

Matrix Spike and Matrix Spike Duplicate **EPA Method 8270C**

61

1

Field ID: Project:

W1C02 **Buzzards Bay**

Client: Matrix: Geolnsight, Inc. Solid

Container: Preservation:

250 ml Glass Cool

Laboratory ID: Sampled: Received: Extracted: Analyzed: Analyst QC Batch ID: Instrument ID:

Sample Weight:

Final Volume:

Percent Solids:

Dilution Factor:

76039-06 76039-26 08-25-04 08:05 08-24-04 08:05 08-26-04 16:00 08-31-04 16:00 09-01-04 02:26 IJТ SV-1491-P MS-6 HP 6890 16 g 1 mL

Parent Sample

08-26-04 16:00 09-08-04 19:00 09-09-04 22:36 ŊΤ SV-1491-P MS-6 HP 6890 15 g 1 mL 61 1

Matrix Spike

Spike Duplicate 76039-25 08-24-04 08:05 08-26-04 16:00 09-08-04 19:00 09-09-04 22:36 IJΤ

SV-1491-P MS-6 HP 6890 16 g 1 mL 61

CAS Number	Solve	Unspiled	MS	245	- WS	MSD	MSD	MSD	RPD	QC Lin	
		Sample (ug/kg)	Spided (up/kg)	Measured (w/Kg)	Recovery	Spiked	Measured	Recovery	Town Livers	Spike	RPD
91-20-3	Naphthalene	6	540	260	47 %	(ug/kg) 520	(ug/Kg)	40.0			
91-57-6	2-Methylnaphthalene	6	540	260	49 %		250	49 %	0%	40 - 140%	30 %
208-96-8	Acenaphthylene	BRL	540	170	30 %	520 520	260	51 %	0 %	40 - 140%	30 %
83-32-9	Acenaphthene	BRL	540	290	54 %	520	170	32 %	2 %	40 - 140%	30 %
86-73-7	Fluorene	BRL	540	300	57 %		300	57 %	1%_	40 - 140%	30 %
85-01-8	Phenanthrene	6	540	350		520	300	59 %	1%	40 - 140%	30 %
120-12-7	Anthracene	BRL	540		65 %	520	340	65 %	4 %	40 - 140%	30 %
206-44-0	Fluoranthene	14		390	71 %	520	380	73 %	2 %	40 - 140%	30 %
129-00-0	Pyrene		540	380	71 %	520	370	71 %	3 %	40 - 140%	30 %
56-55-3	Benzo[a]anthracene	8	540	380	70 %	520	360	70 %	5 %	40 - 140%	30 %
218-01-9	Chrysene	BRL	540	370	69 %	520	350	67 %	8 %	40 - 140%	30 %
205-99-2		6	540	390	71 %	520	350	68 %	9 %	40 - 140%	30 %
207-08-9	Benzo[b]fluoranthene	6	540	350	64 %	520	300	60 %	11 %	40 - 140%	30 %
	Benzo[k]fluoranthene	5	540	370	68 %	520	350	66 %	7%	40 - 140%	30 %
50-32-8	Benzo[a]pyrene	5	540	400	73 %	520	360	70 %	9%	40 - 140%	30 %
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	540	400	73 %	520	360	70 %	9%	40 - 140%	30 %
53-70-3	Dibenzo[a,h]anthracene	BRL	540	400	75 %	520	3 <i>7</i> 0	70 %	10 %	40 - 140%	30 %
191-24-2	Benzo(g,h,i]perylene	BRt.	540	400	75 %	520	370	71 %	11 %	40 - 140%	30 %

QC Surrogate Compound		Yma	Surr	Ogafe Recovi		-77 movie		ZIME I	OC Limits
Nitroben zene-d5	40%	1,100	560	58%	1,000	530	51%	A CONTROL OF THE PARTY OF THE P	30 - 130 %
2-Fluorobiphenyl Terphenyl-d14	40%	1,100		42%	1,000	440	42%	i	30 - 130 %
respienyana	76%	1,100	780	72%	1,000	730	70%		30 - 130 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996). Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:



Field ID:

W1F05-MSQ1

Project:

Buzzards Bay/3871-000

Client:

Geolnsight, Inc.

