	0.50	0.21	1	"	"	"	"	"	X		
91-20-3	Naphthalene	< 0.50		µg/l	0.50	0.40	1	"	"	"	"	"	X		
103-65-1	n-Propylbenzene	< 0.50		µg/l	0.50	0.22	1	"	"	"	"	"	X		
100-42-5	Styrene	< 0.50		µg/l	0.50	0.18	1	"	"	"	"	"	X		
630-20-6	1,1,1,2-Tetrachloroethane	< 0.50		µg/l	0.50	0.24	1	"	"	"	"	"	X		
79-34-5	1,1,2,2-Tetrachloroethane	< 0.50		µg/l	0.50	0.32	1	"	"	"	"	"	X		
127-18-4	Tetrachloroethene	< 0.50		µg/l	0.50	0.39	1	"	"	"	"	"	X		
108-88-3	Toluene	< 0.50		µg/l	0.50	0.33	1	"	"	"	"	"	X		
87-61-6	1,2,3-Trichlorobenzene	< 0.50		µg/l	0.50	0.14	1	"	"	"	"	"	X		
120-82-1	1,2,4-Trichlorobenzene	< 0.50		µg/l	0.50	0.38	1	"	"	"	"	"	X		
71-55-6	1,1,1-Trichloroethane	0.54		µg/l	0.50	0.21	1	"	"	"	"	"	X		
79-00-5	1,1,2-Trichloroethane	< 0.50		µg/l	0.50	0.18	1	"	"	"	"	"	X		
79-01-6	Trichloroethene	< 0.50		µg/l	0.50	0.38	1	"	"	"	"	"	X		
75-69-4	Trichlorofluoromethane (Freon 11)	< 0.50		µg/l	0.50	0.49	1	"	"	"	"	"	X		
96-18-4	1,2,3-Trichloropropane	< 0.50		µg/l	0.50	0.18	1	"	"	"	"	"	X		
95-63-6	1,2,4-Trimethylbenzene	< 0.50		µg/l	0.50	0.27	1	"	"	"	"	"	X		
108-67-8	1,3,5-Trimethylbenzene	< 0.50		µg/l	0.50	0.21	1	"	"	"	"	"	X		
75-01-4	Vinyl chloride	< 0.50		µg/l	0.50	0.34	1	"	"	"	"	"	X		
179601-23-1	m,p-Xylene	< 0.50		µg/l	0.50	0.38	1	"	"	"	"	"	X		
95-47-6	o-Xylene	< 0.50		µg/l	0.50	0.21	1	"	"	"	"	"	X		
109-99-9	Tetrahydrofuran	< 2.00		µg/l	2.00	0.38	1	"	"	"	"	"	X		
994-05-8	Tert-amyl methyl ether	< 0.50		µg/l	0.50	0.24	1	"	"	"	"	"			
637-92-3	Ethyl tert-butyl ether	< 0.50		µg/l	0.50	0.14	1	"	"	"	"	"			
108-20-3	Di-isopropyl ether	< 0.50		µg/l	0.50	0.16	1	"	"	"	"	"			
75-65-0	Tert-Butanol / butyl alcohol	< 10.0		µg/l	10.0	2.29	1	"	"	"	"	"			
<i>Surrogate recoveries:</i>															
460-00-4	4-Bromofluorobenzene	97			80-120 %			"	"	"	"	"			
2037-26-5	Toluene-d8	100			80-120 %			"	"	"	"	"			
17060-07-0	1,2-Dichloroethane-d4	103			80-120 %			"	"	"	"	"			
1868-53-7	Dibromofluoromethane	98			80-120 %			"	"	"	"	"			
Extractable Petroleum Hydrocarbons															
<u>MADEP EPH (Low)</u>															
<u>Prepared by method SW846 3510C</u>															
	C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100	27.3	1	MADEP EPH 5/2004 R	01-Mar-16	01-Mar-16	SEP	1603533			
	C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100	23.7	1	"	"	"	"	"			
	C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"			
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"			
91-20-3	Naphthalene	< 1.00		µg/l	1.00	0.495	1	"	"	"	"	"			

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Sample Identification

#10 Tap

SC18359-01

Client Project #

2015-120

Matrix

Drinking Water

Collection Date/Time

19-Feb-16 17:09

Received

22-Feb-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	* <u>RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
Extractable Petroleum Hydrocarbons													
<u>MADEP EPH (Low)</u>													
<u>Prepared by method SW846 3510C</u>													
91-57-6	2-Methylnaphthalene	< 1.00		µg/l	1.00	0.368	1	MADEP EPH 5/2004 R	01-Mar-16	01-Mar-16	SEP	1603533	
208-96-8	Acenaphthylene	< 1.00		µg/l	1.00	0.208	1	"	"	"	"	"	
83-32-9	Acenaphthene	< 1.00		µg/l	1.00	0.393	1	"	"	"	"	"	
86-73-7	Fluorene	< 1.00		µg/l	1.00	0.331	1	"	"	"	"	"	
85-01-8	Phenanthrene	< 1.00		µg/l	1.00	0.347	1	"	"	"	"	"	
120-12-7	Anthracene	< 1.00		µg/l	1.00	0.417	1	"	"	"	"	"	
206-44-0	Fluoranthene	< 1.00		µg/l	1.00	0.243	1	"	"	"	"	"	
129-00-0	Pyrene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	< 1.00		µg/l	1.00	0.195	1	"	"	"	"	"	
218-01-9	Chrysene	< 1.00		µg/l	1.00	0.320	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	< 1.00		µg/l	1.00	0.238	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	< 0.200		µg/l	0.200	0.131	1	"	"	"	"	"	
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.500		µg/l	0.500	0.248	1	"	"	"	"	"	
53-70-3	Dibenz (a,h) anthracene	< 0.500		µg/l	0.500	0.276	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perlylene	< 1.00		µg/l	1.00	0.205	1	"	"	"	"	"	

Surrogate recoveries:

3386-33-2	1-Chlorooctadecane	51	40-140 %	"	"	"	"	"
84-15-1	Ortho-Terphenyl	61	40-140 %	"	"	"	"	"
321-60-8	2-Fluorobiphenyl	58	40-140 %	"	"	"	"	"

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603231 - SW846 5030 Water MS										
<u>Blank (1603231-BLK1)</u>										
<u>Prepared & Analyzed: 24-Feb-16</u>										
1,1,2-Trichlorotrifluoroethane (Freon 113)	< 0.50		µg/l	0.50						
Acetone	< 10.0		µg/l	10.0						
Acrylonitrile	< 0.50		µg/l	0.50						
Benzene	< 0.50		µg/l	0.50						
Bromobenzene	< 0.50		µg/l	0.50						
Bromoform	< 0.50		µg/l	0.50						
Bromomethane	< 0.50		µg/l	0.50						
2-Butanone (MEK)	< 10.0		µg/l	10.0						
n-Butylbenzene	< 0.50		µg/l	0.50						
sec-Butylbenzene	< 0.50		µg/l	0.50						
tert-Butylbenzene	< 0.50		µg/l	0.50						
Carbon disulfide	< 0.50		µg/l	0.50						
Carbon tetrachloride	< 0.50		µg/l	0.50						
Chlorobenzene	< 0.50		µg/l	0.50						
Chloroethane	< 0.50		µg/l	0.50						
Chloroform	< 0.50		µg/l	0.50						
Chloromethane	< 0.50		µg/l	0.50						
2-Chlorotoluene	< 0.50		µg/l	0.50						
4-Chlorotoluene	< 0.50		µg/l	0.50						
1,2-Dibromo-3-chloropropane	< 0.50		µg/l	0.50						
Dibromochloromethane	< 0.50		µg/l	0.50						
1,2-Dibromoethane (EDB)	< 0.50		µg/l	0.50						
Dibromomethane	< 0.50		µg/l	0.50						
1,2-Dichlorobenzene	< 0.50		µg/l	0.50						
1,3-Dichlorobenzene	< 0.50		µg/l	0.50						
1,4-Dichlorobenzene	< 0.50		µg/l	0.50						
Dichlorodifluoromethane (Freon12)	< 0.50		µg/l	0.50						
1,1-Dichloroethane	< 0.50		µg/l	0.50						
1,2-Dichloroethane	< 0.50		µg/l	0.50						
1,1-Dichloroethene	< 0.50		µg/l	0.50						
cis-1,2-Dichloroethene	< 0.50		µg/l	0.50						
trans-1,2-Dichloroethene	< 0.50		µg/l	0.50						
1,2-Dichloropropane	< 0.50		µg/l	0.50						
1,3-Dichloropropane	< 0.50		µg/l	0.50						
2,2-Dichloropropane	< 0.50		µg/l	0.50						
1,1-Dichloropropene	< 0.50		µg/l	0.50						
cis-1,3-Dichloropropene	< 0.50		µg/l	0.50						
trans-1,3-Dichloropropene	< 0.50		µg/l	0.50						
Ethylbenzene	< 0.50		µg/l	0.50						
Hexachlorobutadiene	< 0.50		µg/l	0.50						
2-Hexanone (MBK)	< 10.0		µg/l	10.0						
Isopropylbenzene	< 0.50		µg/l	0.50						
4-Isopropyltoluene	< 0.50		µg/l	0.50						
Methyl tert-butyl ether	< 0.50		µg/l	0.50						
4-Methyl-2-pentanone (MIBK)	< 10.0		µg/l	10.0						
Methylene chloride	< 0.50		µg/l	0.50						
Naphthalene	< 0.50		µg/l	0.50						
n-Propylbenzene	< 0.50		µg/l	0.50						
Styrene	< 0.50		µg/l	0.50						
1,1,1,2-Tetrachloroethane	< 0.50		µg/l	0.50						

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603231 - SW846 5030 Water MS										
<u>Blank (1603231-BLK1)</u>										
1,1,2,2-Tetrachloroethane	< 0.50		µg/l	0.50						
Tetrachloroethene	< 0.50		µg/l	0.50						
Toluene	< 0.50		µg/l	0.50						
1,2,3-Trichlorobenzene	< 0.50		µg/l	0.50						
1,2,4-Trichlorobenzene	< 0.50		µg/l	0.50						
1,1,1-Trichloroethane	< 0.50		µg/l	0.50						
1,1,2-Trichloroethane	< 0.50		µg/l	0.50						
Trichloroethene	< 0.50		µg/l	0.50						
Trichlorofluoromethane (Freon 11)	< 0.50		µg/l	0.50						
1,2,3-Trichloropropane	< 0.50		µg/l	0.50						
1,2,4-Trimethylbenzene	< 0.50		µg/l	0.50						
1,3,5-Trimethylbenzene	< 0.50		µg/l	0.50						
Vinyl chloride	< 0.50		µg/l	0.50						
m,p-Xylene	< 0.50		µg/l	0.50						
o-Xylene	< 0.50		µg/l	0.50						
Tetrahydrofuran	< 2.00		µg/l	2.00						
Tert-amyl methyl ether	< 0.50		µg/l	0.50						
Ethyl tert-butyl ether	< 0.50		µg/l	0.50						
Di-isopropyl ether	< 0.50		µg/l	0.50						
Tert-Butanol / butyl alcohol	< 10.0		µg/l	10.0						
<i>Surrogate: 4-Bromofluorobenzene</i>	47.6		µg/l	50.0		95	80-120			
<i>Surrogate: Toluene-d8</i>	50.0		µg/l	50.0		100	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	50.1		µg/l	50.0		100	80-120			
<i>Surrogate: Dibromofluoromethane</i>	48.3		µg/l	50.0		97	80-120			
<u>LCS (1603231-BS1)</u>										
Prepared & Analyzed: 24-Feb-16										
1,1,2-Trichlorotrifluoroethane (Freon 113)	19.1		µg/l	20.0		95	80-120			
Acetone	19.9		µg/l	20.0		99	70-130			
Acrylonitrile	17.0		µg/l	20.0		85	70-130			
Benzene	20.4		µg/l	20.0		102	80-120			
Bromobenzene	21.7		µg/l	20.0		108	80-120			
Bromochloromethane	20.8		µg/l	20.0		104	80-120			
Bromodichloromethane	19.6		µg/l	20.0		98	80-120			
Bromoform	17.7		µg/l	20.0		88	80-120			
Bromomethane	26.6	QC2	µg/l	20.0		133	80-120			
2-Butanone (MEK)	19.2		µg/l	20.0		96	70-130			
n-Butylbenzene	18.4		µg/l	20.0		92	80-120			
sec-Butylbenzene	20.1		µg/l	20.0		101	80-120			
tert-Butylbenzene	20.3		µg/l	20.0		102	80-120			
Carbon disulfide	17.5		µg/l	20.0		88	70-130			
Carbon tetrachloride	15.3	QC2	µg/l	20.0		77	80-120			
Chlorobenzene	21.0		µg/l	20.0		105	80-120			
Chloroethane	18.0		µg/l	20.0		90	80-120			
Chloroform	20.7		µg/l	20.0		103	80-120			
Chloromethane	18.4		µg/l	20.0		92	80-120			
2-Chlorotoluene	21.1		µg/l	20.0		106	80-120			
4-Chlorotoluene	22.0		µg/l	20.0		110	80-120			
1,2-Dibromo-3-chloropropane	15.4	QC2	µg/l	20.0		77	80-120			
Dibromochloromethane	18.4		µg/l	20.0		92	80-120			
1,2-Dibromoethane (EDB)	20.6		µg/l	20.0		103	80-120			
Dibromomethane	21.3		µg/l	20.0		106	80-120			
1,2-Dichlorobenzene	21.0		µg/l	20.0		105	80-120			

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603231 - SW846 5030 Water MS										
LCS (1603231-BS1)										
Prepared & Analyzed: 24-Feb-16										
1,3-Dichlorobenzene	20.9		µg/l		20.0	104	80-120			
1,4-Dichlorobenzene	20.3		µg/l		20.0	101	80-120			
Dichlorodifluoromethane (Freon12)	17.6		µg/l		20.0	88	80-120			
1,1-Dichloroethane	20.2		µg/l		20.0	101	80-120			
1,2-Dichloroethane	20.8		µg/l		20.0	104	80-120			
1,1-Dichloroethene	19.9		µg/l		20.0	100	80-120			
cis-1,2-Dichloroethene	20.3		µg/l		20.0	101	80-120			
trans-1,2-Dichloroethene	19.8		µg/l		20.0	99	80-120			
1,2-Dichloropropane	20.6		µg/l		20.0	103	80-120			
1,3-Dichloropropane	21.0		µg/l		20.0	105	80-120			
2,2-Dichloropropane	17.0		µg/l		20.0	85	80-120			
1,1-Dichloropropene	18.8		µg/l		20.0	94	80-120			
cis-1,3-Dichloropropene	18.1		µg/l		20.0	91	80-120			
trans-1,3-Dichloropropene	17.0		µg/l		20.0	85	80-120			
Ethylbenzene	21.2		µg/l		20.0	106	80-120			
Hexachlorobutadiene	18.6		µg/l		20.0	93	80-120			
2-Hexanone (MBK)	21.2		µg/l		20.0	106	70-130			
Isopropylbenzene	20.4		µg/l		20.0	102	80-120			
4-Isopropyltoluene	19.1		µg/l		20.0	96	80-120			
Methyl tert-butyl ether	19.5		µg/l		20.0	98	80-120			
4-Methyl-2-pentanone (MIBK)	20.4		µg/l		20.0	102	70-130			
Methylene chloride	15.0	QC2	µg/l		20.0	75	80-120			
Naphthalene	18.8		µg/l		20.0	94	80-120			
n-Propylbenzene	20.1		µg/l		20.0	100	80-120			
Styrene	21.9		µg/l		20.0	110	80-120			
1,1,1,2-Tetrachloroethane	17.7		µg/l		20.0	89	80-120			
1,1,2,2-Tetrachloroethane	21.0		µg/l		20.0	105	80-120			
Tetrachloroethene	19.7		µg/l		20.0	98	80-120			
Toluene	20.6		µg/l		20.0	103	80-120			
1,2,3-Trichlorobenzene	18.4		µg/l		20.0	92	80-120			
1,2,4-Trichlorobenzene	17.8		µg/l		20.0	89	80-120			
1,1,1-Trichloroethane	17.5		µg/l		20.0	88	80-120			
1,1,2-Trichloroethane	20.6		µg/l		20.0	103	80-120			
Trichloroethene	20.4		µg/l		20.0	102	80-120			
Trichlorofluoromethane (Freon 11)	18.9		µg/l		20.0	95	80-120			
1,2,3-Trichloropropane	20.8		µg/l		20.0	104	80-120			
1,2,4-Trimethylbenzene	20.4		µg/l		20.0	102	80-120			
1,3,5-Trimethylbenzene	21.8		µg/l		20.0	109	80-120			
Vinyl chloride	21.0		µg/l		20.0	105	80-120			
m,p-Xylene	21.3		µg/l		20.0	106	80-120			
o-Xylene	21.6		µg/l		20.0	108	80-120			
Tetrahydrofuran	18.5		µg/l		20.0	93	70-130			
Tert-amyl methyl ether	18.3		µg/l		20.0	92	70-130			
Ethyl tert-butyl ether	19.3		µg/l		20.0	97	70-130			
Di-isopropyl ether	19.9		µg/l		20.0	99	70-130			
Tert-Butanol / butyl alcohol	192		µg/l		200	96	70-130			
Surrogate: 4-Bromofluorobenzene	51.7		µg/l		50.0	103	80-120			
Surrogate: Toluene-d8	50.2		µg/l		50.0	100	80-120			
Surrogate: 1,2-Dichloroethane-d4	50.3		µg/l		50.0	101	80-120			

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603231 - SW846 5030 Water MS										
<u>Matrix Spike (1603231-MS1)</u>										
<u>Source: SC18359-01</u>										
<u>Prepared & Analyzed: 24-Feb-16</u>										
Benzene	15.7	QM7, D	µg/l		20.0	BRL	79	80-120		
Chlorobenzene	17.2	D	µg/l		20.0	BRL	86	80-120		
1,1-Dichloroethene	13.5	QM7, D	µg/l		20.0	BRL	67	80-120		
Toluene	16.1	D	µg/l		20.0	BRL	81	80-120		
Trichloroethene	15.2	QM7, D	µg/l		20.0	BRL	76	80-120		
<i>Surrogate: 4-Bromofluorobenzene</i>	51.2		µg/l		50.0		102	80-120		
<i>Surrogate: Toluene-d8</i>	50.5		µg/l		50.0		101	80-120		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	49.8		µg/l		50.0		100	80-120		
<i>Surrogate: Dibromofluoromethane</i>	50.1		µg/l		50.0		100	80-120		
<u>Matrix Spike Dup (1603231-MSD1)</u>										
<u>Source: SC18359-01</u>										
<u>Prepared & Analyzed: 24-Feb-16</u>										
Benzene	15.4	QM7, D	µg/l		20.0	BRL	77	80-120	2	20
Chlorobenzene	17.1	D	µg/l		20.0	BRL	86	80-120	0.7	20
1,1-Dichloroethene	13.5	QM7, D	µg/l		20.0	BRL	68	80-120	0.4	20
Toluene	15.7	QM7, D	µg/l		20.0	BRL	79	80-120	3	20
Trichloroethene	14.8	QM7, D	µg/l		20.0	BRL	74	80-120	2	20
<i>Surrogate: 4-Bromofluorobenzene</i>	51.6		µg/l		50.0		103	80-120		
<i>Surrogate: Toluene-d8</i>	50.2		µg/l		50.0		100	80-120		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	50.0		µg/l		50.0		100	80-120		
<i>Surrogate: Dibromofluoromethane</i>	49.4		µg/l		50.0		99	80-120		

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603533 - SW846 3510C										
<u>Blank (1603533-BLK1)</u>										
<u>Prepared & Analyzed: 01-Mar-16</u>										
C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100						
C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100						
C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100						
Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100						
Total Petroleum Hydrocarbons	< 300		µg/l	300						
Unadjusted Total Petroleum Hydrocarbons	< 300		µg/l	300						
Naphthalene	< 1.00		µg/l	1.00						
2-Methylnaphthalene	< 1.00		µg/l	1.00						
Acenaphthylene	< 1.00		µg/l	1.00						
Acenaphthene	< 1.00		µg/l	1.00						
Fluorene	< 1.00		µg/l	1.00						
Phenanthrene	< 1.00		µg/l	1.00						
Anthracene	< 1.00		µg/l	1.00						
Fluoranthene	< 1.00		µg/l	1.00						
Pyrene	< 1.00		µg/l	1.00						
Benzo (a) anthracene	< 1.00		µg/l	1.00						
Chrysene	< 1.00		µg/l	1.00						
Benzo (b) fluoranthene	< 1.00		µg/l	1.00						
Benzo (k) fluoranthene	< 1.00		µg/l	1.00						
Benzo (a) pyrene	< 0.200		µg/l	0.200						
Indeno (1,2,3-cd) pyrene	< 0.500		µg/l	0.500						
Dibenzo (a,h) anthracene	< 0.500		µg/l	0.500						
Benzo (g,h,i) perylene	< 1.00		µg/l	1.00						
n-Nonane (C9)	< 5.00		µg/l	5.00						
n-Decane	< 5.00		µg/l	5.00						
n-Dodecane	< 5.00		µg/l	5.00						
n-Tetradecane	< 5.00		µg/l	5.00						
n-Hexadecane	< 5.00		µg/l	5.00						
n-Octadecane	< 5.00		µg/l	5.00						
n-Nonadecane	< 5.00		µg/l	5.00						
n-Eicosane	< 5.00		µg/l	5.00						
n-Docosane	< 5.00		µg/l	5.00						
n-Tetracosane	< 5.00		µg/l	5.00						
n-Hexacosane	< 5.00		µg/l	5.00						
n-Octacosane	< 5.00		µg/l	5.00						
n-Triacontane	< 5.00		µg/l	5.00						
n-Hexatriacontane	< 5.00		µg/l	5.00						
Naphthalene (aliphatic fraction)	0.00		µg/l							
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l							
Surrogate: 1-Chlorooctadecane	41.7		µg/l	50.0		83	40-140			
Surrogate: Ortho-Terphenyl	38.2		µg/l	50.0		76	40-140			
Surrogate: 2-Fluorobiphenyl	26.9		µg/l	40.0		67	40-140			
<u>LCS (1603533-BS1)</u>										
<u>Prepared & Analyzed: 01-Mar-16</u>										
C9-C18 Aliphatic Hydrocarbons	559		µg/l	100	600	93	40-140			
C19-C36 Aliphatic Hydrocarbons	858		µg/l	100	800	107	40-140			
Unadjusted C11-C22 Aromatic Hydrocarbons	555		µg/l	100	680	82	40-140			
Naphthalene	21.7		µg/l	1.00	40.0	54	40-140			
2-Methylnaphthalene	22.8		µg/l	1.00	40.0	57	40-140			
Acenaphthylene	27.9		µg/l	1.00	40.0	70	40-140			
Acenaphthene	29.7		µg/l	1.00	40.0	74	40-140			

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603533 - SW846 3510C										
<u>LCS (1603533-BS1)</u>										
<u>Prepared & Analyzed: 01-Mar-16</u>										
Fluorene	31.4		µg/l	1.00	40.0	78	40-140			
Phenanthrene	34.1		µg/l	1.00	40.0	85	40-140			
Anthracene	34.4		µg/l	1.00	40.0	86	40-140			
Fluoranthene	34.4		µg/l	1.00	40.0	86	40-140			
Pyrene	34.1		µg/l	1.00	40.0	85	40-140			
Benzo (a) anthracene	33.1		µg/l	1.00	40.0	83	40-140			
Chrysene	34.1		µg/l	1.00	40.0	85	40-140			
Benzo (b) fluoranthene	30.1		µg/l	1.00	40.0	75	40-140			
Benzo (k) fluoranthene	32.9		µg/l	1.00	40.0	82	40-140			
Benzo (a) pyrene	28.3		µg/l	0.200	40.0	71	40-140			
Indeno (1,2,3-cd) pyrene	27.7		µg/l	0.500	40.0	69	40-140			
Dibenzo (a,h) anthracene	26.2		µg/l	0.500	40.0	65	40-140			
Benzo (g,h,i) perylene	28.1		µg/l	1.00	40.0	70	40-140			
n-Nonane (C9)	33.0		µg/l	5.00	100	33	30-140			
n-Decane	45.2		µg/l	5.00	100	45	40-140			
n-Dodecane	53.1		µg/l	5.00	100	53	40-140			
n-Tetradecane	61.4		µg/l	5.00	100	61	40-140			
n-Hexadecane	72.4		µg/l	5.00	100	72	40-140			
n-Octadecane	81.1		µg/l	5.00	100	81	40-140			
n-Nonadecane	83.9		µg/l	5.00	100	84	40-140			
n-Eicosane	84.3		µg/l	5.00	100	84	40-140			
n-Docosane	85.7		µg/l	5.00	100	86	40-140			
n-Tetracosane	85.1		µg/l	5.00	100	85	40-140			
n-Hexacosane	83.9		µg/l	5.00	100	84	40-140			
n-Octacosane	84.5		µg/l	5.00	100	85	40-140			
n-Triacontane	82.8		µg/l	5.00	100	83	40-140			
n-Hexatriacontane	80.8		µg/l	5.00	100	81	40-140			
Naphthalene (aliphatic fraction)	0.00		µg/l				0-200			
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l				0-200			
Surrogate: 1-Chlorooctadecane	36.8		µg/l		50.0	74	40-140			
Surrogate: Ortho-Terphenyl	35.6		µg/l		50.0	71	40-140			
Surrogate: 2-Fluorobiphenyl	27.3		µg/l		40.0	68	40-140			
<u>LCS (1603533-BS2)</u>										
<u>Prepared & Analyzed: 01-Mar-16</u>										
C9-C18 Aliphatic Hydrocarbons	543		µg/l	100	600	90	40-140			
C19-C36 Aliphatic Hydrocarbons	885		µg/l	100	800	111	40-140			
Unadjusted C11-C22 Aromatic Hydrocarbons	392		µg/l	100	340	115	40-140			
Naphthalene	12.1		µg/l	1.00	20.0	60	40-140			
2-Methylnaphthalene	14.8		µg/l	1.00	20.0	74	40-140			
Acenaphthylene	20.3		µg/l	1.00	20.0	101	40-140			
Acenaphthene	20.6		µg/l	1.00	20.0	103	40-140			
Fluorene	23.6		µg/l	1.00	20.0	118	40-140			
Phenanthrene	24.2		µg/l	1.00	20.0	121	40-140			
Anthracene	24.0		µg/l	1.00	20.0	120	40-140			
Fluoranthene	24.6		µg/l	1.00	20.0	123	40-140			
Pyrene	24.0		µg/l	1.00	20.0	120	40-140			
Benzo (a) anthracene	23.7		µg/l	1.00	20.0	118	40-140			
Chrysene	23.7		µg/l	1.00	20.0	119	40-140			
Benzo (b) fluoranthene	19.1		µg/l	1.00	20.0	96	40-140			
Benzo (k) fluoranthene	21.4		µg/l	1.00	20.0	107	40-140			
Benzo (a) pyrene	19.3		µg/l	0.200	20.0	96	40-140			
Indeno (1,2,3-cd) pyrene	19.1		µg/l	0.500	20.0	96	40-140			

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603533 - SW846 3510C										
<u>LCS (1603533-BS2)</u>										
							<u>Prepared & Analyzed: 01-Mar-16</u>			
Dibenzo (a,h) anthracene	19.0		µg/l	0.500	20.0		95	40-140		
Benzo (g,h,i) perylene	19.5		µg/l	1.00	20.0		98	40-140		
n-Nonane (C9)	47.8		µg/l	5.00	100		48	30-140		
n-Decane	56.2		µg/l	5.00	100		56	40-140		
n-Dodecane	65.2		µg/l	5.00	100		65	40-140		
n-Tetradecane	67.5		µg/l	5.00	100		67	40-140		
n-Hexadecane	76.0		µg/l	5.00	100		76	40-140		
n-Octadecane	84.5		µg/l	5.00	100		84	40-140		
n-Nonadecane	87.2		µg/l	5.00	100		87	40-140		
n-Eicosane	87.7		µg/l	5.00	100		88	40-140		
n-Docosane	89.6		µg/l	5.00	100		90	40-140		
n-Tetracosane	88.3		µg/l	5.00	100		88	40-140		
n-Hexacosane	86.5		µg/l	5.00	100		87	40-140		
n-Octacosane	87.2		µg/l	5.00	100		87	40-140		
n-Triacontane	85.0		µg/l	5.00	100		85	40-140		
n-Hexatriacontane	83.2		µg/l	5.00	100		83	40-140		
Naphthalene (aliphatic fraction)	0.00		µg/l					0-200		
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l					0-200		
Surrogate: 1-Chlorooctadecane	38.9		µg/l		50.0		78	40-140		
Surrogate: Ortho-Terphenyl	26.4		µg/l		50.0		53	40-140		
Surrogate: 2-Fluorobiphenyl	18.1		µg/l		40.0		45	40-140		
<u>LCS Dup (1603533-BSD1)</u>										
							<u>Prepared & Analyzed: 01-Mar-16</u>			
C9-C18 Aliphatic Hydrocarbons	704		µg/l	100	600		117	40-140	23	25
C19-C36 Aliphatic Hydrocarbons	879		µg/l	100	800		110	40-140	2	25
Unadjusted C11-C22 Aromatic Hydrocarbons	646		µg/l	100	680		95	40-140	15	25
Naphthalene	16.5	QR2	µg/l	1.00	40.0		41	40-140	28	25
2-Methylnaphthalene	23.2		µg/l	1.00	40.0		58	40-140	1	25
Acenaphthylene	30.6		µg/l	1.00	40.0		76	40-140	9	25
Acenaphthene	32.0		µg/l	1.00	40.0		80	40-140	8	25
Fluorene	33.1		µg/l	1.00	40.0		83	40-140	5	25
Phenanthrene	35.4		µg/l	1.00	40.0		88	40-140	4	25
Anthracene	35.9		µg/l	1.00	40.0		90	40-140	4	25
Fluoranthene	34.3		µg/l	1.00	40.0		86	40-140	0.3	25
Pyrene	34.6		µg/l	1.00	40.0		87	40-140	1	25
Benzo (a) anthracene	33.3		µg/l	1.00	40.0		83	40-140	0.7	25
Chrysene	33.9		µg/l	1.00	40.0		85	40-140	0.4	25
Benzo (b) fluoranthene	26.7		µg/l	1.00	40.0		67	40-140	12	25
Benzo (k) fluoranthene	32.3		µg/l	1.00	40.0		81	40-140	2	25
Benzo (a) pyrene	27.9		µg/l	0.200	40.0		70	40-140	1	25
Indeno (1,2,3-cd) pyrene	26.7		µg/l	0.500	40.0		67	40-140	4	25
Dibenzo (a,h) anthracene	26.8		µg/l	0.500	40.0		67	40-140	2	25
Benzo (g,h,i) perylene	28.4		µg/l	1.00	40.0		71	40-140	0.9	25
n-Nonane (C9)	40.4		µg/l	5.00	100		40	30-140	20	25
n-Decane	51.9		µg/l	5.00	100		52	40-140	14	25
n-Dodecane	65.7		µg/l	5.00	100		66	40-140	21	25
n-Tetradecane	69.3		µg/l	5.00	100		69	40-140	12	25
n-Hexadecane	80.8		µg/l	5.00	100		81	40-140	11	25
n-Octadecane	89.2		µg/l	5.00	100		89	40-140	10	25
n-Nonadecane	92.2		µg/l	5.00	100		92	40-140	9	25
n-Eicosane	92.9		µg/l	5.00	100		93	40-140	10	25
n-Docosane	94.0		µg/l	5.00	100		94	40-140	9	25

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603533 - SW846 3510C										
<u>LCS Dup (1603533-BSD1)</u>										
n-Tetracosane	93.4		µg/l	5.00	100	93	40-140	9	25	
n-Hexacosane	92.1		µg/l	5.00	100	92	40-140	9	25	
n-Octacosane	92.6		µg/l	5.00	100	93	40-140	9	25	
n-Triacontane	91.0		µg/l	5.00	100	91	40-140	9	25	
n-Hexatriacontane	89.4		µg/l	5.00	100	89	40-140	10	25	
Naphthalene (aliphatic fraction)	0.00		µg/l				0-200		200	
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l				0-200		200	
Surrogate: 1-Chlorooctadecane	41.8		µg/l		50.0	84	40-140			
Surrogate: Ortho-Terphenyl	36.4		µg/l		50.0	73	40-140			
Surrogate: 2-Fluorobiphenyl	28.9		µg/l		40.0	72	40-140			

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S601729				
<u>Calibration Check (S601729-CCV1)</u>				
Naphthalene	7.979187	7.695539	-3.6	20
2-Methylnaphthalene	5.175777	4.97666	-3.8	20
Acenaphthylene	6.726422	7.045799	4.7	20
Acenaphthene	4.261544	4.59129	7.7	20
Fluorene	4.63772	4.945539	6.6	20
Phenanthrene	6.547178	7.516706	14.8	20
Anthracene	6.459808	7.697589	19.2	20
Fluoranthene	6.59472	7.660055	16.2	20
Pyrene	6.818743	8.13462	19.3	20
Benzo (a) anthracene	5.548701	5.89888	6.3	20
Chrysene	5.938179	6.942321	16.9	20
Benzo (b) fluoranthene	5.646098	5.135105	-9.1	20
Benzo (k) fluoranthene	5.949232	6.818082	14.6	20
Benzo (a) pyrene	4.790196	5.27204	-5.4	20
Indeno (1,2,3-cd) pyrene	5.188538	5.292824	-12.0	20
Dibenzo (a,h) anthracene	4.552503	4.317597	-18.3	20
Benzo (g,h,i) perylene	4.2539	4.864255	-5.1	20
Naphthalene (aliphatic fraction)	192055.7			
2-Methylnaphthalene (aliphatic fraction)	192343.2			
<u>Calibration Check (S601729-CCV2)</u>				
C9-C18 Aliphatic Hydrocarbons	209354.1	171757.9	0.4	25
C19-C36 Aliphatic Hydrocarbons	511275.8	273014.5	24.5	25
Unadjusted C11-C22 Aromatic Hydrocarbons	21.14299	18.27357	7.4	25
n-Nonane (C9)	191834.7	156140.8	-18.6	30
n-Decane	191747.7	158069.4	-17.6	25
n-Dodecane	190677.2	152446.2	-20.1	25
n-Tetradecane	193742.9	158125	-18.4	25
n-Hexadecane	185148	155533.1	-16.0	25
n-Octadecane	174936.2	150616.1	-13.9	25
n-Nonadecane	169032.4	146365.7	-13.4	25
n-Eicosane	165289.9	141654.1	-14.3	25
n-Docosane	160328.1	137570.7	-14.2	25
n-Tetracosane	158603.2	132937.1	-16.2	25
n-Hexacosane	157983	130249.6	-17.6	25
n-Octacosane	156719.2	129820.9	-17.2	25
n-Triacontane	158189.6	131051.4	-17.2	25
n-Hexatriacontane	152128.9	130043	-14.5	25
Naphthalene (aliphatic fraction)	192055.7			
2-Methylnaphthalene (aliphatic fraction)	192343.2			
<u>Calibration Check (S601729-CCV3)</u>				
Naphthalene	7.979187	8.121286	1.8	20
2-Methylnaphthalene	5.175777	5.597798	8.2	20
Acenaphthylene	6.726422	7.721091	14.8	20
Acenaphthene	4.261544	4.987303	17.0	20
Fluorene	4.63772	5.497259	18.5	20
Phenanthrene	6.547178	7.700041	17.6	20
Anthracene	6.459808	7.693651	19.1	20
Fluoranthene	6.59472	7.632716	15.7	20
Pyrene	6.818743	8.11327	19.0	20
Benzo (a) anthracene	5.548701	5.913823	6.6	20
Chrysene	5.938179	6.804914	14.6	20

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S601729				
<u>Calibration Check (S601729-CCV3)</u>				
Benzo (b) fluoranthene	5.646098	5.645755	-0.006	20
Benzo (k) fluoranthene	5.949232	6.748184	13.4	20
Benzo (a) pyrene	4.790196	5.088683	-8.6	20
Indeno (1,2,3-cd) pyrene	5.188538	5.397448	-10.4	20
Dibenzo (a,h) anthracene	4.552503	4.626124	-12.6	20
Benzo (g,h,i) perylene	4.2539	4.827062	-5.9	20
Naphthalene (aliphatic fraction)	192055.7			
2-Methylnaphthalene (aliphatic fraction)	192343.2			
<u>Calibration Check (S601729-CCV4)</u>				
C9-C18 Aliphatic Hydrocarbons	209354.1	196272.2	15.6	25
C19-C36 Aliphatic Hydrocarbons	511275.8	263479.5	18.7	25
Unadjusted C11-C22 Aromatic Hydrocarbons	21.14299	19.56349	15.4	25
n-Nonane (C9)	191834.7	162603.9	-15.2	30
n-Decane	191747.7	167958.6	-12.4	25
n-Dodecane	190677.2	164000.9	-14.0	25
n-Tetradecane	193742.9	168429.3	-13.1	25
n-Hexadecane	185148	165427.6	-10.7	25
n-Octadecane	174936.2	160173.6	-8.4	25
n-Nonadecane	169032.4	159943.3	-5.4	25
n-Eicosane	165289.9	159762.2	-3.3	25
n-Docosane	160328.1	161893.6	1.0	25
n-Tetracosane	158603.2	160470.9	1.2	25
n-Hexacosane	157983	158903.2	0.6	25
n-Octacosane	156719.2	158741.6	1.3	25
n-Triacontane	158189.6	159769	1.0	25
n-Hexatricontane	152128.9	155139.2	2.0	25
Naphthalene (aliphatic fraction)	192055.7			
2-Methylnaphthalene (aliphatic fraction)	192343.2			

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Notes and Definitions

D	Data reported from a dilution
QC2	Analyte out of acceptance range in QC spike but no reportable concentration present in sample.
QM7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QR2	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
V11	Data confirmed with duplicate analysis.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

Validated by:
June O'Connor
Kimberly LaPlante

Laboratory Report

CMG Environmental, Inc.
 67 Hall Road
 Sturbridge, MA 01566
 Attn: Jerry Clark

Project: 18 Ham - Oxford, MA
 Project #: 2015-120

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SC18360-01	MW-1	Ground Water	19-Feb-16 12:00	22-Feb-16 15:45
SC18360-02	MW-2	Ground Water	19-Feb-16 12:15	22-Feb-16 15:45
SC18360-03	MW-3	Ground Water	19-Feb-16 12:25	22-Feb-16 15:45
SC18360-04	MW-4	Ground Water	19-Feb-16 13:15	22-Feb-16 15:45
SC18360-05	MW-5	Ground Water	19-Feb-16 12:55	22-Feb-16 15:45

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
 Connecticut # PH-0777
 Florida # E87936
 Maine # MA138
 New Hampshire # 2538
 New Jersey # MA011
 New York # 11393
 Pennsylvania # 68-04426/68-02924
 Rhode Island # LAO00098
 USDA # S-51435

Authorized by:

June O'Connor
 Laboratory Director



Eurofins Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 30 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our Quality web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

The following outlines the condition of all VPH samples contained within this report upon laboratory receipt.

