

GROUNDWATER ANALYTICAL

Groundwater Analytical, Inc.
P.O. Box 1200
228 Main Street
Buzzards Bay, MA 02532

Telephone (508) 759-4441
FAX (508) 759-4475
www.groundwateranalytical.com

October 18, 2005

Mr. Kevin Trainer
GeoInsight, Inc.
5 Lan Drive
Second Floor
Westford, MA 01886

LABORATORY REPORT

Project: **Buzzards Bay/3871-002**
Lab ID: **88045**
Received: **10-03-05**

Dear Kevin:

Enclosed are the analytical results for the above referenced project. The project was processed for Standard turnaround.

This letter authorizes the release of the analytical results, and should be considered a part of this report. This report contains a sample receipt report detailing the samples received, a project narrative indicating project changes and non-conformances, a quality control report, and a statement of our state certifications.

The analytical results contained in this report meet all applicable NELAC standards, except as may be specifically noted, or described in the project narrative. This report may only be used or reproduced in its entirety.

I attest under the pains and penalties of perjury 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.

Should you have any questions concerning this report, please do not hesitate to contact me.

Sincerely,



Eric H. Jensen
Operations Manager

EHJ/kal
Enclosures

Sample Receipt Report

Project: **Buzzards Bay/3871-002**
Client: **GeoInsight, Inc.**
Lab ID: **88045**

Delivery: **GWA Courier**
Airbill: **n/a**
Lab Receipt: **10-03-05**

Temperature: **2.0'C**
Chain of Custody: **Present**
Custody Seal(s): **n/a**

Lab ID	Field ID		Matrix	Sampled	Method				Notes
88045-1	W2A02-92905-01		Soil	9/29/05 14:00	MA DEP EPH with PAHs by 8270C-Mod SIM				
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship		
C579959	250 mL Glass	n/a	n/a	None	n/a	n/a	n/a		

Massachusetts DEP EPH Method Extractable Petroleum Hydrocarbons by GC/FID

Field ID: W2A02-92905-01
Project: Buzzards Bay/3871-002
Client: Geolnsight, Inc.
Laboratory ID: 88045-01
Sampled: 09-29-05 14:00
Received: 10-03-05 19:40
Extracted: 10-05-05 10:00
Analyzed (AL): 10-13-05 17:14
Analyzed (AR): 10-13-05 17:59
Analyst: MM

Matrix: Soil
Container: 250 mL Glass
Preservation: Cool
QC Batch ID: EP-2166-M
Instrument ID: GC-9 Agilent 6890
Sample Weight: 16 g
Final Volume: 1 mL
% Solids: 16
Aliphatic Dilution Factor: 1
Aromatic Dilution Factor: 1

EPH Ranges	Concentration	Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL		mg/Kg	180
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL		mg/Kg	180
n-C11 to n-C22 Aromatic Hydrocarbons [†] [◊]	BRL		mg/Kg	180
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons [†]	BRL		mg/Kg	180

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
Fractionation: 2-Fluorobiphenyl	16	11	67 %	40 - 140 %
2-Bromonaphthalene	16	11	69 %	40 - 140 %
Extraction: Chloro-octadecane	16	8.4	52 %	40 - 140 %
ortho -Terphenyl	16	9.6	59 %	40 - 140 %

QA/QC Certification	
1. Were all QA/QC procedures required by the method followed?	Yes
2. Were all performance/acceptance standards for the required QA/QC procedures achieved?	Yes
3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?	No
Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.	

Method Reference: Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).
Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

Report Notations: BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
[†] Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
[◊] n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.

EPA Method 8270C (Modified) MA DEP EPH Polynuclear Aromatic Hydrocarbons by GC/MS-SIM

Field ID: W2A02-92905-01
Project: Buzzards Bay/3871-002
Client: GeolInsight, Inc.

Matrix: Soil
Container: 250 mL Glass
Preservation: Cool

Laboratory ID: 88045-01
Sampled: 09-29-05 14:00
Received: 10-03-05 19:40
Extracted: 10-05-05 10:00
Analyzed: 10-13-05 19:50
Analyst: JJT

QC Batch ID: EP-2166-M
Instrument ID: MS-6 HP 6890
Sample Volume: 16 g
Final Volume: 1 mL
Percent Solids: 16
Dilution Factor: 1