76039-07

Laboratory ID: Sampled: Received:

08-26-04 10:50 08-26-04 16:00

Extracted: Analyzed (AL): Analyzed (AR):

08-26-04 20:00 08-31-04 19:12 08-31-04 19:56

Analyst:

MM

Matrix:

Container:

Soil 120 mL Amber Glass

Preservation:

Cool

QC Batch ID: Instrument ID: EP-1935-M GC-9 Agilent 6890

Sample Weight: Final Volume: % Solids:

16 g 1 mL 49

Aliphatic Dilution Factor: 1

Aromatic Dilution Factor: 1

	a a manufacture and a manufact
EPH Ranges	Concentration Notes
n-C9 to n-C18 Aliphatic Hydrocarbons †	Control Contro
n-C19 to n-C36 Aliphatic Hydrocarbons †	BRL mg/Kg 59
n-C11 to n-C22 Aromatic Hydrocarbons +0	BRL mg/Kg 59
	BRL mg/Kg 59
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons †	RD)

QC Surrogate C				<u>DKC</u>	mg/Kg 59
	Ornbound	Spiked	Measured	Recovery	
Fractionation:	2-Fluorobiphenyl	5.2	4.1	7 9 %	OC Limits
	2-Bromonaphthalene	5.2	3.2	61 %	40 - 140 %
Extraction:	Chloro-octadecane	5.2	3.0	57 %	40 - 140 %
<u> </u>	ortho -Terphenyl	5.2	3.3	63 %	40 - 140 %
Not the plant of the same					40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved? 3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Yes Yes 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

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.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be BRL reliably quantified under routine laboratory operating conditions. Reporting fimits 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.

GROUNDWATER ANALYTICAL

EPA Method 8270C Polynuclear Aromatic Hydrocarbons by GC/MS-SIM

Field ID: Project: Client:

W1F05-MS01 Buzzards Bay/3871-000

Geolnsight, Inc.

Laboratory ID: 76039-07 Sampled:

08-26-04 10:50 Received: 08-26-04 16:00 Cleaned Up: 08-30-04 22:30

Extracted: Analyzed:

08-31-04 16:00 09-01-04 03:05

Analyst: JJT Matrix:

Soil

Container:

120 ml Amber Glass

Preservation:

Cool

QC Batch ID: Instrument ID:

SV-1486-P MS-6 HP 6890

Sample Weight: Final Volume:

15 g 1 mL

Percent Solids:

49 Dilution Factor:

CAS Namber	Analyte	Concentration Notes	Units	
91-20-3	Naphthalene	BRL		
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	20
208-96-8	Acenaphthylene	BRL	ug/Kg	20
83-32-9	Acenaphthene	BRL	ug/Kg	20
86-73-7	Fluorene		ug/Kg	20
85-01-8	Phenanthrene	BRL BRL	ug/Kg	20
120-12-7	Anthracene	9 j	ug/Kg	20
206-44-0	Fluoranthene	BRL	ug/Kg	20
129-00-0		20	ug/Kg	20
	Pyrene		ug/Kg	20
56-55-3	Benzo[a]anthracene	9 i	ug/Kg	20
218-01-9	Chrysene	11	ug/Kg	
205-99-2	Benzo[b]fluoranthene	11 i		
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	20
50-32-8	Benzo[a]pyrene		ug/Kg	20
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/Kg	20
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	20
191-24-2		BRL	ug/Kg	20
	Benzo[g,h,i]perylene	BRL	ug/Kg	20

OC Sucrogate Compound	Spiked	Measured	Recovery	
Nitrobenzene-d5	1,300	520	39 %	QC Limits
2-Fluorobiphenyl	1.300	340	0.5 %	30 - 130 %
Terphenyl-d14	1,300	860	65 % m	30 - 130 %
	1,500	000	0.3 %	30 - 130 %

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. Sample extraction performed by EPA Method 3545. Cleanup performed by EPA Method 3630C. Results are reported on a dry weight basis.

- 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.
- Indicates an estimated value detected below the reporting limit for the analyte.
- Surrogate recovery outside recommended limits due to sample matrix interference.



Field ID: Project:

Client:

76039-08

W2A14-MS01

Buzzards Bay/3871-000 Geolasight, Inc.