Matrices	Ground Water			
Containers	<input checked="" type="checkbox"/> Satisfactory			
Sample Preservative	Aqueous (acid preserved)	N/A	<input checked="" type="checkbox"/> pH≤2	pH>2
	Soil or Sediment	<input checked="" type="checkbox"/> N/A	Samples not received in Methanol	
		Samples received in Methanol: covering soil/sediment not covering soil/sediment		ml Methanol/g soil 1:1 +/-25% Other
Temperature	Received on ice	<input checked="" type="checkbox"/>	Received at 4 ± 2 °C	

Were all QA/QC procedures followed as required by the VPH method? *Yes*

Were any significant modifications made to the VPH method as specified in section 11.3? *No*

Were all performance/acceptance standards for required QA/QC procedures achieved? *Yes*

The following outlines the condition of all EPH samples contained within this report upon laboratory receipt.

Matrices	Ground Water			
Containers	<input checked="" type="checkbox"/> Satisfactory			
Aqueous Preservative	N/A	<input checked="" type="checkbox"/> pH≤2	pH>2	pH adjusted to <2 in lab
Temperature	Received on ice	<input checked="" type="checkbox"/>	Received at 4 ± 2 °C	

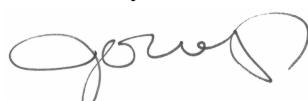
Were all QA/QC procedures followed as required by the EPH method? *Yes*

Were any significant modifications made to the EPH method as specified in Section 11.3? *No*

Were all performance/acceptance standards for required QA/QC procedures achieved? *Yes*

I attest that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Authorized by:



June O'Connor
Laboratory Director

MassDEP Analytical Protocol Certification Form

Laboratory Name: Eurofins Spectrum Analytical, Inc.		Project #: 2015-120			
Project Location: 18 Ham - Oxford, MA		RTN:			
This form provides certifications for the following data set:		SC18360-01 through SC18360-05			
Matrices: Ground Water					
CAM Protocol					
8260 VOC CAM II A	7470/7471 Hg CAM III B	<input checked="" type="checkbox"/> MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	<input checked="" type="checkbox"/> MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9012 Total Cyanide/PAC CAM VI A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B
<i>Affirmative responses to questions A through F are required for Presumptive Certainty'status</i>					
A	Were all samples received in a condition consistent with those described on the Chain of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?				<input checked="" type="checkbox"/> Yes No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?				<input checked="" type="checkbox"/> Yes No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?				<input checked="" type="checkbox"/> Yes No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?				<input checked="" type="checkbox"/> Yes No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?				<input checked="" type="checkbox"/> Yes No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to questions A through E)?				<input checked="" type="checkbox"/> Yes No
<i>Responses to questions G, H and I below are required for Presumptive Certainty'status</i>					
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?				<input checked="" type="checkbox"/> Yes No
<i>Data User Note: Data that achieve Presumptive Certainty'status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.</i>					
H	Were all QC performance standards specified in the CAM protocol(s) achieved?				Yes <input checked="" type="checkbox"/> No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?				<input checked="" type="checkbox"/> Yes No
<i>All negative responses are addressed in a case narrative on the cover page of this report.</i>					
<i>I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.</i>					
					
June O'Connor Laboratory Director Date: 3/2/2016					

This laboratory report is not valid without an authorized signature on the cover page.

CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as “<” (less than) the reporting limit in this report.

The samples were received 4.1 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method. Regulatory limits may not be achieved if specific method and/or technique was not requested on the Chain of Custody.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

MADEP EPH 5/2004 R

Calibration:

1602003

Analyte quantified by quadratic equation type calibration.

Benzo (a) pyrene
Benzo (g,h,i) perylene
Dibenzo (a,h) anthracene
Indeno (1,2,3-cd) pyrene

This affected the following samples:

1603212-BLK1
1603212-BS1
1603212-BS2
1603212-BSD1
MW-1
MW-2
MW-3
MW-4
MW-5
S600801-ICV1
S600801-ICV2
S601623-CCV1
S601623-CCV3
S601690-CCV1
S601690-CCV3

Laboratory Control Samples:

1603212 BSD

MADEP EPH 5/2004 R

Laboratory Control Samples:

1603212 BSD

C9-C18 Aliphatic Hydrocarbons RPD 26% (25%) is outside individual acceptance criteria.

MADEP VPH 5/2004 Rev. 1.1

Spikes:

1603326-MS1 *Source: SC18360-01*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

C9-C10 Aromatic Hydrocarbons

Sample Acceptance Check Form

Client: CMG Environmental, Inc.
Project: 18 Ham - Oxford, MA / 2015-120
Work Order: SC18360
Sample(s) received on: 2/22/2016

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples refrigerated upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Summary of Hits

Lab ID: SC18360-01

Client ID: MW-1

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
C9-C10 Aromatic Hydrocarbons	44.1	D	25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1
C9-C12 Aliphatic Hydrocarbons	27.4	D	25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1
o-Xylene	6.44	D	5.00	µg/l	MADEP VPH 5/2004 Rev. 1.1
Unadjusted C9-C12 Aliphatic Hydrocarbons	71.5	D	25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification**MW-1**

SC18360-01

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

19-Feb-16 12:00

Received

22-Feb-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	* <u>RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>			
Volatile Organic Compounds																
MADEP VPH																
Prepared by method VPH - EPA 5030C Water																
	C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	0.645	5	MADEP VPH 5/2004 Rev. 1.1	25-Feb-16	25-Feb-16	NAA	1603326				
	C9-C12 Aliphatic Hydrocarbons	27.4	D	µg/l	25.0	5.02	5	"	"	"	"	"				
	C9-C10 Aromatic Hydrocarbons	44.1	D	µg/l	25.0	1.06	5	"	"	"	"	"				
	Unadjusted C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	9.51	5	"	"	"	"	"				
	Unadjusted C9-C12 Aliphatic Hydrocarbons	71.5	D	µg/l	25.0	4.78	5	"	"	"	"	"				
71-43-2	Benzene	< 5.00	D	µg/l	5.00	0.945	5	"	"	"	"	"				
100-41-4	Ethylbenzene	< 5.00	D	µg/l	5.00	1.18	5	"	"	"	"	"				
1634-04-4	Methyl tert-butyl ether	< 5.00	D	µg/l	5.00	0.845	5	"	"	"	"	"				
91-20-3	Naphthalene	< 5.00	D	µg/l	5.00	1.10	5	"	"	"	"	"				
108-88-3	Toluene	< 5.00	D	µg/l	5.00	1.81	5	"	"	"	"	"				
179601-23-1	m,p-Xylene	< 10.0	D	µg/l	10.0	2.36	5	"	"	"	"	"				
95-47-6	o-Xylene	6.44	D	µg/l	5.00	1.16	5	"	"	"	"	"				
Surrogate recoveries:																
615-59-8	2,5-Dibromotoluene (FID)	84			70-130 %			"	"	"	"	"				
615-59-8	2,5-Dibromotoluene (PID)	72			70-130 %			"	"	"	"	"				
Extractable Petroleum Hydrocarbons																
MADEP EPH (Low)																
Prepared by method SW846 3510C																
	C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100	27.3	1	MADEP EPH 5/2004 R	24-Feb-16	29-Feb-16	SEP	1603212				
	C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100	23.7	1	"	"	"	"	"				
	C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"				
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"				
91-20-3	Naphthalene	< 1.00		µg/l	1.00	0.495	1	"	"	"	"	"				
91-57-6	2-Methylnaphthalene	< 1.00		µg/l	1.00	0.368	1	"	"	"	"	"				
208-96-8	Acenaphthylene	< 1.00		µg/l	1.00	0.208	1	"	"	"	"	"				
83-32-9	Acenaphthene	< 1.00		µg/l	1.00	0.393	1	"	"	"	"	"				
86-73-7	Fluorene	< 1.00		µg/l	1.00	0.331	1	"	"	"	"	"				
85-01-8	Phenanthrene	< 1.00		µg/l	1.00	0.347	1	"	"	"	"	"				
120-12-7	Anthracene	< 1.00		µg/l	1.00	0.417	1	"	"	"	"	"				
206-44-0	Fluoranthene	< 1.00		µg/l	1.00	0.243	1	"	"	"	"	"				
129-00-0	Pyrene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"				
56-55-3	Benzo (a) anthracene	< 1.00		µg/l	1.00	0.195	1	"	"	"	"	"				
218-01-9	Chrysene	< 1.00		µg/l	1.00	0.320	1	"	"	"	"	"				
205-99-2	Benzo (b) fluoranthene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"				
207-08-9	Benzo (k) fluoranthene	< 1.00		µg/l	1.00	0.238	1	"	"	"	"	"				
50-32-8	Benzo (a) pyrene	< 0.200		µg/l	0.200	0.131	1	"	"	"	"	"				
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.500		µg/l	0.500	0.248	1	"	"	"	"	"				
53-70-3	Dibenzo (a,h) anthracene	< 0.500		µg/l	0.500	0.276	1	"	"	"	"	"				
191-24-2	Benzo (g,h,i) perlylene	< 1.00		µg/l	1.00	0.205	1	"	"	"	"	"				

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Sample Identification**MW-1**

SC18360-01

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

19-Feb-16 12:00

Received

22-Feb-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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Extractable Petroleum HydrocarbonsMADEP EPH (Low)Prepared by method SW846 3510C*Surrogate recoveries:*

3386-33-2	1-Chlorooctadecane	60			40-140 %			MADEP EPH 5/2004 R	24-Feb-16	29-Feb-16	SEP	1603212
84-15-1	Ortho-Terphenyl	44			40-140 %			"	"	"	"	"
321-60-8	2-Fluorobiphenyl	48			40-140 %			"	"	"	"	"

Sample Identification

MW-2

SC18360-02

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

19-Feb-16 12:15

Received

22-Feb-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	* <u>RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>		
Volatile Organic Compounds															
MADEP VPH															
Prepared by method VPH - EPA 5030C Water															
	C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	0.645	5	MADEP VPH 5/2004 Rev. 1.1	26-Feb-16	26-Feb-16	NAA	1603409			
	C9-C12 Aliphatic Hydrocarbons	< 25.0	D	µg/l	25.0	5.02	5	"	"	"	"	"			
	C9-C10 Aromatic Hydrocarbons	< 25.0	D	µg/l	25.0	1.06	5	"	"	"	"	"			
	Unadjusted C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	9.51	5	"	"	"	"	"			
	Unadjusted C9-C12 Aliphatic Hydrocarbons	< 25.0	D	µg/l	25.0	4.78	5	"	"	"	"	"			
71-43-2	Benzene	< 5.00	D	µg/l	5.00	0.945	5	"	"	"	"	"			
100-41-4	Ethylbenzene	< 5.00	D	µg/l	5.00	1.18	5	"	"	"	"	"			
1634-04-4	Methyl tert-butyl ether	< 5.00	D	µg/l	5.00	0.845	5	"	"	"	"	"			
91-20-3	Naphthalene	< 5.00	D	µg/l	5.00	1.10	5	"	"	"	"	"			
108-88-3	Toluene	< 5.00	D	µg/l	5.00	1.81	5	"	"	"	"	"			
179601-23-1	m,p-Xylene	< 10.0	D	µg/l	10.0	2.36	5	"	"	"	"	"			
95-47-6	o-Xylene	< 5.00	D	µg/l	5.00	1.16	5	"	"	"	"	"			
Surrogate recoveries:															
615-59-8	2,5-Dibromotoluene (FID)	106			70-130 %			"	"	"	"	"			
615-59-8	2,5-Dibromotoluene (PID)	108			70-130 %			"	"	"	"	"			
Extractable Petroleum Hydrocarbons															
MADEP EPH (Low)															
Prepared by method SW846 3510C															
	C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100	27.3	1	MADEP EPH 5/2004 R	24-Feb-16	29-Feb-16	SEP	1603212			
	C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100	23.7	1	"	"	"	"	"			
	C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"			
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"			
91-20-3	Naphthalene	< 1.00		µg/l	1.00	0.495	1	"	"	"	"	"			
91-57-6	2-Methylnaphthalene	< 1.00		µg/l	1.00	0.368	1	"	"	"	"	"			
208-96-8	Acenaphthylene	< 1.00		µg/l	1.00	0.208	1	"	"	"	"	"			
83-32-9	Acenaphthene	< 1.00		µg/l	1.00	0.393	1	"	"	"	"	"			
86-73-7	Fluorene	< 1.00		µg/l	1.00	0.331	1	"	"	"	"	"			
85-01-8	Phenanthrene	< 1.00		µg/l	1.00	0.347	1	"	"	"	"	"			
120-12-7	Anthracene	< 1.00		µg/l	1.00	0.417	1	"	"	"	"	"			
206-44-0	Fluoranthene	< 1.00		µg/l	1.00	0.243	1	"	"	"	"	"			
129-00-0	Pyrene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"			
56-55-3	Benzo (a) anthracene	< 1.00		µg/l	1.00	0.195	1	"	"	"	"	"			
218-01-9	Chrysene	< 1.00		µg/l	1.00	0.320	1	"	"	"	"	"			
205-99-2	Benzo (b) fluoranthene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"			
207-08-9	Benzo (k) fluoranthene	< 1.00		µg/l	1.00	0.238	1	"	"	"	"	"			
50-32-8	Benzo (a) pyrene	< 0.200		µg/l	0.200	0.131	1	"	"	"	"	"			
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.500		µg/l	0.500	0.248	1	"	"	"	"	"			
53-70-3	Dibenzo (a,h) anthracene	< 0.500		µg/l	0.500	0.276	1	"	"	"	"	"			
191-24-2	Benzo (g,h,i) perlylene	< 1.00		µg/l	1.00	0.205	1	"	"	"	"	"			

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Sample Identification**MW-2**

SC18360-02

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

19-Feb-16 12:15

Received

22-Feb-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
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Extractable Petroleum HydrocarbonsMADEP EPH (Low)Prepared by method SW846 3510C*Surrogate recoveries:*

3386-33-2	1-Chlorooctadecane	63			40-140 %			MADEP EPH 5/2004 R	24-Feb-16	29-Feb-16	SEP	1603212
84-15-1	Ortho-Terphenyl	42			40-140 %			"	"	"	"	"
321-60-8	2-Fluorobiphenyl	45			40-140 %			"	"	"	"	"

Sample Identification

MW-3

SC18360-03

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

19-Feb-16 12:25

Received

22-Feb-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	* <u>RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>		
Volatile Organic Compounds															
MADEP VPH															
Prepared by method VPH - EPA 5030C Water															
	C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	0.645	5	MADEP VPH 5/2004 Rev. 1.1	26-Feb-16	26-Feb-16	NAA	1603409			
	C9-C12 Aliphatic Hydrocarbons	< 25.0	D	µg/l	25.0	5.02	5	"	"	"	"	"			
	C9-C10 Aromatic Hydrocarbons	< 25.0	D	µg/l	25.0	1.06	5	"	"	"	"	"			
	Unadjusted C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	9.51	5	"	"	"	"	"			
	Unadjusted C9-C12 Aliphatic Hydrocarbons	< 25.0	D	µg/l	25.0	4.78	5	"	"	"	"	"			
71-43-2	Benzene	< 5.00	D	µg/l	5.00	0.945	5	"	"	"	"	"			
100-41-4	Ethylbenzene	< 5.00	D	µg/l	5.00	1.18	5	"	"	"	"	"			
1634-04-4	Methyl tert-butyl ether	< 5.00	D	µg/l	5.00	0.845	5	"	"	"	"	"			
91-20-3	Naphthalene	< 5.00	D	µg/l	5.00	1.10	5	"	"	"	"	"			
108-88-3	Toluene	< 5.00	D	µg/l	5.00	1.81	5	"	"	"	"	"			
179601-23-1	m,p-Xylene	< 10.0	D	µg/l	10.0	2.36	5	"	"	"	"	"			
95-47-6	o-Xylene	< 5.00	D	µg/l	5.00	1.16	5	"	"	"	"	"			
Surrogate recoveries:															
615-59-8	2,5-Dibromotoluene (FID)	109			70-130 %			"	"	"	"	"			
615-59-8	2,5-Dibromotoluene (PID)	112			70-130 %			"	"	"	"	"			
Extractable Petroleum Hydrocarbons															
MADEP EPH (Low)															
Prepared by method SW846 3510C															
	C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100	27.3	1	MADEP EPH 5/2004 R	24-Feb-16	29-Feb-16	SEP	1603212			
	C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100	23.7	1	"	"	"	"	"			
	C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"			
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"			
91-20-3	Naphthalene	< 1.00		µg/l	1.00	0.495	1	"	"	"	"	"			
91-57-6	2-Methylnaphthalene	< 1.00		µg/l	1.00	0.368	1	"	"	"	"	"			
208-96-8	Acenaphthylene	< 1.00		µg/l	1.00	0.208	1	"	"	"	"	"			
83-32-9	Acenaphthene	< 1.00		µg/l	1.00	0.393	1	"	"	"	"	"			
86-73-7	Fluorene	< 1.00		µg/l	1.00	0.331	1	"	"	"	"	"			
85-01-8	Phenanthrene	< 1.00		µg/l	1.00	0.347	1	"	"	"	"	"			
120-12-7	Anthracene	< 1.00		µg/l	1.00	0.417	1	"	"	"	"	"			
206-44-0	Fluoranthene	< 1.00		µg/l	1.00	0.243	1	"	"	"	"	"			
129-00-0	Pyrene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"			
56-55-3	Benzo (a) anthracene	< 1.00		µg/l	1.00	0.195	1	"	"	"	"	"			
218-01-9	Chrysene	< 1.00		µg/l	1.00	0.320	1	"	"	"	"	"			
205-99-2	Benzo (b) fluoranthene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"			
207-08-9	Benzo (k) fluoranthene	< 1.00		µg/l	1.00	0.238	1	"	"	"	"	"			
50-32-8	Benzo (a) pyrene	< 0.200		µg/l	0.200	0.131	1	"	"	"	"	"			
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.500		µg/l	0.500	0.248	1	"	"	"	"	"			
53-70-3	Dibenzo (a,h) anthracene	< 0.500		µg/l	0.500	0.276	1	"	"	"	"	"			
191-24-2	Benzo (g,h,i) perlylene	< 1.00		µg/l	1.00	0.205	1	"	"	"	"	"			

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Sample Identification**MW-3**

SC18360-03

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

19-Feb-16 12:25

Received

22-Feb-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
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Extractable Petroleum HydrocarbonsMADEP EPH (Low)Prepared by method SW846 3510C*Surrogate recoveries:*

3386-33-2	1-Chlorooctadecane	56			40-140 %			MADEP EPH 5/2004 R	24-Feb-16	29-Feb-16	SEP	1603212
84-15-1	Ortho-Terphenyl	43			40-140 %			"	"	"	"	"
321-60-8	2-Fluorobiphenyl	50			40-140 %			"	"	"	"	"

Sample Identification

MW-4

SC18360-04

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

19-Feb-16 13:15

Received

22-Feb-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	* <u>RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>		
Volatile Organic Compounds															
MADEP VPH															
Prepared by method VPH - EPA 5030C Water															
	C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	0.645	5	MADEP VPH 5/2004 Rev. 1.1	26-Feb-16	26-Feb-16	NAA	1603409			
	C9-C12 Aliphatic Hydrocarbons	< 25.0	D	µg/l	25.0	5.02	5	"	"	"	"	"			
	C9-C10 Aromatic Hydrocarbons	< 25.0	D	µg/l	25.0	1.06	5	"	"	"	"	"			
	Unadjusted C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	9.51	5	"	"	"	"	"			
	Unadjusted C9-C12 Aliphatic Hydrocarbons	< 25.0	D	µg/l	25.0	4.78	5	"	"	"	"	"			
71-43-2	Benzene	< 5.00	D	µg/l	5.00	0.945	5	"	"	"	"	"			
100-41-4	Ethylbenzene	< 5.00	D	µg/l	5.00	1.18	5	"	"	"	"	"			
1634-04-4	Methyl tert-butyl ether	< 5.00	D	µg/l	5.00	0.845	5	"	"	"	"	"			
91-20-3	Naphthalene	< 5.00	D	µg/l	5.00	1.10	5	"	"	"	"	"			
108-88-3	Toluene	< 5.00	D	µg/l	5.00	1.81	5	"	"	"	"	"			
179601-23-1	m,p-Xylene	< 10.0	D	µg/l	10.0	2.36	5	"	"	"	"	"			
95-47-6	o-Xylene	< 5.00	D	µg/l	5.00	1.16	5	"	"	"	"	"			
Surrogate recoveries:															
615-59-8	2,5-Dibromotoluene (FID)	109			70-130 %			"	"	"	"	"			
615-59-8	2,5-Dibromotoluene (PID)	110			70-130 %			"	"	"	"	"			
Extractable Petroleum Hydrocarbons															
MADEP EPH (Low)															
Prepared by method SW846 3510C															
	C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100	27.3	1	MADEP EPH 5/2004 R	24-Feb-16	29-Feb-16	SEP	1603212			
	C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100	23.7	1	"	"	"	"	"			
	C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"			
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"			
91-20-3	Naphthalene	< 1.00		µg/l	1.00	0.495	1	"	"	"	"	"			
91-57-6	2-Methylnaphthalene	< 1.00		µg/l	1.00	0.368	1	"	"	"	"	"			
208-96-8	Acenaphthylene	< 1.00		µg/l	1.00	0.208	1	"	"	"	"	"			
83-32-9	Acenaphthene	< 1.00		µg/l	1.00	0.393	1	"	"	"	"	"			
86-73-7	Fluorene	< 1.00		µg/l	1.00	0.331	1	"	"	"	"	"			
85-01-8	Phenanthrene	< 1.00		µg/l	1.00	0.347	1	"	"	"	"	"			
120-12-7	Anthracene	< 1.00		µg/l	1.00	0.417	1	"	"	"	"	"			
206-44-0	Fluoranthene	< 1.00		µg/l	1.00	0.243	1	"	"	"	"	"			
129-00-0	Pyrene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"			
56-55-3	Benzo (a) anthracene	< 1.00		µg/l	1.00	0.195	1	"	"	"	"	"			
218-01-9	Chrysene	< 1.00		µg/l	1.00	0.320	1	"	"	"	"	"			
205-99-2	Benzo (b) fluoranthene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"			
207-08-9	Benzo (k) fluoranthene	< 1.00		µg/l	1.00	0.238	1	"	"	"	"	"			
50-32-8	Benzo (a) pyrene	< 0.200		µg/l	0.200	0.131	1	"	"	"	"	"			
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.500		µg/l	0.500	0.248	1	"	"	"	"	"			
53-70-3	Dibenzo (a,h) anthracene	< 0.500		µg/l	0.500	0.276	1	"	"	"	"	"			
191-24-2	Benzo (g,h,i) perlylene	< 1.00		µg/l	1.00	0.205	1	"	"	"	"	"			

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Sample Identification**MW-4**

SC18360-04

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

19-Feb-16 13:15

Received

22-Feb-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
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Extractable Petroleum HydrocarbonsMADEP EPH (Low)Prepared by method SW846 3510C*Surrogate recoveries:*

3386-33-2	1-Chlorooctadecane	66			40-140 %			MADEP EPH 5/2004 R	24-Feb-16	29-Feb-16	SEP	1603212
84-15-1	Ortho-Terphenyl	69			40-140 %			"	"	"	"	"
321-60-8	2-Fluorobiphenyl	73			40-140 %			"	"	"	"	"

Sample Identification

MW-5

SC18360-05

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

19-Feb-16 12:55

Received

22-Feb-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	* <u>RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>		
Volatile Organic Compounds															
MADEP VPH															
Prepared by method VPH - EPA 5030C Water															
	C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	0.645	5	MADEP VPH 5/2004 Rev. 1.1	26-Feb-16	26-Feb-16	NAA	1603409			
	C9-C12 Aliphatic Hydrocarbons	< 25.0	D	µg/l	25.0	5.02	5	"	"	"	"	"			
	C9-C10 Aromatic Hydrocarbons	< 25.0	D	µg/l	25.0	1.06	5	"	"	"	"	"			
	Unadjusted C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	9.51	5	"	"	"	"	"			
	Unadjusted C9-C12 Aliphatic Hydrocarbons	< 25.0	D	µg/l	25.0	4.78	5	"	"	"	"	"			
71-43-2	Benzene	< 5.00	D	µg/l	5.00	0.945	5	"	"	"	"	"			
100-41-4	Ethylbenzene	< 5.00	D	µg/l	5.00	1.18	5	"	"	"	"	"			
1634-04-4	Methyl tert-butyl ether	< 5.00	D	µg/l	5.00	0.845	5	"	"	"	"	"			
91-20-3	Naphthalene	< 5.00	D	µg/l	5.00	1.10	5	"	"	"	"	"			
108-88-3	Toluene	< 5.00	D	µg/l	5.00	1.81	5	"	"	"	"	"			
179601-23-1	m,p-Xylene	< 10.0	D	µg/l	10.0	2.36	5	"	"	"	"	"			
95-47-6	o-Xylene	< 5.00	D	µg/l	5.00	1.16	5	"	"	"	"	"			
Surrogate recoveries:															
615-59-8	2,5-Dibromotoluene (FID)	106			70-130 %			"	"	"	"	"			
615-59-8	2,5-Dibromotoluene (PID)	107			70-130 %			"	"	"	"	"			
Extractable Petroleum Hydrocarbons															
MADEP EPH (Low)															
Prepared by method SW846 3510C															
	C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100	27.3	1	MADEP EPH 5/2004 R	24-Feb-16	29-Feb-16	SEP	1603212			
	C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100	23.7	1	"	"	"	"	"			
	C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"			
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"			
91-20-3	Naphthalene	< 1.00		µg/l	1.00	0.495	1	"	"	"	"	"			
91-57-6	2-Methylnaphthalene	< 1.00		µg/l	1.00	0.368	1	"	"	"	"	"			
208-96-8	Acenaphthylene	< 1.00		µg/l	1.00	0.208	1	"	"	"	"	"			
83-32-9	Acenaphthene	< 1.00		µg/l	1.00	0.393	1	"	"	"	"	"			
86-73-7	Fluorene	< 1.00		µg/l	1.00	0.331	1	"	"	"	"	"			
85-01-8	Phenanthrene	< 1.00		µg/l	1.00	0.347	1	"	"	"	"	"			
120-12-7	Anthracene	< 1.00		µg/l	1.00	0.417	1	"	"	"	"	"			
206-44-0	Fluoranthene	< 1.00		µg/l	1.00	0.243	1	"	"	"	"	"			
129-00-0	Pyrene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"			
56-55-3	Benzo (a) anthracene	< 1.00		µg/l	1.00	0.195	1	"	"	"	"	"			
218-01-9	Chrysene	< 1.00		µg/l	1.00	0.320	1	"	"	"	"	"			
205-99-2	Benzo (b) fluoranthene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"			
207-08-9	Benzo (k) fluoranthene	< 1.00		µg/l	1.00	0.238	1	"	"	"	"	"			
50-32-8	Benzo (a) pyrene	< 0.200		µg/l	0.200	0.131	1	"	"	"	"	"			
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.500		µg/l	0.500	0.248	1	"	"	"	"	"			
53-70-3	Dibenzo (a,h) anthracene	< 0.500		µg/l	0.500	0.276	1	"	"	"	"	"			
191-24-2	Benzo (g,h,i) perlylene	< 1.00		µg/l	1.00	0.205	1	"	"	"	"	"			

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Sample Identification**MW-5**

SC18360-05

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

19-Feb-16 12:55

Received

22-Feb-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
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Extractable Petroleum HydrocarbonsMADEP EPH (Low)Prepared by method SW846 3510C*Surrogate recoveries:*

3386-33-2	1-Chlorooctadecane	59			40-140 %			MADEP EPH 5/2004 R	24-Feb-16	29-Feb-16	SEP	1603212
84-15-1	Ortho-Terphenyl	60			40-140 %			"	"	"	"	"
321-60-8	2-Fluorobiphenyl	66			40-140 %			"	"	"	"	"

Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603326 - VPH - EPA 5030C Water										
<u>Blank (1603326-BLK1)</u>										
C5-C8 Aliphatic Hydrocarbons	< 75.0		µg/l	75.0						
C9-C12 Aliphatic Hydrocarbons	< 25.0		µg/l	25.0						
C9-C10 Aromatic Hydrocarbons	< 25.0		µg/l	25.0						
Unadjusted C5-C8 Aliphatic Hydrocarbons	< 75.0		µg/l	75.0						
Unadjusted C9-C12 Aliphatic Hydrocarbons	< 25.0		µg/l	25.0						
Benzene	< 5.00		µg/l	5.00						
Ethylbenzene	< 5.00		µg/l	5.00						
Methyl tert-butyl ether	< 5.00		µg/l	5.00						
Naphthalene	< 5.00		µg/l	5.00						
Toluene	< 5.00		µg/l	5.00						
m,p-Xylene	< 10.0		µg/l	10.0						
o-Xylene	< 5.00		µg/l	5.00						
Total Xylenes	< 5.00		µg/l	5.00						
2-Methylpentane	< 5.00		µg/l	5.00						
n-Nonane	< 10.0		µg/l	10.0						
n-Pentane	< 10.0		µg/l	10.0						
1,2,4-Trimethylbenzene	< 5.00		µg/l	5.00						
2,2,4-Trimethylpentane	< 5.00		µg/l	5.00						
n-Butylcyclohexane	< 5.00		µg/l	5.00						
n-Decane	< 5.00		µg/l	5.00						
<i>Surrogate: 2,5-Dibromotoluene (FID)</i>	43.7		µg/l	50.0		87		70-130		
<i>Surrogate: 2,5-Dibromotoluene (PID)</i>	36.3		µg/l	50.0		73		70-130		
<u>LCS (1603326-BS1)</u>										
Prepared & Analyzed: 25-Feb-16										
C5-C8 Aliphatic Hydrocarbons	75.4		µg/l	60.0		126		70-130		
C9-C12 Aliphatic Hydrocarbons	57.8		µg/l	60.0		96		70-130		
C9-C10 Aromatic Hydrocarbons	17.8		µg/l	20.0		89		70-130		
Unadjusted C5-C8 Aliphatic Hydrocarbons	200		µg/l	200		100		70-130		
Unadjusted C9-C12 Aliphatic Hydrocarbons	75.6		µg/l	80.0		94		70-130		
Benzene	17.1		µg/l	20.0		85		70-130		
Ethylbenzene	17.5		µg/l	20.0		88		70-130		
Methyl tert-butyl ether	19.1		µg/l	20.0		95		70-130		
Naphthalene	16.9		µg/l	20.0		85		70-130		
Toluene	17.8		µg/l	20.0		89		70-130		
m,p-Xylene	35.6		µg/l	40.0		89		70-130		
o-Xylene	17.6		µg/l	20.0		88		70-130		
2-Methylpentane	16.9		µg/l	20.0		85		70-130		
n-Nonane	18.5		µg/l	20.0		92		70-130		
n-Pentane	15.8		µg/l	20.0		79		70-130		
1,2,4-Trimethylbenzene	16.0		µg/l	20.0		80		70-130		
2,2,4-Trimethylpentane	17.9		µg/l	20.0		90		70-130		
n-Butylcyclohexane	20.0		µg/l	20.0		100		70-130		
n-Decane	19.1		µg/l	20.0		96		70-130		
<i>Surrogate: 2,5-Dibromotoluene (FID)</i>	55.4		µg/l	50.0		111		70-130		
<i>Surrogate: 2,5-Dibromotoluene (PID)</i>	46.3		µg/l	50.0		93		70-130		
<u>LCS Dup (1603326-BSD1)</u>										
Prepared & Analyzed: 25-Feb-16										
C9-C12 Aliphatic Hydrocarbons	54.4		µg/l	60.0		91		70-130	6	25
C5-C8 Aliphatic Hydrocarbons	77.2		µg/l	60.0		129		70-130	2	25
C9-C10 Aromatic Hydrocarbons	16.8		µg/l	20.0		84		70-130	6	25
Unadjusted C5-C8 Aliphatic Hydrocarbons	196		µg/l	200		98		70-130	2	25

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603326 - VPH - EPA 5030C Water										
<u>LCS Dup (1603326-BSD1)</u>										
Unadjusted C9-C12 Aliphatic Hydrocarbons	71.2		µg/l		80.0	89	70-130	6	25	
Benzene	16.2		µg/l		20.0	81	70-130	6	25	
Ethylbenzene	16.5		µg/l		20.0	82	70-130	6	25	
Methyl tert-butyl ether	18.7		µg/l		20.0	94	70-130	2	25	
Naphthalene	16.5		µg/l		20.0	83	70-130	3	25	
Toluene	17.1		µg/l		20.0	86	70-130	4	25	
m,p-Xylene	33.5		µg/l		40.0	84	70-130	6	25	
o-Xylene	16.9		µg/l		20.0	84	70-130	4	25	
2-Methylpentane	15.8		µg/l		20.0	79	70-130	7	25	
n-Nonane	16.9		µg/l		20.0	85	70-130	9	25	
n-Pentane	14.3		µg/l		20.0	71	70-130	10	25	
1,2,4-Trimethylbenzene	15.1		µg/l		20.0	76	70-130	6	25	
2,2,4-Trimethylpentane	16.7		µg/l		20.0	83	70-130	7	25	
n-Butylcyclohexane	18.1		µg/l		20.0	90	70-130	10	25	
n-Decane	17.6		µg/l		20.0	88	70-130	8	25	
Surrogate: 2,5-Dibromotoluene (FID)	52.1		µg/l		50.0	104	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	43.2		µg/l		50.0	86	70-130			
<u>Duplicate (1603326-DUP1)</u>										
					<u>Source: SC18360-01</u>	<u>Prepared & Analyzed: 25-Feb-16</u>				
C9-C12 Aliphatic Hydrocarbons	24.0	J,D	µg/l	25.0		27.4		13	50	
C5-C8 Aliphatic Hydrocarbons	38.1	J,D	µg/l	75.0		36.8		3	50	
C9-C10 Aromatic Hydrocarbons	46.1	D	µg/l	25.0		44.1		4	50	
Unadjusted C5-C8 Aliphatic Hydrocarbons	63.7	J,D	µg/l	75.0		60.5		5	50	
Unadjusted C9-C12 Aliphatic Hydrocarbons	70.1	D	µg/l	25.0		71.5		2	50	
Benzene	1.57	J,D	µg/l	5.00		1.30		19	50	
Ethylbenzene	3.08	J,D	µg/l	5.00		2.86		8	50	
Methyl tert-butyl ether	< 5.00	D	µg/l	5.00		BRL			50	
Naphthalene	5.29	D	µg/l	5.00		4.34		20	50	
Toluene	4.43	J,D	µg/l	5.00		4.08		8	50	
m,p-Xylene	9.72	J,D	µg/l	10.0		8.96		8	50	
o-Xylene	6.84	D	µg/l	5.00		6.44		6	50	
Surrogate: 2,5-Dibromotoluene (FID)	45.9		µg/l		50.0	92	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	37.4		µg/l		50.0	75	70-130			
<u>Matrix Spike (1603326-MS1)</u>										
					<u>Source: SC18360-01</u>	<u>Prepared & Analyzed: 25-Feb-16</u>				
C9-C12 Aliphatic Hydrocarbons	53.8	D	µg/l		60.0	5.47	80	70-130		
C5-C8 Aliphatic Hydrocarbons	78.0	D	µg/l		60.0	7.36	118	70-130		
C9-C10 Aromatic Hydrocarbons	40.0	QM7, D	µg/l		20.0	8.82	156	70-130		
Unadjusted C5-C8 Aliphatic Hydrocarbons	210	D	µg/l		200	12.1	99	70-130		
Unadjusted C9-C12 Aliphatic Hydrocarbons	93.7	D	µg/l		80.0	14.3	99	70-130		
Benzene	17.5	D	µg/l		20.0	0.260	86	70-130		
Ethylbenzene	18.5	D	µg/l		20.0	0.571	90	70-130		
Methyl tert-butyl ether	19.9	D	µg/l		20.0	BRL	99	70-130		
Naphthalene	17.4	D	µg/l		20.0	0.867	83	70-130		
Toluene	18.6	D	µg/l		20.0	0.816	89	70-130		
m,p-Xylene	38.3	D	µg/l		40.0	1.79	91	70-130		
o-Xylene	19.5	D	µg/l		20.0	1.29	91	70-130		
2-Methylpentane	17.0	D	µg/l		20.0	BRL	85	70-130		
n-Nonane	18.2	D	µg/l		20.0	BRL	91	70-130		
n-Pentane	15.7	D	µg/l		20.0	BRL	78	70-130		
1,2,4-Trimethylbenzene	17.8	D	µg/l		20.0	1.48	82	70-130		