CAS Number	Analyte	Concentration	Notes	Units	Reporting Limit
91-20-3	Naphthalene	73		ug/Kg	61
91-57-6	2-Methylnaphthalene	41	j	ug/Kg	61
208-96-8	Acenaphthylene	BRL		ug/Kg	61
83-32-9	Acenaphthene	190		ug/Kg	61
86-73-7	Fluorene	220		ug/Kg	61
85-01-8	Phenanthrene	670		ug/Kg	61
120-12-7	Anthracene	180		ug/Kg	61
206-44-0	Fluoranthene	890		ug/Kg	61
129-00-0	Pyrene	690		ug/Kg	61
56-55-3	Benzo[a]anthracene	340		ug/Kg	61
218-01-9	Chrysene	310		ug/Kg	61
205-99-2	Benzo[b]fluoranthene	310		ug/Kg	61
207-08-9	Benzo[k]fluoranthene	150		ug/Kg	61
50-32-8	Benzo[a]pyrene	240		ug/Kg	61
193-39-5	Indeno[1,2,3-c,d]pyrene	200		ug/Kg	61
53-70-3	Dibenzo[a,h]anthracene	94		ug/Kg	61
191-24-2	Benzo[g,h,i]perylene	170		ug/Kg	61

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho- Terphenyl	16,000	9,000	55 %	40 - 140 %

Method Reference: Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).
Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.
Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons.
Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations: BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
j Indicates an estimated value detected below the reporting limit for the analyte.

Project Narrative

Project: **Buzzards Bay/3871-002**
Client: **GeolInsight, Inc.**

Lab ID: **88045**
Received: **10-03-05 19:40**

A. Documentation and Client Communication

The following documentation discrepancies, and client changes or amendments were noted for this project:

- 1 . No documentation discrepancies, changes, or amendments were noted.

B. Method Modifications, Non-Conformances and Observations

The sample(s) in this project were analyzed by the references analytical method(s), and no method modifications, non-conformances or analytical issues were noted, except as indicated below:

- 1 . No method modifications non-conformances or analytical issues were noted.

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CHAIN-OF-CUSTODY RECORD AND WORK ORDER

NO 201276

Project Name:

Buzzards Bay

Firm:

GeoInsight

Project Number:

3871-002

Address:

5 Lan Drive, Suite 200

Sampler Name:

LAC

City / State / Zip:

Westford, MA 01886

Project Manager:

Kevin Tranter

Telephone:

978 418-1114

INSTRUCTIONS: Use separate line for each container (except replicates).

TURNAROUND

☒ STANDARD (10 Business Days)

☐ PRIORITY (5 Business Days)

☐ RUSH (RAN- Rush requires Rush Authorization Number)

☒ Please Email to: katramm@geoinsight.com

☐ Please FAX to:

BILLING

☐ Purchase Order No.:

☐ Third Party Billing:

☐ GWA Quote:

ANALYSIS REQUEST

Volatiles

Sanitizers

Extractions

Metals

Problem Hydrocarbons

Ext. TPH

Ext. TPH

Ext. TPH

Ext. TPH

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REMARKS / SPECIAL INSTRUCTIONS

MA DEP MCP Data Enhancement Affirmation

☐ YES ☐ NO MCP Data Certification required.

☐ YES ☐ NO MCP Drinking Water Sample included.

(Require collection of contingent duplicate sample.

Trip blanks are also required, if VOA sample collected).

Signature: PAH analyzed by 8870 w/ (SM)

Selected for monitoring

DATA QUALITY OBJECTIVES

Regulatory Program

State

Standard

☒ MCP GW-1/S-1

☐ PWS Form

☒ MCP GW-2/S-2

☐ MWRA

☒ NY STARS

☐ Drinking Water

☐ Wastewater

☐ Waste Disposal

☐ VT

☐ Dredge Material

☐

Project Specific QC

Many regulatory programs and EPA methods require project specific QC. Project specific QC includes Sample Duplicates, Matrix Spikes, and/or Matrix Spike Duplicates. Laboratory QC is not project specific unless prearranged. Project specific QC samples are charged on a per sample basis. Each MS, MSD and Sample Duplicate requires an additional sample aliquot.

Project Specific QC Required

☐ Sample Duplicate

☐ Matrix Spike

☐ Matrix Spike Duplicate

Selection of QC Sample

☐ Please use sample:

CHAIN-OF-CUSTODY RECORD

NOTE: All samples submitted subject to Standard Terms and Conditions on reverse hereof.