Laboratory ID: Sampled:

08-26-04 13:15 Received: 08-26-04 16:00 08-26-04 20:00

Extracted: Analyzed (AL): Analyzed (AR):

08-31-04 20:41 08-31-04 21:25

Analyst:

MM

Matrix:

Soil Container: 120 mL Amber Glass

Preservation:

Cool

QC Batch ID:

EP-1935-M

Instrument ID: Sample Weight:

GC-9 Agilent 6890 15 g

Final Volume: % Solids:

1 mL 72

Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1

EPH Rar			•
		Conventration Notes	Units Resident limit
II-C9 to n-	C18 Aliphatic Hydrocarbons †	BRL	and the second s
n-C19 to n	-C36 Aliphatic Hydrocarbons †		mg/Kg 41
n-C11 to n	-C22 Aromatic Hydrocarbons + o	BRL	mg/Kg 41
		BRL	mg/Kg 41
<u>Unadjusted</u>	n-C11 to n-C22 Aromatic Hydrocarbons †		41
	- Truomane Tryorocarpons	BRI	

QC Surrogate C	ompound	Spiked			mg/Kg 41
Fractionation:	2-Fluorobiphenyl	3.6	2.5	Recovery 68 %	QCEmits
	2-Bromonaphthalene	3.6	2.1	57 %	40 - 140 %
(ADACTION:	Chloro-octadecane	3.6	1.8	49 %	40 - 140 % 40 - 140 %
	ortho-Terphenyl	3.6	1.9	52 %	40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- Were all performance/acceptance standards for the required QA/QC procedures achieved? 3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Yes Yes

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. 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. ٥
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.

GROUNDWATER ANALYTICAL

EPA Method 8270C Polynuclear Aromatic Hydrocarbons by GC/MS-SIM

Field ID: W2A14-MS01 Matrix: Project: Soil Buzzards Bay/3871-000 Container: 120 mL Amber Glass Client: Geolnsight, Inc. Preservation: Cool Laboratory ID: 76039-08 QC Batch ID: SV-1486-P Sampled: 08-26-04 13:15 Instrument ID: MS-6 HP 6890 Received: 08-26-04 16:00 Sample Weight: Cleaned Up: 15 g 08-30-04 22:30 Final Volume: Extracted: 1 mL 08-31-04 16:00 Percent Solids: Analyzed: 72 09-01-04 03:44 Dilution Factor: Analyst: 7 IJΤ

CAS Number	Analyte	Concentration Notes		
91-20-3	Naphthalene		Units	Reporting Limit
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	13
208-96-8	Acenaphthylene	BRL	ug/Kg	13
83-32-9	Acenaphthene	BRL	ug/Kg	13
86-73-7	Fluorene	BRL	ug/Kg	13
85-01-8	Phenanthrene	BRŁ	ug/Kg	13
120-12-7	Anthracene	BRL	ug/Kg	13
206-44-0	Fluoranthene	BRL	ug/Kg	13
129-00-0	Ругеле	14	ug/Kg	13
56-55-3	Benzo[a]anthracene	14	ug/Kg	- 13
218-01-9	Chrysene	6 j	ug/Kg	13
205-99-2	Benzo[b]fluoranthene	6 j	ug/Kg	13
207-08-9	Benzo[k]fluoranthene	5 j	ug/Kg	13
50-32-8	Benzo[a]pyrene	5 j	ug/Kg	- 13
193-39-5		6 j	ug/Kg	13
53-70-3	Indeno[1,2,3-c,d]pyrene	BRL	ug/Kg	13
191-24-2	Dibenzo[a,h]anthracene	BR1	ug/Kg	
	Benzo[g,h,i]perylene	BRL		73
OC Surmonto Co			⊔g/Kg	13

	CA_Surrogate Compound	Spiked		Mary Company of the C	
	Nitrobenzene-d5			Resovery	QCLimits and a
		900	360	39 %	
	2-Fluorobiphenyl	900	360	40 %	30 - 130 %
i	Terphenyl-d14	000			30 - 130 %
		900	740	82 %	70 120 0

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. Sample extraction performed by EPA Method 3545. Cleanup performed by EPA Method 3630C. Results are reported on a dry weight basis.

Report Notations:

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.

Indicates an estimated value detected below the reporting limit for the analyte.