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603326 - VPH - EPA 5030C Water										
<u>Matrix Spike (1603326-MS1)</u>										
2,2,4-Trimethylpentane										
18.0										
n-Butylcyclohexane										
20.2										
n-Decane										
20.7										
Surrogate: 2,5-Dibromotoluene (FID)										
49.0										
Surrogate: 2,5-Dibromotoluene (PID)										
40.4										
Batch 1603409 - VPH - EPA 5030C Water										
<u>Blank (1603409-BLK1)</u>										
C5-C8 Aliphatic Hydrocarbons										
< 75.0										
C9-C12 Aliphatic Hydrocarbons										
< 25.0										
C9-C10 Aromatic Hydrocarbons										
< 25.0										
Unadjusted C5-C8 Aliphatic Hydrocarbons										
< 75.0										
Unadjusted C9-C12 Aliphatic Hydrocarbons										
< 25.0										
Benzene										
< 5.00										
Ethylbenzene										
< 5.00										
Methyl tert-butyl ether										
< 5.00										
Naphthalene										
< 5.00										
Toluene										
< 5.00										
m,p-Xylene										
< 10.0										
o-Xylene										
< 5.00										
2-Methylpentane										
< 5.00										
n-Nonane										
< 10.0										
n-Pentane										
< 10.0										
1,2,4-Trimethylbenzene										
< 5.00										
2,2,4-Trimethylpentane										
< 5.00										
n-Butylcyclohexane										
< 5.00										
n-Decane										
< 5.00										
Surrogate: 2,5-Dibromotoluene (FID)										
55.7										
Surrogate: 2,5-Dibromotoluene (PID)										
57.5										
<u>LCS (1603409-BS1)</u>										
C5-C8 Aliphatic Hydrocarbons										
62.4										
C9-C12 Aliphatic Hydrocarbons										
66.8										
C9-C10 Aromatic Hydrocarbons										
21.2										
Unadjusted C5-C8 Aliphatic Hydrocarbons										
215										
Unadjusted C9-C12 Aliphatic Hydrocarbons										
87.9										
Benzene										
21.9										
Ethylbenzene										
22.1										
Methyl tert-butyl ether										
21.8										
Naphthalene										
20.2										
Toluene										
22.5										
m,p-Xylene										
43.3										
o-Xylene										
21.3										
2-Methylpentane										
22.1										
n-Nonane										
23.9										
n-Pentane										
21.1										
1,2,4-Trimethylbenzene										
21.8										
2,2,4-Trimethylpentane										
23.6										
n-Butylcyclohexane										
23.2										
n-Decane										
25.7										
Surrogate: 2,5-Dibromotoluene (FID)										
55.4										
<u>Prepared & Analyzed: 26-Feb-16</u>										

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603409 - VPH - EPA 5030C Water										
<u>LCS (1603409-BS1)</u>										
<u>Prepared & Analyzed: 26-Feb-16</u>										
Surrogate: 2,5-Dibromotoluene (PID)	55.8		µg/l		50.0	112	70-130			
<u>LCS Dup (1603409-BSD1)</u>										
<u>Prepared & Analyzed: 26-Feb-16</u>										
C5-C8 Aliphatic Hydrocarbons	60.5		µg/l		60.0	101	70-130	3	25	
C9-C12 Aliphatic Hydrocarbons	58.7		µg/l		60.0	98	70-130	13	25	
C9-C10 Aromatic Hydrocarbons	20.7		µg/l		20.0	104	70-130	2	25	
Unadjusted C5-C8 Aliphatic Hydrocarbons	208		µg/l		200	104	70-130	3	25	
Unadjusted C9-C12 Aliphatic Hydrocarbons	79.4		µg/l		80.0	99	70-130	10	25	
Benzene	20.2		µg/l		20.0	101	70-130	8	25	
Ethylbenzene	21.6		µg/l		20.0	108	70-130	2	25	
Methyl tert-butyl ether	19.9		µg/l		20.0	100	70-130	9	25	
Naphthalene	19.7		µg/l		20.0	99	70-130	2	25	
Toluene	21.1		µg/l		20.0	105	70-130	7	25	
m,p-Xylene	43.4		µg/l		40.0	109	70-130	0.3	25	
o-Xylene	21.1		µg/l		20.0	106	70-130	0.6	25	
2-Methylpentane	19.0		µg/l		20.0	95	70-130	15	25	
n-Nonane	21.2		µg/l		20.0	106	70-130	12	25	
n-Pentane	18.8		µg/l		20.0	94	70-130	11	25	
1,2,4-Trimethylbenzene	21.1		µg/l		20.0	106	70-130	3	25	
2,2,4-Trimethylpentane	21.0		µg/l		20.0	105	70-130	11	25	
n-Butylcyclohexane	20.0		µg/l		20.0	100	70-130	15	25	
n-Decane	19.3	QR5	µg/l		20.0	97	70-130	28	25	
Surrogate: 2,5-Dibromotoluene (FID)	54.0		µg/l		50.0	108	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	53.8		µg/l		50.0	108	70-130			

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603212 - SW846 3510C										
<u>Blank (1603212-BLK1)</u>										
C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100						
C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100						
C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100						
Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100						
Total Petroleum Hydrocarbons	< 300		µg/l	300						
Unadjusted Total Petroleum Hydrocarbons	< 300		µg/l	300						
Naphthalene	< 1.00		µg/l	1.00						
2-Methylnaphthalene	< 1.00		µg/l	1.00						
Acenaphthylene	< 1.00		µg/l	1.00						
Acenaphthene	< 1.00		µg/l	1.00						
Fluorene	< 1.00		µg/l	1.00						
Phenanthrene	< 1.00		µg/l	1.00						
Anthracene	< 1.00		µg/l	1.00						
Fluoranthene	< 1.00		µg/l	1.00						
Pyrene	< 1.00		µg/l	1.00						
Benzo (a) anthracene	< 1.00		µg/l	1.00						
Chrysene	< 1.00		µg/l	1.00						
Benzo (b) fluoranthene	< 1.00		µg/l	1.00						
Benzo (k) fluoranthene	< 1.00		µg/l	1.00						
Benzo (a) pyrene	< 0.200		µg/l	0.200						
Indeno (1,2,3-cd) pyrene	< 0.500		µg/l	0.500						
Dibenzo (a,h) anthracene	< 0.500		µg/l	0.500						
Benzo (g,h,i) perylene	< 1.00		µg/l	1.00						
n-Nonane (C9)	< 5.00		µg/l	5.00						
n-Decane	< 5.00		µg/l	5.00						
n-Dodecane	< 5.00		µg/l	5.00						
n-Tetradecane	< 5.00		µg/l	5.00						
n-Hexadecane	< 5.00		µg/l	5.00						
n-Octadecane	< 5.00		µg/l	5.00						
n-Nonadecane	< 5.00		µg/l	5.00						
n-Eicosane	< 5.00		µg/l	5.00						
n-Docosane	< 5.00		µg/l	5.00						
n-Tetracosane	< 5.00		µg/l	5.00						
n-Hexacosane	< 5.00		µg/l	5.00						
n-Octacosane	< 5.00		µg/l	5.00						
n-Triacontane	< 5.00		µg/l	5.00						
n-Hexatriacontane	< 5.00		µg/l	5.00						
Naphthalene (aliphatic fraction)	0.00		µg/l							
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l							
Surrogate: 1-Chlorooctadecane	43.5		µg/l	50.0		87	40-140			
Surrogate: Ortho-Terphenyl	38.3		µg/l	50.0		77	40-140			
Surrogate: 2-Fluorobiphenyl	22.1		µg/l	40.0		55	40-140			
<u>LCS (1603212-BS1)</u>										
<u>Prepared: 24-Feb-16 Analyzed: 25-Feb-16</u>										
C9-C18 Aliphatic Hydrocarbons	690		µg/l	100	600	115	40-140			
C19-C36 Aliphatic Hydrocarbons	827		µg/l	100	800	103	40-140			
Unadjusted C11-C22 Aromatic Hydrocarbons	630		µg/l	100	680	93	40-140			
Naphthalene	24.7		µg/l	1.00	40.0	62	40-140			
2-Methylnaphthalene	27.3		µg/l	1.00	40.0	68	40-140			
Acenaphthylene	33.9		µg/l	1.00	40.0	85	40-140			
Acenaphthene	35.8		µg/l	1.00	40.0	89	40-140			

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603212 - SW846 3510C										
<u>LCS (1603212-BS1)</u>										
								<u>Prepared: 24-Feb-16 Analyzed: 25-Feb-16</u>		
Fluorene	37.8		µg/l	1.00	40.0	95		40-140		
Phenanthrene	40.5		µg/l	1.00	40.0	101		40-140		
Anthracene	40.1		µg/l	1.00	40.0	100		40-140		
Fluoranthene	40.7		µg/l	1.00	40.0	102		40-140		
Pyrene	39.9		µg/l	1.00	40.0	100		40-140		
Benzo (a) anthracene	38.4		µg/l	1.00	40.0	96		40-140		
Chrysene	37.9		µg/l	1.00	40.0	95		40-140		
Benzo (b) fluoranthene	34.0		µg/l	1.00	40.0	85		40-140		
Benzo (k) fluoranthene	38.0		µg/l	1.00	40.0	95		40-140		
Benzo (a) pyrene	33.9		µg/l	0.200	40.0	85		40-140		
Indeno (1,2,3-cd) pyrene	32.8		µg/l	0.500	40.0	82		40-140		
Dibenzo (a,h) anthracene	31.6		µg/l	0.500	40.0	79		40-140		
Benzo (g,h,i) perylene	33.7		µg/l	1.00	40.0	84		40-140		
n-Nonane (C9)	46.5		µg/l	5.00	100	47		30-140		
n-Decane	61.5		µg/l	5.00	100	62		40-140		
n-Dodecane	72.9		µg/l	5.00	100	73		40-140		
n-Tetradecane	85.0		µg/l	5.00	100	85		40-140		
n-Hexadecane	100		µg/l	5.00	100	100		40-140		
n-Octadecane	112		µg/l	5.00	100	112		40-140		
n-Nonadecane	117		µg/l	5.00	100	117		40-140		
n-Eicosane	119		µg/l	5.00	100	119		40-140		
n-Docosane	122		µg/l	5.00	100	122		40-140		
n-Tetracosane	121		µg/l	5.00	100	121		40-140		
n-Hexacosane	120		µg/l	5.00	100	120		40-140		
n-Octacosane	121		µg/l	5.00	100	121		40-140		
n-Triacontane	119		µg/l	5.00	100	119		40-140		
n-Hexatriacontane	115		µg/l	5.00	100	115		40-140		
Naphthalene (aliphatic fraction)	0.00		µg/l					0-200		
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l					0-200		
Surrogate: 1-Chlorooctadecane	60.7		µg/l		50.0	121		40-140		
Surrogate: Ortho-Terphenyl	47.1		µg/l		50.0	94		40-140		
Surrogate: 2-Fluorobiphenyl	30.3		µg/l		40.0	76		40-140		
<u>LCS (1603212-BS2)</u>										
								<u>Prepared: 24-Feb-16 Analyzed: 25-Feb-16</u>		
C9-C18 Aliphatic Hydrocarbons	511		µg/l	100	600	85		40-140		
C19-C36 Aliphatic Hydrocarbons	668		µg/l	100	800	83		40-140		
Unadjusted C11-C22 Aromatic Hydrocarbons	584		µg/l	100	680	86		40-140		
Naphthalene	22.5		µg/l	1.00	40.0	56		40-140		
2-Methylnaphthalene	24.9		µg/l	1.00	40.0	62		40-140		
Acenaphthylene	31.6		µg/l	1.00	40.0	79		40-140		
Acenaphthene	32.8		µg/l	1.00	40.0	82		40-140		
Fluorene	35.0		µg/l	1.00	40.0	87		40-140		
Phenanthrene	38.8		µg/l	1.00	40.0	97		40-140		
Anthracene	38.5		µg/l	1.00	40.0	96		40-140		
Fluoranthene	39.6		µg/l	1.00	40.0	99		40-140		
Pyrene	38.8		µg/l	1.00	40.0	97		40-140		
Benzo (a) anthracene	37.6		µg/l	1.00	40.0	94		40-140		
Chrysene	37.5		µg/l	1.00	40.0	94		40-140		
Benzo (b) fluoranthene	32.3		µg/l	1.00	40.0	81		40-140		
Benzo (k) fluoranthene	36.3		µg/l	1.00	40.0	91		40-140		
Benzo (a) pyrene	32.8		µg/l	0.200	40.0	82		40-140		
Indeno (1,2,3-cd) pyrene	30.4		µg/l	0.500	40.0	76		40-140		

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603212 - SW846 3510C										
<u>LCS (1603212-BS2)</u>										
								<u>Prepared: 24-Feb-16 Analyzed: 25-Feb-16</u>		
Dibenzo (a,h) anthracene	30.0		µg/l	0.500	40.0		75	40-140		
Benzo (g,h,i) perylene	31.5		µg/l	1.00	40.0		79	40-140		
n-Nonane (C9)	35.0		µg/l	5.00	100		35	30-140		
n-Decane	47.7		µg/l	5.00	100		48	40-140		
n-Dodecane	57.4		µg/l	5.00	100		57	40-140		
n-Tetradecane	68.2		µg/l	5.00	100		68	40-140		
n-Hexadecane	81.7		µg/l	5.00	100		82	40-140		
n-Octadecane	92.9		µg/l	5.00	100		93	40-140		
n-Nonadecane	97.2		µg/l	5.00	100		97	40-140		
n-Eicosane	98.1		µg/l	5.00	100		98	40-140		
n-Docosane	99.8		µg/l	5.00	100		100	40-140		
n-Tetracosane	98.6		µg/l	5.00	100		99	40-140		
n-Hexacosane	96.4		µg/l	5.00	100		96	40-140		
n-Octacosane	96.2		µg/l	5.00	100		96	40-140		
n-Triacontane	93.3		µg/l	5.00	100		93	40-140		
n-Hexatriacontane	89.1		µg/l	5.00	100		89	40-140		
Naphthalene (aliphatic fraction)	0.00		µg/l					0-200		
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l					0-200		
Surrogate: 1-Chlorooctadecane	46.7		µg/l		50.0		93	40-140		
Surrogate: Ortho-Terphenyl	41.5		µg/l		50.0		83	40-140		
Surrogate: 2-Fluorobiphenyl	28.8		µg/l		40.0		72	40-140		
<u>LCS Dup (1603212-BSD1)</u>										
								<u>Prepared: 24-Feb-16 Analyzed: 25-Feb-16</u>		
C9-C18 Aliphatic Hydrocarbons	530	QR2	µg/l	100	600		88	40-140	26	25
C19-C36 Aliphatic Hydrocarbons	833		µg/l	100	800		104	40-140	0.6	25
Unadjusted C11-C22 Aromatic Hydrocarbons	550		µg/l	100	680		81	40-140	14	25
Naphthalene	22.1		µg/l	1.00	40.0		55	40-140	11	25
2-Methylnaphthalene	24.9		µg/l	1.00	40.0		62	40-140	9	25
Acenaphthylene	30.5		µg/l	1.00	40.0		76	40-140	10	25
Acenaphthene	32.3		µg/l	1.00	40.0		81	40-140	10	25
Fluorene	33.3		µg/l	1.00	40.0		83	40-140	13	25
Phenanthrene	36.6		µg/l	1.00	40.0		92	40-140	10	25
Anthracene	36.0		µg/l	1.00	40.0		90	40-140	11	25
Fluoranthene	36.1		µg/l	1.00	40.0		90	40-140	12	25
Pyrene	36.2		µg/l	1.00	40.0		90	40-140	10	25
Benzo (a) anthracene	34.1		µg/l	1.00	40.0		85	40-140	12	25
Chrysene	33.6		µg/l	1.00	40.0		84	40-140	12	25
Benzo (b) fluoranthene	29.9		µg/l	1.00	40.0		75	40-140	13	25
Benzo (k) fluoranthene	32.9		µg/l	1.00	40.0		82	40-140	14	25
Benzo (a) pyrene	29.5		µg/l	0.200	40.0		74	40-140	14	25
Indeno (1,2,3-cd) pyrene	28.2		µg/l	0.500	40.0		70	40-140	15	25
Dibenzo (a,h) anthracene	27.9		µg/l	0.500	40.0		70	40-140	13	25
Benzo (g,h,i) perylene	29.0		µg/l	1.00	40.0		72	40-140	15	25
n-Nonane (C9)	43.5		µg/l	5.00	100		44	30-140	7	25
n-Decane	57.5		µg/l	5.00	100		58	40-140	7	25
n-Dodecane	68.1		µg/l	5.00	100		68	40-140	7	25
n-Tetradecane	79.5		µg/l	5.00	100		79	40-140	7	25
n-Hexadecane	93.6		µg/l	5.00	100		94	40-140	7	25
n-Octadecane	105		µg/l	5.00	100		105	40-140	7	25
n-Nonadecane	110		µg/l	5.00	100		110	40-140	6	25
n-Eicosane	112		µg/l	5.00	100		112	40-140	6	25
n-Docosane	115		µg/l	5.00	100		115	40-140	6	25

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603212 - SW846 3510C										
<u>LCS Dup (1603212-BSD1)</u>										
n-Tetracosane	114		µg/l	5.00	100	114	40-140	6	25	
n-Hexacosane	113		µg/l	5.00	100	113	40-140	6	25	
n-Octacosane	114		µg/l	5.00	100	114	40-140	6	25	
n-Triacontane	112		µg/l	5.00	100	112	40-140	6	25	
n-Hexatriacontane	108		µg/l	5.00	100	108	40-140	6	25	
Naphthalene (aliphatic fraction)	0.00		µg/l				0-200		200	
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l				0-200		200	
Surrogate: 1-Chlorooctadecane	55.9		µg/l		50.0	112	40-140			
Surrogate: Ortho-Terphenyl	41.2		µg/l		50.0	82	40-140			
Surrogate: 2-Fluorobiphenyl	27.5		µg/l		40.0	69	40-140			

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S601690				
<u>Calibration Check (S601690-CCV1)</u>				
Naphthalene	7.979187	7.49412	-6.1	20
2-Methylnaphthalene	5.175777	5.561119	7.4	20
Acenaphthylene	6.726422	7.757371	15.3	20
Acenaphthene	4.261544	5.073907	19.1	20
Fluorene	4.63772	5.474221	18.0	20
Phenanthrene	6.547178	7.679035	17.3	20
Anthracene	6.459808	7.694929	19.1	20
Fluoranthene	6.59472	7.844121	18.9	20
Pyrene	6.818743	8.083483	18.5	20
Benzo (a) anthracene	5.548701	6.268477	13.0	20
Chrysene	5.938179	7.068588	19.0	20
Benzo (b) fluoranthene	5.646098	5.173795	-8.4	20
Benzo (k) fluoranthene	5.949232	6.82866	14.8	20
Benzo (a) pyrene	4.790196	5.413698	-2.9	20
Indeno (1,2,3-cd) pyrene	5.188538	5.798315	-3.9	20
Dibenzo (a,h) anthracene	4.552503	5.026743	-5.1	20
Benzo (g,h,i) perylene	4.2539	5.098633	-0.6	20
<u>Calibration Check (S601690-CCV2)</u>				
C9-C18 Aliphatic Hydrocarbons	209354.1	200154.6	18.0	25
C19-C36 Aliphatic Hydrocarbons	511275.8	266509	20.5	25
Unadjusted C11-C22 Aromatic Hydrocarbons	21.14299	17.81758	4.6	25
n-Nonane (C9)	191834.7	193621.4	0.9	30
n-Decane	191747.7	196517.3	2.5	25
n-Dodecane	190677.2	194927.2	2.2	25
n-Tetradecane	193742.9	198236.5	2.3	25
n-Hexadecane	185148	195434.3	5.6	25
n-Octadecane	174936.2	190055.2	8.6	25
n-Nonadecane	169032.4	186096.3	10.1	25
n-Eicosane	165289.9	187146.8	13.2	25
n-Docosane	160328.1	186150.3	16.1	25
n-Tetracosane	158603.2	185571.7	17.0	25
n-Hexacosane	157983	183217.8	16.0	25
n-Octacosane	156719.2	182273.7	16.3	25
n-Triacontane	158189.6	182439.7	15.3	25
n-Hexatriacontane	152128.9	178859.3	17.6	25
Naphthalene (aliphatic fraction)	192055.7			
2-Methylnaphthalene (aliphatic fraction)	192343.2			
<u>Calibration Check (S601690-CCV3)</u>				
Naphthalene	7.979187	7.748795	-2.9	20
2-Methylnaphthalene	5.175777	5.275157	1.9	20
Acenaphthylene	6.726422	7.561306	12.4	20
Acenaphthene	4.261544	4.913132	15.3	20
Fluorene	4.63772	5.391478	16.3	20
Phenanthrene	6.547178	7.518792	14.8	20
Anthracene	6.459808	7.638071	18.2	20
Fluoranthene	6.59472	7.555842	14.6	20
Pyrene	6.818743	7.874499	15.5	20
Benzo (a) anthracene	5.548701	5.971698	7.6	20
Chrysene	5.938179	6.802206	14.6	20
Benzo (b) fluoranthene	5.646098	4.639495	-17.8	20
Benzo (k) fluoranthene	5.949232	6.738874	13.3	20

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S601690				
<u>Calibration Check (S601690-CCV3)</u>				
Benzo (a) pyrene	4.790196	4.895593	-12.1	20
Indeno (1,2,3-cd) pyrene	5.188538	5.467311	-9.2	20
Dibenzo (a,h) anthracene	4.552503	4.702747	-11.1	20
Benzo (g,h,i) perylene	4.2539	4.835807	-5.7	20
<u>Calibration Check (S601690-CCV4)</u>				
C9-C18 Aliphatic Hydrocarbons	209354.1	189140.3	11.2	25
C19-C36 Aliphatic Hydrocarbons	511275.8	234199.8	0.8	25
Unadjusted C11-C22 Aromatic Hydrocarbons	21.14299	17.57137	3.0	25
n-Nonane (C9)	191834.7	145715.1	-24.0	30
n-Decane	191747.7	143856.5	-25.0	25
n-Dodecane	190677.2	145070.5	-23.9	25
n-Tetradecane	193742.9	145850.3	-24.7	25
n-Hexadecane	185148	141909.5	-23.4	25
n-Octadecane	174936.2	138637.5	-20.7	25
n-Nonadecane	169032.4	135482.5	-19.8	25
n-Eicosane	165289.9	132662.1	-19.7	25
n-Docosane	160328.1	130534.4	-18.6	25
n-Tetracosane	158603.2	130325	-17.8	25
n-Hexacosane	157983	129242.8	-18.2	25
n-Octacosane	156719.2	129040.3	-17.7	25
n-Triacontane	158189.6	129865.7	-17.9	25
n-Hexatriacontane	152128.9	127792.1	-16.0	25
Naphthalene (aliphatic fraction)	192055.7			
2-Methylnaphthalene (aliphatic fraction)	192343.2			

This laboratory report is not valid without an authorized signature on the cover page.

Volatile Organic Compounds - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S601576				
<u>Calibration Check (S601576-CCV1)</u>				
Benzene	173596	158152.3	-8.9	25
Ethylbenzene	110537.8	103306.8	-6.5	25
Methyl tert-butyl ether	73662.13	71861.5	-2.4	25
Naphthalene	65697.41	57964.5	-11.8	25
Toluene	141896.3	134321	-5.3	25
m,p-Xylene	125133.9	118177.1	-5.6	25
o-Xylene	109053.3	102597.8	-5.9	25
2-Methylpentane	17078.55	15962.65	-6.5	25
n-Nonane	9298.906	9888.3	6.3	30
n-Pentane	16146.84	13077.5	-19.0	25
1,2,4-Trimethylbenzene	91631.4	85978.4	-14.5	25
2,2,4-Trimethylpentane	16165.17	15748.8	-2.6	25
n-Butylcyclohexane	9311.792	10129.7	8.8	25
n-Decane	6426.25	6943.7	8.1	25
<u>Calibration Check (S601576-CCV2)</u>				
Benzene	173596	154680.2	-10.9	25
Ethylbenzene	110537.8	100291.8	-9.3	25
Methyl tert-butyl ether	73662.13	73991.85	0.4	25
Naphthalene	65697.41	57774.4	-12.1	25
Toluene	141896.3	133666.1	-5.8	25
m,p-Xylene	125133.9	114654.7	-8.4	25
o-Xylene	109053.3	100742.5	-7.6	25
2-Methylpentane	17078.55	13939.55	-18.4	25
n-Nonane	9298.906	7496.25	-19.4	30
n-Pentane	16146.84	12968.55	-19.7	25
1,2,4-Trimethylbenzene	91631.4	82970.5	-17.4	25
2,2,4-Trimethylpentane	16165.17	13828.65	-14.5	25
n-Butylcyclohexane	9311.792	7904.8	-15.1	25
n-Decane	6426.25	5364.5	-16.5	25
Batch S601606				
<u>Calibration Check (S601606-CCV1)</u>				
Benzene	144843.4	145684.7	0.6	25
Ethylbenzene	87193.11	97055.96	11.3	25
Methyl tert-butyl ether	73001.13	68767.14	-5.8	25
Naphthalene	83590.61	87071.98	4.2	25
Toluene	112472.5	118807.6	5.6	25
m,p-Xylene	95187.73	106854.6	12.3	25
o-Xylene	81388.2	89810.46	10.3	25
2-Methylpentane	39065.31	40012.02	2.4	25
n-Nonane	28487.49	34690.56	21.8	30
n-Pentane	33068.61	31320.36	-5.3	25
1,2,4-Trimethylbenzene	80897.12	88908.1	9.9	25
2,2,4-Trimethylpentane	40465.66	45134.44	11.5	25
n-Butylcyclohexane	30684.29	35694.4	16.3	25
n-Decane	23656.41	29045.76	22.8	25
<u>Calibration Check (S601606-CCV2)</u>				
Benzene	144843.4	145457.5	0.4	25
Ethylbenzene	87193.11	94946.14	8.9	25
Methyl tert-butyl ether	73001.13	70016.7	-4.1	25
Naphthalene	83590.61	85350.76	2.1	25
Toluene	112472.5	116300	3.4	25

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Volatile Organic Compounds - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S601606				
<u>Calibration Check (S601606-CCV2)</u>				
m,p-Xylene	95187.73	104795	10.1	25
o-Xylene	81388.2	88544.8	8.8	25
2-Methylpentane	39065.31	35084.92	-10.2	25
n-Nonane	28487.49	31795	11.6	30
n-Pentane	33068.61	27274.52	-17.5	25
1,2,4-Trimethylbenzene	80897.12	88575.36	9.5	25
2,2,4-Trimethylpentane	40465.66	39738.94	-1.8	25
n-Butylcyclohexane	30684.29	30267.38	-1.4	25
n-Decane	23656.41	26380.98	11.5	25
<u>Calibration Check (S601606-CCV3)</u>				
Benzene	144843.4	146732.7	1.3	25
Ethylbenzene	87193.11	95465.36	9.5	25
Methyl tert-butyl ether	73001.13	74160.04	1.6	25
Naphthalene	83590.61	87897.08	5.2	25
Toluene	112472.5	121124.9	7.7	25
m,p-Xylene	95187.73	103852.9	9.1	25
o-Xylene	81388.2	87593.22	7.6	25
2-Methylpentane	39065.31	33502.78	-14.2	25
n-Nonane	28487.49	33097.52	16.2	30
n-Pentane	33068.61	25526.22	-22.8	25
1,2,4-Trimethylbenzene	80897.12	88338.34	9.2	25
2,2,4-Trimethylpentane	40465.66	39513.08	-2.4	25
n-Butylcyclohexane	30684.29	33377.72	8.8	25
n-Decane	23656.41	29222.34	23.5	25

This laboratory report is not valid without an authorized signature on the cover page.

Notes and Definitions

D	Data reported from a dilution
QM7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QR2	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QR5	RPD out of acceptance range.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

Validated by:
June O'Connor
Kimberly LaPlante

Final Report
 Re-Issued Report
 Revised Report

Report Date:
02-Mar-16 12:08

Laboratory Report

CMG Environmental, Inc.
67 Hall Road
Sturbridge, MA 01566
Attn: Jerry Clark

Project: 18 Ham - Oxford, MA
Project #: 2015-120

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SC18364-01	#22 Tap	Drinking Water	19-Feb-16 09:45	22-Feb-16 15:45

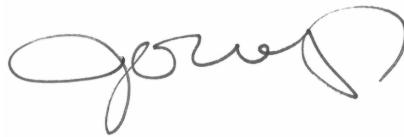
I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011
New York # 11393
Pennsylvania # 68-04426/68-02924
Rhode Island # LAO00098
USDA # S-51435



Authorized by:



June O'Connor
Laboratory Director

Eurofins Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 20 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our Quality web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

The following outlines the condition of all EPH samples contained within this report upon laboratory receipt.

Matrices	Drinking Water		
Containers	<input checked="" type="checkbox"/> Satisfactory		
Aqueous Preservative	N/A	<input checked="" type="checkbox"/> pH≤2	pH>2 pH adjusted to <2 in lab
Temperature	Received on ice <input checked="" type="checkbox"/> Received at 4 ± 2 °C		

Were all QA/QC procedures followed as required by the EPH method? *Yes*

Were any significant modifications made to the EPH method as specified in Section 11.3? *No*

Were all performance/acceptance standards for required QA/QC procedures achieved? *Yes*

I attest that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Authorized by:



June O'Connor
Laboratory Director

MassDEP Analytical Protocol Certification Form

Laboratory Name: Eurofins Spectrum Analytical, Inc.		Project #: 2015-120			
Project Location: 18 Ham - Oxford, MA		RTN:			
This form provides certifications for the following data set:		SC18364-01			
Matrices: Drinking Water					
CAM Protocol					
8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	✓ MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9012 Total Cyanide/PAC CAM VI A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B
<i>Affirmative responses to questions A through F are required for Presumptive Certainty'status</i>					
A	Were all samples received in a condition consistent with those described on the Chain of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?				Yes ✓ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?				✓ Yes No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?				✓ Yes No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?				✓ Yes No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?				✓ Yes No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to questions A through E)?				✓ Yes No
<i>Responses to questions G, H and I below are required for Presumptive Certainty'status</i>					
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?				✓ Yes No
<i>Data User Note: Data that achieve Presumptive Certainty'status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.</i>					
H	Were all QC performance standards specified in the CAM protocol(s) achieved?				Yes ✓ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?				✓ Yes No
<i>All negative responses are addressed in a case narrative on the cover page of this report.</i>					
<i>I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.</i>					
					
June O'Connor Laboratory Director Date: 3/2/2016					

This laboratory report is not valid without an authorized signature on the cover page.

CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as “<” (less than) the reporting limit in this report.

The samples were received 4.1 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method. Regulatory limits may not be achieved if specific method and/or technique was not requested on the Chain of Custody.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

This work order contains 1 drinking water sample and the required field QC was not submitted.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

EPA 524.2

Calibration:

1602051

Analyte quantified by quadratic equation type calibration.

1,2,3-Trichlorobenzene
1,2,4-Trichlorobenzene
Naphthalene
n-Butylbenzene

This affected the following samples:

S601511-ICV1

S601511-ICV1

Analyte percent recovery is outside individual acceptance criteria.

2,2-Dichloropropane (79%)

This affected the following samples:

#22 Tap
1603231-BLK1
1603231-BS1
S601521-CCV1

Laboratory Control Samples:

1603231 BS

EPA 524.2

Laboratory Control Samples:

1603231 BS

1,2-Dibromo-3-chloropropane percent recovery 77 (80-120) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

#22 Tap

Bromomethane percent recovery 133 (80-120) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

#22 Tap

Carbon tetrachloride percent recovery 77 (80-120) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

#22 Tap

Methylene chloride percent recovery 75 (80-120) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

#22 Tap

MADEP EPH 5/2004 R

Calibration:

1602003

Analyte quantified by quadratic equation type calibration.

Benzo (a) pyrene
Benzo (g,h,i) perylene
Dibenzo (a,h) anthracene
Indeno (1,2,3-cd) pyrene

This affected the following samples:

S600801-ICV1
S600801-ICV2

Laboratory Control Samples:

1603533 BSD

Naphthalene RPD 28% (25%) is outside individual acceptance criteria.

Sample Acceptance Check Form

Client: CMG Environmental, Inc.
Project: 18 Ham - Oxford, MA / 2015-120
Work Order: SC18364
Sample(s) received on: 2/22/2016

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples refrigerated upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Summary of Hits

Lab ID:

Client ID:

Parameter

Result

Flag

Reporting Limit

Units

Analytical Method

No hits detected.