Relinquished by Sampler:

Date

Time

Received by:

Date

Time

Relinquished by:

Date

Time

Received by Laboratory:

Date

Time

Shipping/Airbill Number:

Custody Seal Number:

Method of Shipment: ☒ GWA Courier ☐ Express Mail ☐ Federal Express

☐ UPS ☐ Hand

Quality Assurance/Quality Control

A. Program Overview

Groundwater Analytical conducts an active Quality Assurance program to ensure the production of high quality, valid data. This program closely follows the guidance provided by *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans*, US EPA QAMS-005/80 (1980), and *Test Methods for Evaluating Solid Waste*, US EPA, SW-846, Update III (1996).

Quality Control protocols include written Standard Operating Procedures (SOPs) developed for each analytical method. SOPs are derived from US EPA methodologies and other established references. Standards are prepared from commercially obtained reference materials of certified purity, and documented for traceability.

Quality Assessment protocols for most organic analyses include a minimum of one laboratory control sample, one method blank, one matrix spike sample, and one sample duplicate for each sample preparation batch. All samples, standards, blanks, laboratory control samples, matrix spikes and sample duplicates are spiked with internal standards and surrogate compounds. All instrument sequences begin with an initial calibration verification standard and a blank; and excepting GC/MS sequences, all sequences close with a continuing calibration standard. GC/MS systems are tuned to appropriate ion abundance criteria daily, or for each 12 hour operating period, whichever is more frequent.

Quality Assessment protocols for most inorganic analyses include a minimum of one laboratory control sample, one method blank, one matrix spike sample, and one sample duplicate for each sample preparation batch. Standard curves are derived from one reagent blank and four concentration levels. Curve validity is verified by standard recoveries within plus or minus ten percent of the curve.

B. Definitions

Batches are used as the basic unit for Quality Assessment. A Batch is defined as twenty or fewer samples of the same matrix which are prepared together for the same analysis, using the same lots of reagents and the same techniques or manipulations, all within the same continuum of time, up to but not exceeding 24 hours.

Laboratory Control Samples are used to assess the accuracy of the analytical method. A Laboratory Control Sample consists of reagent water or sodium sulfate spiked with a group of target analytes representative of the method analytes. Accuracy is defined as the degree of agreement of the measured value with the true or expected value. Percent Recoveries for the Laboratory Control Samples are calculated to assess accuracy.

Method Blanks are used to assess the level of contamination present in the analytical system. Method Blanks consist of reagent water or an aliquot of sodium sulfate. Method Blanks are taken through all the appropriate steps of an analytical method. Sample data reported is not corrected for blank contamination.

Surrogate Compounds are used to assess the effectiveness of an analytical method in dealing with each sample matrix. Surrogate Compounds are organic compounds which are similar to the target analytes of interest in chemical behavior, but which are not normally found in environmental samples. Percent Recoveries are calculated for each Surrogate Compound.