Field ID: W2A02-TP01 Project: Buzzards Bay/3871-000 Client: Geolasight, Inc. Laboratory ID: 76039-15 Sampled: 08-24-04 08:30 Received: 08-26-04 16:00 Extracted: 08-26-04 16:00 Analyzed (AL): 09-01-04 12:34 Analyzed (AR): 09-01-04 13:17 Analyst: MM

Matrix: Aqueous Container: 1 L Amber Glass Preservation: H2SO4/Cool

QC Batch ID: Instrument ID: Sample Volume: Final Volume:

EP-1409-F GC-7 HP 5890 1000 mL

Aliphatic Dilution Factor: Aromatic Dilution Factor: 1

1 mL

Units

ug/L

ug/L

	The street ractor:
EPH Ranges	
n-C9 to n-C18 Aliphatic Hydrocarbons 1	Concentration Notes
II-C19 to n-C36 Aliphatic Hydrocarbons †	BRL
n-C11 to n-C22 Aromatic Hydrocarbons ^{f o}	BRL
Lipadiustad - Can	BRL

Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons ug/L 150 BRL QC Surrogate Compound ug/L 150 Spiked Measured Fractionation: 2-Fluorobiphenyl Recovery QC Limits 40 35 2-Bromonaphthalene 87 % 40 40 - 140 % Extraction: 35 Chloro-octadecane 87 % 40 40 - 140 % 30 ortho-Terphenyl 75 % 40 40 - 140 % 35 86 % 40 - 140 %

QA/QC Certification

- Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

3. Were any significant modifications made to the method, as specified in Section 11.3?

Yes

Reporting Limit

500

500

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 Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by separatory funnel technique.

- 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.



Field ID: W2A02-TP01 Project: Buzzards Bay/3871-000 Client: Geolnsight, Inc. Laboratory ID: 76039-15 Sampled: 08-24-04 08:30 Received: 08-26-04 16:00 Extracted: 08-26-04 16:00 Analyzed: 09-01-04 12:25 Analyst: JJT

Matrix: Container:

Aqueous I L Amber Glass

Preservation:

H2SO4/Coo!

QC Batch (D: Instrument ID:

EP-1409-F

Sample Volume:

MS-6 HP 6890 1000 mL

Final Volume:

1 mL

Dilution Factor:

	<i>,</i> , .			Di.	rector:	7	
CAS Number	Analyte	September 1997		- <u>-</u> -			
91-20-3	Naphthalene		Cor	entration	Notes		
91-5 <i>7-</i> 6	2-Methylnaphthalene			BRL	10 mm	Units	Reporting Limi
208-96-8	Acenaphthylene		_	BRL		ug/L	0.5
83-32-9	Acenaphthene			BRL		ug/l	0.5
86-73-7	Fluorene			BRL		ug/L	0.5
85-01-8	Phenanthrene			BRL		ug/L	0.5
120-12-7	Anthracene			BRL		ug/L	0.5
206-44-0				BRL		ug/L	0.5
129-00-0	Fluoranthene			BRL		ug/L	0.5
56-55-3	Pyrene		7	BRL		ug/L	0.5
218-01-9	Benzo[a]anthracene			BRL		ug/L	0.5
205-99-2	Chrysene			BRL		ug/L	0.1
207-08-9	Benzo[b]fluoranthene		 -			ug/L	0.1
50-32-8	Benzo[k]fluoranthene		+	BRL		ug/L	0.1
193-39-5	Benzo[a]pyrene		 	BRL		ug/L	0.1
3-70-3	Indeno[1,2,3-c,d]pyrene		 	BRL		ug/L	0.1
	Dibenzo[a,h]anthracene		- 	BRL		ug/L	0.1
91-24-2	Benzo[g,h,i]perylene		 	BRL		ug/L	0.1
⊋C Surrogate Co				BRL		ug/L	0.1
ortho-Terphenyl	A - TRACE - CONTROL OF THE PROPERTY OF THE PRO	Spiked	Measured	Recovery			
		40	43	107 %	2 (f) (m) (1) (1)	QC	Limits
ethod Reference:	Test Methods for Evaluating So			10/ /6		40 -	140 %

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:



Field ID: W1F04-W01 Project: Buzzards Bay/3871-000 Client: Geolasight, Inc. Laboratory ID: 76039-16 Sampled: 08-24-04 12:32 Received: 08-26-04 16:00 Extracted: 08-26-04 16:00 Analyzed (AL): 09-01-04 14:01 Analyzed (AR): 09-01-04 14:44 Analyst: MM