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification

#22 Tap

SC18364-01

Client Project #

2015-120

Matrix

Drinking Water

Collection Date/Time

19-Feb-16 09:45

Received

22-Feb-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Purgeable Organic Compounds													
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 0.50		µg/l	0.50	0.35	1	EPA 524.2	24-Feb-16	25-Feb-16	EK	1603231	
67-64-1	Acetone	< 10.0		µg/l	10.0	0.98	1	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 0.50		µg/l	0.50	0.25	1	"	"	"	"	"	X
71-43-2	Benzene	< 0.50		µg/l	0.50	0.17	1	"	"	"	"	"	X
108-86-1	Bromobenzene	< 0.50		µg/l	0.50	0.11	1	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 0.50		µg/l	0.50	0.13	1	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 0.50		µg/l	0.50	0.18	1	"	"	"	"	"	X
75-25-2	Bromoform	< 0.50		µg/l	0.50	0.29	1	"	"	"	"	"	X
74-83-9	Bromomethane	< 0.50		µg/l	0.50	0.36	1	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 10.0		µg/l	10.0	0.58	1	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 0.50		µg/l	0.50	0.26	1	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 0.50		µg/l	0.50	0.16	1	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 0.50		µg/l	0.50	0.21	1	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 0.50		µg/l	0.50	0.25	1	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 0.50		µg/l	0.50	0.23	1	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 0.50		µg/l	0.50	0.20	1	"	"	"	"	"	X
75-00-3	Chloroethane	< 0.50		µg/l	0.50	0.31	1	"	"	"	"	"	X
67-66-3	Chloroform	< 0.50		µg/l	0.50	0.19	1	"	"	"	"	"	X
74-87-3	Chloromethane	< 0.50		µg/l	0.50	0.34	1	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 0.50		µg/l	0.50	0.17	1	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 0.50		µg/l	0.50	0.20	1	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 0.50		µg/l	0.50	0.48	1	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 0.50		µg/l	0.50	0.24	1	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 0.50		µg/l	0.50	0.16	1	"	"	"	"	"	X
74-95-3	Dibromomethane	< 0.50		µg/l	0.50	0.19	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 0.50		µg/l	0.50	0.15	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 0.50		µg/l	0.50	0.22	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 0.50		µg/l	0.50	0.25	1	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 0.50		µg/l	0.50	0.49	1	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 0.50		µg/l	0.50	0.17	1	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 0.50		µg/l	0.50	0.15	1	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 0.50		µg/l	0.50	0.28	1	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 0.50		µg/l	0.50	0.20	1	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 0.50		µg/l	0.50	0.21	1	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 0.50		µg/l	0.50	0.15	1	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 0.50		µg/l	0.50	0.22	1	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 0.50		µg/l	0.50	0.36	1	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 0.50		µg/l	0.50	0.28	1	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 0.50		µg/l	0.50	0.18	1	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 0.50		µg/l	0.50	0.20	1	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 0.50		µg/l	0.50	0.17	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 0.50		µg/l	0.50	0.40	1	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 10.0		µg/l	10.0	0.54	1	"	"	"	"	"	X

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification

#22 Tap

SC18364-01

Client Project #

2015-120

Matrix

Drinking Water

Collection Date/Time

19-Feb-16 09:45

Received

22-Feb-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.		
Volatile Organic Compounds															
Purgeable Organic Compounds															
98-82-8	Isopropylbenzene	< 0.50		µg/l	0.50	0.24	1	EPA 524.2	24-Feb-16	25-Feb-16	EK	1603231	X		
99-87-6	4-Isopropyltoluene	< 0.50		µg/l	0.50	0.22	1	"	"	"	"	"	X		
1634-04-4	Methyl tert-butyl ether	< 0.50		µg/l	0.50	0.13	1	"	"	"	"	"	X		
108-10-1	4-Methyl-2-pentanone (MIBK)	< 10.0		µg/l	10.0	0.26	1	"	"	"	"	"	X		
75-09-2	Methylene chloride	< 0.50		µg/l	0.50	0.21	1	"	"	"	"	"	X		
91-20-3	Naphthalene	< 0.50		µg/l	0.50	0.40	1	"	"	"	"	"	X		
103-65-1	n-Propylbenzene	< 0.50		µg/l	0.50	0.22	1	"	"	"	"	"	X		
100-42-5	Styrene	< 0.50		µg/l	0.50	0.18	1	"	"	"	"	"	X		
630-20-6	1,1,1,2-Tetrachloroethane	< 0.50		µg/l	0.50	0.24	1	"	"	"	"	"	X		
79-34-5	1,1,2,2-Tetrachloroethane	< 0.50		µg/l	0.50	0.32	1	"	"	"	"	"	X		
127-18-4	Tetrachloroethene	< 0.50		µg/l	0.50	0.39	1	"	"	"	"	"	X		
108-88-3	Toluene	< 0.50		µg/l	0.50	0.33	1	"	"	"	"	"	X		
87-61-6	1,2,3-Trichlorobenzene	< 0.50		µg/l	0.50	0.14	1	"	"	"	"	"	X		
120-82-1	1,2,4-Trichlorobenzene	< 0.50		µg/l	0.50	0.38	1	"	"	"	"	"	X		
71-55-6	1,1,1-Trichloroethane	< 0.50		µg/l	0.50	0.21	1	"	"	"	"	"	X		
79-00-5	1,1,2-Trichloroethane	< 0.50		µg/l	0.50	0.18	1	"	"	"	"	"	X		
79-01-6	Trichloroethene	< 0.50		µg/l	0.50	0.38	1	"	"	"	"	"	X		
75-69-4	Trichlorofluoromethane (Freon 11)	< 0.50		µg/l	0.50	0.49	1	"	"	"	"	"	X		
96-18-4	1,2,3-Trichloropropane	< 0.50		µg/l	0.50	0.18	1	"	"	"	"	"	X		
95-63-6	1,2,4-Trimethylbenzene	< 0.50		µg/l	0.50	0.27	1	"	"	"	"	"	X		
108-67-8	1,3,5-Trimethylbenzene	< 0.50		µg/l	0.50	0.21	1	"	"	"	"	"	X		
75-01-4	Vinyl chloride	< 0.50		µg/l	0.50	0.34	1	"	"	"	"	"	X		
179601-23-1	m,p-Xylene	< 0.50		µg/l	0.50	0.38	1	"	"	"	"	"	X		
95-47-6	o-Xylene	< 0.50		µg/l	0.50	0.21	1	"	"	"	"	"	X		
109-99-9	Tetrahydrofuran	< 2.00		µg/l	2.00	0.38	1	"	"	"	"	"	X		
994-05-8	Tert-amyl methyl ether	< 0.50		µg/l	0.50	0.24	1	"	"	"	"	"			
637-92-3	Ethyl tert-butyl ether	< 0.50		µg/l	0.50	0.14	1	"	"	"	"	"			
108-20-3	Di-isopropyl ether	< 0.50		µg/l	0.50	0.16	1	"	"	"	"	"			
75-65-0	Tert-Butanol / butyl alcohol	< 10.0		µg/l	10.0	2.29	1	"	"	"	"	"			
<i>Surrogate recoveries:</i>															
460-00-4	4-Bromofluorobenzene	96			80-120 %			"	"	"	"	"			
2037-26-5	Toluene-d8	99			80-120 %			"	"	"	"	"			
17060-07-0	1,2-Dichloroethane-d4	102			80-120 %			"	"	"	"	"			
1868-53-7	Dibromofluoromethane	97			80-120 %			"	"	"	"	"			
Extractable Petroleum Hydrocarbons															
<u>MADEP EPH (Low)</u>															
<u>Prepared by method SW846 3510C</u>															
	C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100	27.3	1	MADEP EPH 5/2004 R	01-Mar-16	01-Mar-16	SEP	1603533			
	C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100	23.7	1	"	"	"	"	"			
	C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"			
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"			
91-20-3	Naphthalene	< 1.00		µg/l	1.00	0.495	1	"	"	"	"	"			

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Sample Identification

#22 Tap

SC18364-01

Client Project #

2015-120

Matrix

Drinking Water

Collection Date/Time

19-Feb-16 09:45

Received

22-Feb-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	* <u>RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
Extractable Petroleum Hydrocarbons													
MADEP EPH (Low)													
Prepared by method SW846 3510C													
91-57-6	2-Methylnaphthalene	< 1.00		µg/l	1.00	0.368	1	MADEP EPH 5/2004 R	01-Mar-16	01-Mar-16	SEP	1603533	
208-96-8	Acenaphthylene	< 1.00		µg/l	1.00	0.208	1	"	"	"	"	"	
83-32-9	Acenaphthene	< 1.00		µg/l	1.00	0.393	1	"	"	"	"	"	
86-73-7	Fluorene	< 1.00		µg/l	1.00	0.331	1	"	"	"	"	"	
85-01-8	Phenanthrene	< 1.00		µg/l	1.00	0.347	1	"	"	"	"	"	
120-12-7	Anthracene	< 1.00		µg/l	1.00	0.417	1	"	"	"	"	"	
206-44-0	Fluoranthene	< 1.00		µg/l	1.00	0.243	1	"	"	"	"	"	
129-00-0	Pyrene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	< 1.00		µg/l	1.00	0.195	1	"	"	"	"	"	
218-01-9	Chrysene	< 1.00		µg/l	1.00	0.320	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	< 1.00		µg/l	1.00	0.200	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	< 1.00		µg/l	1.00	0.238	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	< 0.200		µg/l	0.200	0.131	1	"	"	"	"	"	
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.500		µg/l	0.500	0.248	1	"	"	"	"	"	
53-70-3	Dibenz (a,h) anthracene	< 0.500		µg/l	0.500	0.276	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perlylene	< 1.00		µg/l	1.00	0.205	1	"	"	"	"	"	

Surrogate recoveries:

3386-33-2	1-Chlorooctadecane	61	40-140 %	"	"	"	"	"
84-15-1	Ortho-Terphenyl	58	40-140 %	"	"	"	"	"
321-60-8	2-Fluorobiphenyl	59	40-140 %	"	"	"	"	"

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603231 - SW846 5030 Water MS										
<u>Blank (1603231-BLK1)</u>										
<u>Prepared & Analyzed: 24-Feb-16</u>										
1,1,2-Trichlorotrifluoroethane (Freon 113)	< 0.50		µg/l	0.50						
Acetone	< 10.0		µg/l	10.0						
Acrylonitrile	< 0.50		µg/l	0.50						
Benzene	< 0.50		µg/l	0.50						
Bromobenzene	< 0.50		µg/l	0.50						
Bromoform	< 0.50		µg/l	0.50						
Bromomethane	< 0.50		µg/l	0.50						
2-Butanone (MEK)	< 10.0		µg/l	10.0						
n-Butylbenzene	< 0.50		µg/l	0.50						
sec-Butylbenzene	< 0.50		µg/l	0.50						
tert-Butylbenzene	< 0.50		µg/l	0.50						
Carbon disulfide	< 0.50		µg/l	0.50						
Carbon tetrachloride	< 0.50		µg/l	0.50						
Chlorobenzene	< 0.50		µg/l	0.50						
Chloroethane	< 0.50		µg/l	0.50						
Chloroform	< 0.50		µg/l	0.50						
Chloromethane	< 0.50		µg/l	0.50						
2-Chlorotoluene	< 0.50		µg/l	0.50						
4-Chlorotoluene	< 0.50		µg/l	0.50						
1,2-Dibromo-3-chloropropane	< 0.50		µg/l	0.50						
Dibromochloromethane	< 0.50		µg/l	0.50						
1,2-Dibromoethane (EDB)	< 0.50		µg/l	0.50						
Dibromomethane	< 0.50		µg/l	0.50						
1,2-Dichlorobenzene	< 0.50		µg/l	0.50						
1,3-Dichlorobenzene	< 0.50		µg/l	0.50						
1,4-Dichlorobenzene	< 0.50		µg/l	0.50						
Dichlorodifluoromethane (Freon12)	< 0.50		µg/l	0.50						
1,1-Dichloroethane	< 0.50		µg/l	0.50						
1,2-Dichloroethane	< 0.50		µg/l	0.50						
1,1-Dichloroethene	< 0.50		µg/l	0.50						
cis-1,2-Dichloroethene	< 0.50		µg/l	0.50						
trans-1,2-Dichloroethene	< 0.50		µg/l	0.50						
1,2-Dichloropropane	< 0.50		µg/l	0.50						
1,3-Dichloropropane	< 0.50		µg/l	0.50						
2,2-Dichloropropane	< 0.50		µg/l	0.50						
1,1-Dichloropropene	< 0.50		µg/l	0.50						
cis-1,3-Dichloropropene	< 0.50		µg/l	0.50						
trans-1,3-Dichloropropene	< 0.50		µg/l	0.50						
Ethylbenzene	< 0.50		µg/l	0.50						
Hexachlorobutadiene	< 0.50		µg/l	0.50						
2-Hexanone (MBK)	< 10.0		µg/l	10.0						
Isopropylbenzene	< 0.50		µg/l	0.50						
4-Isopropyltoluene	< 0.50		µg/l	0.50						
Methyl tert-butyl ether	< 0.50		µg/l	0.50						
4-Methyl-2-pentanone (MIBK)	< 10.0		µg/l	10.0						
Methylene chloride	< 0.50		µg/l	0.50						
Naphthalene	< 0.50		µg/l	0.50						
n-Propylbenzene	< 0.50		µg/l	0.50						
Styrene	< 0.50		µg/l	0.50						
1,1,1,2-Tetrachloroethane	< 0.50		µg/l	0.50						

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603231 - SW846 5030 Water MS										
<u>Blank (1603231-BLK1)</u>										
1,1,2,2-Tetrachloroethane	< 0.50		µg/l	0.50						
Tetrachloroethene	< 0.50		µg/l	0.50						
Toluene	< 0.50		µg/l	0.50						
1,2,3-Trichlorobenzene	< 0.50		µg/l	0.50						
1,2,4-Trichlorobenzene	< 0.50		µg/l	0.50						
1,1,1-Trichloroethane	< 0.50		µg/l	0.50						
1,1,2-Trichloroethane	< 0.50		µg/l	0.50						
Trichloroethene	< 0.50		µg/l	0.50						
Trichlorofluoromethane (Freon 11)	< 0.50		µg/l	0.50						
1,2,3-Trichloropropane	< 0.50		µg/l	0.50						
1,2,4-Trimethylbenzene	< 0.50		µg/l	0.50						
1,3,5-Trimethylbenzene	< 0.50		µg/l	0.50						
Vinyl chloride	< 0.50		µg/l	0.50						
m,p-Xylene	< 0.50		µg/l	0.50						
o-Xylene	< 0.50		µg/l	0.50						
Tetrahydrofuran	< 2.00		µg/l	2.00						
Tert-amyl methyl ether	< 0.50		µg/l	0.50						
Ethyl tert-butyl ether	< 0.50		µg/l	0.50						
Di-isopropyl ether	< 0.50		µg/l	0.50						
Tert-Butanol / butyl alcohol	< 10.0		µg/l	10.0						
<i>Surrogate: 4-Bromofluorobenzene</i>	47.6		µg/l	50.0		95	80-120			
<i>Surrogate: Toluene-d8</i>	50.0		µg/l	50.0		100	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	50.1		µg/l	50.0		100	80-120			
<i>Surrogate: Dibromofluoromethane</i>	48.3		µg/l	50.0		97	80-120			
<u>LCS (1603231-BS1)</u>										
Prepared & Analyzed: 24-Feb-16										
1,1,2-Trichlorotrifluoroethane (Freon 113)	19.1		µg/l	20.0		95	80-120			
Acetone	19.9		µg/l	20.0		99	70-130			
Acrylonitrile	17.0		µg/l	20.0		85	70-130			
Benzene	20.4		µg/l	20.0		102	80-120			
Bromobenzene	21.7		µg/l	20.0		108	80-120			
Bromoform	20.8		µg/l	20.0		104	80-120			
Bromochloromethane	19.6		µg/l	20.0		98	80-120			
Bromoform	17.7		µg/l	20.0		88	80-120			
Bromomethane	26.6	QC2	µg/l	20.0		133	80-120			
2-Butanone (MEK)	19.2		µg/l	20.0		96	70-130			
n-Butylbenzene	18.4		µg/l	20.0		92	80-120			
sec-Butylbenzene	20.1		µg/l	20.0		101	80-120			
tert-Butylbenzene	20.3		µg/l	20.0		102	80-120			
Carbon disulfide	17.5		µg/l	20.0		88	70-130			
Carbon tetrachloride	15.3	QC2	µg/l	20.0		77	80-120			
Chlorobenzene	21.0		µg/l	20.0		105	80-120			
Chloroethane	18.0		µg/l	20.0		90	80-120			
Chloroform	20.7		µg/l	20.0		103	80-120			
Chloromethane	18.4		µg/l	20.0		92	80-120			
2-Chlorotoluene	21.1		µg/l	20.0		106	80-120			
4-Chlorotoluene	22.0		µg/l	20.0		110	80-120			
1,2-Dibromo-3-chloropropane	15.4	QC2	µg/l	20.0		77	80-120			
Dibromochloromethane	18.4		µg/l	20.0		92	80-120			
1,2-Dibromoethane (EDB)	20.6		µg/l	20.0		103	80-120			
Dibromomethane	21.3		µg/l	20.0		106	80-120			
1,2-Dichlorobenzene	21.0		µg/l	20.0		105	80-120			

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603231 - SW846 5030 Water MS										
<u>LCS (1603231-BS1)</u>										
<u>Prepared & Analyzed: 24-Feb-16</u>										
1,3-Dichlorobenzene	20.9		ug/l		20.0	104	80-120			
1,4-Dichlorobenzene	20.3		ug/l		20.0	101	80-120			
Dichlorodifluoromethane (Freon12)	17.6		ug/l		20.0	88	80-120			
1,1-Dichloroethane	20.2		ug/l		20.0	101	80-120			
1,2-Dichloroethane	20.8		ug/l		20.0	104	80-120			
1,1-Dichloroethene	19.9		ug/l		20.0	100	80-120			
cis-1,2-Dichloroethene	20.3		ug/l		20.0	101	80-120			
trans-1,2-Dichloroethene	19.8		ug/l		20.0	99	80-120			
1,2-Dichloropropane	20.6		ug/l		20.0	103	80-120			
1,3-Dichloropropane	21.0		ug/l		20.0	105	80-120			
2,2-Dichloropropane	17.0		ug/l		20.0	85	80-120			
1,1-Dichloropropene	18.8		ug/l		20.0	94	80-120			
cis-1,3-Dichloropropene	18.1		ug/l		20.0	91	80-120			
trans-1,3-Dichloropropene	17.0		ug/l		20.0	85	80-120			
Ethylbenzene	21.2		ug/l		20.0	106	80-120			
Hexachlorobutadiene	18.6		ug/l		20.0	93	80-120			
2-Hexanone (MBK)	21.2		ug/l		20.0	106	70-130			
Isopropylbenzene	20.4		ug/l		20.0	102	80-120			
4-Isopropyltoluene	19.1		ug/l		20.0	96	80-120			
Methyl tert-butyl ether	19.5		ug/l		20.0	98	80-120			
4-Methyl-2-pentanone (MIBK)	20.4		ug/l		20.0	102	70-130			
Methylene chloride	15.0	QC2	ug/l		20.0	75	80-120			
Naphthalene	18.8		ug/l		20.0	94	80-120			
n-Propylbenzene	20.1		ug/l		20.0	100	80-120			
Styrene	21.9		ug/l		20.0	110	80-120			
1,1,1,2-Tetrachloroethane	17.7		ug/l		20.0	89	80-120			
1,1,2,2-Tetrachloroethane	21.0		ug/l		20.0	105	80-120			
Tetrachloroethene	19.7		ug/l		20.0	98	80-120			
Toluene	20.6		ug/l		20.0	103	80-120			
1,2,3-Trichlorobenzene	18.4		ug/l		20.0	92	80-120			
1,2,4-Trichlorobenzene	17.8		ug/l		20.0	89	80-120			
1,1,1-Trichloroethane	17.5		ug/l		20.0	88	80-120			
1,1,2-Trichloroethane	20.6		ug/l		20.0	103	80-120			
Trichloroethene	20.4		ug/l		20.0	102	80-120			
Trichlorofluoromethane (Freon 11)	18.9		ug/l		20.0	95	80-120			
1,2,3-Trichloropropane	20.8		ug/l		20.0	104	80-120			
1,2,4-Trimethylbenzene	20.4		ug/l		20.0	102	80-120			
1,3,5-Trimethylbenzene	21.8		ug/l		20.0	109	80-120			
Vinyl chloride	21.0		ug/l		20.0	105	80-120			
m,p-Xylene	21.3		ug/l		20.0	106	80-120			
o-Xylene	21.6		ug/l		20.0	108	80-120			
Tetrahydrofuran	18.5		ug/l		20.0	93	70-130			
Tert-amyl methyl ether	18.3		ug/l		20.0	92	70-130			
Ethyl tert-butyl ether	19.3		ug/l		20.0	97	70-130			
Di-isopropyl ether	19.9		ug/l		20.0	99	70-130			
Tert-Butanol / butyl alcohol	192		ug/l		200	96	70-130			
Surrogate: 4-Bromofluorobenzene	51.7		ug/l		50.0	103	80-120			
Surrogate: Toluene-d8	50.2		ug/l		50.0	100	80-120			
Surrogate: 1,2-Dichloroethane-d4	50.3		ug/l		50.0	101	80-120			
Surrogate: Dibromofluoromethane	49.8		ug/l		50.0	100	80-120			

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603533 - SW846 3510C										
<u>Blank (1603533-BLK1)</u>										
<u>Prepared & Analyzed: 01-Mar-16</u>										
C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100						
C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100						
C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100						
Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100						
Total Petroleum Hydrocarbons	< 300		µg/l	300						
Unadjusted Total Petroleum Hydrocarbons	< 300		µg/l	300						
Naphthalene	< 1.00		µg/l	1.00						
2-Methylnaphthalene	< 1.00		µg/l	1.00						
Acenaphthylene	< 1.00		µg/l	1.00						
Acenaphthene	< 1.00		µg/l	1.00						
Fluorene	< 1.00		µg/l	1.00						
Phenanthrene	< 1.00		µg/l	1.00						
Anthracene	< 1.00		µg/l	1.00						
Fluoranthene	< 1.00		µg/l	1.00						
Pyrene	< 1.00		µg/l	1.00						
Benzo (a) anthracene	< 1.00		µg/l	1.00						
Chrysene	< 1.00		µg/l	1.00						
Benzo (b) fluoranthene	< 1.00		µg/l	1.00						
Benzo (k) fluoranthene	< 1.00		µg/l	1.00						
Benzo (a) pyrene	< 0.200		µg/l	0.200						
Indeno (1,2,3-cd) pyrene	< 0.500		µg/l	0.500						
Dibenzo (a,h) anthracene	< 0.500		µg/l	0.500						
Benzo (g,h,i) perylene	< 1.00		µg/l	1.00						
n-Nonane (C9)	< 5.00		µg/l	5.00						
n-Decane	< 5.00		µg/l	5.00						
n-Dodecane	< 5.00		µg/l	5.00						
n-Tetradecane	< 5.00		µg/l	5.00						
n-Hexadecane	< 5.00		µg/l	5.00						
n-Octadecane	< 5.00		µg/l	5.00						
n-Nonadecane	< 5.00		µg/l	5.00						
n-Eicosane	< 5.00		µg/l	5.00						
n-Docosane	< 5.00		µg/l	5.00						
n-Tetracosane	< 5.00		µg/l	5.00						
n-Hexacosane	< 5.00		µg/l	5.00						
n-Octacosane	< 5.00		µg/l	5.00						
n-Triacontane	< 5.00		µg/l	5.00						
n-Hexatriacontane	< 5.00		µg/l	5.00						
Naphthalene (aliphatic fraction)	0.00		µg/l							
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l							
Surrogate: 1-Chlorooctadecane	41.7		µg/l	50.0		83	40-140			
Surrogate: Ortho-Terphenyl	38.2		µg/l	50.0		76	40-140			
Surrogate: 2-Fluorobiphenyl	26.9		µg/l	40.0		67	40-140			
<u>LCS (1603533-BS1)</u>										
<u>Prepared & Analyzed: 01-Mar-16</u>										
C9-C18 Aliphatic Hydrocarbons	559		µg/l	100	600	93	40-140			
C19-C36 Aliphatic Hydrocarbons	858		µg/l	100	800	107	40-140			
Unadjusted C11-C22 Aromatic Hydrocarbons	555		µg/l	100	680	82	40-140			
Naphthalene	21.7		µg/l	1.00	40.0	54	40-140			
2-Methylnaphthalene	22.8		µg/l	1.00	40.0	57	40-140			
Acenaphthylene	27.9		µg/l	1.00	40.0	70	40-140			
Acenaphthene	29.7		µg/l	1.00	40.0	74	40-140			

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603533 - SW846 3510C										
<u>LCS (1603533-BS1)</u>										
<u>Prepared & Analyzed: 01-Mar-16</u>										
Fluorene	31.4		µg/l	1.00	40.0	78	40-140			
Phenanthrene	34.1		µg/l	1.00	40.0	85	40-140			
Anthracene	34.4		µg/l	1.00	40.0	86	40-140			
Fluoranthene	34.4		µg/l	1.00	40.0	86	40-140			
Pyrene	34.1		µg/l	1.00	40.0	85	40-140			
Benzo (a) anthracene	33.1		µg/l	1.00	40.0	83	40-140			
Chrysene	34.1		µg/l	1.00	40.0	85	40-140			
Benzo (b) fluoranthene	30.1		µg/l	1.00	40.0	75	40-140			
Benzo (k) fluoranthene	32.9		µg/l	1.00	40.0	82	40-140			
Benzo (a) pyrene	28.3		µg/l	0.200	40.0	71	40-140			
Indeno (1,2,3-cd) pyrene	27.7		µg/l	0.500	40.0	69	40-140			
Dibenzo (a,h) anthracene	26.2		µg/l	0.500	40.0	65	40-140			
Benzo (g,h,i) perylene	28.1		µg/l	1.00	40.0	70	40-140			
n-Nonane (C9)	33.0		µg/l	5.00	100	33	30-140			
n-Decane	45.2		µg/l	5.00	100	45	40-140			
n-Dodecane	53.1		µg/l	5.00	100	53	40-140			
n-Tetradecane	61.4		µg/l	5.00	100	61	40-140			
n-Hexadecane	72.4		µg/l	5.00	100	72	40-140			
n-Octadecane	81.1		µg/l	5.00	100	81	40-140			
n-Nonadecane	83.9		µg/l	5.00	100	84	40-140			
n-Eicosane	84.3		µg/l	5.00	100	84	40-140			
n-Docosane	85.7		µg/l	5.00	100	86	40-140			
n-Tetracosane	85.1		µg/l	5.00	100	85	40-140			
n-Hexacosane	83.9		µg/l	5.00	100	84	40-140			
n-Octacosane	84.5		µg/l	5.00	100	85	40-140			
n-Triacontane	82.8		µg/l	5.00	100	83	40-140			
n-Hexatriacontane	80.8		µg/l	5.00	100	81	40-140			
Naphthalene (aliphatic fraction)	0.00		µg/l				0-200			
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l				0-200			
Surrogate: 1-Chlorooctadecane	36.8		µg/l		50.0	74	40-140			
Surrogate: Ortho-Terphenyl	35.6		µg/l		50.0	71	40-140			
Surrogate: 2-Fluorobiphenyl	27.3		µg/l		40.0	68	40-140			
<u>LCS (1603533-BS2)</u>										
<u>Prepared & Analyzed: 01-Mar-16</u>										
C9-C18 Aliphatic Hydrocarbons	543		µg/l	100	600	90	40-140			
C19-C36 Aliphatic Hydrocarbons	885		µg/l	100	800	111	40-140			
Unadjusted C11-C22 Aromatic Hydrocarbons	392		µg/l	100	340	115	40-140			
Naphthalene	12.1		µg/l	1.00	20.0	60	40-140			
2-Methylnaphthalene	14.8		µg/l	1.00	20.0	74	40-140			
Acenaphthylene	20.3		µg/l	1.00	20.0	101	40-140			
Acenaphthene	20.6		µg/l	1.00	20.0	103	40-140			
Fluorene	23.6		µg/l	1.00	20.0	118	40-140			
Phenanthrene	24.2		µg/l	1.00	20.0	121	40-140			
Anthracene	24.0		µg/l	1.00	20.0	120	40-140			
Fluoranthene	24.6		µg/l	1.00	20.0	123	40-140			
Pyrene	24.0		µg/l	1.00	20.0	120	40-140			
Benzo (a) anthracene	23.7		µg/l	1.00	20.0	118	40-140			
Chrysene	23.7		µg/l	1.00	20.0	119	40-140			
Benzo (b) fluoranthene	19.1		µg/l	1.00	20.0	96	40-140			
Benzo (k) fluoranthene	21.4		µg/l	1.00	20.0	107	40-140			
Benzo (a) pyrene	19.3		µg/l	0.200	20.0	96	40-140			
Indeno (1,2,3-cd) pyrene	19.1		µg/l	0.500	20.0	96	40-140			

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603533 - SW846 3510C										
<u>LCS (1603533-BS2)</u>										
							<u>Prepared & Analyzed: 01-Mar-16</u>			
Dibenzo (a,h) anthracene	19.0		µg/l	0.500	20.0		95	40-140		
Benzo (g,h,i) perylene	19.5		µg/l	1.00	20.0		98	40-140		
n-Nonane (C9)	47.8		µg/l	5.00	100		48	30-140		
n-Decane	56.2		µg/l	5.00	100		56	40-140		
n-Dodecane	65.2		µg/l	5.00	100		65	40-140		
n-Tetradecane	67.5		µg/l	5.00	100		67	40-140		
n-Hexadecane	76.0		µg/l	5.00	100		76	40-140		
n-Octadecane	84.5		µg/l	5.00	100		84	40-140		
n-Nonadecane	87.2		µg/l	5.00	100		87	40-140		
n-Eicosane	87.7		µg/l	5.00	100		88	40-140		
n-Docosane	89.6		µg/l	5.00	100		90	40-140		
n-Tetracosane	88.3		µg/l	5.00	100		88	40-140		
n-Hexacosane	86.5		µg/l	5.00	100		87	40-140		
n-Octacosane	87.2		µg/l	5.00	100		87	40-140		
n-Triacontane	85.0		µg/l	5.00	100		85	40-140		
n-Hexatriacontane	83.2		µg/l	5.00	100		83	40-140		
Naphthalene (aliphatic fraction)	0.00		µg/l					0-200		
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l					0-200		
Surrogate: 1-Chlorooctadecane	38.9		µg/l		50.0		78	40-140		
Surrogate: Ortho-Terphenyl	26.4		µg/l		50.0		53	40-140		
Surrogate: 2-Fluorobiphenyl	18.1		µg/l		40.0		45	40-140		
<u>LCS Dup (1603533-BSD1)</u>										
							<u>Prepared & Analyzed: 01-Mar-16</u>			
C9-C18 Aliphatic Hydrocarbons	704		µg/l	100	600		117	40-140	23	25
C19-C36 Aliphatic Hydrocarbons	879		µg/l	100	800		110	40-140	2	25
Unadjusted C11-C22 Aromatic Hydrocarbons	646		µg/l	100	680		95	40-140	15	25
Naphthalene	16.5	QR2	µg/l	1.00	40.0		41	40-140	28	25
2-Methylnaphthalene	23.2		µg/l	1.00	40.0		58	40-140	1	25
Acenaphthylene	30.6		µg/l	1.00	40.0		76	40-140	9	25
Acenaphthene	32.0		µg/l	1.00	40.0		80	40-140	8	25
Fluorene	33.1		µg/l	1.00	40.0		83	40-140	5	25
Phenanthrene	35.4		µg/l	1.00	40.0		88	40-140	4	25
Anthracene	35.9		µg/l	1.00	40.0		90	40-140	4	25
Fluoranthene	34.3		µg/l	1.00	40.0		86	40-140	0.3	25
Pyrene	34.6		µg/l	1.00	40.0		87	40-140	1	25
Benzo (a) anthracene	33.3		µg/l	1.00	40.0		83	40-140	0.7	25
Chrysene	33.9		µg/l	1.00	40.0		85	40-140	0.4	25
Benzo (b) fluoranthene	26.7		µg/l	1.00	40.0		67	40-140	12	25
Benzo (k) fluoranthene	32.3		µg/l	1.00	40.0		81	40-140	2	25
Benzo (a) pyrene	27.9		µg/l	0.200	40.0		70	40-140	1	25
Indeno (1,2,3-cd) pyrene	26.7		µg/l	0.500	40.0		67	40-140	4	25
Dibenzo (a,h) anthracene	26.8		µg/l	0.500	40.0		67	40-140	2	25
Benzo (g,h,i) perylene	28.4		µg/l	1.00	40.0		71	40-140	0.9	25
n-Nonane (C9)	40.4		µg/l	5.00	100		40	30-140	20	25
n-Decane	51.9		µg/l	5.00	100		52	40-140	14	25
n-Dodecane	65.7		µg/l	5.00	100		66	40-140	21	25
n-Tetradecane	69.3		µg/l	5.00	100		69	40-140	12	25
n-Hexadecane	80.8		µg/l	5.00	100		81	40-140	11	25
n-Octadecane	89.2		µg/l	5.00	100		89	40-140	10	25
n-Nonadecane	92.2		µg/l	5.00	100		92	40-140	9	25
n-Eicosane	92.9		µg/l	5.00	100		93	40-140	10	25
n-Docosane	94.0		µg/l	5.00	100		94	40-140	9	25

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1603533 - SW846 3510C										
<u>LCS Dup (1603533-BSD1)</u>										
n-Tetracosane	93.4		µg/l	5.00	100	93	40-140	9	25	
n-Hexacosane	92.1		µg/l	5.00	100	92	40-140	9	25	
n-Octacosane	92.6		µg/l	5.00	100	93	40-140	9	25	
n-Triacontane	91.0		µg/l	5.00	100	91	40-140	9	25	
n-Hexatriacontane	89.4		µg/l	5.00	100	89	40-140	10	25	
Naphthalene (aliphatic fraction)	0.00		µg/l				0-200		200	
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l				0-200		200	
Surrogate: 1-Chlorooctadecane	41.8		µg/l		50.0	84	40-140			
Surrogate: Ortho-Terphenyl	36.4		µg/l		50.0	73	40-140			
Surrogate: 2-Fluorobiphenyl	28.9		µg/l		40.0	72	40-140			

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S601729				
<u>Calibration Check (S601729-CCV1)</u>				
Naphthalene	7.979187	7.695539	-3.6	20
2-Methylnaphthalene	5.175777	4.97666	-3.8	20
Acenaphthylene	6.726422	7.045799	4.7	20
Acenaphthene	4.261544	4.59129	7.7	20
Fluorene	4.63772	4.945539	6.6	20
Phenanthrene	6.547178	7.516706	14.8	20
Anthracene	6.459808	7.697589	19.2	20
Fluoranthene	6.59472	7.660055	16.2	20
Pyrene	6.818743	8.13462	19.3	20
Benzo (a) anthracene	5.548701	5.89888	6.3	20
Chrysene	5.938179	6.942321	16.9	20
Benzo (b) fluoranthene	5.646098	5.135105	-9.1	20
Benzo (k) fluoranthene	5.949232	6.818082	14.6	20
Benzo (a) pyrene	4.790196	5.27204	-5.4	20
Indeno (1,2,3-cd) pyrene	5.188538	5.292824	-12.0	20
Dibenzo (a,h) anthracene	4.552503	4.317597	-18.3	20
Benzo (g,h,i) perylene	4.2539	4.864255	-5.1	20
Naphthalene (aliphatic fraction)	192055.7			
2-Methylnaphthalene (aliphatic fraction)	192343.2			
<u>Calibration Check (S601729-CCV2)</u>				
C9-C18 Aliphatic Hydrocarbons	209354.1	171757.9	0.4	25
C19-C36 Aliphatic Hydrocarbons	511275.8	273014.5	24.5	25
Unadjusted C11-C22 Aromatic Hydrocarbons	21.14299	18.27357	7.4	25
n-Nonane (C9)	191834.7	156140.8	-18.6	30
n-Decane	191747.7	158069.4	-17.6	25
n-Dodecane	190677.2	152446.2	-20.1	25
n-Tetradecane	193742.9	158125	-18.4	25
n-Hexadecane	185148	155533.1	-16.0	25
n-Octadecane	174936.2	150616.1	-13.9	25
n-Nonadecane	169032.4	146365.7	-13.4	25
n-Eicosane	165289.9	141654.1	-14.3	25
n-Docosane	160328.1	137570.7	-14.2	25
n-Tetracosane	158603.2	132937.1	-16.2	25
n-Hexacosane	157983	130249.6	-17.6	25
n-Octacosane	156719.2	129820.9	-17.2	25
n-Triacontane	158189.6	131051.4	-17.2	25
n-Hexatriacontane	152128.9	130043	-14.5	25
Naphthalene (aliphatic fraction)	192055.7			
2-Methylnaphthalene (aliphatic fraction)	192343.2			
<u>Calibration Check (S601729-CCV3)</u>				
Naphthalene	7.979187	8.121286	1.8	20
2-Methylnaphthalene	5.175777	5.597798	8.2	20
Acenaphthylene	6.726422	7.721091	14.8	20
Acenaphthene	4.261544	4.987303	17.0	20
Fluorene	4.63772	5.497259	18.5	20
Phenanthrene	6.547178	7.700041	17.6	20
Anthracene	6.459808	7.693651	19.1	20
Fluoranthene	6.59472	7.632716	15.7	20
Pyrene	6.818743	8.11327	19.0	20
Benzo (a) anthracene	5.548701	5.913823	6.6	20
Chrysene	5.938179	6.804914	14.6	20

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S601729				
<u>Calibration Check (S601729-CCV3)</u>				
Benzo (b) fluoranthene	5.646098	5.645755	-0.006	20
Benzo (k) fluoranthene	5.949232	6.748184	13.4	20
Benzo (a) pyrene	4.790196	5.088683	-8.6	20
Indeno (1,2,3-cd) pyrene	5.188538	5.397448	-10.4	20
Dibenzo (a,h) anthracene	4.552503	4.626124	-12.6	20
Benzo (g,h,i) perylene	4.2539	4.827062	-5.9	20
Naphthalene (aliphatic fraction)	192055.7			
2-Methylnaphthalene (aliphatic fraction)	192343.2			
<u>Calibration Check (S601729-CCV4)</u>				
C9-C18 Aliphatic Hydrocarbons	209354.1	196272.2	15.6	25
C19-C36 Aliphatic Hydrocarbons	511275.8	263479.5	18.7	25
Unadjusted C11-C22 Aromatic Hydrocarbons	21.14299	19.56349	15.4	25
n-Nonane (C9)	191834.7	162603.9	-15.2	30
n-Decane	191747.7	167958.6	-12.4	25
n-Dodecane	190677.2	164000.9	-14.0	25
n-Tetradecane	193742.9	168429.3	-13.1	25
n-Hexadecane	185148	165427.6	-10.7	25
n-Octadecane	174936.2	160173.6	-8.4	25
n-Nonadecane	169032.4	159943.3	-5.4	25
n-Eicosane	165289.9	159762.2	-3.3	25
n-Docosane	160328.1	161893.6	1.0	25
n-Tetracosane	158603.2	160470.9	1.2	25
n-Hexacosane	157983	158903.2	0.6	25
n-Octacosane	156719.2	158741.6	1.3	25
n-Triacontane	158189.6	159769	1.0	25
n-Hexatricontane	152128.9	155139.2	2.0	25
Naphthalene (aliphatic fraction)	192055.7			
2-Methylnaphthalene (aliphatic fraction)	192343.2			

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Notes and Definitions

QC2	Analyte out of acceptance range in QC spike but no reportable concentration present in sample.
QR2	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

Validated by:
June O'Connor
Kimberly LaPlante

Final Report
 Re-Issued Report
 Revised Report

Report Date:
 09-Jun-16 11:38

Laboratory Report

CMG Environmental, Inc.
 67 Hall Road
 Sturbridge, MA 01566
 Attn: Ben Gould

Project: Hammond St - Oxford, MA
 Project #: 2015-120

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SC21897-01	SW	Surface Water	26-May-16 11:14	27-May-16 15:35

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
 Connecticut # PH-0777
 Florida # E87936
 Maine # MA138
 New Hampshire # 2538
 New Jersey # MA011
 New York # 11393
 Pennsylvania # 68-04426/68-02924
 Rhode Island # LAO00098
 USDA # S-51435

Surface Water

Final Report

Re-Issued Report

Revised Report

Authorized by:

June O'Connor
 Laboratory Director



Eurofins Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 13 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our Quality web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

The following outlines the condition of all EPH samples contained within this report upon laboratory receipt.