Quality Control Report Laboratory Control Samples

Category: MA DEP EPH Method QC Batch ID: EP-2166-M Matrix: Soil Units: mg/Kg	LCS Instrument ID: GC-9 Agilent 6890 Extracted: 10-05-05 10:00 Analyzed (AL): 10-13-05 18:37 Analyzed (AR): 10-13-05 19:21 Analyst: MM	LCSD Instrument ID: GC-9 Agilent 6890 Extracted: 10-05-05 10:00 Analyzed (AL): 10-13-05 20:05 Analyzed (AR): 10-13-05 20:50 Analyst: MM
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CAS Number	Analyte	LCS			LCS Duplicate				QC Limits	
		Spiked	Measured	Recovery	Spiked	Measured	Recovery	RPD	Spike	RPD
111-84-2	<i>n</i> -Nonane (C ₉)	3.3	1.7	53 %	3.3	1.8	53 %	1 %	30 - 140 %	25%
124-18-5	<i>n</i> -Decane (C ₁₀)	3.3	2.1	64 %	3.3	2.1	64 %	1 %	40 - 140 %	25%
112-40-3	<i>n</i> -Dodecane (C ₁₂)	3.3	2.2	66 %	3.3	2.2	65 %	2 %	40 - 140 %	25%
629-59-4	<i>n</i> -Tetradecane (C ₁₄)	3.3	2.3	68 %	3.3	2.2	67 %	3 %	40 - 140 %	25%
544-76-3	<i>n</i> -Hexadecane (C ₁₆)	3.3	2.5	76 %	3.3	2.4	74 %	4 %	40 - 140 %	25%
593-45-3	<i>n</i> -Octadecane (C ₁₈)	3.3	2.8	83 %	3.3	2.7	83 %	1 %	40 - 140 %	25%
n/a	<i>n</i> -C9 to <i>n</i> -C18 Group	20	14	69 %	20	13	68 %	1 %	40 - 140 %	25%
629-92-5	<i>n</i> -Nonadecane (C ₁₉)	3.3	2.7	81 %	3.3	2.7	81 %	1 %	40 - 140 %	25%
112-95-8	<i>n</i> -Eicosane (C ₂₀)	3.3	2.7	83 %	3.3	2.7	83 %	0 %	40 - 140 %	25%
629-97-0	<i>n</i> -Docosane (C ₂₂)	3.3	2.7	81 %	3.3	2.7	81 %	1 %	40 - 140 %	25%
646-31-1	<i>n</i> -Tetracosane (C ₂₄)	3.3	2.6	80 %	3.3	2.6	79 %	1 %	40 - 140 %	25%
630-01-3	<i>n</i> -Hexacosane (C ₂₆)	3.3	2.5	77 %	3.3	2.5	76 %	2 %	40 - 140 %	25%
630-02-4	<i>n</i> -Octacosane (C ₂₈)	3.3	2.5	77 %	3.3	2.5	75 %	3 %	40 - 140 %	25%
638-68-6	<i>n</i> -Triacosane (C ₃₀)	3.3	2.5	77 %	3.3	2.5	74 %	3 %	40 - 140 %	25%
630-06-8	<i>n</i> -Hexatriacontane (C ₃₆)	3.3	2.4	73 %	3.3	2.2	67 %	9 %	40 - 140 %	25%
n/a	<i>n</i> -C19 to <i>n</i> -C36 Group	26	21	79 %	26	20	77 %	2 %	40 - 140 %	25%
91-20-3	Naphthalene	3.3	1.7	52 %	3.3	1.7	52 %	1 %	40 - 140 %	25%
91-57-6	2-Methylnaphthalene	3.3	1.8	54 %	3.3	1.8	56 %	3 %	40 - 140 %	25%
208-96-8	Acenaphthylene	3.3	1.9	59 %	3.3	2.1	63 %	6 %	40 - 140 %	25%
83-32-9	Acenaphthene	3.3	1.8	55 %	3.3	2.0	60 %	8 %	40 - 140 %	25%
86-73-7	Fluorene	3.3	1.9	58 %	3.3	2.2	67 %	14 %	40 - 140 %	25%
85-01-8	Phenanthrene	3.3	2.0	61 %	3.3	2.4	72 %	17 %	40 - 140 %	25%
120-12-7	Anthracene	3.3	2.3	70 %	3.3	2.7	82 %	15 %	40 - 140 %	25%
206-44-0	Fluoranthene	3.3	2.2	67 %	3.3	2.7	81 %	19 %	40 - 140 %	25%
129-00-0	Pyrene	3.3	2.2	66 %	3.3	2.7	80 %	19 %	40 - 140 %	25%
56-55-3	Benzo[a]anthracene	3.3	2.2	66 %	3.3	2.6	80 %	20 %	40 - 140 %	25%
218-01-9	Chrysene	3.3	2.6	78 %	3.3	2.9	87 %	11 %	40 - 140 %	25%
205-99-2	Benzo[b]fluoranthene	3.3	1.9	59 %	3.3	2.4	72 %	21 %	40 - 140 %	25%
207-08-9	Benzo[k]fluoranthene	3.3	2.4	74 %	3.3	2.8	84 %	12 %	40 - 140 %	25%
50-32-8	Benzo[a]pyrene	3.3	2.2	66 %	3.3	2.6	78 %	17 %	40 - 140 %	25%
193-39-5	Indeno[1,2,3-c,d]pyrene	3.3	1.9	58 %	3.3	2.3	71 %	20 %	40 - 140 %	25%
53-70-3	Dibenzo[a,h]anthracene	3.3	2.6	78 %	3.3	2.8	86 %	9 %	40 - 140 %	25%
191-24-2	Benzo[g,h,i]perylene	3.3	2.0	61 %	3.3	2.4	72 %	16 %	40 - 140 %	25%
n/a	PAH Group	56	36	64 %	56	41	73 %	14 %	40 - 140 %	25%

QC Surrogate Compound		Spiked	Measured	Recovery	Spiked	Measured	Recovery	QC Limits	
Fractionation:	2-Fluorobiphenyl	2.7	1.6	59 %	2.7	1.7	63 %	40 - 140 %	
	2-Bromonaphthalene	2.7	1.6	59 %	2.7	1.8	67 %	40 - 140 %	
Extraction:	Chloro-octadecane	2.7	2.0	74 %	2.7	2.0	74 %	40 - 140 %	
	ortho-Terphenyl	2.7	1.6	59 %	2.7	1.9	70 %	40 - 140 %	

Fractionation Breakthrough Evaluation								QC Limits	
91-20-3	Naphthalene	LCS		0 %	LCSD		0 %	5 %	
91-57-6	2-Methylnaphthalene	LCS		1 %	LCSD		0 %	5 %	

Method Reference: Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).
Method modified by use of microwave accelerated solvent extraction technique.