Matrix: Aqueous Container: 1 L Amber Glass Preservation: H2SO4/Cool

QC Batch ID: Instrument ID: Sample Volume:

EP-1409-F GC-7 HP 5890 850 mL

Final Volume: 1 mL Aliphatic Dilution Factor: 1

Aromatic Dilution Factor: 1

EP (Ranges	
n-C9 to n-C18 Aliphatic Hydrocarbons †	on Notes Units Reporting Limit
n-C19 to n-C36 Aliphatic Hydrocarbons 1	BRL ug/L 590
n-C11 to n-C22 Aromatic Hydrocarbons † °	BRL ug/l 500
	BRL ug/L 180
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons †	BRL

QC Surrogate C	Oppound	and the same of	Taran - Name - N	JKL	ug/L	180
	2-Fluorobiphenyl	Spiked		Recovery		C-Limits
	2-Bromonaphthalene	4/ -	40	84 %		20 to 100 miles
Extraction:	Chloro-octadecane	47	38	81 %		- 140 %
	Chloro-octadecane	47	37	79 %	40	- 140 %
L	ortho-Terphenyl	47	38	81 %	40	- 140 %
				01 70	40	- 140 %

QA/QC Centification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Were any significant modifications made to the method, as specified in Section 11.3?

Yes Yes 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

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by separatory funnel technique.

- 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.



Field ID: W1F04-W01 Project: Buzzards Bay/3871-000 Client: Geolnsight, Inc. Laboratory ID: 76039-16 Sampled: 08-24-04 12:32 Received: 08-26-04 16:00 Extracted: 08-26-04 16:00 Analyzed: 09-01-04 13:04 Analyst: IIT

Matrix: Container:

1 L Amber Glass

Preservation:

H2SO4/Cool

QC Batch ID: Instrument ID: Sample Volume:

EP-1409-F MS-6 HP 6890

Final Volume:

850 mL 1 mL

Analyst:	JJT			Dilution Factor:	1 mL	
CAS Number	Analyte	2500-2600-250 			•	
91-20-3	Naphthalene		Concentration	Notes		
91-57-6	2-Methylnaphthalene		BRL		Units	Reporting Limit
208-96-8	Acenaphthylene		BRL		ug/L	0.6
83-32-9	Acenaphthene		BRL		ug/L	0.6
86-73-7	Fluorene		BRL		ug/L	0.6
85-01-8	Phenanthrene		BRL		ug/L	0.6
120-12-7	Anthracene		BRL		ug/L	0.6
206-44-0	Fluoranthene		BRL		ug/L	0.6
129-00-0	Pyrene		BRL		ug/L	0.6
56-55-3			BRL		ug/L	0.6
218-01-9	Benzo[a]anthracene				ug/L	0.6
205-99-2	Chrysene		BRL BRL		ug/I	0.1
207-08-9	Benzo[b]fluoranthene		BRL		ug/L	0.1
50-32-8	Benzo[k]fluoranthene		BRL		ug/L	0.1
93-39-5	Benzo[a]pyrene	 	BRL		ug/L	0.1
3-70-3	Indeno[1,2,3-c,d]pyrene		BRL		ug/L	
	Dibenzo[a,h]anthracene		BRL BRL		ug/L	0.1
91-24-2	Benzo[g,h,i]perylene		BRLBRL		ug/L	0.1
2C Surrogate Co			BRL			0.1
rtho-Terphenyl	Service Control of the Control of th	piked Measur	ed Recovery		ug/L	0.1
		47 47	100 N	and the state of t	QCI	Limits
ethod Reference:	Test Methods for Evaluating Solid V	Vaste LIS EDA CU	100 /6			140 %

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:



Field ID:

W1C02-TP01

Project:

Buzzards Bay/3871-000

Client:

Geolnsight, Inc.