Matrices	Surface Water		
Containers	<input checked="" type="checkbox"/> Satisfactory		
Aqueous Preservative	N/A	<input checked="" type="checkbox"/> pH≤2	pH>2 pH adjusted to <2 in lab
Temperature	Received on ice <input checked="" type="checkbox"/> Received at 4 ± 2 °C		

Were all QA/QC procedures followed as required by the EPH method? *Yes*

Were any significant modifications made to the EPH method as specified in Section 11.3? *No*

Were all performance/acceptance standards for required QA/QC procedures achieved? *Yes*

I attest that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Authorized by:



June O'Connor
Laboratory Director

MassDEP Analytical Protocol Certification Form

Laboratory Name: Eurofins Spectrum Analytical, Inc.		Project #: 2015-120			
Project Location: Hammond St - Oxford, MA		RTN:			
This form provides certifications for the following data set:		SC21897-01			
Matrices: Surface Water					
CAM Protocol					
8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	✓ MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9012 Total Cyanide/PAC CAM VI A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B
<i>Affirmative responses to questions A through F are required for Presumptive Certainty'status</i>					
A	Were all samples received in a condition consistent with those described on the Chain of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?				✓ Yes No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?				✓ Yes No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?				✓ Yes No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?				✓ Yes No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?				✓ Yes No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to questions A through E)?				✓ Yes No
<i>Responses to questions G, H and I below are required for Presumptive Certainty'status</i>					
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?				✓ Yes No
<i>Data User Note: Data that achieve Presumptive Certainty'status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.</i>					
H	Were all QC performance standards specified in the CAM protocol(s) achieved?				✓ Yes No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?				✓ Yes No
<i>All negative responses are addressed in a case narrative on the cover page of this report.</i>					
<i>I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.</i>					
					
June O'Connor Laboratory Director Date: 6/9/2016					

This laboratory report is not valid without an authorized signature on the cover page.

CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as “<” (less than) the reporting limit in this report.

The samples were received 4.2 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method. Regulatory limits may not be achieved if specific method and/or technique was not requested on the Chain of Custody.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

MADEP EPH 5/2004 R

Calibration:

1604020

Analyte quantified by quadratic equation type calibration.

Benzo (a) pyrene
Benzo (g,h,i) perylene
Dibenzo (a,h) anthracene
Indeno (1,2,3-cd) pyrene

This affected the following samples:

1609449-BLK1
1609449-BS1
1609449-BS2
1609449-BSD1
S603014-ICV2
S604732-CCV2
S604789-CCV1
SW

Sample Acceptance Check Form

Client: CMG Environmental, Inc.
Project: Hammond St - Oxford, MA / 2015-120
Work Order: SC21897
Sample(s) received on: 5/27/2016

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples refrigerated upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Summary of Hits

Lab ID: SC21897-01

Client ID: SW

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
C11-C22 Aromatic Hydrocarbons	171		100	µg/l	MADEP EPH 5/2004 R
C19-C36 Aliphatic Hydrocarbons	173		100	µg/l	MADEP EPH 5/2004 R
Unadjusted C11-C22 Aromatic Hydrocarbons	171		100	µg/l	MADEP EPH 5/2004 R

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification

SW

SC21897-01

Client Project #

2015-120

Matrix

Surface Water

Collection Date/Time

26-May-16 11:14

Received

27-May-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	* <u>RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
Extractable Petroleum Hydrocarbons													
<u>MADEP EPH</u>													
<u>Prepared by method SW846 3510C</u>													
	C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100	27.3	1	MADEP EPH 5/2004 R	06-Jun-16	09-Jun-16	NAA	1609449	
	C19-C36 Aliphatic Hydrocarbons	173		µg/l	100	23.7	1	"	"	"	"	"	
	C11-C22 Aromatic Hydrocarbons	171		µg/l	100	34.1	1	"	"	"	"	"	
	Unadjusted C11-C22 Aromatic Hydrocarbons	171		µg/l	100	34.1	1	"	"	"	"	"	
91-20-3	Naphthalene	< 5.00		µg/l	5.00	1.37	1	"	"	"	"	"	
91-57-6	2-Methylnaphthalene	< 5.00		µg/l	5.00	1.42	1	"	"	"	"	"	
208-96-8	Acenaphthylene	< 5.00		µg/l	5.00	1.49	1	"	"	"	"	"	
83-32-9	Acenaphthene	< 5.00		µg/l	5.00	1.40	1	"	"	"	"	"	
86-73-7	Fluorene	< 5.00		µg/l	5.00	1.46	1	"	"	"	"	"	
85-01-8	Phenanthrene	< 5.00		µg/l	5.00	1.35	1	"	"	"	"	"	
120-12-7	Anthracene	< 5.00		µg/l	5.00	2.27	1	"	"	"	"	"	
206-44-0	Fluoranthene	< 5.00		µg/l	5.00	2.00	1	"	"	"	"	"	
129-00-0	Pyrene	< 5.00		µg/l	5.00	1.57	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	< 5.00		µg/l	5.00	2.15	1	"	"	"	"	"	
218-01-9	Chrysene	< 5.00		µg/l	5.00	1.55	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	< 5.00		µg/l	5.00	2.24	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	< 5.00		µg/l	5.00	1.79	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	< 5.00		µg/l	5.00	2.07	1	"	"	"	"	"	
193-39-5	Indeno (1,2,3-cd) pyrene	< 5.00		µg/l	5.00	1.44	1	"	"	"	"	"	
53-70-3	Dibenzo (a,h) anthracene	< 5.00		µg/l	5.00	1.69	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perlylene	< 5.00		µg/l	5.00	1.22	1	"	"	"	"	"	

Surrogate recoveries:

3386-33-2	1-Chlorooctadecane	58	40-140 %	"	"	"	"	"
84-15-1	Ortho-Terphenyl	45	40-140 %	"	"	"	"	"
321-60-8	2-Fluorobiphenyl	75	40-140 %	"	"	"	"	"

Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609449 - SW846 3510C										
<u>Blank (1609449-BLK1)</u>										
C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100						
C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100						
C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100						
Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100						
Total Petroleum Hydrocarbons	< 300		µg/l	300						
Unadjusted Total Petroleum Hydrocarbons	< 300		µg/l	300						
Naphthalene	< 5.00		µg/l	5.00						
2-Methylnaphthalene	< 5.00		µg/l	5.00						
Acenaphthylene	< 5.00		µg/l	5.00						
Acenaphthene	< 5.00		µg/l	5.00						
Fluorene	< 5.00		µg/l	5.00						
Phenanthrene	< 5.00		µg/l	5.00						
Anthracene	< 5.00		µg/l	5.00						
Fluoranthene	< 5.00		µg/l	5.00						
Pyrene	< 5.00		µg/l	5.00						
Benzo (a) anthracene	< 5.00		µg/l	5.00						
Chrysene	< 5.00		µg/l	5.00						
Benzo (b) fluoranthene	< 5.00		µg/l	5.00						
Benzo (k) fluoranthene	< 5.00		µg/l	5.00						
Benzo (a) pyrene	< 5.00		µg/l	5.00						
Indeno (1,2,3-cd) pyrene	< 5.00		µg/l	5.00						
Dibenzo (a,h) anthracene	< 5.00		µg/l	5.00						
Benzo (g,h,i) perylene	< 5.00		µg/l	5.00						
n-Nonane (C9)	< 5.00		µg/l	5.00						
n-Decane	< 5.00		µg/l	5.00						
n-Dodecane	< 5.00		µg/l	5.00						
n-Tetradecane	< 5.00		µg/l	5.00						
n-Hexadecane	< 5.00		µg/l	5.00						
n-Octadecane	< 5.00		µg/l	5.00						
n-Nonadecane	< 5.00		µg/l	5.00						
n-Eicosane	< 5.00		µg/l	5.00						
n-Docosane	< 5.00		µg/l	5.00						
n-Tetracosane	< 5.00		µg/l	5.00						
n-Hexacosane	< 5.00		µg/l	5.00						
n-Octacosane	< 5.00		µg/l	5.00						
n-Triacontane	< 5.00		µg/l	5.00						
n-Hexatriacontane	< 5.00		µg/l	5.00						
Naphthalene (aliphatic fraction)	0.00		µg/l							
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l							
Surrogate: 1-Chlorooctadecane	40.0		µg/l		50.0		80	40-140		
Surrogate: Ortho-Terphenyl	35.7		µg/l		50.0		71	40-140		
Surrogate: 2-Fluorobiphenyl	23.5		µg/l		40.0		59	40-140		
<u>LCS (1609449-BS1)</u>										
<u>Prepared: 06-Jun-16 Analyzed: 07-Jun-16</u>										
C9-C18 Aliphatic Hydrocarbons	585		µg/l	100	600		98	40-140		
C19-C36 Aliphatic Hydrocarbons	345		µg/l	100	800		43	40-140		
Unadjusted C11-C22 Aromatic Hydrocarbons	651		µg/l	100	680		96	40-140		
Naphthalene	21.5		µg/l	5.00	40.0		54	40-140		
2-Methylnaphthalene	26.9		µg/l	5.00	40.0		67	40-140		
Acenaphthylene	26.2		µg/l	5.00	40.0		66	40-140		
Acenaphthene	28.9		µg/l	5.00	40.0		72	40-140		

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609449 - SW846 3510C										
<u>LCS (1609449-BS1)</u>										
								<u>Prepared: 06-Jun-16 Analyzed: 07-Jun-16</u>		
Fluorene	30.3		µg/l	5.00	40.0	76	40-140			
Phenanthrene	31.4		µg/l	5.00	40.0	79	40-140			
Anthracene	30.4		µg/l	5.00	40.0	76	40-140			
Fluoranthene	34.1		µg/l	5.00	40.0	85	40-140			
Pyrene	34.2		µg/l	5.00	40.0	85	40-140			
Benzo (a) anthracene	32.7		µg/l	5.00	40.0	82	40-140			
Chrysene	37.1		µg/l	5.00	40.0	93	40-140			
Benzo (b) fluoranthene	21.9		µg/l	5.00	40.0	55	40-140			
Benzo (k) fluoranthene	36.3		µg/l	5.00	40.0	91	40-140			
Benzo (a) pyrene	30.9		µg/l	5.00	40.0	77	40-140			
Indeno (1,2,3-cd) pyrene	28.0		µg/l	5.00	40.0	70	40-140			
Dibenzo (a,h) anthracene	28.2		µg/l	5.00	40.0	70	40-140			
Benzo (g,h,i) perylene	26.5		µg/l	5.00	40.0	66	40-140			
n-Nonane (C9)	50.1		µg/l	5.00	100	50	30-140			
n-Decane	41.8		µg/l	5.00	100	42	40-140			
n-Dodecane	48.8		µg/l	5.00	100	49	40-140			
n-Tetradecane	57.5		µg/l	5.00	100	58	40-140			
n-Hexadecane	66.9		µg/l	5.00	100	67	40-140			
n-Octadecane	73.4		µg/l	5.00	100	73	40-140			
n-Nonadecane	77.2		µg/l	5.00	100	77	40-140			
n-Eicosane	79.3		µg/l	5.00	100	79	40-140			
n-Docosane	83.9		µg/l	5.00	100	84	40-140			
n-Tetracosane	86.6		µg/l	5.00	100	87	40-140			
n-Hexacosane	88.8		µg/l	5.00	100	89	40-140			
n-Octacosane	89.0		µg/l	5.00	100	89	40-140			
n-Triacontane	88.2		µg/l	5.00	100	88	40-140			
n-Hexatriacontane	83.9		µg/l	5.00	100	84	40-140			
Naphthalene (aliphatic fraction)	0.00		µg/l				0-200			
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l				0-200			
Surrogate: 1-Chlorooctadecane	46.8		µg/l		50.0	94	40-140			
Surrogate: Ortho-Terphenyl	50.0		µg/l		50.0	100	40-140			
Surrogate: 2-Fluorobiphenyl	30.5		µg/l		40.0	76	40-140			
<u>LCS (1609449-BS2)</u>										
								<u>Prepared: 06-Jun-16 Analyzed: 07-Jun-16</u>		
C9-C18 Aliphatic Hydrocarbons	716		µg/l	100	600	119	40-140			
C19-C36 Aliphatic Hydrocarbons	701		µg/l	100	800	88	40-140			
Unadjusted C11-C22 Aromatic Hydrocarbons	798		µg/l	100	680	117	40-140			
Naphthalene	20.6		µg/l	5.00	40.0	52	40-140			
2-Methylnaphthalene	24.1		µg/l	5.00	40.0	60	40-140			
Acenaphthylene	25.5		µg/l	5.00	40.0	64	40-140			
Acenaphthene	27.8		µg/l	5.00	40.0	70	40-140			
Fluorene	29.2		µg/l	5.00	40.0	73	40-140			
Phenanthrene	32.1		µg/l	5.00	40.0	80	40-140			
Anthracene	30.1		µg/l	5.00	40.0	75	40-140			
Fluoranthene	34.7		µg/l	5.00	40.0	87	40-140			
Pyrene	35.1		µg/l	5.00	40.0	88	40-140			
Benzo (a) anthracene	31.9		µg/l	5.00	40.0	80	40-140			
Chrysene	38.7		µg/l	5.00	40.0	97	40-140			
Benzo (b) fluoranthene	23.3		µg/l	5.00	40.0	58	40-140			
Benzo (k) fluoranthene	36.9		µg/l	5.00	40.0	92	40-140			
Benzo (a) pyrene	33.1		µg/l	5.00	40.0	83	40-140			
Indeno (1,2,3-cd) pyrene	27.4		µg/l	5.00	40.0	69	40-140			

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609449 - SW846 3510C										
<u>LCS (1609449-BS2)</u>										
								<u>Prepared: 06-Jun-16 Analyzed: 07-Jun-16</u>		
Dibenzo (a,h) anthracene	30.2		µg/l	5.00	40.0		75	40-140		
Benzo (g,h,i) perylene	33.5		µg/l	5.00	40.0		84	40-140		
n-Nonane (C9)	37.0		µg/l	5.00	100		37	30-140		
n-Decane	46.3		µg/l	5.00	100		46	40-140		
n-Dodecane	53.8		µg/l	5.00	100		54	40-140		
n-Tetradecane	63.9		µg/l	5.00	100		64	40-140		
n-Hexadecane	74.5		µg/l	5.00	100		75	40-140		
n-Octadecane	81.3		µg/l	5.00	100		81	40-140		
n-Nonadecane	84.7		µg/l	5.00	100		85	40-140		
n-Eicosane	86.1		µg/l	5.00	100		86	40-140		
n-Docosane	91.2		µg/l	5.00	100		91	40-140		
n-Tetracosane	94.2		µg/l	5.00	100		94	40-140		
n-Hexacosane	96.8		µg/l	5.00	100		97	40-140		
n-Octacosane	97.4		µg/l	5.00	100		97	40-140		
n-Triacontane	96.9		µg/l	5.00	100		97	40-140		
n-Hexatriacontane	93.0		µg/l	5.00	100		93	40-140		
Naphthalene (aliphatic fraction)	0.00		µg/l					0-200		
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l					0-200		
Surrogate: 1-Chlorooctadecane	50.9		µg/l		50.0		102	40-140		
Surrogate: Ortho-Terphenyl	50.1		µg/l		50.0		100	40-140		
Surrogate: 2-Fluorobiphenyl	29.4		µg/l		40.0		74	40-140		
<u>LCS Dup (1609449-BSD1)</u>										
								<u>Prepared: 06-Jun-16 Analyzed: 07-Jun-16</u>		
C9-C18 Aliphatic Hydrocarbons	670		µg/l	100	600		112	40-140	13	25
C19-C36 Aliphatic Hydrocarbons	435		µg/l	100	800		54	40-140	23	25
Unadjusted C11-C22 Aromatic Hydrocarbons	744		µg/l	100	680		109	40-140	13	25
Naphthalene	21.5		µg/l	5.00	40.0		54	40-140	0.4	25
2-Methylnaphthalene	27.1		µg/l	5.00	40.0		68	40-140	0.5	25
Acenaphthylene	26.3		µg/l	5.00	40.0		66	40-140	0.4	25
Acenaphthene	28.6		µg/l	5.00	40.0		72	40-140	0.8	25
Fluorene	30.2		µg/l	5.00	40.0		75	40-140	0.4	25
Phenanthrene	31.8		µg/l	5.00	40.0		80	40-140	1	25
Anthracene	30.4		µg/l	5.00	40.0		76	40-140	0.07	25
Fluoranthene	33.4		µg/l	5.00	40.0		83	40-140	2	25
Pyrene	33.6		µg/l	5.00	40.0		84	40-140	2	25
Benzo (a) anthracene	29.9		µg/l	5.00	40.0		75	40-140	9	25
Chrysene	36.5		µg/l	5.00	40.0		91	40-140	2	25
Benzo (b) fluoranthene	23.0		µg/l	5.00	40.0		58	40-140	5	25
Benzo (k) fluoranthene	38.2		µg/l	5.00	40.0		96	40-140	5	25
Benzo (a) pyrene	31.2		µg/l	5.00	40.0		78	40-140	1	25
Indeno (1,2,3-cd) pyrene	24.9		µg/l	5.00	40.0		62	40-140	12	25
Dibenzo (a,h) anthracene	22.1		µg/l	5.00	40.0		55	40-140	24	25
Benzo (g,h,i) perylene	26.5		µg/l	5.00	40.0		66	40-140	0	25
n-Nonane (C9)	51.7		µg/l	5.00	100		52	30-140	3	25
n-Decane	44.2		µg/l	5.00	100		44	40-140	6	25
n-Dodecane	52.0		µg/l	5.00	100		52	40-140	6	25
n-Tetradecane	61.3		µg/l	5.00	100		61	40-140	6	25
n-Hexadecane	71.2		µg/l	5.00	100		71	40-140	6	25
n-Octadecane	77.2		µg/l	5.00	100		77	40-140	5	25
n-Nonadecane	80.9		µg/l	5.00	100		81	40-140	5	25
n-Eicosane	82.6		µg/l	5.00	100		83	40-140	4	25
n-Docosane	87.1		µg/l	5.00	100		87	40-140	4	25

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609449 - SW846 3510C										
<u>LCS Dup (1609449-BSD1)</u>										
n-Tetracosane	89.7		µg/l	5.00	100	90	40-140	4	25	
n-Hexacosane	92.1		µg/l	5.00	100	92	40-140	4	25	
n-Octacosane	92.5		µg/l	5.00	100	93	40-140	4	25	
n-Triacontane	91.8		µg/l	5.00	100	92	40-140	4	25	
n-Hexatriacontane	87.2		µg/l	5.00	100	87	40-140	4	25	
Naphthalene (aliphatic fraction)	0.00		µg/l				0-200		200	
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l				0-200		200	
<i>Surrogate: 1-Chlorooctadecane</i>	48.6		µg/l		50.0	97	40-140			
<i>Surrogate: Ortho-Terphenyl</i>	49.8		µg/l		50.0	100	40-140			
<i>Surrogate: 2-Fluorobiphenyl</i>	30.9		µg/l		40.0	77	40-140			

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S604789				
<u>Calibration Check (S604789-CCV1)</u>				
C9-C18 Aliphatic Hydrocarbons	225670.7	165789.5	4.3	25
C19-C36 Aliphatic Hydrocarbons	1433281	368986	-22.7	25
Unadjusted C11-C22 Aromatic Hydrocarbons	24.03551	19.21223	12.4	20
Naphthalene	7.378404	6.786461	-8.0	20
2-Methylnaphthalene	4.308346	4.720493	9.6	20
Acenaphthylene	7.460001	6.964178	-6.6	20
Acenaphthene	4.845007	4.441176	-8.3	20
Fluorene	5.074137	4.836322	-4.7	20
Phenanthrene	6.753278	6.170566	-8.6	20
Anthracene	7.709496	6.480016	-15.9	20
Fluoranthene	7.305509	6.892328	-5.7	20
Pyrene	7.652392	7.255599	-5.2	20
Benzo (a) anthracene	5.896059	5.778379	-2.0	20
Chrysene	6.7393	6.728171	-0.2	20
Benzo (b) fluoranthene	6.035965	6.645198	10.1	20
Benzo (k) fluoranthene	6.638118	7.214027	8.7	20
Benzo (a) pyrene	5.579656	5.523217	2.1	20
Indeno (1,2,3-cd) pyrene	6.366253	6.124063	-2.5	20
Dibenzo (a,h) anthracene	5.317723	5.178113	-4.9	20
Benzo (g,h,i) perylene	5.394442	5.099714	-4.4	20
n-Nonane (C9)	205747.8	216883	5.4	25
n-Decane	204813.1	212576.8	3.8	25
n-Dodecane	203877.7	203705.2	-0.08	25
n-Tetradecane	201712.1	203142	0.7	25
n-Hexadecane	195278.5	200362.8	2.6	25
n-Octadecane	187431.2	193048.6	3.0	25
n-Nonadecane	181249.4	186552	2.9	25
n-Eicosane	176548	182847.4	3.6	25
n-Docosane	168319.2	177969.3	5.7	25
n-Tetracosane	163462.3	176245.7	7.8	25
n-Hexacosane	158574.7	174811.8	10.2	25
n-Octacosane	158586.1	173091.8	9.1	25
n-Triacontane	158880.7	173351.5	9.1	25
n-Hexatriacontane	159740.7	168033.5	5.2	25
Naphthalene (aliphatic fraction)	247081.9			
2-Methylnaphthalene (aliphatic fraction)	252288.7			

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Notes and Definitions

dry Sample results reported on a dry weight basis

NR Not Reported

RPD Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

Validated by:
Rebecca Merz

Laboratory Report

CMG Environmental, Inc.
67 Hall Road
Sturbridge, MA 01566
Attn: Ben Gould

Project: Hammond St - Oxford, MA
Project #: 2015-120

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SC21903-01	SED	Sed	26-May-16 11:16	27-May-16 15:35

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011
New York # 11393
Pennsylvania # 68-04426/68-02924
Rhode Island # LAO00098
USDA # S-51435



Authorized by:

June O'Connor
Laboratory Director

Eurofins Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 14 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our Quality web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

The following outlines the condition of all EPH samples contained within this report upon laboratory receipt.

Matrices	Sed
Containers	<input checked="" type="checkbox"/> Satisfactory
Aqueous Preservative	<input checked="" type="checkbox"/> N/A pH≤2 pH>2 pH adjusted to <2 in lab
Temperature	Received on ice <input checked="" type="checkbox"/> Received at $4 \pm 2^{\circ}\text{C}$

Were all QA/QC procedures followed as required by the EPH method? *Yes*

Were any significant modifications made to the EPH method as specified in Section 11.3? *No*

Were all performance/acceptance standards for required QA/QC procedures achieved? *Yes*

I attest that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Authorized by:



June O'Connor
Laboratory Director

MassDEP Analytical Protocol Certification Form

Laboratory Name: Eurofins Spectrum Analytical, Inc.		Project #: 2015-120			
Project Location: Hammond St - Oxford, MA		RTN:			
This form provides certifications for the following data set:		SC21903-01			
Matrices: Sed					
CAM Protocol					
8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	✓ MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9012 Total Cyanide/PAC CAM VI A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B
<i>Affirmative responses to questions A through F are required for Presumptive Certainty'status</i>					
A	Were all samples received in a condition consistent with those described on the Chain of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?				✓ Yes No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?				✓ Yes No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?				✓ Yes No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?				✓ Yes No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?				✓ Yes No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to questions A through E)?				✓ Yes No
<i>Responses to questions G, H and I below are required for Presumptive Certainty'status</i>					
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?				✓ Yes No
<i>Data User Note: Data that achieve Presumptive Certainty'status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.</i>					
H	Were all QC performance standards specified in the CAM protocol(s) achieved?				✓ Yes No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?				✓ Yes No
<i>All negative responses are addressed in a case narrative on the cover page of this report.</i>					
<i>I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.</i>					
					
June O'Connor Laboratory Director Date: 6/9/2016					

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CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as “<” (less than) the reporting limit in this report.

The samples were received 4.2 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method. Regulatory limits may not be achieved if specific method and/or technique was not requested on the Chain of Custody.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

TOC via Lloyd Kahn Case Narrative:

Following the acidification via a 1:1 phosphoric acid solution to remove the inorganic carbon, the sample is dried in a 100°C oven for 10-15 minutes. A homogenous sample is then weighed into the platinum boat and tested, on a dry weight basis, for TOC using the Lloyd Kahn method.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

MADEP EPH 5/2004 R

Calibration:

1604020

Analyte quantified by quadratic equation type calibration.

Benzo (a) pyrene
Benzo (g,h,i) perylene
Dibenzo (a,h) anthracene
Indeno (1,2,3-cd) pyrene

This affected the following samples:

S603014-ICV2

Sample Acceptance Check Form

Client: CMG Environmental, Inc.
Project: Hammond St - Oxford, MA / 2015-120
Work Order: SC21903
Sample(s) received on: 5/27/2016

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples refrigerated upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Summary of Hits

Lab ID: SC21903-01

Client ID: SED

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Total Organic Carbon	2420		193	mg/kg	Lloyd Kahn

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification

SED

SC21903-01

Client Project #

2015-120

Matrix

Sed

Collection Date/Time

26-May-16 11:16

Received

27-May-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	* <u>RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
Extractable Petroleum Hydrocarbons													
<u>MADEP EPH</u>													
<u>Prepared by method SW846 3545A</u>													
	C9-C18 Aliphatic Hydrocarbons	< 13.2		mg/kg dry	13.2	3.16	1	MADEP EPH 5/2004 R	01-Jun-16	09-Jun-16	NAA	1609213	
	C19-C36 Aliphatic Hydrocarbons	< 13.2		mg/kg dry	13.2	3.04	1	"	"	"	"	"	
	C11-C22 Aromatic Hydrocarbons	< 13.2		mg/kg dry	13.2	6.86	1	"	"	"	"	"	
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 13.2		mg/kg dry	13.2	6.86	1	"	"	"	"	"	
91-20-3	Naphthalene	< 0.440		mg/kg dry	0.440	0.349	1	"	"	"	"	"	
91-57-6	2-Methylnaphthalene	< 0.440		mg/kg dry	0.440	0.189	1	"	"	"	"	"	
208-96-8	Acenaphthylene	< 0.440		mg/kg dry	0.440	0.279	1	"	"	"	"	"	
83-32-9	Acenaphthene	< 0.440		mg/kg dry	0.440	0.266	1	"	"	"	"	"	
86-73-7	Fluorene	< 0.440		mg/kg dry	0.440	0.274	1	"	"	"	"	"	
85-01-8	Phenanthrene	< 0.440		mg/kg dry	0.440	0.260	1	"	"	"	"	"	
120-12-7	Anthracene	< 0.440		mg/kg dry	0.440	0.242	1	"	"	"	"	"	
206-44-0	Fluoranthene	< 0.440		mg/kg dry	0.440	0.292	1	"	"	"	"	"	
129-00-0	Pyrene	< 0.440		mg/kg dry	0.440	0.226	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	< 0.440		mg/kg dry	0.440	0.280	1	"	"	"	"	"	
218-01-9	Chrysene	< 0.440		mg/kg dry	0.440	0.325	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	< 0.440		mg/kg dry	0.440	0.377	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	< 0.440		mg/kg dry	0.440	0.407	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	< 0.440		mg/kg dry	0.440	0.295	1	"	"	"	"	"	
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.440		mg/kg dry	0.440	0.271	1	"	"	"	"	"	
53-70-3	Dibenzo (a,h) anthracene	< 0.440		mg/kg dry	0.440	0.214	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perlylene	< 0.440		mg/kg dry	0.440	0.247	1	"	"	"	"	"	
<u>Surrogate recoveries:</u>													
3386-33-2	1-Chlorooctadecane	75			40-140 %			"	"	"	"	"	
84-15-1	Ortho-Terphenyl	68			40-140 %			"	"	"	"	"	
321-60-8	2-Fluorobiphenyl	58			40-140 %			"	"	"	"	"	
General Chemistry Parameters													
	% Solids	75.0		%			1	SM2540 G Mod.	31-May-1 6	31-May-1 6	DT	1609170	
	Total Organic Carbon	2,420		mg/kg	193	191	1	Lloyd Kahn	07-Jun-16	07-Jun-16	rft	1609591	

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609213 - SW846 3545A										
<u>Blank (1609213-BLK1)</u>										
C9-C18 Aliphatic Hydrocarbons	< 9.74		mg/kg wet	9.74						
C19-C36 Aliphatic Hydrocarbons	< 9.74		mg/kg wet	9.74						
C11-C22 Aromatic Hydrocarbons	< 9.74		mg/kg wet	9.74						
Unadjusted C11-C22 Aromatic Hydrocarbons	< 9.74		mg/kg wet	9.74						
Total Petroleum Hydrocarbons	< 29.2		mg/kg wet	29.2						
Unadjusted Total Petroleum Hydrocarbons	< 29.2		mg/kg wet	29.2						
Naphthalene	< 0.324		mg/kg wet	0.324						
2-Methylnaphthalene	< 0.324		mg/kg wet	0.324						
Acenaphthylene	< 0.324		mg/kg wet	0.324						
Acenaphthene	< 0.324		mg/kg wet	0.324						
Fluorene	< 0.324		mg/kg wet	0.324						
Phenanthrene	< 0.324		mg/kg wet	0.324						
Anthracene	< 0.324		mg/kg wet	0.324						
Fluoranthene	< 0.324		mg/kg wet	0.324						
Pyrene	< 0.324		mg/kg wet	0.324						
Benzo (a) anthracene	< 0.324		mg/kg wet	0.324						
Chrysene	< 0.324		mg/kg wet	0.324						
Benzo (b) fluoranthene	< 0.324		mg/kg wet	0.324						
Benzo (k) fluoranthene	< 0.324		mg/kg wet	0.324						
Benzo (a) pyrene	< 0.324		mg/kg wet	0.324						
Indeno (1,2,3-cd) pyrene	< 0.324		mg/kg wet	0.324						
Dibenzo (a,h) anthracene	< 0.324		mg/kg wet	0.324						
Benzo (g,h,i) perylene	< 0.324		mg/kg wet	0.324						
n-Nonane (C9)	< 0.324		mg/kg wet	0.324						
n-Decane	< 0.324		mg/kg wet	0.324						
n-Dodecane	< 0.324		mg/kg wet	0.324						
n-Tetradecane	< 0.324		mg/kg wet	0.324						
n-Hexadecane	< 0.324		mg/kg wet	0.324						
n-Octadecane	< 0.324		mg/kg wet	0.324						
n-Nonadecane	< 0.324		mg/kg wet	0.324						
n-Eicosane	< 0.324		mg/kg wet	0.324						
n-Docosane	< 0.324		mg/kg wet	0.324						
n-Tetracosane	< 0.324		mg/kg wet	0.324						
n-Hexacosane	< 0.324		mg/kg wet	0.324						
n-Octacosane	< 0.324		mg/kg wet	0.324						
n-Triacontane	< 0.324		mg/kg wet	0.324						
n-Hexatriacontane	< 0.324		mg/kg wet	0.324						
Naphthalene (aliphatic fraction)	0.00		mg/kg wet							
2-Methylnaphthalene (aliphatic fraction)	0.00		mg/kg wet							
Surrogate: 1-Chlorooctadecane	1.78		mg/kg wet		3.25		55	40-140		
Surrogate: Ortho-Terphenyl	2.08		mg/kg wet		3.25		64	40-140		
Surrogate: 2-Fluorobiphenyl	1.64		mg/kg wet		2.60		63	40-140		
<u>LCS (1609213-BS1)</u>										
Prepared: 01-Jun-16 Analyzed: 03-Jun-16										
C9-C18 Aliphatic Hydrocarbons	31.3		mg/kg wet	9.92	39.7		79	40-140		
C19-C36 Aliphatic Hydrocarbons	21.6		mg/kg wet	9.92	52.9		41	40-140		
Unadjusted C11-C22 Aromatic Hydrocarbons	22.7		mg/kg wet	9.92	45.0		50	40-140		
Naphthalene	1.14		mg/kg wet	0.330	2.64		43	40-140		
2-Methylnaphthalene	1.25		mg/kg wet	0.330	2.64		47	40-140		
Acenaphthylene	1.21		mg/kg wet	0.330	2.64		46	40-140		
Acenaphthene	1.30		mg/kg wet	0.330	2.64		49	40-140		

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609213 - SW846 3545A										
<u>LCS (1609213-BS1)</u>										
								<u>Prepared: 01-Jun-16 Analyzed: 03-Jun-16</u>		
Fluorene	1.38		mg/kg wet	0.330	2.64		52	40-140		
Phenanthrene	1.50		mg/kg wet	0.330	2.64		57	40-140		
Anthracene	1.43		mg/kg wet	0.330	2.64		54	40-140		
Fluoranthene	1.56		mg/kg wet	0.330	2.64		59	40-140		
Pyrene	1.55		mg/kg wet	0.330	2.64		59	40-140		
Benzo (a) anthracene	1.32		mg/kg wet	0.330	2.64		50	40-140		
Chrysene	1.67		mg/kg wet	0.330	2.64		63	40-140		
Benzo (b) fluoranthene	1.14		mg/kg wet	0.330	2.64		43	40-140		
Benzo (k) fluoranthene	1.81		mg/kg wet	0.330	2.64		68	40-140		
Benzo (a) pyrene	1.43		mg/kg wet	0.330	2.64		54	40-140		
Indeno (1,2,3-cd) pyrene	1.21		mg/kg wet	0.330	2.64		46	40-140		
Dibenzo (a,h) anthracene	1.11		mg/kg wet	0.330	2.64		42	40-140		
Benzo (g,h,i) perylene	1.29		mg/kg wet	0.330	2.64		49	40-140		
n-Nonane (C9)	2.08		mg/kg wet	0.330	6.61		31	30-140		
n-Decane	3.15		mg/kg wet	0.330	6.61		48	40-140		
n-Dodecane	3.46		mg/kg wet	0.330	6.61		52	40-140		
n-Tetradecane	4.04		mg/kg wet	0.330	6.61		61	40-140		
n-Hexadecane	4.59		mg/kg wet	0.330	6.61		69	40-140		
n-Octadecane	4.88		mg/kg wet	0.330	6.61		74	40-140		
n-Nonadecane	5.03		mg/kg wet	0.330	6.61		76	40-140		
n-Eicosane	5.07		mg/kg wet	0.330	6.61		77	40-140		
n-Docosane	5.26		mg/kg wet	0.330	6.61		80	40-140		
n-Tetracosane	5.31		mg/kg wet	0.330	6.61		80	40-140		
n-Hexacosane	5.37		mg/kg wet	0.330	6.61		81	40-140		
n-Octacosane	5.31		mg/kg wet	0.330	6.61		80	40-140		
n-Triacontane	5.23		mg/kg wet	0.330	6.61		79	40-140		
n-Hexatriacontane	4.59		mg/kg wet	0.330	6.61		69	40-140		
Naphthalene (aliphatic fraction)	0.00		mg/kg wet					0-200		
2-Methylnaphthalene (aliphatic fraction)	0.00		mg/kg wet					0-200		
Surrogate: 1-Chlorooctadecane	1.91		mg/kg wet		3.31		58	40-140		
Surrogate: Ortho-Terphenyl	2.11		mg/kg wet		3.31		64	40-140		
Surrogate: 2-Fluorobiphenyl	1.40		mg/kg wet		2.64		53	40-140		
<u>LCS (1609213-BS2)</u>										
								<u>Prepared: 01-Jun-16 Analyzed: 02-Jun-16</u>		
C9-C18 Aliphatic Hydrocarbons	26.2		mg/kg wet	10.0	40.0		66	40-140		
C19-C36 Aliphatic Hydrocarbons	38.7		mg/kg wet	10.0	53.3		73	40-140		
Unadjusted C11-C22 Aromatic Hydrocarbons	31.2		mg/kg wet	10.0	45.3		69	40-140		
Naphthalene	1.25		mg/kg wet	0.333	2.67		47	40-140		
2-Methylnaphthalene	1.31		mg/kg wet	0.333	2.67		49	40-140		
Acenaphthylene	1.22		mg/kg wet	0.333	2.67		46	40-140		
Acenaphthene	1.30		mg/kg wet	0.333	2.67		49	40-140		
Fluorene	1.36		mg/kg wet	0.333	2.67		51	40-140		
Phenanthrene	1.46		mg/kg wet	0.333	2.67		55	40-140		
Anthracene	1.39		mg/kg wet	0.333	2.67		52	40-140		
Fluoranthene	1.60		mg/kg wet	0.333	2.67		60	40-140		
Pyrene	1.62		mg/kg wet	0.333	2.67		61	40-140		
Benzo (a) anthracene	1.52		mg/kg wet	0.333	2.67		57	40-140		
Chrysene	1.81		mg/kg wet	0.333	2.67		68	40-140		
Benzo (b) fluoranthene	1.27		mg/kg wet	0.333	2.67		48	40-140		
Benzo (k) fluoranthene	1.57		mg/kg wet	0.333	2.67		59	40-140		
Benzo (a) pyrene	1.56		mg/kg wet	0.333	2.67		58	40-140		
Indeno (1,2,3-cd) pyrene	1.25		mg/kg wet	0.333	2.67		47	40-140		

