



## ANALYTICAL REPORT

Lab Number:	L2320537
Client:	Anchor QEA, LLC 123 Tice Boulevard Suite 205 Woodcliff Lake, NJ 07677
ATTN:	Deborah Chiavelli
Phone:	(201) 571-0945
Project Name:	GASCO HYDROCARBON INVESTIGATIO
Project Number:	000029-02.78 T12A
Report Date:	05/09/23

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

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**Project Name:** GASCO HYDROCARBON INVESTIGATIO  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2320537-01	MW2112-041723-NAPL	OIL	OR	04/17/23 09:30	04/18/23
L2320537-02	MW2112-041723-NET	SHEEN NET	OR	04/17/23 09:30	04/18/23

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

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### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### PIANO Volatile Organics

WG1774659-7 Dup: The relative percent difference for 3-methylnonane (36%) is above the RPD limit of 25%. This compound represented less than 10% of the compounds detected; therefore no further action was taken.

#### Alkylated PAHs

L2320537-02D: The sample has elevated detection limits due to the dilution required by the sample matrix.

#### Saturated Hydrocarbons

L2320537-02: The surrogate recoveries are outside the acceptance criteria for o-terphenyl (0%) and d50-tetracosane (174%), due to the sample matrix.

L2320537-02D: The sample was re-analyzed on dilution in order to quantitate the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

L2320537-02D: The surrogate recoveries are outside the acceptance criteria for o-terphenyl (0%) and d50-Tetracosane (0%), due to the dilution required to quantitate the sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Elizabeth Porta

Title: Technical Director/Representative

Date: 05/09/23

# ORGANICS

# **VOLATILES**

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**SAMPLE RESULTS**

**Lab ID:** L2320537-01  
**Client ID:** MW2112-041723-NAPL  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Oil  
**Analytical Method:** 1,8260D  
**Analytical Date:** 05/03/23 23:36  
**Analyst:** RAY  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
3-Methyl-1-butene	ND		mg/kg	9.26	1.38	1
Isopentane	ND		mg/kg	9.26	1.69	1
1-Pentene	ND		mg/kg	9.26	1.69	1
2-Methyl-1-Butene	ND		mg/kg	9.26	1.44	1
Pentane	ND		mg/kg	9.26	2.89	1
trans-2-Pentene	ND		mg/kg	9.26	1.25	1
Isoprene	ND		mg/kg	9.26	1.65	1
cis-2-Pentene	ND		mg/kg	9.26	1.49	1
Tertiary Butanol	ND		mg/kg	116	15.0	1
2,2-Dimethylbutane	ND		mg/kg	9.26	2.86	1
4-Methyl-1-pentene	ND		mg/kg	9.26	1.44	1
Cyclopentane	ND		mg/kg	9.26	2.40	1
2,3-Dimethylbutane	ND		mg/kg	9.26	3.82	1
2-Methylpentane	ND		mg/kg	9.26	2.51	1
Methyl tert butyl ether	ND		mg/kg	9.26	1.91	1
3-Methylpentane	ND		mg/kg	9.26	1.47	1
1-Hexene	ND		mg/kg	9.26	1.30	1
n-Hexane	ND		mg/kg	9.26	1.52	1
Isopropyl Ether	ND		mg/kg	9.26	1.12	1
trans-2-Hexene	ND		mg/kg	9.26	1.21	1
2-Methyl-2-pentene	ND		mg/kg	9.26	1.42	1
cis-2-Hexene	ND		mg/kg	9.26	1.25	1
Ethyl-Tert-Butyl-Ether	ND		mg/kg	9.26	1.40	1
2,2-Dimethylpentane	ND		mg/kg	9.26	1.24	1
Methylcyclopentane	ND		mg/kg	9.26	1.24	1
2,4-Dimethylpentane	ND		mg/kg	9.26	1.14	1
2,2,3-Trimethylbutane	ND		mg/kg	9.26	1.25	1
1,2-Dichloroethane	ND		mg/kg	9.26	1.36	1

**Project Name:** GASCO HYDROCARBON INVESTIGATION**Lab Number:** L2320537**Project Number:** 000029-02.78 T12A**Report Date:** 05/09/23**SAMPLE RESULTS**