Laboratory ID: Sampled:

76039-17

Received:

08-25-04 08:00 08-26-04 16:00

Extracted:

08-26-04 16:00

Analyzed (AL): Analyzed (AR):

09-01-04 11:12 09-01-04 11:51

Analyst:

MM

Matrix:

Aqueous

Container:

1 L Amber Glass

Preservation:

H2SO4/Cool

QC Batch ID: Instrument ID:

EP-1409-F GC-7 HP 5890

Sample Volume:

1000 mL

Final Volume:

1 mL Aliphatic Dilution Factor: 1

Aromatic Dilution Factor: 1

eri Bango	- Concentration Notes		
n-C9 to n-C18 Aliphatic Hydrocarbons †		Units	Reporting Limit
n-C19 to n-C36 Aliphatic Hydrocarbons †	BRL	ug/L_	500
n-C11 to n-C22 Aromatic Hydrocarbons + 6	BRL BRL	_ug/L	500
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons 1	DKL	ug/L	150
and the state of t	BRL	ug/L	150

QC Surrogate Co	Impound	Spiked	Measured			
	2-Fluorobiphenyl	40	36	Recovery 90 %		C Limits
Extraction:	2-Bromonaphthalene	40	35	87 %		- 140 %
Extraction;	Chloro-octadecane ortho-Terphenyl	40	33	83 %	 	- 140 % - 140 %
Control of the contro	oruro-reiphenyi	40	33	83 %		- 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?
- Were any significant modifications made to the method, as specified in Section 11.3?

Yes 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

Yes

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by separatory funnel technique.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be BRL 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. + ٥
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID: W1C02-TP01 Project: Buzzards Bay/3871-000 Client: Geolnsight, Inc. Laboratory ID: 76039-17 Sampled: 08-25-04 08:00 Received: 08-26-04 16:00 Extracted: 08-26-04 16:00 Analyzed: 09-07-04 13:44 Analyst:

JJT

Matrix: Container: Preservation: QC Batch ID: Instrument ID:

1 L Amber Glass H2SO4/Cool

EP-1409-F MS-6 HP 6890 Sample Volume: 1000 mL

Final Volume: Dilution Factor:

1 mL

CAS Number	Analyte	Gardia Pro-Pro				
91-20-3	Naphthalene		Cone	entration	Notes Units	Reporting Limit
91-57-6	2-Methylnaphthalene		- 	BRL	ug/L	0.5
208-96-8	Acenaphthylene			BRL	ug/L	0.5
83-32-9	Acenaphthene			BRI	ug/L	0.5
86-73-7	Fluorene		-	BRL	ug/L	0.5
85-01-8	Phenanthrene		- 	BRL	ug/L	
120-12-7	Anthracene			BRL	ug/L	0.5
206-44-0	Fluoranthene			BRL	ug/L	0.5
129-00-0	Pyrene	-		BRL	ug/L	0.5
56-55-3	Benzo[a]anthracene		-	BRL	ug/l	0.5
218-01-9	Chrysene			BRL	ug/L	0.5
205-99-2	Benzo[b]fluoranthene			BRL	ug/L	0.1
207-08-9	Benzo[k]fluoranthene			BRL	ug/L	0.1
50-32-8	Benzo[a]pyrene		-	BRL	ug/L	0.1
193-39-5	Indeno[1,2,3-c,d]pyrene		<u> </u>	BRL	ug/L	0.1
53- <i>7</i> 0-3	Dibenzo[a,h]anthracene		_	BRL	ug/L	0.1
191-24-2	Benzolg,h,i]perylene		<u> </u>	BRL	ug/L	0.1
202			<u> </u>	BRL		0.1
QC Surnogate Co	mpound	Spiked	Measured		ug/L	0.1
ortho-Terphenyl		40	39	Recovery	er ve jar gr	Limits
lethod Reference:	Test Methods for Evaluating Sol			98 %		140 %

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:



Field ID: W1C02-TP02 Project: Buzzards Bay/3871-000 Client: Geolnsight, Inc. Laboratory ID: 76039-18 Sampled: 08-25-04 08:20 Received: 08-26-04 16:00 Extracted: 08-26-04 16:00 Analyzed (AL):

09-01-04 12:34 09-01-04 13:17

Analyst:

Analyzed (AR):

Container: Preservation: 1 L Amber Glass

H2SO4/Cool

QC Batch ID: Instrument ID:

EP-1409-F GC-7 HP 5890

Sample Volume:

1000 mL

Final Volume:

1 mL

Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1

- Co to	Concentration Notes Units Reporting Ling
n-C19 to n-C36 Aliphatic Hydrocarbons †	BRL ug/L 500
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL ug/L 500
	BRL
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons [†]	BRI 150

QC Surrogate Compound	Spiked	i.		150
Fractionation: 2-Fluorobiphenyl	- AMACU	The state of the s	Recovery	QC Limits
	40	36	90 %	
2-Bromonaphthalene Extraction: Chloro estado	40	37	91 %	40 - 140 %
cmoro-octadecane	40	32	80 %	40 - 140 %
ortho-Terphenyl	40	35	 	40 - 140 %
			89 %	40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

3. Were any significant modifications made to the method, as specified in Section 11.3?

Yes

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality Nο control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by separatory funnel technique.