Report Notations: All calculations performed prior to rounding. Quality Control Limits are defined by the methodology, or alternatively based upon the historical average recovery plus or minus three standard deviation units.
The LCS and LCSD are prepared from separate source standards than those used for calibration.

Quality Control Report Method Blank

Category: MA DEP EPH
QC Batch ID: EP-2166-M
Matrix: Soil

Instrument ID: GC-9 Agilent 6890
Extracted: 10-05-05 10:00
Analyzed (AL): 10-13-05 17:12
Analyzed (AR): 10-13-05 17:53
Analyst: MM

EPH Ranges		Concentration	Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]		BRL		mg/Kg	30
n-C19 to n-C36 Aliphatic Hydrocarbons [†]		BRL		mg/Kg	30
n-C11 to n-C22 Aromatic Hydrocarbons [†] [◊]		BRL		mg/Kg	30
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons [†]		BRL		mg/Kg	30

QC Surrogate Compound		Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	2.7	2.0	76 %	40 - 140 %
	2-Bromonaphthalene	2.7	2.0	74 %	40 - 140 %
Extraction:	Chloro-octadecane	2.7	1.8	69 %	40 - 140 %
	ortho-Terphenyl	2.7	1.9	72 %	40 - 140 %

Method Reference: Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).
Sample extraction performed by microwave accelerated solvent extraction technique.

Report Notations: BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
[†] Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
[◊] n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.

Quality Control Report Laboratory Control Samples

Category: EPA 8270C Modified
QC Batch ID: EP-2166-M
Matrix: Soil
Units: ug/Kg

LCS
Instrument ID: MS-6 HP 6890
Extracted: 10-05-05 10:00
Analyzed: 10-13-05 17:54
Analyst: JJT

LCSD
Instrument ID: MS-6 HP 6890
Extracted: 10-05-05 10:00
Analyzed: 10-13-05 18:32
Analyst: JJT

CAS Number	Analyte	LCS			LCS Duplicate				QC Limits	
		Spiked	Measured	Recovery	Spiked	Measured	Recovery	RPD	Spike	RPD
91-20-3	Naphthalene	330	170	52 %	330	170	52 %	0 %	40 - 140 %	20%
91-57-6	2-Methylnaphthalene	330	190	58 %	330	180	55 %	5 %	40 - 140 %	20%
85-01-8	Phenanthrene	330	230	70 %	330	220	67 %	4 %	40 - 140 %	20%
83-32-9	Acenaphthene	330	240	73 %	330	230	70 %	4 %	40 - 140 %	20%
208-96-8	Acenaphthylene	330	220	67 %	330	210	64 %	5 %	40 - 140 %	20%
86-73-7	Fluorene	330	230	70 %	330	220	67 %	4 %	40 - 140 %	20%
120-12-7	Anthracene	330	230	70 %	330	220	67 %	4 %	40 - 140 %	20%
206-44-0	Fluoranthene	330	270	82 %	330	260	79 %	4 %	40 - 140 %	20%
129-00-0	Pyrene	330	260	79 %	330	250	76 %	4 %	40 - 140 %	20%
56-55-3	Benzo[a]anthracene	330	260	79 %	330	250	76 %	4 %	40 - 140 %	20%
218-01-9	Chrysene	330	260	79 %	330	260	79 %	0 %	40 - 140 %	20%
205-99-2	Benzo[b]fluoranthene	330	240	73 %	330	240	73 %	0 %	40 - 140 %	20%
207-08-9	Benzo[k]fluoranthene	330	250	76 %	330	250	76 %	0 %	40 - 140 %	20%
50-32-8	Benzo[a]pyrene	330	240	73 %	330	240	73 %	0 %	40 - 140 %	20%
193-39-5	Indeno[1,2,3-c,d]pyrene	330	230	70 %	330	230	70 %	0 %	40 - 140 %	20%
53-70-3	Dibenzo[a,h]anthracene	330	220	67 %	330	220	67 %	0 %	40 - 140 %	20%
191-24-2	Benzo[g,h,i]perylene	330	250	76 %	330	250	76 %	0 %	40 - 140 %	20%

QC Surrogate Compound	Spiked	Measured	Recovery	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl	2,700	2,100	78 %	2,700	1,900	70 %	40 - 140 %

Method Reference: Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).
Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.
Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons.
Sample extraction performed by EPA Method 3510C.