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609213 - SW846 3545A										
<u>LCS (1609213-BS2)</u>										
								<u>Prepared: 01-Jun-16 Analyzed: 02-Jun-16</u>		
Dibenzo (a,h) anthracene	1.12		mg/kg wet	0.333	2.67		42	40-140		
Benzo (g,h,i) perylene	1.34		mg/kg wet	0.333	2.67		50	40-140		
n-Nonane (C9)	2.19		mg/kg wet	0.333	6.67		33	30-140		
n-Decane	2.69		mg/kg wet	0.333	6.67		40	40-140		
n-Dodecane	2.75		mg/kg wet	0.333	6.67		41	40-140		
n-Tetradecane	3.01		mg/kg wet	0.333	6.67		45	40-140		
n-Hexadecane	3.33		mg/kg wet	0.333	6.67		50	40-140		
n-Octadecane	3.52		mg/kg wet	0.333	6.67		53	40-140		
n-Nonadecane	3.62		mg/kg wet	0.333	6.67		54	40-140		
n-Eicosane	3.65		mg/kg wet	0.333	6.67		55	40-140		
n-Docosane	3.78		mg/kg wet	0.333	6.67		57	40-140		
n-Tetracosane	3.82		mg/kg wet	0.333	6.67		57	40-140		
n-Hexacosane	3.82		mg/kg wet	0.333	6.67		57	40-140		
n-Octacosane	3.72		mg/kg wet	0.333	6.67		56	40-140		
n-Triacontane	3.64		mg/kg wet	0.333	6.67		55	40-140		
n-Hexatriacontane	3.19		mg/kg wet	0.333	6.67		48	40-140		
Naphthalene (aliphatic fraction)	0.00		mg/kg wet					0-200		
2-Methylnaphthalene (aliphatic fraction)	0.00		mg/kg wet					0-200		
Surrogate: 1-Chlorooctadecane	1.97		mg/kg wet		3.33		59	40-140		
Surrogate: Ortho-Terphenyl	2.11		mg/kg wet		3.33		63	40-140		
Surrogate: 2-Fluorobiphenyl	1.36		mg/kg wet		2.67		51	40-140		
<u>LCS Dup (1609213-BSD1)</u>										
								<u>Prepared: 01-Jun-16 Analyzed: 03-Jun-16</u>		
C9-C18 Aliphatic Hydrocarbons	25.4		mg/kg wet	9.95	39.8		64	40-140	21	25
C19-C36 Aliphatic Hydrocarbons	24.3		mg/kg wet	9.95	53.1		46	40-140	12	25
Unadjusted C11-C22 Aromatic Hydrocarbons	27.0		mg/kg wet	9.95	45.1		60	40-140	18	25
Naphthalene	1.23		mg/kg wet	0.331	2.65		46	40-140	8	25
2-Methylnaphthalene	1.30		mg/kg wet	0.331	2.65		49	40-140	4	25
Acenaphthylene	1.28		mg/kg wet	0.331	2.65		48	40-140	6	25
Acenaphthene	1.37		mg/kg wet	0.331	2.65		52	40-140	6	25
Fluorene	1.47		mg/kg wet	0.331	2.65		55	40-140	6	25
Phenanthrene	1.55		mg/kg wet	0.331	2.65		59	40-140	3	25
Anthracene	1.52		mg/kg wet	0.331	2.65		57	40-140	6	25
Fluoranthene	1.67		mg/kg wet	0.331	2.65		63	40-140	7	25
Pyrene	1.67		mg/kg wet	0.331	2.65		63	40-140	7	25
Benzo (a) anthracene	1.51		mg/kg wet	0.331	2.65		57	40-140	13	25
Chrysene	1.87		mg/kg wet	0.331	2.65		71	40-140	12	25
Benzo (b) fluoranthene	1.45		mg/kg wet	0.331	2.65		55	40-140	24	25
Benzo (k) fluoranthene	1.91		mg/kg wet	0.331	2.65		72	40-140	5	25
Benzo (a) pyrene	1.57		mg/kg wet	0.331	2.65		59	40-140	9	25
Indeno (1,2,3-cd) pyrene	1.30		mg/kg wet	0.331	2.65		49	40-140	7	25
Dibenzo (a,h) anthracene	1.18		mg/kg wet	0.331	2.65		44	40-140	6	25
Benzo (g,h,i) perylene	1.39		mg/kg wet	0.331	2.65		52	40-140	8	25
n-Nonane (C9)	2.24		mg/kg wet	0.331	6.63		34	30-140	8	25
n-Decane	3.26		mg/kg wet	0.331	6.63		49	40-140	3	25
n-Dodecane	3.67		mg/kg wet	0.331	6.63		55	40-140	6	25
n-Tetradecane	4.24		mg/kg wet	0.331	6.63		64	40-140	5	25
n-Hexadecane	4.83		mg/kg wet	0.331	6.63		73	40-140	5	25
n-Octadecane	5.15		mg/kg wet	0.331	6.63		78	40-140	6	25
n-Nonadecane	5.34		mg/kg wet	0.331	6.63		80	40-140	6	25
n-Eicosane	5.40		mg/kg wet	0.331	6.63		81	40-140	6	25
n-Docosane	5.62		mg/kg wet	0.331	6.63		85	40-140	7	25

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609213 - SW846 3545A										
<u>LCS Dup (1609213-BSD1)</u>										
n-Tetracosane	5.68		mg/kg wet	0.331	6.63	86	40-140	7	25	
n-Hexacosane	5.73		mg/kg wet	0.331	6.63	86	40-140	7	25	
n-Octacosane	5.66		mg/kg wet	0.331	6.63	85	40-140	6	25	
n-Triacontane	5.56		mg/kg wet	0.331	6.63	84	40-140	6	25	
n-Hexatriacontane	4.90		mg/kg wet	0.331	6.63	74	40-140	6	25	
Naphthalene (aliphatic fraction)	0.00		mg/kg wet				0-200		200	
2-Methylnaphthalene (aliphatic fraction)	0.00		mg/kg wet				0-200		200	
Surrogate: 1-Chlorooctadecane	2.09		mg/kg wet		3.32	63	40-140			
Surrogate: Ortho-Terphenyl	2.16		mg/kg wet		3.32	65	40-140			
Surrogate: 2-Fluorobiphenyl	1.48		mg/kg wet		2.65	56	40-140			

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General Chemistry Parameters - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609591 - General Preparation										
<u>Blank (1609591-BLK1)</u>										
Total Organic Carbon	< 100		mg/kg	100						<u>Prepared & Analyzed: 07-Jun-16</u>
<u>LCS (1609591-BS1)</u>										
Total Organic Carbon	961		mg/kg	100	1000		96	75-125		<u>Prepared & Analyzed: 07-Jun-16</u>
<u>Reference (1609591-SRM1)</u>										
Total Organic Carbon	4810		mg/kg	172	5430		89	49-151		<u>Prepared & Analyzed: 07-Jun-16</u>

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S604786				
<u>Calibration Check (S604786-CCV1)</u>				
C9-C18 Aliphatic Hydrocarbons	225670.7	165789.5	4.3	25
C19-C36 Aliphatic Hydrocarbons	1433281	368986	-22.7	25
Unadjusted C11-C22 Aromatic Hydrocarbons	24.03551	19.21223	12.4	20
Naphthalene	7.378404	6.786461	-8.0	20
2-Methylnaphthalene	4.308346	4.720493	9.6	20
Acenaphthylene	7.460001	6.964178	-6.6	20
Acenaphthene	4.845007	4.441176	-8.3	20
Fluorene	5.074137	4.836322	-4.7	20
Phenanthrene	6.753278	6.170566	-8.6	20
Anthracene	7.709496	6.480016	-15.9	20
Fluoranthene	7.305509	6.892328	-5.7	20
Pyrene	7.652392	7.255599	-5.2	20
Benzo (a) anthracene	5.896059	5.778379	-2.0	20
Chrysene	6.7393	6.728171	-0.2	20
Benzo (b) fluoranthene	6.035965	6.645198	10.1	20
Benzo (k) fluoranthene	6.638118	7.214027	8.7	20
Benzo (a) pyrene	5.579656	5.523217	2.1	20
Indeno (1,2,3-cd) pyrene	6.366253	6.124063	-2.5	20
Dibenzo (a,h) anthracene	5.317723	5.178113	-4.9	20
Benzo (g,h,i) perylene	5.394442	5.099714	-4.4	20
n-Nonane (C9)	205747.8	216883	5.4	25
n-Decane	204813.1	212576.8	3.8	25
n-Dodecane	203877.7	203705.2	-0.08	25
n-Tetradecane	201712.1	203142	0.7	25
n-Hexadecane	195278.5	200362.8	2.6	25
n-Octadecane	187431.2	193048.6	3.0	25
n-Nonadecane	181249.4	186552	2.9	25
n-Eicosane	176548	182847.4	3.6	25
n-Docosane	168319.2	177969.3	5.7	25
n-Tetracosane	163462.3	176245.7	7.8	25
n-Hexacosane	158574.7	174811.8	10.2	25
n-Octacosane	158586.1	173091.8	9.1	25
n-Triacontane	158880.7	173351.5	9.1	25
n-Hexatriacontane	159740.7	168033.5	5.2	25
Naphthalene (aliphatic fraction)	247081.9			
2-Methylnaphthalene (aliphatic fraction)	252288.7			

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Notes and Definitions

dry Sample results reported on a dry weight basis

NR Not Reported

RPD Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

Validated by:
Christina White
Rebecca Merz
Thomas Dunn

Laboratory Report

CMG Environmental, Inc.
 67 Hall Road
 Sturbridge, MA 01566
 Attn: Ben Gould

Project: Hammond St - Oxford, MA
 Project #: 2015-120

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SC21910-01	MW-1	Ground Water	26-May-16 11:05	27-May-16 15:40
SC21910-02	MW-2	Ground Water	26-May-16 10:02	27-May-16 15:40
SC21910-03	MW-3	Ground Water	26-May-16 10:20	27-May-16 15:40
SC21910-04	MW-4	Ground Water	26-May-16 10:34	27-May-16 15:40
SC21910-05	MW-5	Ground Water	26-May-16 10:51	27-May-16 15:40
SC21910-06	MW-8	Ground Water	26-May-16 09:49	27-May-16 15:40

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
 Connecticut # PH-0777
 Florida # E87936
 Maine # MA138
 New Hampshire # 2538
 New Jersey # MA011
 New York # 11393
 Pennsylvania # 68-04426/68-02924
 Rhode Island # LAO00098
 USDA # S-51435



Authorized by:

June O'Connor
 Laboratory Director

Eurofins Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 31 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

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Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

The following outlines the condition of all VPH samples contained within this report upon laboratory receipt.

Matrices	Ground Water			
Containers	<input checked="" type="checkbox"/> Satisfactory			
Sample Preservative	Aqueous (acid preserved)	N/A	<input checked="" type="checkbox"/> pH≤2	pH>2
	Soil or Sediment	<input checked="" type="checkbox"/> N/A	Samples not received in Methanol	
		Samples received in Methanol: covering soil/sediment not covering soil/sediment		ml Methanol/g soil 1:1 +/-25% Other
Samples received in air-tight container				
Temperature	Received on ice	<input checked="" type="checkbox"/>	Received at 4 ± 2 °C	

Were all QA/QC procedures followed as required by the VPH method? *Yes*

Were any significant modifications made to the VPH method as specified in section 11.3? *No*

Were all performance/acceptance standards for required QA/QC procedures achieved? *Yes*

The following outlines the condition of all EPH samples contained within this report upon laboratory receipt.

Matrices	Ground Water			
Containers	<input checked="" type="checkbox"/> Satisfactory			
Aqueous Preservative	N/A	<input checked="" type="checkbox"/> pH≤2	pH>2	pH adjusted to <2 in lab
Temperature	Received on ice	<input checked="" type="checkbox"/>	Received at 4 ± 2 °C	

Were all QA/QC procedures followed as required by the EPH method? *Yes*

Were any significant modifications made to the EPH method as specified in Section 11.3? *No*

Were all performance/acceptance standards for required QA/QC procedures achieved? *Yes*

I attest that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Authorized by:

June O'Connor
Laboratory Director

MassDEP Analytical Protocol Certification Form

Laboratory Name: Eurofins Spectrum Analytical, Inc.		Project #: 2015-120			
Project Location: Hammond St - Oxford, MA		RTN:			
This form provides certifications for the following data set:		SC21910-01 through SC21910-06			
Matrices: Ground Water					
CAM Protocol					
8260 VOC CAM II A	7470/7471 Hg CAM III B	<input checked="" type="checkbox"/> MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	<input checked="" type="checkbox"/> MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9012 Total Cyanide/PAC CAM VI A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B
<i>Affirmative responses to questions A through F are required for Presumptive Certainty'status</i>					
A	Were all samples received in a condition consistent with those described on the Chain of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?				<input checked="" type="checkbox"/> Yes No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?				<input checked="" type="checkbox"/> Yes No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?				<input checked="" type="checkbox"/> Yes No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?				<input checked="" type="checkbox"/> Yes No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?				<input checked="" type="checkbox"/> Yes No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to questions A through E)?				<input checked="" type="checkbox"/> Yes No
<i>Responses to questions G, H and I below are required for Presumptive Certainty'status</i>					
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?				Yes <input checked="" type="checkbox"/> No
<i>Data User Note: Data that achieve Presumptive Certainty'status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.</i>					
H	Were all QC performance standards specified in the CAM protocol(s) achieved?				Yes <input checked="" type="checkbox"/> No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?				<input checked="" type="checkbox"/> Yes No
<i>All negative responses are addressed in a case narrative on the cover page of this report.</i>					
<i>I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.</i>					
					
June O'Connor Laboratory Director Date: 6/9/2016					

This laboratory report is not valid without an authorized signature on the cover page.

CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as “<” (less than) the reporting limit in this report.

The samples were received 4.2 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method. Regulatory limits may not be achieved if specific method and/or technique was not requested on the Chain of Custody.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

Sample Acceptance Policy Case Narrative:

Spectrum Analytical Sample Acceptance Policy, in conjunction with NELAC Sample Acceptance Policy (5.5.8.3.2.), require that all samples submitted must have labels attached to each container identifying the sample ID, site location, and/or project number and the collection date written in indelible ink. This is necessary in order to ensure identifiable samples and to maintain sample integrity. Containers in this work order were received without sample labels attached to the sample jars (bottles). Please insure that all sample containers are properly labeled with a unique sample ID, site location, and/or project number and collection date.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

MADEP EPH 5/2004 R

Calibration:

1604020

Analyte quantified by quadratic equation type calibration.

Benzo (a) pyrene
Benzo (g,h,i) perylene
Dibenzo (a,h) anthracene
Indeno (1,2,3-cd) pyrene

MADEP EPH 5/2004 R

Calibration:

1604020

This affected the following samples:

1609394-BLK1
1609394-BS1
1609394-BS2
1609394-BSD1
MW-1
MW-2
MW-3
MW-4
MW-5
MW-8
S603014-ICV2
S604665-CCV2
S604665-CCV4
S604784-CCV1
S604784-CCV2
S604787-CCV2

Laboratory Control Samples:

1609394 BSD

C19-C36 Aliphatic Hydrocarbons RPD 27% (25%) is outside individual acceptance criteria.

MADEP VPH 5/2004 Rev. 1.1

Spikes:

1609536-MS1 *Source: SC21910-01*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

C5-C8 Aliphatic Hydrocarbons
C9-C10 Aromatic Hydrocarbons

Duplicates:

1609536-DUP1 *Source: SC21910-01*

RPD out of acceptance range.

C9-C12 Aliphatic Hydrocarbons

Sample Acceptance Check Form

Client: CMG Environmental, Inc.
Project: Hammond St - Oxford, MA / 2015-120
Work Order: SC21910
Sample(s) received on: 5/27/2016

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples refrigerated upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Summary of Hits

Lab ID: SC21910-01

Client ID: MW-1

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
C9-C10 Aromatic Hydrocarbons	68.4	D	25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1
C9-C12 Aliphatic Hydrocarbons	32.2	D	25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1
Unadjusted C9-C12 Aliphatic Hydrocarbons	101	D	25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1

Lab ID: SC21910-04

Client ID: MW-4

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
C9-C10 Aromatic Hydrocarbons	68.1		25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1
C9-C12 Aliphatic Hydrocarbons	25.8		25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1
Ethylbenzene	5.25		5.00	µg/l	MADEP VPH 5/2004 Rev. 1.1
Naphthalene	5.23		5.00	µg/l	MADEP VPH 5/2004 Rev. 1.1
o-Xylene	13.0		5.00	µg/l	MADEP VPH 5/2004 Rev. 1.1
Unadjusted C9-C12 Aliphatic Hydrocarbons	93.9		25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1

Lab ID: SC21910-05

Client ID: MW-5

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
C9-C18 Aliphatic Hydrocarbons	603		104	µg/l	MADEP EPH 5/2004 R
Benzene	6.86	D	5.00	µg/l	MADEP VPH 5/2004 Rev. 1.1
C5-C8 Aliphatic Hydrocarbons	126	D	75.0	µg/l	MADEP VPH 5/2004 Rev. 1.1
C9-C10 Aromatic Hydrocarbons	297	D	25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1
C9-C12 Aliphatic Hydrocarbons	113	D	25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1
Ethylbenzene	24.3	D	5.00	µg/l	MADEP VPH 5/2004 Rev. 1.1
m,p-Xylene	58.9	D	10.0	µg/l	MADEP VPH 5/2004 Rev. 1.1
Naphthalene	15.3	D	5.00	µg/l	MADEP VPH 5/2004 Rev. 1.1
o-Xylene	57.2	D	5.00	µg/l	MADEP VPH 5/2004 Rev. 1.1
Unadjusted C5-C8 Aliphatic Hydrocarbons	274	D	75.0	µg/l	MADEP VPH 5/2004 Rev. 1.1
Unadjusted C9-C12 Aliphatic Hydrocarbons	411	D	25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1

Lab ID: SC21910-06

Client ID: MW-8

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
C9-C10 Aromatic Hydrocarbons	32.5	D	25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1
Unadjusted C9-C12 Aliphatic Hydrocarbons	50.9	D	25.0	µg/l	MADEP VPH 5/2004 Rev. 1.1

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification

MW-1

SC21910-01

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

26-May-16 11:05

Received

27-May-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.			
Volatile Organic Compounds																
MADEP VPH																
Prepared by method VPH - EPA 5030C Water																
	C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	12.7	5	MADEP VPH 5/2004 Rev. 1.1	07-Jun-16	07-Jun-16	MP	1609536				
	C9-C12 Aliphatic Hydrocarbons	32.2	D	µg/l	25.0	3.84	5	"	"	"	"	"	"			
	C9-C10 Aromatic Hydrocarbons	68.4	D	µg/l	25.0	1.41	5	"	"	"	"	"	"			
	Unadjusted C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	15.2	5	"	"	"	"	"	"			
	Unadjusted C9-C12 Aliphatic Hydrocarbons	101	D	µg/l	25.0	4.48	5	"	"	"	"	"	"			
71-43-2	Benzene	< 5.00	D	µg/l	5.00	1.92	5	"	"	"	"	"	"			
100-41-4	Ethylbenzene	< 5.00	D	µg/l	5.00	1.74	5	"	"	"	"	"	"			
1634-04-4	Methyl tert-butyl ether	< 5.00	D	µg/l	5.00	2.29	5	"	"	"	"	"	"			
91-20-3	Naphthalene	< 5.00	D	µg/l	5.00	3.06	5	"	"	"	"	"	"			
108-88-3	Toluene	< 5.00	D	µg/l	5.00	1.54	5	"	"	"	"	"	"			
179601-23-1	m,p-Xylene	< 10.0	D	µg/l	10.0	3.40	5	"	"	"	"	"	"			
95-47-6	o-Xylene	< 5.00	D	µg/l	5.00	1.64	5	"	"	"	"	"	"			
Surrogate recoveries:																
615-59-8	2,5-Dibromotoluene (FID)	96			70-130 %			"	"	"	"	"	"			
615-59-8	2,5-Dibromotoluene (PID)	90			70-130 %			"	"	"	"	"	"			
Extractable Petroleum Hydrocarbons																
MADEP EPH																
Prepared by method SW846 3510C																
	C9-C18 Aliphatic Hydrocarbons	< 103		µg/l	103	28.2	1	MADEP EPH 5/2004 R	03-Jun-16	09-Jun-16	NAA	1609394				
	C19-C36 Aliphatic Hydrocarbons	< 103		µg/l	103	24.4	1	"	"	"	"	"	"			
	C11-C22 Aromatic Hydrocarbons	< 103		µg/l	103	35.1	1	"	"	"	"	"	"			
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 103		µg/l	103	35.1	1	"	"	"	"	"	"			
91-20-3	Naphthalene	< 5.15		µg/l	5.15	1.41	1	"	"	"	"	"	"			
91-57-6	2-Methylnaphthalene	< 5.15		µg/l	5.15	1.46	1	"	"	"	"	"	"			
208-96-8	Acenaphthylene	< 5.15		µg/l	5.15	1.54	1	"	"	"	"	"	"			
83-32-9	Acenaphthene	< 5.15		µg/l	5.15	1.44	1	"	"	"	"	"	"			
86-73-7	Fluorene	< 5.15		µg/l	5.15	1.51	1	"	"	"	"	"	"			
85-01-8	Phenanthrene	< 5.15		µg/l	5.15	1.39	1	"	"	"	"	"	"			
120-12-7	Anthracene	< 5.15		µg/l	5.15	2.34	1	"	"	"	"	"	"			
206-44-0	Fluoranthene	< 5.15		µg/l	5.15	2.06	1	"	"	"	"	"	"			
129-00-0	Pyrene	< 5.15		µg/l	5.15	1.62	1	"	"	"	"	"	"			
56-55-3	Benzo (a) anthracene	< 5.15		µg/l	5.15	2.22	1	"	"	"	"	"	"			
218-01-9	Chrysene	< 5.15		µg/l	5.15	1.60	1	"	"	"	"	"	"			
205-99-2	Benzo (b) fluoranthene	< 5.15		µg/l	5.15	2.31	1	"	"	"	"	"	"			
207-08-9	Benzo (k) fluoranthene	< 5.15		µg/l	5.15	1.85	1	"	"	"	"	"	"			
50-32-8	Benzo (a) pyrene	< 5.15		µg/l	5.15	2.13	1	"	"	"	"	"	"			
193-39-5	Indeno (1,2,3-cd) pyrene	< 5.15		µg/l	5.15	1.48	1	"	"	"	"	"	"			
53-70-3	Dibenzo (a,h) anthracene	< 5.15		µg/l	5.15	1.74	1	"	"	"	"	"	"			
191-24-2	Benzo (g,h,i) perlylene	< 5.15		µg/l	5.15	1.26	1	"	"	"	"	"	"			

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Sample Identification**MW-1**

SC21910-01

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

26-May-16 11:05

Received

27-May-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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Extractable Petroleum HydrocarbonsMADEP EPHPrepared by method SW846 3510C*Surrogate recoveries:*

3386-33-2	1-Chlorooctadecane	67			40-140 %			MADEP EPH 5/2004 R	03-Jun-16	09-Jun-16	NAA	1609394
84-15-1	Ortho-Terphenyl	60			40-140 %			"	"	"	"	"
321-60-8	2-Fluorobiphenyl	70			40-140 %			"	"	"	"	"

Sample Identification

MW-2

SC21910-02

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

26-May-16 10:02

Received

27-May-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.			
Volatile Organic Compounds																
MADEP VPH																
Prepared by method VPH - EPA 5030C Water																
	C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	12.7	5	MADEP VPH 5/2004 Rev. 1.1	07-Jun-16	07-Jun-16	MP	1609536				
	C9-C12 Aliphatic Hydrocarbons	< 25.0	D	µg/l	25.0	3.84	5	"	"	"	"	"				
	C9-C10 Aromatic Hydrocarbons	< 25.0	D	µg/l	25.0	1.41	5	"	"	"	"	"				
	Unadjusted C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	15.2	5	"	"	"	"	"				
	Unadjusted C9-C12 Aliphatic Hydrocarbons	< 25.0	D	µg/l	25.0	4.48	5	"	"	"	"	"				
71-43-2	Benzene	< 5.00	D	µg/l	5.00	1.92	5	"	"	"	"	"				
100-41-4	Ethylbenzene	< 5.00	D	µg/l	5.00	1.74	5	"	"	"	"	"				
1634-04-4	Methyl tert-butyl ether	< 5.00	D	µg/l	5.00	2.29	5	"	"	"	"	"				
91-20-3	Naphthalene	< 5.00	D	µg/l	5.00	3.06	5	"	"	"	"	"				
108-88-3	Toluene	< 5.00	D	µg/l	5.00	1.54	5	"	"	"	"	"				
179601-23-1	m,p-Xylene	< 10.0	D	µg/l	10.0	3.40	5	"	"	"	"	"				
95-47-6	o-Xylene	< 5.00	D	µg/l	5.00	1.64	5	"	"	"	"	"				
Surrogate recoveries:																
615-59-8	2,5-Dibromotoluene (FID)	90			70-130 %			"	"	"	"	"				
615-59-8	2,5-Dibromotoluene (PID)	84			70-130 %			"	"	"	"	"				
Extractable Petroleum Hydrocarbons																
MADEP EPH																
Prepared by method SW846 3510C																
	C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100	27.3	1	MADEP EPH 5/2004 R	03-Jun-16	09-Jun-16	NAA	1609394				
	C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100	23.7	1	"	"	"	"	"				
	C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"				
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100	34.1	1	"	"	"	"	"				
91-20-3	Naphthalene	< 5.00		µg/l	5.00	1.37	1	"	"	"	"	"				
91-57-6	2-Methylnaphthalene	< 5.00		µg/l	5.00	1.42	1	"	"	"	"	"				
208-96-8	Acenaphthylene	< 5.00		µg/l	5.00	1.49	1	"	"	"	"	"				
83-32-9	Acenaphthene	< 5.00		µg/l	5.00	1.40	1	"	"	"	"	"				
86-73-7	Fluorene	< 5.00		µg/l	5.00	1.46	1	"	"	"	"	"				
85-01-8	Phenanthrene	< 5.00		µg/l	5.00	1.35	1	"	"	"	"	"				
120-12-7	Anthracene	< 5.00		µg/l	5.00	2.27	1	"	"	"	"	"				
206-44-0	Fluoranthene	< 5.00		µg/l	5.00	2.00	1	"	"	"	"	"				
129-00-0	Pyrene	< 5.00		µg/l	5.00	1.57	1	"	"	"	"	"				
56-55-3	Benzo (a) anthracene	< 5.00		µg/l	5.00	2.15	1	"	"	"	"	"				
218-01-9	Chrysene	< 5.00		µg/l	5.00	1.55	1	"	"	"	"	"				
205-99-2	Benzo (b) fluoranthene	< 5.00		µg/l	5.00	2.24	1	"	"	"	"	"				
207-08-9	Benzo (k) fluoranthene	< 5.00		µg/l	5.00	1.79	1	"	"	"	"	"				
50-32-8	Benzo (a) pyrene	< 5.00		µg/l	5.00	2.07	1	"	"	"	"	"				
193-39-5	Indeno (1,2,3-cd) pyrene	< 5.00		µg/l	5.00	1.44	1	"	"	"	"	"				
53-70-3	Dibenzo (a,h) anthracene	< 5.00		µg/l	5.00	1.69	1	"	"	"	"	"				
191-24-2	Benzo (g,h,i) perlylene	< 5.00		µg/l	5.00	1.22	1	"	"	"	"	"				

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Sample Identification**MW-2**

SC21910-02

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

26-May-16 10:02

Received

27-May-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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Extractable Petroleum HydrocarbonsMADEP EPHPrepared by method SW846 3510C*Surrogate recoveries:*

3386-33-2	1-Chlorooctadecane	73			40-140 %			MADEP EPH 5/2004 R	03-Jun-16	09-Jun-16	NAA	1609394
84-15-1	Ortho-Terphenyl	66			40-140 %			"	"	"	"	"
321-60-8	2-Fluorobiphenyl	67			40-140 %			"	"	"	"	"

Sample Identification

MW-3

SC21910-03

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

26-May-16 10:20

Received

27-May-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.		
Volatile Organic Compounds															
<u>MADEP VPH</u>															
<u>Prepared by method VPH - EPA 5030C Water</u>															
	C5-C8 Aliphatic Hydrocarbons	< 75.0		µg/l	75.0	12.7	1	MADEP VPH 5/2004 Rev. 1.1	07-Jun-16	07-Jun-16	MP	1609536			
	C9-C12 Aliphatic Hydrocarbons	< 25.0		µg/l	25.0	3.84	1	"	"	"	"	"	"		
	C9-C10 Aromatic Hydrocarbons	< 25.0		µg/l	25.0	1.41	1	"	"	"	"	"	"		
	Unadjusted C5-C8 Aliphatic Hydrocarbons	< 75.0		µg/l	75.0	15.2	1	"	"	"	"	"	"		
	Unadjusted C9-C12 Aliphatic Hydrocarbons	< 25.0		µg/l	25.0	4.48	1	"	"	"	"	"	"		
71-43-2	Benzene	< 5.00		µg/l	5.00	1.92	1	"	"	"	"	"	"		
100-41-4	Ethylbenzene	< 5.00		µg/l	5.00	1.74	1	"	"	"	"	"	"		
1634-04-4	Methyl tert-butyl ether	< 5.00		µg/l	5.00	2.29	1	"	"	"	"	"	"		
91-20-3	Naphthalene	< 5.00		µg/l	5.00	3.06	1	"	"	"	"	"	"		
108-88-3	Toluene	< 5.00		µg/l	5.00	1.54	1	"	"	"	"	"	"		
179601-23-1	m,p-Xylene	< 10.0		µg/l	10.0	3.40	1	"	"	"	"	"	"		
95-47-6	o-Xylene	< 5.00		µg/l	5.00	1.64	1	"	"	"	"	"	"		
<u>Surrogate recoveries:</u>															
615-59-8	2,5-Dibromotoluene (FID)	91			70-130 %			"	"	"	"	"	"		
615-59-8	2,5-Dibromotoluene (PID)	84			70-130 %			"	"	"	"	"	"		
<u>Extractable Petroleum Hydrocarbons</u>															
<u>MADEP EPH</u>															
<u>Prepared by method SW846 3510C</u>															
	C9-C18 Aliphatic Hydrocarbons	< 103		µg/l	103	28.2	1	MADEP EPH 5/2004 R	03-Jun-16	09-Jun-16	NAA	1609394			
	C19-C36 Aliphatic Hydrocarbons	< 103		µg/l	103	24.4	1	"	"	"	"	"	"		
	C11-C22 Aromatic Hydrocarbons	< 103		µg/l	103	35.1	1	"	"	"	"	"	"		
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 103		µg/l	103	35.1	1	"	"	"	"	"	"		
91-20-3	Naphthalene	< 5.15		µg/l	5.15	1.41	1	"	"	"	"	"	"		
91-57-6	2-Methylnaphthalene	< 5.15		µg/l	5.15	1.46	1	"	"	"	"	"	"		
208-96-8	Acenaphthylene	< 5.15		µg/l	5.15	1.54	1	"	"	"	"	"	"		
83-32-9	Acenaphthene	< 5.15		µg/l	5.15	1.44	1	"	"	"	"	"	"		
86-73-7	Fluorene	< 5.15		µg/l	5.15	1.51	1	"	"	"	"	"	"		
85-01-8	Phenanthrene	< 5.15		µg/l	5.15	1.39	1	"	"	"	"	"	"		
120-12-7	Anthracene	< 5.15		µg/l	5.15	2.34	1	"	"	"	"	"	"		
206-44-0	Fluoranthene	< 5.15		µg/l	5.15	2.06	1	"	"	"	"	"	"		
129-00-0	Pyrene	< 5.15		µg/l	5.15	1.62	1	"	"	"	"	"	"		
56-55-3	Benzo (a) anthracene	< 5.15		µg/l	5.15	2.22	1	"	"	"	"	"	"		
218-01-9	Chrysene	< 5.15		µg/l	5.15	1.60	1	"	"	"	"	"	"		
205-99-2	Benzo (b) fluoranthene	< 5.15		µg/l	5.15	2.31	1	"	"	"	"	"	"		
207-08-9	Benzo (k) fluoranthene	< 5.15		µg/l	5.15	1.85	1	"	"	"	"	"	"		
50-32-8	Benzo (a) pyrene	< 5.15		µg/l	5.15	2.13	1	"	"	"	"	"	"		
193-39-5	Indeno (1,2,3-cd) pyrene	< 5.15		µg/l	5.15	1.48	1	"	"	"	"	"	"		
53-70-3	Dibenzo (a,h) anthracene	< 5.15		µg/l	5.15	1.74	1	"	"	"	"	"	"		
191-24-2	Benzo (g,h,i) perlylene	< 5.15		µg/l	5.15	1.26	1	"	"	"	"	"	"		

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Sample Identification**MW-3**

SC21910-03

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

26-May-16 10:20

Received

27-May-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
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Extractable Petroleum HydrocarbonsMADEP EPHPrepared by method SW846 3510C*Surrogate recoveries:*

3386-33-2	1-Chlorooctadecane	82			40-140 %			MADEP EPH 5/2004 R	03-Jun-16	09-Jun-16	NAA	1609394
84-15-1	Ortho-Terphenyl	68			40-140 %			"	"	"	"	"
321-60-8	2-Fluorobiphenyl	69			40-140 %			"	"	"	"	"