Lab ID: L2320537-01  
 Client ID: MW2112-041723-NAPL  
 Sample Location: OR

Date Collected: 04/17/23 09:30  
 Date Received: 04/18/23  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
3,3-Dimethylpentane	ND		mg/kg	9.26	1.72	1
Cyclohexane	ND		mg/kg	9.26	1.14	1
2-Methylhexane	ND		mg/kg	9.26	1.46	1
Benzene	2.84	J	mg/kg	9.26	1.41	1
2,3-Dimethylpentane	ND		mg/kg	9.26	1.23	1
Thiophene	ND		mg/kg	9.26	1.31	1
1,1-Dimethylcyclopentane	ND		mg/kg	9.26	1.11	1
3-Methylhexane	ND		mg/kg	9.26	1.48	1
Tertiary-Amyl Methyl Ether	ND		mg/kg	9.26	1.14	1
1,3-Dimethylcyclopentane (cis)	ND		mg/kg	9.26	1.39	1
3-Ethylpentane	ND		mg/kg	9.26	1.34	1
1-Heptene/1,2-DMCP (trans)	ND		mg/kg	18.5	2.71	1
Isooctane	ND		mg/kg	9.26	1.01	1
trans-3-Heptene	ND		mg/kg	9.26	1.44	1
Heptane	ND		mg/kg	9.26	1.61	1
trans-2-Heptene	ND		mg/kg	9.26	1.18	1
cis-2-Heptene	ND		mg/kg	9.26	1.79	1
2,2-Dimethylhexane	ND		mg/kg	9.26	1.34	1
Methylcyclohexane	3.92	J	mg/kg	9.26	1.25	1
2,5-Dimethylhexane	ND		mg/kg	9.26	1.61	1
2,4-Dimethylhexane	ND		mg/kg	9.26	1.12	1
Ethylcyclopentane	ND		mg/kg	9.26	1.23	1
2,2,3-Trimethylpentane	ND		mg/kg	9.26	1.61	1
2,3,4-Trimethylpentane	2.12	J	mg/kg	9.26	1.21	1
2,3,3-Trimethylpentane	2.11	J	mg/kg	9.26	1.84	1
2,3-Dimethylhexane	ND		mg/kg	9.26	2.24	1
2-Methylheptane	3.61	J	mg/kg	9.26	1.56	1
4-Methylheptane	ND		mg/kg	9.26	1.59	1
3-Methylheptane	ND		mg/kg	9.26	1.32	1
3-Ethylhexane	ND		mg/kg	9.26	1.66	1
Toluene	ND		mg/kg	9.26	1.25	1
2-Methylthiophene	ND		mg/kg	9.26	0.787	1
1,4-Dimethylcyclohexane (trans)	9.60		mg/kg	9.26	1.20	1
3-Methylthiophene	ND		mg/kg	9.26	1.08	1
1-Octene	ND		mg/kg	23.1	1.42	1
Octane	ND		mg/kg	9.26	1.09	1
1,2-Dimethylcyclohexane (trans)	21.3		mg/kg	9.26	1.36	1



**Project Name:** GASCO HYDROCARBON INVESTIGATION**Lab Number:** L2320537**Project Number:** 000029-02.78 T12A**Report Date:** 05/09/23**SAMPLE RESULTS****Lab ID:** L2320537-01**Date Collected:** 04/17/23 09:30**Client ID:** MW2112-041723-NAPL**Date Received:** 04/18/23**Sample Location:** OR**Field Prep:** Not Specified**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
1,2-Dibromoethane	ND		mg/kg	9.26	1.48	1
cis-2-Octene	ND		mg/kg	9.26	1.06	1
Isopropylcyclopentane	ND		mg/kg	9.26	1.36	1
1,2-Dimethylcyclohexane (cis)	15.2		mg/kg	9.26	2.69	1
2,5-Dimethylheptane	8.06	J	mg/kg	9.26	1.55	1
3,5-Dimethylheptane	3.02	J	mg/kg	9.26	1.30	1
3,3-Dimethylheptane	1.27	J	mg/kg	9.26	1.12	1
1,1,4-Trimethylcyclohexane	ND		mg/kg	9.26	0.921	1
2,3-Dimethylheptane	24.3		mg/kg	9.26	1.06	1
3,4-Dimethylheptane	10.2		mg/kg	9.26	1.57	1
4-Methyloctane	6.52	J	mg/kg	9.26	1.55	1
2-Methyloctane	6.80	J	mg/kg	9.26	2.37	1
Ethylbenzene	ND		mg/kg	9.26	1.00	1
2-Ethylthiophene	ND		mg/kg	9.26	0.815	1
3-Methyloctane	16.9		mg/kg	9.26	1.04	1
3,3-Diethylpentane	ND		mg/kg	9.26	1.08	1
p/m-Xylene	2.68	J	mg/kg	18.5	1.76	1
1-Nonene	ND		mg/kg	23.1	1.25	1
trans-3-Nonene	ND		mg/kg	9.26	1.10	1
cis-3-Nonene	ND		mg/kg	9.26	1.73	1
Nonane (C9)	ND		mg/kg	9.26	1.44	1
Styrene	ND		mg/kg	9.26	0.935	1
o-Xylene	2.51	J	mg/kg	9.26	0.968	1
Xylene (Total) <sup>1</sup>	5.19	J	mg/kg	9.26	0.968	1
2-Nonene	ND		mg/kg	23.1	1.18	1
Isopropylcyclohexane	ND		mg/kg	9.26	0.981	1
Isopropylbenzene	14.7		mg/kg	9.26	0.866	1
3,3-Dimethyloctane	6.24	J	mg/kg	9.26	0.935	1
n-Propylbenzene	7.69	J	mg/kg	9.26	0.819	1
2-Methylnonane	ND		mg/kg	9.26	1.31	1
3-Methylnonane	14.4		mg/kg	9.26	1.29	1
1-Methyl-3-Ethylbenzene	ND		mg/kg	9.26	1.46	1
1-Methyl-4-Ethylbenzene	ND		mg/kg	9.26	1.30	1
1,3,5-Trimethylbenzene	1.62	J	mg/kg	9.26	1.06	1
1-Decene	ND		mg/kg	9.26	1.20	1
Isobutylcyclohexane	ND		mg/kg	9.26	0.755	1
1-Methyl-2-Ethylbenzene	7.76	J	mg/kg	9.26	0.787	1