Report Notations: All calculations performed prior to rounding. Quality Control Limits are defined by the methodology, or alternatively based upon the historical average recovery plus or minus three standard deviation units.
The LCS and LCSD are prepared from separate source standards than those used for calibration.

Quality Control Report Method Blank

Category: EPA Method 8270C (Mod.) - EPH PAHs by GC/MS-SIM
QC Batch ID: EP-2166-M
Matrix: Soil

Instrument ID: MS-6 HP 6890
Extracted: 10-05-05 10:00
Analyzed: 10-13-05 19:11
Analyst: JJT

CAS Number	Analyte	Concentration	Notes	Units	Reporting Limit
91-20-3	Naphthalene	BRL		ug/Kg	10
91-57-6	2-Methylnaphthalene	BRL		ug/Kg	10
208-96-8	Acenaphthylene	BRL		ug/Kg	10
83-32-9	Acenaphthene	BRL		ug/Kg	10
86-73-7	Fluorene	BRL		ug/Kg	10
85-01-8	Phenanthrene	BRL		ug/Kg	10
120-12-7	Anthracene	BRL		ug/Kg	10
206-44-0	Fluoranthene	BRL		ug/Kg	10
129-00-0	Pyrene	BRL		ug/Kg	10
56-55-3	Benzo[a]anthracene	BRL		ug/Kg	10
218-01-9	Chrysene	BRL		ug/Kg	10
205-99-2	Benzo[b]fluoranthene	BRL		ug/Kg	10
207-08-9	Benzo[k]fluoranthene	BRL		ug/Kg	10
50-32-8	Benzo[a]pyrene	BRL		ug/Kg	10
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL		ug/Kg	10
53-70-3	Dibenzo[a,h]anthracene	BRL		ug/Kg	10
191-24-2	Benzo[g,h,i]perylene	BRL		ug/Kg	10

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho- Terphenyl	2,700	1,700	65 %	40 - 140 %

Method Reference: Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).
Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.
Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons.
Sample extraction performed by EPA Method 3546.

Report Notations: BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

Certifications and Approvals

Groundwater Analytical maintains environmental laboratory certification in a variety of states.

Copies of our current certificates may be obtained from our website:

<http://www.groundwateranalytical.com/qualifications.htm>

CONNECTICUT, Department of Health Services, PH-0586

Categories: Potable Water, Wastewater, Solid Waste and Soil

http://www.dph.state.ct.us/BRS/Environmental_Lab/OutStateLabList.htm

FLORIDA, Department of Health, Bureau of Laboratories, E87643

Categories: SDWA, CWA, RCRA/CERCLA

<http://www.floridadep.org/labs/qa/dohforms.htm>

MAINE, Department of Human Services, MA103

Categories: Drinking Water and Wastewater

<http://www.state.me.us/dhs/eng/water/Compliance.htm>

MASSACHUSETTS, Department of Environmental Protection, M-MA-103

Categories: Potable Water and Non-Potable Water

<http://www.state.ma.us/dep/bspt/wes/files/certlabs.pdf>

NEW HAMPSHIRE, Department of Environmental Services, 202703

Categories: Drinking Water and Wastewater

<http://www.des.state.nh.us/asp/NHELAP/labsview.asp>

NEW YORK, Department of Health, 11754

Categories: Potable Water, Non-Potable Water and Solid Waste

<http://www.wadsworth.org/labcert/elap/comm.html>

PENNSYLVANIA, Department of Environmental Protection, 68-665

Environmental Laboratory Registration (Non-drinking water and Non-wastewater)

<http://www.dep.state.pa.us/Labs/Registered/>

RHODE ISLAND, Department of Health, 54

Categories: Surface Water, Air, Wastewater, Potable Water, Sewage

http://www.healthri.org/labs/labsCT_MA.htm

U.S. Department of Agriculture, Soil Permit, S-53921

Foreign soil import permit

VERMONT, Department of Environmental Conservation, Water Supply Division

Category: Drinking Water

<http://www.vermontdrinkingwater.org/wsops/labtable.PDF>