Sample Identification

MW-4

SC21910-04

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

26-May-16 10:34

Received

27-May-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.			
Volatile Organic Compounds																
<u>MADEP VPH</u>																
<u>Prepared by method VPH - EPA 5030C Water</u>																
	C5-C8 Aliphatic Hydrocarbons	< 75.0		µg/l	75.0	12.7	1	MADEP VPH 5/2004 Rev. 1.1	07-Jun-16	07-Jun-16	MP	1609536				
	C9-C12 Aliphatic Hydrocarbons	25.8		µg/l	25.0	3.84	1	"	"	"	"	"	"			
	C9-C10 Aromatic Hydrocarbons	68.1		µg/l	25.0	1.41	1	"	"	"	"	"	"			
	Unadjusted C5-C8 Aliphatic Hydrocarbons	< 75.0		µg/l	75.0	15.2	1	"	"	"	"	"	"			
	Unadjusted C9-C12 Aliphatic Hydrocarbons	93.9		µg/l	25.0	4.48	1	"	"	"	"	"	"			
71-43-2	Benzene	< 5.00		µg/l	5.00	1.92	1	"	"	"	"	"	"			
100-41-4	Ethylbenzene	5.25		µg/l	5.00	1.74	1	"	"	"	"	"	"			
1634-04-4	Methyl tert-butyl ether	< 5.00		µg/l	5.00	2.29	1	"	"	"	"	"	"			
91-20-3	Naphthalene	5.23		µg/l	5.00	3.06	1	"	"	"	"	"	"			
108-88-3	Toluene	< 5.00		µg/l	5.00	1.54	1	"	"	"	"	"	"			
179601-23-1	m,p-Xylene	< 10.0		µg/l	10.0	3.40	1	"	"	"	"	"	"			
95-47-6	o-Xylene	13.0		µg/l	5.00	1.64	1	"	"	"	"	"	"			
<u>Surrogate recoveries:</u>																
615-59-8	2,5-Dibromotoluene (FID)	99			70-130 %			"	"	"	"	"	"			
615-59-8	2,5-Dibromotoluene (PID)	90			70-130 %			"	"	"	"	"	"			
<u>Extractable Petroleum Hydrocarbons</u>																
<u>MADEP EPH</u>																
<u>Prepared by method SW846 3510C</u>																
	C9-C18 Aliphatic Hydrocarbons	< 104		µg/l	104	28.5	1	MADEP EPH 5/2004 R	03-Jun-16	09-Jun-16	NAA	1609394				
	C19-C36 Aliphatic Hydrocarbons	< 104		µg/l	104	24.6	1	"	"	"	"	"	"			
	C11-C22 Aromatic Hydrocarbons	< 104		µg/l	104	35.5	1	"	"	"	"	"	"			
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 104		µg/l	104	35.5	1	"	"	"	"	"	"			
91-20-3	Naphthalene	< 5.21		µg/l	5.21	1.43	1	"	"	"	"	"	"			
91-57-6	2-Methylnaphthalene	< 5.21		µg/l	5.21	1.48	1	"	"	"	"	"	"			
208-96-8	Acenaphthylene	< 5.21		µg/l	5.21	1.55	1	"	"	"	"	"	"			
83-32-9	Acenaphthene	< 5.21		µg/l	5.21	1.46	1	"	"	"	"	"	"			
86-73-7	Fluorene	< 5.21		µg/l	5.21	1.52	1	"	"	"	"	"	"			
85-01-8	Phenanthrene	< 5.21		µg/l	5.21	1.41	1	"	"	"	"	"	"			
120-12-7	Anthracene	< 5.21		µg/l	5.21	2.36	1	"	"	"	"	"	"			
206-44-0	Fluoranthene	< 5.21		µg/l	5.21	2.08	1	"	"	"	"	"	"			
129-00-0	Pyrene	< 5.21		µg/l	5.21	1.64	1	"	"	"	"	"	"			
56-55-3	Benzo (a) anthracene	< 5.21		µg/l	5.21	2.24	1	"	"	"	"	"	"			
218-01-9	Chrysene	< 5.21		µg/l	5.21	1.61	1	"	"	"	"	"	"			
205-99-2	Benzo (b) fluoranthene	< 5.21		µg/l	5.21	2.33	1	"	"	"	"	"	"			
207-08-9	Benzo (k) fluoranthene	< 5.21		µg/l	5.21	1.86	1	"	"	"	"	"	"			
50-32-8	Benzo (a) pyrene	< 5.21		µg/l	5.21	2.16	1	"	"	"	"	"	"			
193-39-5	Indeno (1,2,3-cd) pyrene	< 5.21		µg/l	5.21	1.50	1	"	"	"	"	"	"			
53-70-3	Dibenzo (a,h) anthracene	< 5.21		µg/l	5.21	1.76	1	"	"	"	"	"	"			
191-24-2	Benzo (g,h,i) perlylene	< 5.21		µg/l	5.21	1.27	1	"	"	"	"	"	"			

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Sample Identification**MW-4**

SC21910-04

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

26-May-16 10:34

Received

27-May-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
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Extractable Petroleum HydrocarbonsMADEP EPHPrepared by method SW846 3510C*Surrogate recoveries:*

3386-33-2	1-Chlorooctadecane	41			40-140 %			MADEP EPH 5/2004 R	03-Jun-16	09-Jun-16	NAA	1609394
84-15-1	Ortho-Terphenyl	53			40-140 %			"	"	"	"	"
321-60-8	2-Fluorobiphenyl	68			40-140 %			"	"	"	"	"

Sample Identification

MW-5

SC21910-05

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

26-May-16 10:51

Received

27-May-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	* <u>RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>		
Volatile Organic Compounds															
<u>MADEP VPH</u>															
<u>Prepared by method VPH - EPA 5030C Water</u>															
	C5-C8 Aliphatic Hydrocarbons	126	D	µg/l	75.0	12.7	5	MADEP VPH 5/2004 Rev. 1.1	07-Jun-16	07-Jun-16	MP	1609536			
	C9-C12 Aliphatic Hydrocarbons	113	D	µg/l	25.0	3.84	5	"	"	"	"	"			
	C9-C10 Aromatic Hydrocarbons	297	D	µg/l	25.0	1.41	5	"	"	"	"	"			
	Unadjusted C5-C8 Aliphatic Hydrocarbons	274	D	µg/l	75.0	15.2	5	"	"	"	"	"			
	Unadjusted C9-C12 Aliphatic Hydrocarbons	411	D	µg/l	25.0	4.48	5	"	"	"	"	"			
71-43-2	Benzene	6.86	D	µg/l	5.00	1.92	5	"	"	"	"	"			
100-41-4	Ethylbenzene	24.3	D	µg/l	5.00	1.74	5	"	"	"	"	"			
1634-04-4	Methyl tert-butyl ether	< 5.00	D	µg/l	5.00	2.29	5	"	"	"	"	"			
91-20-3	Naphthalene	15.3	D	µg/l	5.00	3.06	5	"	"	"	"	"			
108-88-3	Toluene	< 5.00	D	µg/l	5.00	1.54	5	"	"	"	"	"			
179601-23-1	m,p-Xylene	58.9	D	µg/l	10.0	3.40	5	"	"	"	"	"			
95-47-6	o-Xylene	57.2	D	µg/l	5.00	1.64	5	"	"	"	"	"			
<u>Surrogate recoveries:</u>															
615-59-8	2,5-Dibromotoluene (FID)	85			70-130 %			"	"	"	"	"			
615-59-8	2,5-Dibromotoluene (PID)	80			70-130 %			"	"	"	"	"			
<u>Extractable Petroleum Hydrocarbons</u>															
<u>MADEP EPH</u>															
<u>Prepared by method SW846 3510C</u>															
	C9-C18 Aliphatic Hydrocarbons	603		µg/l	104	28.5	1	MADEP EPH 5/2004 R	03-Jun-16	09-Jun-16	NAA	1609394			
	C19-C36 Aliphatic Hydrocarbons	< 104		µg/l	104	24.6	1	"	"	"	"	"			
	C11-C22 Aromatic Hydrocarbons	< 104		µg/l	104	35.5	1	"	"	"	"	"			
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 104		µg/l	104	35.5	1	"	"	"	"	"			
91-20-3	Naphthalene	< 5.21		µg/l	5.21	1.43	1	"	"	"	"	"			
91-57-6	2-Methylnaphthalene	< 5.21		µg/l	5.21	1.48	1	"	"	"	"	"			
208-96-8	Acenaphthylene	< 5.21		µg/l	5.21	1.55	1	"	"	"	"	"			
83-32-9	Acenaphthene	< 5.21		µg/l	5.21	1.46	1	"	"	"	"	"			
86-73-7	Fluorene	< 5.21		µg/l	5.21	1.52	1	"	"	"	"	"			
85-01-8	Phenanthrene	< 5.21		µg/l	5.21	1.41	1	"	"	"	"	"			
120-12-7	Anthracene	< 5.21		µg/l	5.21	2.36	1	"	"	"	"	"			
206-44-0	Fluoranthene	< 5.21		µg/l	5.21	2.08	1	"	"	"	"	"			
129-00-0	Pyrene	< 5.21		µg/l	5.21	1.64	1	"	"	"	"	"			
56-55-3	Benzo (a) anthracene	< 5.21		µg/l	5.21	2.24	1	"	"	"	"	"			
218-01-9	Chrysene	< 5.21		µg/l	5.21	1.61	1	"	"	"	"	"			
205-99-2	Benzo (b) fluoranthene	< 5.21		µg/l	5.21	2.33	1	"	"	"	"	"			
207-08-9	Benzo (k) fluoranthene	< 5.21		µg/l	5.21	1.86	1	"	"	"	"	"			
50-32-8	Benzo (a) pyrene	< 5.21		µg/l	5.21	2.16	1	"	"	"	"	"			
193-39-5	Indeno (1,2,3-cd) pyrene	< 5.21		µg/l	5.21	1.50	1	"	"	"	"	"			
53-70-3	Dibenzo (a,h) anthracene	< 5.21		µg/l	5.21	1.76	1	"	"	"	"	"			
191-24-2	Benzo (g,h,i) perlylene	< 5.21		µg/l	5.21	1.27	1	"	"	"	"	"			

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Sample Identification**MW-5**

SC21910-05

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

26-May-16 10:51

Received

27-May-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
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Extractable Petroleum HydrocarbonsMADEP EPHPrepared by method SW846 3510C*Surrogate recoveries:*

3386-33-2	1-Chlorooctadecane	40		40-140 %		MADEP EPH 5/2004 R	03-Jun-16	09-Jun-16	NAA	1609394			
84-15-1	Ortho-Terphenyl	62		40-140 %		"	"	"	"	"	"		
321-60-8	2-Fluorobiphenyl	68		40-140 %		"	"	"	"	"	"		

Sample Identification

MW-8

SC21910-06

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

26-May-16 09:49

Received

27-May-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.			
Volatile Organic Compounds																
MADEP VPH																
Prepared by method VPH - EPA 5030C Water																
	C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	12.7	5	MADEP VPH 5/2004 Rev. 1.1	07-Jun-16	07-Jun-16	MP	1609536				
	C9-C12 Aliphatic Hydrocarbons	< 25.0	D	µg/l	25.0	3.84	5	"	"	"	"	"				
	C9-C10 Aromatic Hydrocarbons	32.5	D	µg/l	25.0	1.41	5	"	"	"	"	"				
	Unadjusted C5-C8 Aliphatic Hydrocarbons	< 75.0	D	µg/l	75.0	15.2	5	"	"	"	"	"				
	Unadjusted C9-C12 Aliphatic Hydrocarbons	50.9	D	µg/l	25.0	4.48	5	"	"	"	"	"				
71-43-2	Benzene	< 5.00	D	µg/l	5.00	1.92	5	"	"	"	"	"				
100-41-4	Ethylbenzene	< 5.00	D	µg/l	5.00	1.74	5	"	"	"	"	"				
1634-04-4	Methyl tert-butyl ether	< 5.00	D	µg/l	5.00	2.29	5	"	"	"	"	"				
91-20-3	Naphthalene	< 5.00	D	µg/l	5.00	3.06	5	"	"	"	"	"				
108-88-3	Toluene	< 5.00	D	µg/l	5.00	1.54	5	"	"	"	"	"				
179601-23-1	m,p-Xylene	< 10.0	D	µg/l	10.0	3.40	5	"	"	"	"	"				
95-47-6	o-Xylene	< 5.00	D	µg/l	5.00	1.64	5	"	"	"	"	"				
Surrogate recoveries:																
615-59-8	2,5-Dibromotoluene (FID)	91			70-130 %			"	"	"	"	"				
615-59-8	2,5-Dibromotoluene (PID)	84			70-130 %			"	"	"	"	"				
Extractable Petroleum Hydrocarbons																
MADEP EPH																
Prepared by method SW846 3510C																
	C9-C18 Aliphatic Hydrocarbons	< 111		µg/l	111	30.4	1	MADEP EPH 5/2004 R	03-Jun-16	09-Jun-16	NAA	1609394				
	C19-C36 Aliphatic Hydrocarbons	< 111		µg/l	111	26.3	1	"	"	"	"	"				
	C11-C22 Aromatic Hydrocarbons	< 111		µg/l	111	37.9	1	"	"	"	"	"				
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 111		µg/l	111	37.9	1	"	"	"	"	"				
91-20-3	Naphthalene	< 5.56		µg/l	5.56	1.52	1	"	"	"	"	"				
91-57-6	2-Methylnaphthalene	< 5.56		µg/l	5.56	1.58	1	"	"	"	"	"				
208-96-8	Acenaphthylene	< 5.56		µg/l	5.56	1.66	1	"	"	"	"	"				
83-32-9	Acenaphthene	< 5.56		µg/l	5.56	1.56	1	"	"	"	"	"				
86-73-7	Fluorene	< 5.56		µg/l	5.56	1.62	1	"	"	"	"	"				
85-01-8	Phenanthrene	< 5.56		µg/l	5.56	1.50	1	"	"	"	"	"				
120-12-7	Anthracene	< 5.56		µg/l	5.56	2.52	1	"	"	"	"	"				
206-44-0	Fluoranthene	< 5.56		µg/l	5.56	2.22	1	"	"	"	"	"				
129-00-0	Pyrene	< 5.56		µg/l	5.56	1.74	1	"	"	"	"	"				
56-55-3	Benzo (a) anthracene	< 5.56		µg/l	5.56	2.39	1	"	"	"	"	"				
218-01-9	Chrysene	< 5.56		µg/l	5.56	1.72	1	"	"	"	"	"				
205-99-2	Benzo (b) fluoranthene	< 5.56		µg/l	5.56	2.49	1	"	"	"	"	"				
207-08-9	Benzo (k) fluoranthene	< 5.56		µg/l	5.56	1.99	1	"	"	"	"	"				
50-32-8	Benzo (a) pyrene	< 5.56		µg/l	5.56	2.30	1	"	"	"	"	"				
193-39-5	Indeno (1,2,3-cd) pyrene	< 5.56		µg/l	5.56	1.60	1	"	"	"	"	"				
53-70-3	Dibenzo (a,h) anthracene	< 5.56		µg/l	5.56	1.88	1	"	"	"	"	"				
191-24-2	Benzo (g,h,i) perlylene	< 5.56		µg/l	5.56	1.36	1	"	"	"	"	"				

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Sample Identification**MW-8**

SC21910-06

Client Project #

2015-120

Matrix

Ground Water

Collection Date/Time

26-May-16 09:49

Received

27-May-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
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Extractable Petroleum HydrocarbonsMADEP EPHPrepared by method SW846 3510C*Surrogate recoveries:*

3386-33-2	1-Chlorooctadecane	42			40-140 %			MADEP EPH 5/2004 R	03-Jun-16	09-Jun-16	NAA	1609394
84-15-1	Ortho-Terphenyl	61			40-140 %			"	"	"	"	"
321-60-8	2-Fluorobiphenyl	51			40-140 %			"	"	"	"	"

Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609536 - VPH - EPA 5030C Water										
<u>Blank (1609536-BLK1)</u>										
C9-C12 Aliphatic Hydrocarbons	< 25.0		µg/l	25.0						
C5-C8 Aliphatic Hydrocarbons	< 75.0		µg/l	75.0						
C9-C10 Aromatic Hydrocarbons	< 25.0		µg/l	25.0						
Unadjusted C5-C8 Aliphatic Hydrocarbons	< 75.0		µg/l	75.0						
Unadjusted C9-C12 Aliphatic Hydrocarbons	< 25.0		µg/l	25.0						
Benzene	< 5.00		µg/l	5.00						
Ethylbenzene	< 5.00		µg/l	5.00						
Methyl tert-butyl ether	< 5.00		µg/l	5.00						
Naphthalene	< 5.00		µg/l	5.00						
Toluene	< 5.00		µg/l	5.00						
m,p-Xylene	< 10.0		µg/l	10.0						
o-Xylene	< 5.00		µg/l	5.00						
2-Methylpentane	< 5.00		µg/l	5.00						
n-Nonane	< 10.0		µg/l	10.0						
n-Pentane	< 10.0		µg/l	10.0						
1,2,4-Trimethylbenzene	< 5.00		µg/l	5.00						
2,2,4-Trimethylpentane	< 5.00		µg/l	5.00						
n-Butylcyclohexane	< 5.00		µg/l	5.00						
n-Decane	< 5.00		µg/l	5.00						
<i>Surrogate: 2,5-Dibromotoluene (FID)</i>	48.2		µg/l	50.0		96		70-130		
<i>Surrogate: 2,5-Dibromotoluene (PID)</i>	44.9		µg/l	50.0		90		70-130		
<u>LCS (1609536-BS1)</u>										
<u>Prepared & Analyzed: 07-Jun-16</u>										
C5-C8 Aliphatic Hydrocarbons	73.3		µg/l	60.0		122		70-130		
C9-C12 Aliphatic Hydrocarbons	64.0		µg/l	60.0		107		70-130		
C9-C10 Aromatic Hydrocarbons	18.4		µg/l	20.0		92		70-130		
Unadjusted C5-C8 Aliphatic Hydrocarbons	209		µg/l	200		105		70-130		
Unadjusted C9-C12 Aliphatic Hydrocarbons	82.5		µg/l	80.0		103		70-130		
Benzene	20.0		µg/l	20.0		100		70-130		
Ethylbenzene	18.8		µg/l	20.0		94		70-130		
Methyl tert-butyl ether	21.7		µg/l	20.0		109		70-130		
Naphthalene	18.2		µg/l	20.0		91		70-130		
Toluene	20.1		µg/l	20.0		101		70-130		
m,p-Xylene	37.0		µg/l	40.0		92		70-130		
o-Xylene	18.2		µg/l	20.0		91		70-130		
2-Methylpentane	19.5		µg/l	20.0		98		70-130		
n-Nonane	19.7		µg/l	20.0		99		70-130		
n-Pentane	20.2		µg/l	20.0		101		70-130		
1,2,4-Trimethylbenzene	18.9		µg/l	20.0		95		70-130		
2,2,4-Trimethylpentane	18.9		µg/l	20.0		95		70-130		
n-Butylcyclohexane	18.7		µg/l	20.0		93		70-130		
n-Decane	18.5		µg/l	20.0		92		70-130		
<i>Surrogate: 2,5-Dibromotoluene (FID)</i>	56.3		µg/l	50.0		113		70-130		
<i>Surrogate: 2,5-Dibromotoluene (PID)</i>	52.2		µg/l	50.0		104		70-130		
<u>LCS Dup (1609536-BSD1)</u>										
<u>Prepared & Analyzed: 07-Jun-16</u>										
C5-C8 Aliphatic Hydrocarbons	69.6		µg/l	60.0		116		70-130	5	25
C9-C12 Aliphatic Hydrocarbons	64.1		µg/l	60.0		107		70-130	0.08	25
C9-C10 Aromatic Hydrocarbons	19.0		µg/l	20.0		95		70-130	3	25
Unadjusted C5-C8 Aliphatic Hydrocarbons	207		µg/l	200		104		70-130	0.8	25
Unadjusted C9-C12 Aliphatic Hydrocarbons	83.1		µg/l	80.0		104		70-130	0.8	25

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609536 - VPH - EPA 5030C Water										
<u>LCS Dup (1609536-BSD1)</u>										
Benzene	19.4		µg/l		20.0	97	70-130	3	25	
Ethylbenzene	19.7		µg/l		20.0	99	70-130	5	25	
Methyl tert-butyl ether	20.3		µg/l		20.0	101	70-130	7	25	
Naphthalene	19.0		µg/l		20.0	95	70-130	4	25	
Toluene	19.7		µg/l		20.0	99	70-130	2	25	
m,p-Xylene	39.4		µg/l		40.0	99	70-130	6	25	
o-Xylene	19.3		µg/l		20.0	96	70-130	6	25	
2-Methylpentane	19.7		µg/l		20.0	98	70-130	0.7	25	
n-Nonane	21.2		µg/l		20.0	106	70-130	7	25	
n-Pentane	20.5		µg/l		20.0	102	70-130	1	25	
1,2,4-Trimethylbenzene	19.3		µg/l		20.0	97	70-130	2	25	
2,2,4-Trimethylpentane	20.2		µg/l		20.0	101	70-130	7	25	
n-Butylcyclohexane	19.7		µg/l		20.0	99	70-130	6	25	
n-Decane	22.2		µg/l		20.0	111	70-130	19	25	
Surrogate: 2,5-Dibromotoluene (FID)	51.8		µg/l		50.0	104	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	47.9		µg/l		50.0	96	70-130			
<u>Duplicate (1609536-DUP1)</u>										
					Source: SC21910-01	Prepared & Analyzed: 07-Jun-16				
C5-C8 Aliphatic Hydrocarbons	53.6	J,D	µg/l	75.0		53.3		0.5	50	
C9-C12 Aliphatic Hydrocarbons	55.4	QR5, D	µg/l	25.0		32.2		53	50	
C9-C10 Aromatic Hydrocarbons	65.9	D	µg/l	25.0		68.4		4	50	
Unadjusted C5-C8 Aliphatic Hydrocarbons	65.0	J,D	µg/l	75.0		70.5		8	50	
Unadjusted C9-C12 Aliphatic Hydrocarbons	121	D	µg/l	25.0		101		19	50	
Benzene	< 5.00	D	µg/l	5.00		BRL			50	
Ethylbenzene	1.94	J,D	µg/l	5.00		3.00		43	50	
Methyl tert-butyl ether	< 5.00	D	µg/l	5.00		BRL			50	
Naphthalene	3.26	J,D	µg/l	5.00		3.91		18	50	
Toluene	< 5.00	D	µg/l	5.00		2.94			50	
m,p-Xylene	3.98	J,D	µg/l	10.0		5.88		38	50	
o-Xylene	3.34	J,D	µg/l	5.00		4.46		29	50	
Surrogate: 2,5-Dibromotoluene (FID)	44.5		µg/l		50.0	89	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	41.9		µg/l		50.0	84	70-130			
<u>Matrix Spike (1609536-MS1)</u>										
					Source: SC21910-01	Prepared & Analyzed: 07-Jun-16				
C5-C8 Aliphatic Hydrocarbons	93.2	QM7, D	µg/l		60.0	10.7	138	70-130		
C9-C12 Aliphatic Hydrocarbons	81.8	D	µg/l		60.0	6.44	126	70-130		
C9-C10 Aromatic Hydrocarbons	21.5	QM7, D	µg/l		20.0	13.7	39	70-130		
Unadjusted C5-C8 Aliphatic Hydrocarbons	237	D	µg/l		200	14.1	111	70-130		
Unadjusted C9-C12 Aliphatic Hydrocarbons	103	D	µg/l		80.0	20.1	104	70-130		
Benzene	19.4	D	µg/l		20.0	0.165	96	70-130		
Ethylbenzene	21.0	D	µg/l		20.0	0.601	102	70-130		
Methyl tert-butyl ether	20.0	D	µg/l		20.0	0.0150	100	70-130		
Naphthalene	20.1	D	µg/l		20.0	0.782	96	70-130		
Toluene	20.7	D	µg/l		20.0	0.589	101	70-130		
m,p-Xylene	41.6	D	µg/l		40.0	1.18	101	70-130		
o-Xylene	20.9	D	µg/l		20.0	0.892	100	70-130		
2-Methylpentane	19.0	D	µg/l		20.0	0.0440	95	70-130		
n-Nonane	21.3	D	µg/l		20.0	0.0360	106	70-130		
n-Pentane	19.5	D	µg/l		20.0	0.337	96	70-130		
1,2,4-Trimethylbenzene	21.4	D	µg/l		20.0	1.05	102	70-130		
2,2,4-Trimethylpentane	20.2	D	µg/l		20.0	0.0360	101	70-130		

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609536 - VPH - EPA 5030C Water										
<u>Matrix Spike (1609536-MS1)</u>										
<u>Source: SC21910-01</u>										
<u>Prepared & Analyzed: 07-Jun-16</u>										
n-Butylcyclohexane	20.7	D	µg/l		20.0	0.229	103	70-130		
n-Decane	23.2	D	µg/l		20.0	BRL	116	70-130		
Surrogate: 2,5-Dibromotoluene (FID)	45.6		µg/l		50.0		91	70-130		
Surrogate: 2,5-Dibromotoluene (PID)	43.3		µg/l		50.0		87	70-130		

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609394 - SW846 3510C										
<u>Blank (1609394-BLK1)</u>										
<u>Prepared & Analyzed: 03-Jun-16</u>										
C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100						
C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100						
C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100						
Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100						
Total Petroleum Hydrocarbons	< 300		µg/l	300						
Unadjusted Total Petroleum Hydrocarbons	< 300		µg/l	300						
Naphthalene	< 5.00		µg/l	5.00						
2-Methylnaphthalene	< 5.00		µg/l	5.00						
Acenaphthylene	< 5.00		µg/l	5.00						
Acenaphthene	< 5.00		µg/l	5.00						
Fluorene	< 5.00		µg/l	5.00						
Phenanthrene	< 5.00		µg/l	5.00						
Anthracene	< 5.00		µg/l	5.00						
Fluoranthene	< 5.00		µg/l	5.00						
Pyrene	< 5.00		µg/l	5.00						
Benzo (a) anthracene	< 5.00		µg/l	5.00						
Chrysene	< 5.00		µg/l	5.00						
Benzo (b) fluoranthene	< 5.00		µg/l	5.00						
Benzo (k) fluoranthene	< 5.00		µg/l	5.00						
Benzo (a) pyrene	< 5.00		µg/l	5.00						
Indeno (1,2,3-cd) pyrene	< 5.00		µg/l	5.00						
Dibenzo (a,h) anthracene	< 5.00		µg/l	5.00						
Benzo (g,h,i) perylene	< 5.00		µg/l	5.00						
n-Nonane (C9)	< 5.00		µg/l	5.00						
n-Decane	< 5.00		µg/l	5.00						
n-Dodecane	< 5.00		µg/l	5.00						
n-Tetradecane	< 5.00		µg/l	5.00						
n-Hexadecane	< 5.00		µg/l	5.00						
n-Octadecane	< 5.00		µg/l	5.00						
n-Nonadecane	< 5.00		µg/l	5.00						
n-Eicosane	< 5.00		µg/l	5.00						
n-Docosane	< 5.00		µg/l	5.00						
n-Tetracosane	< 5.00		µg/l	5.00						
n-Hexacosane	< 5.00		µg/l	5.00						
n-Octacosane	< 5.00		µg/l	5.00						
n-Triacontane	< 5.00		µg/l	5.00						
n-Hexatriacontane	< 5.00		µg/l	5.00						
Naphthalene (aliphatic fraction)	0.00		µg/l							
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l							
Surrogate: 1-Chlorooctadecane	35.3		µg/l	50.0		71	40-140			
Surrogate: Ortho-Terphenyl	33.0		µg/l	50.0		66	40-140			
Surrogate: 2-Fluorobiphenyl	20.5		µg/l	40.0		51	40-140			
<u>LCS (1609394-BS1)</u>										
<u>Prepared & Analyzed: 03-Jun-16</u>										
C9-C18 Aliphatic Hydrocarbons	371		µg/l	100	600	62	40-140			
C19-C36 Aliphatic Hydrocarbons	455		µg/l	100	800	57	40-140			
Unadjusted C11-C22 Aromatic Hydrocarbons	342		µg/l	100	680	50	40-140			
Naphthalene	17.6		µg/l	5.00	40.0	44	40-140			
2-Methylnaphthalene	19.3		µg/l	5.00	40.0	48	40-140			
Acenaphthylene	18.4		µg/l	5.00	40.0	46	40-140			
Acenaphthene	20.0		µg/l	5.00	40.0	50	40-140			

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609394 - SW846 3510C										
<u>LCS (1609394-BS1)</u>										
<u>Prepared & Analyzed: 03-Jun-16</u>										
Fluorene	21.3		ug/l	5.00	40.0		53	40-140		
Phenanthrene	21.7		ug/l	5.00	40.0		54	40-140		
Anthracene	21.8		ug/l	5.00	40.0		55	40-140		
Fluoranthene	23.6		ug/l	5.00	40.0		59	40-140		
Pyrene	23.5		ug/l	5.00	40.0		59	40-140		
Benzo (a) anthracene	21.0		ug/l	5.00	40.0		53	40-140		
Chrysene	27.1		ug/l	5.00	40.0		68	40-140		
Benzo (b) fluoranthene	19.3		ug/l	5.00	40.0		48	40-140		
Benzo (k) fluoranthene	24.1		ug/l	5.00	40.0		60	40-140		
Benzo (a) pyrene	20.9		ug/l	5.00	40.0		52	40-140		
Indeno (1,2,3-cd) pyrene	17.5		ug/l	5.00	40.0		44	40-140		
Dibenzo (a,h) anthracene	16.1		ug/l	5.00	40.0		40	40-140		
Benzo (g,h,i) perylene	18.5		ug/l	5.00	40.0		46	40-140		
n-Nonane (C9)	31.5		ug/l	5.00	100		32	30-140		
n-Decane	48.4		ug/l	5.00	100		48	40-140		
n-Dodecane	52.6		ug/l	5.00	100		53	40-140		
n-Tetradecane	61.3		ug/l	5.00	100		61	40-140		
n-Hexadecane	70.2		ug/l	5.00	100		70	40-140		
n-Octadecane	74.9		ug/l	5.00	100		75	40-140		
n-Nonadecane	76.8		ug/l	5.00	100		77	40-140		
n-Eicosane	76.4		ug/l	5.00	100		76	40-140		
n-Docosane	77.9		ug/l	5.00	100		78	40-140		
n-Tetracosane	77.7		ug/l	5.00	100		78	40-140		
n-Hexacosane	77.1		ug/l	5.00	100		77	40-140		
n-Octacosane	75.6		ug/l	5.00	100		76	40-140		
n-Triacontane	73.6		ug/l	5.00	100		74	40-140		
n-Hexatriacontane	64.9		ug/l	5.00	100		65	40-140		
Naphthalene (aliphatic fraction)	0.00		ug/l					0-200		
2-Methylnaphthalene (aliphatic fraction)	0.00		ug/l					0-200		
Surrogate: 1-Chlorooctadecane	28.4		ug/l		50.0		57	40-140		
Surrogate: Ortho-Terphenyl	31.8		ug/l		50.0		64	40-140		
Surrogate: 2-Fluorobiphenyl	21.7		ug/l		40.0		54	40-140		
<u>LCS (1609394-BS2)</u>										
<u>Prepared & Analyzed: 03-Jun-16</u>										
C9-C18 Aliphatic Hydrocarbons	356		ug/l	100	600		59	40-140		
C19-C36 Aliphatic Hydrocarbons	437		ug/l	100	800		55	40-140		
Unadjusted C11-C22 Aromatic Hydrocarbons	453		ug/l	100	680		67	40-140		
Naphthalene	18.5		ug/l	5.00	40.0		46	40-140		
2-Methylnaphthalene	19.0		ug/l	5.00	40.0		48	40-140		
Acenaphthylene	18.0		ug/l	5.00	40.0		45	40-140		
Acenaphthene	19.1		ug/l	5.00	40.0		48	40-140		
Fluorene	20.0		ug/l	5.00	40.0		50	40-140		
Phenanthrene	20.8		ug/l	5.00	40.0		52	40-140		
Anthracene	21.3		ug/l	5.00	40.0		53	40-140		
Fluoranthene	24.2		ug/l	5.00	40.0		60	40-140		
Pyrene	24.5		ug/l	5.00	40.0		61	40-140		
Benzo (a) anthracene	22.9		ug/l	5.00	40.0		57	40-140		
Chrysene	27.0		ug/l	5.00	40.0		68	40-140		
Benzo (b) fluoranthene	21.7		ug/l	5.00	40.0		54	40-140		
Benzo (k) fluoranthene	23.2		ug/l	5.00	40.0		58	40-140		
Benzo (a) pyrene	23.7		ug/l	5.00	40.0		59	40-140		
Indeno (1,2,3-cd) pyrene	18.7		ug/l	5.00	40.0		47	40-140		

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609394 - SW846 3510C										
<u>LCS (1609394-BS2)</u>										
							<u>Prepared & Analyzed: 03-Jun-16</u>			
Dibenzo (a,h) anthracene	17.1		µg/l	5.00	40.0		43	40-140		
Benzo (g,h,i) perylene	20.2		µg/l	5.00	40.0		51	40-140		
n-Nonane (C9)	33.8		µg/l	5.00	100		34	30-140		
n-Decane	39.9		µg/l	5.00	100		40	40-140		
n-Dodecane	42.3		µg/l	5.00	100		42	40-140		
n-Tetradecane	46.5		µg/l	5.00	100		46	40-140		
n-Hexadecane	51.4		µg/l	5.00	100		51	40-140		
n-Octadecane	55.2		µg/l	5.00	100		55	40-140		
n-Nonadecane	57.5		µg/l	5.00	100		57	40-140		
n-Eicosane	58.7		µg/l	5.00	100		59	40-140		
n-Docosane	62.0		µg/l	5.00	100		62	40-140		
n-Tetracosane	63.2		µg/l	5.00	100		63	40-140		
n-Hexacosane	64.0		µg/l	5.00	100		64	40-140		
n-Octacosane	63.2		µg/l	5.00	100		63	40-140		
n-Triacontane	61.7		µg/l	5.00	100		62	40-140		
n-Hexatriacontane	54.4		µg/l	5.00	100		54	40-140		
Naphthalene (aliphatic fraction)	0.00		µg/l					0-200		
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l					0-200		
Surrogate: 1-Chlorooctadecane	32.1		µg/l		50.0		64	40-140		
Surrogate: Ortho-Terphenyl	31.8		µg/l		50.0		64	40-140		
Surrogate: 2-Fluorobiphenyl	20.1		µg/l		40.0		50	40-140		
<u>LCS Dup (1609394-BSD1)</u>										
							<u>Prepared & Analyzed: 03-Jun-16</u>			
C9-C18 Aliphatic Hydrocarbons	410		µg/l	100	600		68	40-140	10	25
C19-C36 Aliphatic Hydrocarbons	347	QR2	µg/l	100	800		43	40-140	27	25
Unadjusted C11-C22 Aromatic Hydrocarbons	429		µg/l	100	680		63	40-140	22	25
Naphthalene	18.9		µg/l	5.00	40.0		47	40-140	7	25
2-Methylnaphthalene	19.9		µg/l	5.00	40.0		50	40-140	3	25
Acenaphthylene	19.8		µg/l	5.00	40.0		50	40-140	7	25
Acenaphthene	21.4		µg/l	5.00	40.0		53	40-140	6	25
Fluorene	22.0		µg/l	5.00	40.0		55	40-140	3	25
Phenanthrene	23.2		µg/l	5.00	40.0		58	40-140	7	25
Anthracene	23.4		µg/l	5.00	40.0		58	40-140	7	25
Fluoranthene	25.7		µg/l	5.00	40.0		64	40-140	8	25
Pyrene	25.5		µg/l	5.00	40.0		64	40-140	8	25
Benzo (a) anthracene	23.8		µg/l	5.00	40.0		59	40-140	12	25
Chrysene	28.6		µg/l	5.00	40.0		72	40-140	6	25
Benzo (b) fluoranthene	18.0		µg/l	5.00	40.0		45	40-140	7	25
Benzo (k) fluoranthene	30.5		µg/l	5.00	40.0		76	40-140	23	25
Benzo (a) pyrene	23.6		µg/l	5.00	40.0		59	40-140	12	25
Indeno (1,2,3-cd) pyrene	19.3		µg/l	5.00	40.0		48	40-140	10	25
Dibenzo (a,h) anthracene	17.4		µg/l	5.00	40.0		43	40-140	7	25
Benzo (g,h,i) perylene	20.9		µg/l	5.00	40.0		52	40-140	12	25
n-Nonane (C9)	34.7		µg/l	5.00	100		35	30-140	10	25
n-Decane	51.0		µg/l	5.00	100		51	40-140	5	25
n-Dodecane	56.3		µg/l	5.00	100		56	40-140	7	25
n-Tetradecane	64.8		µg/l	5.00	100		65	40-140	6	25
n-Hexadecane	73.9		µg/l	5.00	100		74	40-140	5	25
n-Octadecane	78.5		µg/l	5.00	100		78	40-140	5	25
n-Nonadecane	80.6		µg/l	5.00	100		81	40-140	5	25
n-Eicosane	80.5		µg/l	5.00	100		80	40-140	5	25
n-Docosane	82.5		µg/l	5.00	100		82	40-140	6	25

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1609394 - SW846 3510C										
<u>LCS Dup (1609394-BSD1)</u>										
n-Tetracosane	82.5		µg/l	5.00	100	82	40-140	6	25	
n-Hexacosane	82.3		µg/l	5.00	100	82	40-140	6	25	
n-Octacosane	80.1		µg/l	5.00	100	80	40-140	6	25	
n-Triacontane	77.3		µg/l	5.00	100	77	40-140	5	25	
n-Hexatriacontane	67.7		µg/l	5.00	100	68	40-140	4	25	
Naphthalene (aliphatic fraction)	0.00		µg/l				0-200		200	
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l				0-200		200	
<i>Surrogate: 1-Chlorooctadecane</i>	30.9		µg/l		50.0	62	40-140			
<i>Surrogate: Ortho-Terphenyl</i>	33.0		µg/l		50.0	66	40-140			
<i>Surrogate: 2-Fluorobiphenyl</i>	22.7		µg/l		40.0	57	40-140			