- 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. t
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range. ٥
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID: W1C02-TP02

Project: Client:

Buzzards Bay/3871-000

Geolnsight, Inc.

Laboratory ID:

76039-18

Sampled: Received: Extracted: 08-25-04 08:20 08-26-04 16:00 08-26-04 16:00

Analyzed: Analyst:

09-01-04 14:23

Matrix: Container:

Aqueous 1 L Amber Glass

Preservation:

H2SO4/Cool EP-1409-F

QC Batch ID: Instrument ID:

MS-6 HP 6890

Sample Volume: Final Volume:

1000 mL 1 mL

Dilution Factor:

CAS Number	Analyte		The state of the s	Centration Note		
91-20-3	Naphthalene			The second secon	S Unids	Reporting Limit
91-57-6	2-Methylnaphthalene			BRL	ug/L	0.5
208-96-8	Acenaphthylene			BRL	ug/L	0.5
83-32-9	Acenaphthene			BRL	ug/L	0.5
86-73-7	Fluorene			BRL	ug/L	0.5
85-01-8	Phenanthrene			BRL	ug/L	0.5
120-12-7	Anthracene			BRL	ug/L	0.5
206-44-0	Fluoranthene		- 	BRL	ug/L	0.5
129-00-0	Pyrene			BRL	ug/L	0.5
56-55-3	Benzo[a]anthracene			BRL	ug/L	0.5
218-01-9	Chrysene	·	-	BRL	ug/L	0.1
205-99-2	Benzo[b]fluoranthene		 	BRL	ug/L	0.1
207-08-9	Benzo[k]fluoranthene		-	BRL	ug/L	0.1
60-32-8				BRL	ug/L	0.1
93-39-5	Benzo[a]pyrene		<u> </u>	BRL	ug/L	0.1
3-70-3	Indeno[1,2,3-c,d]pyrene			BRL	ug/L	0.1
91-24-2	Dibenzo[a,h]anthracene			BRL	ug/L	0.1
	Benzo[g,h,i]perylene			BRL	ug/L	0.1
C Surrogate Co	мироння	Spiked	Measured			
rtho-Temphenyl		40		Besovery	Q(Limits
	Test Mark 1 C = 1	40_	42	104 %		- 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:



Field ID: Project:

W1F05-TP01 Buzzards Bay/3871-000

Client:

Geolnsight, Inc.

Laboratory ID: Sampled:

76039-19 08-26-04 10:35

Received: Extracted:

08-26-04 16:00 08-26-04 16:00

Analyzed (AL): Analyzed (AR):

09-01-04 14:01 09-01-04 14:44

Analyst:

MM

Matrix:

Aqueous

Container: Preservation: 1 L Amber Glass H2SO4/Cool

QC Batch ID:

EP-1409-F

Instrument ID: Sample Volume:

GC-7 HP 5890 1000 mL

Final Volume: Aliphatic Dilution Factor: 1

1 ml

Aromatic Dilution Factor: 1

Purages	Concentration Notes		
II-C9 to II-C18 Allphatic Hydrocarbons T	200	Units	Reporting Limit
n-C19 to n-C36 Aliphatic Hydrocarbons †	BRI BRI	ug/L	500
n-C11 to n-C22 Aromatic Hydrocarbons † 6	BRL	⊔g/L	500
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons f	DKL	ug/L	150
"CIT to II-C22 Aromatic Hydrocarbons	BRI	7.	

QC Surrogate C	ompound	Spiked	Measurec	And the second s		150
	2-Fluorobiphenyl	40	35	Recovery and the same of the s		C Limits
Extraction:	2-Bromonaphthalene	40	34	84 %		- 140 % - 140 %
- CANACHONI.	Chloro-octadecane	40	31	79 %	 	- 140 %
	ortho-Terphenyl	40	32	80 %	+	- 140 % - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved? 3. Were any significant modifications made to the method, as specified in Section 11.3?

Yes Yes

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 separatory funnel technique.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be BRL 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.