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S604784				
<u>Calibration Check (S604784-CCV1)</u>				
C9-C18 Aliphatic Hydrocarbons	225670.7	161828.9	1.5	25
C19-C36 Aliphatic Hydrocarbons	1433281	387513.8	-9.4	25
Unadjusted C11-C22 Aromatic Hydrocarbons	24.03551	19.02627	11.2	20
Naphthalene	7.378404	6.548159	-11.3	20
2-Methylnaphthalene	4.308346	4.573683	6.2	20
Acenaphthylene	7.460001	6.784988	-9.0	20
Acenaphthene	4.845007	4.341405	-10.4	20
Fluorene	5.074137	4.805174	-5.3	20
Phenanthrene	6.753278	6.404612	-5.2	20
Anthracene	7.709496	6.539614	-15.2	20
Fluoranthene	7.305509	6.892563	-5.7	20
Pyrene	7.652392	7.310219	-4.5	20
Benzo (a) anthracene	5.896059	5.852702	-0.7	20
Chrysene	6.7393	6.784994	0.7	20
Benzo (b) fluoranthene	6.035965	5.308576	-12.1	20
Benzo (k) fluoranthene	6.638118	7.120348	7.3	20
Benzo (a) pyrene	5.579656	5.394453	-0.3	20
Indeno (1,2,3-cd) pyrene	6.366253	5.880848	-6.3	20
Dibenzo (a,h) anthracene	5.317723	4.984062	-8.5	20
Benzo (g,h,i) perylene	5.394442	4.911807	-7.9	20
n-Nonane (C9)	205747.8	199193.6	-3.2	25
n-Decane	204813.1	199506.2	-2.6	25
n-Dodecane	203877.7	192148.1	-5.8	25
n-Tetradecane	201712.1	190808.3	-5.4	25
n-Hexadecane	195278.5	187173.5	-4.2	25
n-Octadecane	187431.2	180522	-3.7	25
n-Nonadecane	181249.4	175079.7	-3.4	25
n-Eicosane	176548	172445.3	-2.3	25
n-Docosane	168319.2	169163.2	0.5	25
n-Tetracosane	163462.3	168351.8	3.0	25
n-Hexacosane	158574.7	167640.4	5.7	25
n-Octacosane	158586.1	166607.3	5.1	25
n-Triacontane	158880.7	167221.9	5.2	25
n-Hexatriacontane	159740.7	164241.3	2.8	25
Naphthalene (aliphatic fraction)	247081.9			
2-Methylnaphthalene (aliphatic fraction)	252288.7			
<u>Calibration Check (S604784-CCV2)</u>				
C9-C18 Aliphatic Hydrocarbons	225670.7	165789.5	4.3	25
C19-C36 Aliphatic Hydrocarbons	1433281	368986	-22.7	25
Unadjusted C11-C22 Aromatic Hydrocarbons	24.03551	19.21223	12.4	20
Naphthalene	7.378404	6.786461	-8.0	20
2-Methylnaphthalene	4.308346	4.720493	9.6	20
Acenaphthylene	7.460001	6.964178	-6.6	20
Acenaphthene	4.845007	4.441176	-8.3	20
Fluorene	5.074137	4.836322	-4.7	20
Phenanthrene	6.753278	6.170566	-8.6	20
Anthracene	7.709496	6.480016	-15.9	20
Fluoranthene	7.305509	6.892328	-5.7	20
Pyrene	7.652392	7.255599	-5.2	20
Benzo (a) anthracene	5.896059	5.778379	-2.0	20
Chrysene	6.7393	6.728171	-0.2	20

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S604784				
<u>Calibration Check (S604784-CCV2)</u>				
Benzo (b) fluoranthene	6.035965	6.645198	10.1	20
Benzo (k) fluoranthene	6.638118	7.214027	8.7	20
Benzo (a) pyrene	5.579656	5.523217	2.1	20
Indeno (1,2,3-cd) pyrene	6.366253	6.124063	-2.5	20
Dibenzo (a,h) anthracene	5.317723	5.178113	-4.9	20
Benzo (g,h,i) perylene	5.394442	5.099714	-4.4	20
n-Nonane (C9)	205747.8	216883	5.4	25
n-Decane	204813.1	212576.8	3.8	25
n-Dodecane	203877.7	203705.2	-0.08	25
n-Tetradecane	201712.1	203142	0.7	25
n-Hexadecane	195278.5	200362.8	2.6	25
n-Octadecane	187431.2	193048.6	3.0	25
n-Nonadecane	181249.4	186552	2.9	25
n-Eicosane	176548	182847.4	3.6	25
n-Docosane	168319.2	177969.3	5.7	25
n-Tetracosane	163462.3	176245.7	7.8	25
n-Hexacosane	158574.7	174811.8	10.2	25
n-Octacosane	158586.1	173091.8	9.1	25
n-Triacontane	158880.7	173351.5	9.1	25
n-Hexatriacontane	159740.7	168033.5	5.2	25
Naphthalene (aliphatic fraction)	247081.9			
2-Methylnaphthalene (aliphatic fraction)	252288.7			
Batch S604787				
<u>Calibration Check (S604787-CCV2)</u>				
C9-C18 Aliphatic Hydrocarbons	225670.7	165789.5	4.3	25
C19-C36 Aliphatic Hydrocarbons	1433281	368986	-22.7	25
Unadjusted C11-C22 Aromatic Hydrocarbons	24.03551	19.21223	12.4	20
Naphthalene	7.378404	6.786461	-8.0	20
2-Methylnaphthalene	4.308346	4.720493	9.6	20
Acenaphthylene	7.460001	6.964178	-6.6	20
Acenaphthene	4.845007	4.441176	-8.3	20
Fluorene	5.074137	4.836322	-4.7	20
Phenanthrene	6.753278	6.170566	-8.6	20
Anthracene	7.709496	6.480016	-15.9	20
Fluoranthene	7.305509	6.892328	-5.7	20
Pyrene	7.652392	7.255599	-5.2	20
Benzo (a) anthracene	5.896059	5.778379	-2.0	20
Chrysene	6.7393	6.728171	-0.2	20
Benzo (b) fluoranthene	6.035965	6.645198	10.1	20
Benzo (k) fluoranthene	6.638118	7.214027	8.7	20
Benzo (a) pyrene	5.579656	5.523217	2.1	20
Indeno (1,2,3-cd) pyrene	6.366253	6.124063	-2.5	20
Dibenzo (a,h) anthracene	5.317723	5.178113	-4.9	20
Benzo (g,h,i) perylene	5.394442	5.099714	-4.4	20
n-Nonane (C9)	205747.8	216883	5.4	25
n-Decane	204813.1	212576.8	3.8	25
n-Dodecane	203877.7	203705.2	-0.08	25
n-Tetradecane	201712.1	203142	0.7	25
n-Hexadecane	195278.5	200362.8	2.6	25
n-Octadecane	187431.2	193048.6	3.0	25
n-Nonadecane	181249.4	186552	2.9	25

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S604787				
<u>Calibration Check (S604787-CCV2)</u>				
n-Eicosane	176548	182847.4	3.6	25
n-Docosane	168319.2	177969.3	5.7	25
n-Tetracosane	163462.3	176245.7	7.8	25
n-Hexacosane	158574.7	174811.8	10.2	25
n-Octacosane	158586.1	173091.8	9.1	25
n-Triacontane	158880.7	173351.5	9.1	25
n-Hexatriacontane	159740.7	168033.5	5.2	25
Naphthalene (aliphatic fraction)	247081.9			
2-Methylnaphthalene (aliphatic fraction)	252288.7			

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Volatile Organic Compounds - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S604715				
<u>Calibration Check (S604715-CCV1)</u>				
Benzene	144843.4	140026.4	-3.3	25
Ethylbenzene	87193.11	87613	0.5	25
Methyl tert-butyl ether	73001.13	71542.96	-2.0	25
Naphthalene	83590.61	77790.02	-6.9	25
Toluene	112472.5	110562.1	-1.7	25
m,p-Xylene	95187.73	94341.99	-0.9	25
o-Xylene	81388.2	79109.4	-2.8	25
2-Methylpentane	39065.31	41925.12	7.3	25
n-Nonane	28487.49	33112.86	16.2	30
n-Pentane	33068.61	35260.34	6.6	25
1,2,4-Trimethylbenzene	80897.12	77080.32	-4.7	25
2,2,4-Trimethylpentane	40465.66	44452.32	9.9	25
n-Butylcyclohexane	30684.29	32571.82	6.2	25
n-Decane	23656.41	26300.3	11.2	25
<u>Calibration Check (S604715-CCV2)</u>				
Benzene	144843.4	129446.3	-10.6	25
Ethylbenzene	87193.11	82358.64	-5.5	25
Methyl tert-butyl ether	73001.13	65948.16	-9.7	25
Naphthalene	83590.61	74296.98	-11.1	25
Toluene	112472.5	105494.2	-6.2	25
m,p-Xylene	95187.73	88835.63	-6.7	25
o-Xylene	81388.2	75543.38	-7.2	25
2-Methylpentane	39065.31	34144.06	-12.6	25
n-Nonane	28487.49	31255.44	9.7	30
n-Pentane	33068.61	28437.04	-14.0	25
1,2,4-Trimethylbenzene	80897.12	76248.54	-5.7	25
2,2,4-Trimethylpentane	40465.66	36920.3	-8.8	25
n-Butylcyclohexane	30684.29	31606.6	3.0	25
n-Decane	23656.41	27861.66	17.8	25

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Notes and Definitions

D	Data reported from a dilution
QM7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QR2	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QR5	RPD out of acceptance range.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

Validated by:
Rebecca Merz
Wes Bryon



Spectrum Analytical

CHAIN OF CUSTODY RECORD

Page 1 of 1

Report To: CML
Le7 Hse Rd
Sturbridge, MA

Invoice To: Cmc

Project No: 2015-120
Site Name: Hammond St
Location: Oxford State: NY
Sampler(s): M. Cole

Telephone #:

Project Mgr: B. Gould

P.O No.: _____ Quote #: _____

F=Field Filtered 1=Na₂S2O₃ 2=HCl 3=H₂SO₄ 4=HNO₃ 5=NaOH
 7=CH₃OH 8=NaHSO₄ 9=Deionized Water 10=H₃PO₄ 11= 12=

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water

O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas

G=Grab

C=Compsite

20

Lab ID:

Sample ID

e_i^{*}

QA/QC Reporting Notes:
* additional charges may apply

MA DEP MCP CAM Report? Yes No
CT DPH RCP Report? Yes No

<input type="checkbox"/> Standard	<input type="checkbox"/> No QC
<input type="checkbox"/> DQA*	
<input type="checkbox"/> ASP A*	<input type="checkbox"/> ASP B*
<input type="checkbox"/> NJ Reduced*	<input type="checkbox"/> NJ Full*
<input type="checkbox"/> Tier II*	<input type="checkbox"/> Tier IV*

Other: _____
State-specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp °C	
<i>Mukul P. G.</i>	<i>Retnag</i>	<i>5/26/16</i>	<i>1:00</i>	<i>4.2</i>	Observed
<i>David Dec</i>	<i>Divine Dec</i>	<i>5/27/16</i>	<i>10:09</i>	<i>0</i>	Correction Factor
<i>David Dec</i>	<i>JH</i>	<i>5/27/16</i>	<i>15:40</i>	<i>4.2</i>	Corrected
				IR ID #	C2

EDD format:
 E-mail to: *BGould@cmbe.tu.ac.ae*

 Ambient Iced Refrigerated DI VOA Frozen Soil Jar Frozen

Condition upon receipt: Custody Seals: Present Intact Broken

Final Report
 Re-Issued Report
 Revised Report

Report Date:
 21-Jun-16 15:49

Laboratory Report

CMG Environmental, Inc.
 67 Hall Road
 Sturbridge, MA 01566
 Attn: Gary Magnuson

Project: Hammond St - Oxford, MA
 Project #: 2015-120

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SC22430-01	SW	Surface Water	10-Jun-16 13:30	13-Jun-16 13:55

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
 Connecticut # PH-0777
 Florida # E87936
 Maine # MA138
 New Hampshire # 2538
 New Jersey # MA011
 New York # 11393
 Pennsylvania # 68-04426/68-02924
 Rhode Island # LAO00098
 USDA # S-51435



Authorized by:

June O'Connor
 Laboratory Director

Eurofins Spectrum Analytical holds primary NELAC certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 15 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our Quality web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

The following outlines the condition of all EPH samples contained within this report upon laboratory receipt.

Matrices	Surface Water		
Containers	<input checked="" type="checkbox"/> Satisfactory		
Aqueous Preservative	N/A	<input checked="" type="checkbox"/> pH≤2	pH>2 pH adjusted to <2 in lab
Temperature	Received on ice	Received at 4 ± 2 °C	<input checked="" type="checkbox"/> Other: 0.2°C

Were all QA/QC procedures followed as required by the EPH method? *Yes*

Were any significant modifications made to the EPH method as specified in Section 11.3? *No*

Were all performance/acceptance standards for required QA/QC procedures achieved? *Yes*

I attest that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Authorized by:



June O'Connor
Laboratory Director

MassDEP Analytical Protocol Certification Form

Laboratory Name: Eurofins Spectrum Analytical, Inc.		Project #: 2015-120			
Project Location: Hammond St - Oxford, MA		RTN:			
This form provides certifications for the following data set:		SC22430-01			
Matrices: Surface Water					
CAM Protocol					
8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	✓ MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9012 Total Cyanide/PAC CAM VI A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B
<i>Affirmative responses to questions A through F are required for Presumptive Certainty'status</i>					
A	Were all samples received in a condition consistent with those described on the Chain of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?				✓ Yes No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?				✓ Yes No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?				✓ Yes No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?				✓ Yes No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?				✓ Yes No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to questions A through E)?				✓ Yes No
<i>Responses to questions G, H and I below are required for Presumptive Certainty'status</i>					
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?				Yes ✓ No
<i>Data User Note: Data that achieve Presumptive Certainty'status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.</i>					
H	Were all QC performance standards specified in the CAM protocol(s) achieved?				Yes ✓ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?				✓ Yes No
<i>All negative responses are addressed in a case narrative on the cover page of this report.</i>					
<i>I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.</i>					
					
June O'Connor Laboratory Director Date: 6/21/2016					

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CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as “<” (less than) the reporting limit in this report.

The samples were received 0.2 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method. Regulatory limits may not be achieved if specific method and/or technique was not requested on the Chain of Custody.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

June 21, 2016 Report Revision Case Narrative:

This report is being revised to correct the project number per client request.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

MADEP EPH 5/2004 R

Calibration:

1604020

Analyte quantified by quadratic equation type calibration.

Benzo (a) pyrene
Benzo (g,h,i) perylene
Dibenzo (a,h) anthracene
Indeno (1,2,3-cd) pyrene

This affected the following samples:

1610058-BLK1
1610058-BS1
1610058-BS2
1610058-BSD1
S603014-ICV2
S605014-CCV1
S605014-CCV2
S605015-CCV1
S605015-CCV2
SW

Laboratory Control Samples:

1610058 BSD

Benzo (b) fluoranthene RPD 40% (25%) is outside individual acceptance criteria.

MADEP EPH 5/2004 R

Laboratory Control Samples:

1610058 BSD

C19-C36 Aliphatic Hydrocarbons RPD 27% (25%) is outside individual acceptance criteria.

Sample Acceptance Check Form

Client: CMG Environmental, Inc.
Project: Hammond St - Oxford, MA / 2015-120
Work Order: SC22430
Sample(s) received on: 6/13/2016

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples refrigerated upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Summary of Hits

Lab ID:

Client ID:

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
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No hits detected.

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification

SW

SC22430-01

Client Project #

2015-120

Matrix

Surface Water

Collection Date/Time

10-Jun-16 13:30

Received

13-Jun-16

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	* <u>RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
Extractable Petroleum Hydrocarbons													
<u>MADEP EPH</u>													
<u>Prepared by method SW846 3510C</u>													
	C9-C18 Aliphatic Hydrocarbons	< 105		µg/l	105	28.8	1	MADEP EPH 5/2004 R	15-Jun-16	16-Jun-16	NAA	1610058	
	C19-C36 Aliphatic Hydrocarbons	< 105		µg/l	105	24.9	1	"	"	"	"	"	
	C11-C22 Aromatic Hydrocarbons	< 105		µg/l	105	35.9	1	"	"	"	"	"	
	Unadjusted C11-C22 Aromatic Hydrocarbons	< 105		µg/l	105	35.9	1	"	"	"	"	"	
91-20-3	Naphthalene	< 5.26		µg/l	5.26	1.44	1	"	"	"	"	"	
91-57-6	2-Methylnaphthalene	< 5.26		µg/l	5.26	1.49	1	"	"	"	"	"	
208-96-8	Acenaphthylene	< 5.26		µg/l	5.26	1.57	1	"	"	"	"	"	
83-32-9	Acenaphthene	< 5.26		µg/l	5.26	1.47	1	"	"	"	"	"	
86-73-7	Fluorene	< 5.26		µg/l	5.26	1.54	1	"	"	"	"	"	
85-01-8	Phenanthrene	< 5.26		µg/l	5.26	1.42	1	"	"	"	"	"	
120-12-7	Anthracene	< 5.26		µg/l	5.26	2.39	1	"	"	"	"	"	
206-44-0	Fluoranthene	< 5.26		µg/l	5.26	2.11	1	"	"	"	"	"	
129-00-0	Pyrene	< 5.26		µg/l	5.26	1.65	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	< 5.26		µg/l	5.26	2.26	1	"	"	"	"	"	
218-01-9	Chrysene	< 5.26		µg/l	5.26	1.63	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	< 5.26		µg/l	5.26	2.36	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	< 5.26		µg/l	5.26	1.88	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	< 5.26		µg/l	5.26	2.18	1	"	"	"	"	"	
193-39-5	Indeno (1,2,3-cd) pyrene	< 5.26		µg/l	5.26	1.52	1	"	"	"	"	"	
53-70-3	Dibenzo (a,h) anthracene	< 5.26		µg/l	5.26	1.78	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perlylene	< 5.26		µg/l	5.26	1.28	1	"	"	"	"	"	

Surrogate recoveries:

3386-33-2	1-Chlorooctadecane	67	40-140 %	"	"	"	"	"
84-15-1	Ortho-Terphenyl	43	40-140 %	"	"	"	"	"
321-60-8	2-Fluorobiphenyl	60	40-140 %	"	"	"	"	"

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1610058 - SW846 3510C										
<u>Blank (1610058-BLK1)</u>										
<u>Prepared & Analyzed: 15-Jun-16</u>										
C9-C18 Aliphatic Hydrocarbons	< 100		µg/l	100						
C19-C36 Aliphatic Hydrocarbons	< 100		µg/l	100						
C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100						
Unadjusted C11-C22 Aromatic Hydrocarbons	< 100		µg/l	100						
Total Petroleum Hydrocarbons	< 300		µg/l	300						
Unadjusted Total Petroleum Hydrocarbons	< 300		µg/l	300						
Naphthalene	< 5.00		µg/l	5.00						
2-Methylnaphthalene	< 5.00		µg/l	5.00						
Acenaphthylene	< 5.00		µg/l	5.00						
Acenaphthene	< 5.00		µg/l	5.00						
Fluorene	< 5.00		µg/l	5.00						
Phenanthrene	< 5.00		µg/l	5.00						
Anthracene	< 5.00		µg/l	5.00						
Fluoranthene	< 5.00		µg/l	5.00						
Pyrene	< 5.00		µg/l	5.00						
Benzo (a) anthracene	< 5.00		µg/l	5.00						
Chrysene	< 5.00		µg/l	5.00						
Benzo (b) fluoranthene	< 5.00		µg/l	5.00						
Benzo (k) fluoranthene	< 5.00		µg/l	5.00						
Benzo (a) pyrene	< 5.00		µg/l	5.00						
Indeno (1,2,3-cd) pyrene	< 5.00		µg/l	5.00						
Dibenzo (a,h) anthracene	< 5.00		µg/l	5.00						
Benzo (g,h,i) perylene	< 5.00		µg/l	5.00						
n-Nonane (C9)	< 5.00		µg/l	5.00						
n-Decane	< 5.00		µg/l	5.00						
n-Dodecane	< 5.00		µg/l	5.00						
n-Tetradecane	< 5.00		µg/l	5.00						
n-Hexadecane	< 5.00		µg/l	5.00						
n-Octadecane	< 5.00		µg/l	5.00						
n-Nonadecane	< 5.00		µg/l	5.00						
n-Eicosane	< 5.00		µg/l	5.00						
n-Docosane	< 5.00		µg/l	5.00						
n-Tetracosane	< 5.00		µg/l	5.00						
n-Hexacosane	< 5.00		µg/l	5.00						
n-Octacosane	< 5.00		µg/l	5.00						
n-Triacontane	< 5.00		µg/l	5.00						
n-Hexatriacontane	< 5.00		µg/l	5.00						
Naphthalene (aliphatic fraction)	0.00		µg/l							
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l							
Surrogate: 1-Chlorooctadecane	37.0		µg/l	50.0		74	40-140			
Surrogate: Ortho-Terphenyl	32.3		µg/l	50.0		65	40-140			
Surrogate: 2-Fluorobiphenyl	20.5		µg/l	40.0		51	40-140			
<u>LCS (1610058-BS1)</u>										
<u>Prepared & Analyzed: 15-Jun-16</u>										
C9-C18 Aliphatic Hydrocarbons	433		µg/l	100	600	72	40-140			
C19-C36 Aliphatic Hydrocarbons	628		µg/l	100	800	79	40-140			
Unadjusted C11-C22 Aromatic Hydrocarbons	387		µg/l	100	680	57	40-140			
Naphthalene	18.1		µg/l	5.00	40.0	45	40-140			
2-Methylnaphthalene	19.1		µg/l	5.00	40.0	48	40-140			
Acenaphthylene	18.4		µg/l	5.00	40.0	46	40-140			
Acenaphthene	19.8		µg/l	5.00	40.0	50	40-140			

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1610058 - SW846 3510C										
<u>LCS (1610058-BS1)</u>										
<u>Prepared & Analyzed: 15-Jun-16</u>										
Fluorene	21.1		ug/l	5.00	40.0		53	40-140		
Phenanthrene	21.8		ug/l	5.00	40.0		54	40-140		
Anthracene	22.0		ug/l	5.00	40.0		55	40-140		
Fluoranthene	23.8		ug/l	5.00	40.0		59	40-140		
Pyrene	23.5		ug/l	5.00	40.0		59	40-140		
Benzo (a) anthracene	21.4		ug/l	5.00	40.0		54	40-140		
Chrysene	28.5		ug/l	5.00	40.0		71	40-140		
Benzo (b) fluoranthene	18.5		ug/l	5.00	40.0		46	40-140		
Benzo (k) fluoranthene	26.8		ug/l	5.00	40.0		67	40-140		
Benzo (a) pyrene	22.9		ug/l	5.00	40.0		57	40-140		
Indeno (1,2,3-cd) pyrene	17.9		ug/l	5.00	40.0		45	40-140		
Dibenzo (a,h) anthracene	16.7		ug/l	5.00	40.0		42	40-140		
Benzo (g,h,i) perylene	18.6		ug/l	5.00	40.0		46	40-140		
n-Nonane (C9)	40.5		ug/l	5.00	100		41	30-140		
n-Decane	41.6		ug/l	5.00	100		42	40-140		
n-Dodecane	45.7		ug/l	5.00	100		46	40-140		
n-Tetradecane	51.4		ug/l	5.00	100		51	40-140		
n-Hexadecane	57.5		ug/l	5.00	100		58	40-140		
n-Octadecane	60.3		ug/l	5.00	100		60	40-140		
n-Nonadecane	61.6		ug/l	5.00	100		62	40-140		
n-Eicosane	62.1		ug/l	5.00	100		62	40-140		
n-Docosane	64.0		ug/l	5.00	100		64	40-140		
n-Tetracosane	64.8		ug/l	5.00	100		65	40-140		
n-Hexacosane	65.9		ug/l	5.00	100		66	40-140		
n-Octacosane	65.6		ug/l	5.00	100		66	40-140		
n-Triacontane	64.9		ug/l	5.00	100		65	40-140		
n-Hexatriacontane	59.9		ug/l	5.00	100		60	40-140		
Naphthalene (aliphatic fraction)	0.00		ug/l					0-200		
2-Methylnaphthalene (aliphatic fraction)	0.00		ug/l					0-200		
Surrogate: 1-Chlorooctadecane	40.3		ug/l		50.0		81	40-140		
Surrogate: Ortho-Terphenyl	30.8		ug/l		50.0		62	40-140		
Surrogate: 2-Fluorobiphenyl	23.3		ug/l		40.0		58	40-140		
<u>LCS (1610058-BS2)</u>										
<u>Prepared & Analyzed: 15-Jun-16</u>										
C9-C18 Aliphatic Hydrocarbons	531		ug/l	100	600		88	40-140		
C19-C36 Aliphatic Hydrocarbons	646		ug/l	100	800		81	40-140		
Unadjusted C11-C22 Aromatic Hydrocarbons	411		ug/l	100	680		60	40-140		
Naphthalene	16.2		ug/l	5.00	40.0		40	40-140		
2-Methylnaphthalene	22.4		ug/l	5.00	40.0		56	40-140		
Acenaphthylene	20.7		ug/l	5.00	40.0		52	40-140		
Acenaphthene	21.5		ug/l	5.00	40.0		54	40-140		
Fluorene	22.8		ug/l	5.00	40.0		57	40-140		
Phenanthrene	22.3		ug/l	5.00	40.0		56	40-140		
Anthracene	22.7		ug/l	5.00	40.0		57	40-140		
Fluoranthene	24.5		ug/l	5.00	40.0		61	40-140		
Pyrene	24.6		ug/l	5.00	40.0		61	40-140		
Benzo (a) anthracene	21.8		ug/l	5.00	40.0		54	40-140		
Chrysene	27.1		ug/l	5.00	40.0		68	40-140		
Benzo (b) fluoranthene	16.8		ug/l	5.00	40.0		42	40-140		
Benzo (k) fluoranthene	28.2		ug/l	5.00	40.0		70	40-140		
Benzo (a) pyrene	23.7		ug/l	5.00	40.0		59	40-140		
Indeno (1,2,3-cd) pyrene	19.8		ug/l	5.00	40.0		49	40-140		

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1610058 - SW846 3510C										
<u>LCS (1610058-BS2)</u>										
							<u>Prepared & Analyzed: 15-Jun-16</u>			
Dibenzo (a,h) anthracene	19.8		µg/l	5.00	40.0	49	40-140			
Benzo (g,h,i) perylene	21.3		µg/l	5.00	40.0	53	40-140			
n-Nonane (C9)	40.7		µg/l	5.00	100	41	30-140			
n-Decane	43.5		µg/l	5.00	100	44	40-140			
n-Dodecane	45.9		µg/l	5.00	100	46	40-140			
n-Tetradecane	51.2		µg/l	5.00	100	51	40-140			
n-Hexadecane	56.7		µg/l	5.00	100	57	40-140			
n-Octadecane	59.4		µg/l	5.00	100	59	40-140			
n-Nonadecane	60.4		µg/l	5.00	100	60	40-140			
n-Eicosane	60.3		µg/l	5.00	100	60	40-140			
n-Docosane	62.0		µg/l	5.00	100	62	40-140			
n-Tetracosane	63.1		µg/l	5.00	100	63	40-140			
n-Hexacosane	64.1		µg/l	5.00	100	64	40-140			
n-Octacosane	64.4		µg/l	5.00	100	64	40-140			
n-Triacontane	63.9		µg/l	5.00	100	64	40-140			
n-Hexatriacontane	59.8		µg/l	5.00	100	60	40-140			
Naphthalene (aliphatic fraction)	0.00		µg/l				0-200			
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l				0-200			
Surrogate: 1-Chlorooctadecane	40.7		µg/l		50.0	81	40-140			
Surrogate: Ortho-Terphenyl	33.6		µg/l		50.0	67	40-140			
Surrogate: 2-Fluorobiphenyl	22.9		µg/l		40.0	57	40-140			
<u>LCS Dup (1610058-BSD1)</u>										
							<u>Prepared & Analyzed: 15-Jun-16</u>			
C9-C18 Aliphatic Hydrocarbons	476		µg/l	100	600	79	40-140	9	25	
C19-C36 Aliphatic Hydrocarbons	480	QR2	µg/l	100	800	60	40-140	27	25	
Unadjusted C11-C22 Aromatic Hydrocarbons	485		µg/l	100	680	71	40-140	22	25	
Naphthalene	18.1		µg/l	5.00	40.0	45	40-140	0	25	
2-Methylnaphthalene	22.5		µg/l	5.00	40.0	56	40-140	16	25	
Acenaphthylene	21.7		µg/l	5.00	40.0	54	40-140	16	25	
Acenaphthene	23.3		µg/l	5.00	40.0	58	40-140	16	25	
Fluorene	24.5		µg/l	5.00	40.0	61	40-140	15	25	
Phenanthrene	26.5		µg/l	5.00	40.0	66	40-140	19	25	
Anthracene	25.8		µg/l	5.00	40.0	65	40-140	16	25	
Fluoranthene	28.8		µg/l	5.00	40.0	72	40-140	19	25	
Pyrene	28.5		µg/l	5.00	40.0	71	40-140	19	25	
Benzo (a) anthracene	27.3		µg/l	5.00	40.0	68	40-140	24	25	
Chrysene	34.2		µg/l	5.00	40.0	86	40-140	18	25	
Benzo (b) fluoranthene	27.7	QR2	µg/l	5.00	40.0	69	40-140	40	25	
Benzo (k) fluoranthene	33.1		µg/l	5.00	40.0	83	40-140	21	25	
Benzo (a) pyrene	28.1		µg/l	5.00	40.0	70	40-140	20	25	
Indeno (1,2,3-cd) pyrene	21.9		µg/l	5.00	40.0	55	40-140	20	25	
Dibenzo (a,h) anthracene	20.7		µg/l	5.00	40.0	52	40-140	22	25	
Benzo (g,h,i) perylene	22.8		µg/l	5.00	40.0	57	40-140	21	25	
n-Nonane (C9)	41.1		µg/l	5.00	100	41	30-140	1	25	
n-Decane	45.9		µg/l	5.00	100	46	40-140	10	25	
n-Dodecane	50.6		µg/l	5.00	100	51	40-140	10	25	
n-Tetradecane	58.0		µg/l	5.00	100	58	40-140	12	25	
n-Hexadecane	65.4		µg/l	5.00	100	65	40-140	13	25	
n-Octadecane	70.1		µg/l	5.00	100	70	40-140	15	25	
n-Nonadecane	72.5		µg/l	5.00	100	72	40-140	16	25	
n-Eicosane	73.9		µg/l	5.00	100	74	40-140	17	25	
n-Docosane	77.3		µg/l	5.00	100	77	40-140	19	25	

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1610058 - SW846 3510C										
<u>LCS Dup (1610058-BSD1)</u>										
n-Tetracosane	78.1		µg/l	5.00	100	78	40-140	19	25	
n-Hexacosane	79.1		µg/l	5.00	100	79	40-140	18	25	
n-Octacosane	78.4		µg/l	5.00	100	78	40-140	18	25	
n-Triacontane	77.3		µg/l	5.00	100	77	40-140	17	25	
n-Hexatriacontane	71.4		µg/l	5.00	100	71	40-140	17	25	
Naphthalene (aliphatic fraction)	0.00		µg/l				0-200		200	
2-Methylnaphthalene (aliphatic fraction)	0.00		µg/l				0-200		200	
Surrogate: 1-Chlorooctadecane	43.4		µg/l		50.0	87	40-140			
Surrogate: Ortho-Terphenyl	37.3		µg/l		50.0	75	40-140			
Surrogate: 2-Fluorobiphenyl	24.2		µg/l		40.0	60	40-140			

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S605014				
<u>Calibration Check (S605014-CCV1)</u>				
C9-C18 Aliphatic Hydrocarbons	225670.7	170744.7	7.8	25
C19-C36 Aliphatic Hydrocarbons	1433281	372482.3	-20.2	25
Unadjusted C11-C22 Aromatic Hydrocarbons	24.03551	17.48725	0.7	20
Naphthalene	7.378404	6.21979	-15.7	20
2-Methylnaphthalene	4.308346	4.086706	-5.1	20
Acenaphthylene	7.460001	6.157324	-17.5	20
Acenaphthene	4.845007	3.893719	-19.6	20
Fluorene	5.074137	4.326023	-14.7	20
Phenanthrene	6.753278	5.851265	-13.4	20
Anthracene	7.709496	6.206987	-19.5	20
Fluoranthene	7.305509	6.210066	-15.0	20
Pyrene	7.652392	6.585584	-13.9	20
Benzo (a) anthracene	5.896059	5.373719	-8.9	20
Chrysene	6.7393	6.39104	-5.2	20
Benzo (b) fluoranthene	6.035965	5.228609	-13.4	20
Benzo (k) fluoranthene	6.638118	6.567183	-1.1	20
Benzo (a) pyrene	5.579656	5.068483	-6.3	20
Indeno (1,2,3-cd) pyrene	6.366253	5.259574	-16.1	20
Dibenzo (a,h) anthracene	5.317723	4.949605	-9.1	20
Benzo (g,h,i) perylene	5.394442	4.687316	-12.0	20
n-Nonane (C9)	205747.8	230810	12.2	25
n-Decane	204813.1	227342.6	11.0	25
n-Dodecane	203877.7	224784.2	10.3	25
n-Tetradecane	201712.1	221472.2	9.8	25
n-Hexadecane	195278.5	215343.6	10.3	25
n-Octadecane	187431.2	206337.8	10.1	25
n-Nonadecane	181249.4	200986.8	10.9	25
n-Eicosane	176548	198184.6	12.3	25
n-Docosane	168319.2	195005.8	15.9	25
n-Tetracosane	163462.3	193793.6	18.6	25
n-Hexacosane	158574.7	190196.2	19.9	25
n-Octacosane	158586.1	188824.1	19.1	25
n-Triacontane	158880.7	190397.1	19.8	25
n-Hexatriacontane	159740.7	183852	15.1	25
Naphthalene (aliphatic fraction)	247081.9			
2-Methylnaphthalene (aliphatic fraction)	252288.7			
<u>Calibration Check (S605014-CCV2)</u>				
C9-C18 Aliphatic Hydrocarbons	225670.7	185713.3	18.3	25
C19-C36 Aliphatic Hydrocarbons	1433281	373516.8	-19.5	25
Unadjusted C11-C22 Aromatic Hydrocarbons	24.03551	16.75184	-4.2	20
Naphthalene	7.378404	6.09353	-17.4	20
2-Methylnaphthalene	4.308346	4.002099	-7.1	20
Acenaphthylene	7.460001	6.082185	-18.5	20
Acenaphthene	4.845007	3.930737	-18.9	20
Fluorene	5.074137	4.241847	-16.4	20
Phenanthrene	6.753278	5.635649	-16.5	20
Anthracene	7.709496	6.249431	-18.9	20
Fluoranthene	7.305509	5.966116	-18.3	20
Pyrene	7.652392	6.230144	-18.6	20
Benzo (a) anthracene	5.896059	5.338532	-9.5	20
Chrysene	6.7393	5.693227	-15.5	20

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Extractable Petroleum Hydrocarbons - CCV Evaluation Report

Analyte(s)	Average RF	CCRF	% D	Limit
Batch S605014				
<u>Calibration Check (S605014-CCV2)</u>				
Benzo (b) fluoranthene	6.035965	4.999134	-17.2	20
Benzo (k) fluoranthene	6.638118	5.988158	-9.8	20
Benzo (a) pyrene	5.579656	5.081831	-6.0	20
Indeno (1,2,3-cd) pyrene	6.366253	5.528858	-11.9	20
Dibenzo (a,h) anthracene	5.317723	4.733688	-13.0	20
Benzo (g,h,i) perylene	5.394442	4.41141	-17.1	20
n-Nonane (C9)	205747.8	178145.1	-13.4	25
n-Decane	204813.1	177246.8	-13.5	25
n-Dodecane	203877.7	177366.4	-13.0	25
n-Tetradecane	201712.1	175558.9	-13.0	25
n-Hexadecane	195278.5	171379.9	-12.2	25
n-Octadecane	187431.2	163878.6	-12.6	25
n-Nonadecane	181249.4	157773.2	-13.0	25
n-Eicosane	176548	154203.4	-12.7	25
n-Docosane	168319.2	149450.9	-11.2	25
n-Tetracosane	163462.3	147525.3	-9.7	25
n-Hexacosane	158574.7	147268.9	-7.1	25
n-Octacosane	158586.1	145498.3	-8.3	25
n-Triacontane	158880.7	143480.3	-9.7	25
n-Hexatriacontane	159740.7	129895.3	-18.7	25
Naphthalene (aliphatic fraction)	247081.9			
2-Methylnaphthalene (aliphatic fraction)	252288.7			

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Notes and Definitions

QR2	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