Field ID: W1F05-TP01 Project: Buzzards Bay/3871-000 Client: Geolnsight, Inc. Laboratory ID: 76039-19 Sampled: 08-26-04 10:35 Received: 08-26-04 16:00 Extracted: 08-26-04 16:00 Analyzed: 09-01-04 15:02 Analyst: IJТ

Matrix: Container: Preservation: QC Batch ID: Instrument ID: Sample Volume:

Aqueous 1 L Amber Glass H2SO4/Cool EP-1409-F MS-6 HP 6890

1000 mL 1 mL

Final Vo	lume:
Dilution	Factor:

CAS Number	Aualyte			centration	ALCOHOLOGICA CONTRACTOR		
91-20-3	Naphthalene				Notes	Units	Reporting Limit
91-5 <i>7-</i> 6	2-Methylnaphthalene			BRL	 	ug/L	0.5
208-96-8	Acenaphthylene			BRL		ug/L	0.5
83-32-9	Acenaphthene			BRL		ug/L	0.5
86-73-7	Fluorene		- 	BRL	<u> </u>	ug/L	0.5
85-01-8	Phenanthrene		-	BRL		ug/L	0.5
120-12-7	Anthracene			BRL		ug/L	0.5
206-44-0	Fluoranthene			BRL		ug/L	0.5
129-00-0	Pyrene	·· ·	 	BRL		ug/L	0.5
56-55-3	Benzo[a]anthracene			BRL		ug/L	0.5
218-01-9	Chrysene		ļ <u> </u>	BRL		ug/L	0.1
05-99-2	Benzo[b]fluoranthene			BRL	i	ug/L	0.1
207-08-9	Benzo[k]fluoranthene			BRL		ug/L	0.1
0-32-8	Benzo[a]pyrene		<u> </u>	BRL		ug/L	0.1
93-39-5	Indeno[1,2,3-c,d]pyrene		ļ	BRL		ug/L	0.1
3-70-3	Dibenzo[a,h]anthracene			BRL		ug/L	0.1
91-24-2	Benzo[g,h,i]perylene			BRL		ug/L	0.1
			1	BRL		ug/L	0.1
QC Surrogate Co	mpound	Spiked	Measured				
ortho-Terphenyl	and the second s	40	38	and the same of th	The state of the s		Limits
ethod Reference:	Test Methods for Evaluation C. I		36_	96 %		40 -	140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US FPA, 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:



Project Narrative

Project: Client: **Buzzards Bay/3871-000**

Geolnsight, Inc.

Lab ID:

76039

Received: 08

08-26-04 16:00

A. Documentation and Client Communication

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

 A Matrix Spike and a Matrix Spike Duplicate were performed on sample 'W2A02-MS01', per Kevin Trainer 8-27-04.

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 . Project Non-conformance. Project 76039 was received at a temperature of 15.0'C. This measurement is outside the recommended range of 2-6'C.
- 2. EPA 8270C Modification: Samples 76039-01,-02,-03,-04,-05,-06,-07,-08,-25,-26. Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method. GC/MS-SIM was used to achieve low quantification limits necessary for regulatory compliance.
- 3. EPA 8270C Note: Samples 76039-01,-02,-03,-04,-05,-06,-07,-08,-25,-26. Samples were analyzed for only selected polynuclear aromatic hydrocarbons (PAH) target analytes, as requested by client.
- 4. MA DEP EPH Note: Samples 76039-01,-02,-03,-04,-05,-06,-07,-08,-22,-23. Samples were analyzed for only carbon range analytes, as requested by client.
- 5. MA DEP EPH Note: Samples 76039-15,-16,-17,-18,-19. Polynuclear aromatic hydrocarbon (PAH) target analytes were identified and quantified by GC/MS-SIM, in accordance with the method provision for alternate determinative methodologies. GC/MS-SIM was used to achieve low quantification limits necessary for regulatory determination by GC/FID.
- EPA 8270C Non-conformance: Sample 76039-07. Sample had surrogate recovery outside recommended limits due to sample matrix interference.

VALYTI	VALYTICAL	Buzzards Telephone www.grour	6uzzaroa Bay, MA 02532 Telephone (508) 759-4441 • FAX (508) 759-4475 www.groundwateranalytical.com	VX (508) 759-4475 n	AND WOR	D WORK ORDER	R R									ÿ	091068	•
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