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**Lab ID:** L2320537-01  
**Client ID:** MW2112-041723-NAPL  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
Decane (C10)	10.7		mg/kg	9.26	1.25	1
tert-Butylbenzene	2.74	J	mg/kg	9.26	0.977	1
1,2,4-Trimethylbenzene	2.60	J	mg/kg	9.26	0.958	1
Isobutylbenzene	11.4		mg/kg	9.26	1.25	1
sec-Butylbenzene	21.3		mg/kg	9.26	1.20	1
1-Methyl-3-Isopropylbenzene	ND		mg/kg	9.26	1.19	1
1-Methyl-4-Isopropylbenzene	ND		mg/kg	9.26	0.981	1
1,2,3-Trimethylbenzene	ND		mg/kg	9.26	1.03	1
1-Methyl-2-Isopropylbenzene	7.04	J	mg/kg	9.26	1.00	1
Indane	9.89		mg/kg	9.26	0.569	1
1,3-Diethylbenzene	35.0		mg/kg	9.26	1.15	1
1-Methyl-3-N-Propylbenzene	ND		mg/kg	9.26	0.935	1
Indene	2.31	J	mg/kg	9.26	0.537	1
1-Methyl-4-N-Propylbenzene	5.65	J	mg/kg	9.26	1.16	1
n-Butylbenzene	20.6		mg/kg	9.26	0.912	1
1,2-Dimethyl-4-Ethylbenzene	ND		mg/kg	9.26	1.13	1
1,2-Diethylbenzene	23.8		mg/kg	9.26	1.37	1
1-Methyl-2-N-Propylbenzene	ND		mg/kg	9.26	1.15	1
1,4-Dimethyl-2-Ethylbenzene	ND		mg/kg	9.26	0.866	1
Undecane	45.0		mg/kg	9.26	1.03	1
1,3-Dimethyl-4-Ethylbenzene	ND		mg/kg	9.26	0.898	1
1,3-Dimethyl-5-Ethylbenzene	41.3		mg/kg	9.26	1.09	1
1,3-Dimethyl-2-Ethylbenzene	28.0		mg/kg	9.26	0.690	1
1,2-Dimethyl-3-Ethylbenzene	ND		mg/kg	9.26	0.588	1
1,2,4,5-Tetramethylbenzene	154		mg/kg	9.26	0.718	1
1,2,3,5-Tetramethylbenzene	ND		mg/kg	9.26	0.704	1
N-Pentylbenzene	15.1		mg/kg	9.26	1.15	1
1,2,3,4-Tetramethylbenzene	ND		mg/kg	9.26	0.991	1
1,3-Dimethyl-5-tert-Butylbenzene	ND		mg/kg	9.26	1.32	1
Dodecane (C12)	ND		mg/kg	23.1	3.04	1
1,3,5-Triethylbenzene	ND		mg/kg	9.26	1.76	1
Naphthalene	13.3		mg/kg	9.26	3.86	1
Benzothiophene	ND		mg/kg	9.26	4.89	1
1,2,4-Triethylbenzene	25.2		mg/kg	9.26	1.57	1
Hexylbenzene	ND		mg/kg	9.26	1.78	1
MMT	ND		mg/kg	23.1	5.95	1
Tridecane	47.6		mg/kg	23.1	6.45	1

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**Lab ID:** L2320537-01  
**Client ID:** MW2112-041723-NAPL  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - Mansfield Lab						
2-Methylnaphthalene	ND		mg/kg	23.1	6.12	1
1-Methylnaphthalene	ND		mg/kg	23.1	6.80	1
Tetradecane (C14)	ND		mg/kg	23.1	2.83	1
Pentadecane	ND		mg/kg	23.1	5.16	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	123		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	86		70-130

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**Lab Number:** L2320537  
**Report Date:** 05/09/23

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260D  
 Analytical Date: 05/02/23 17:19  
 Analyst: RAY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01 Batch: WG1774659-6					
3-Methyl-1-butene	ND		mg/kg	10.0	1.48
Isopentane	ND		mg/kg	10.0	1.83
1-Pentene	ND		mg/kg	10.0	1.82
2-Methyl-1-Butene	ND		mg/kg	10.0	1.56
Pentane	ND		mg/kg	10.0	3.12
trans-2-Pentene	ND		mg/kg	10.0	1.35
Isoprene	ND		mg/kg	10.0	1.78
cis-2-Pentene	ND		mg/kg	10.0	1.61
Tertiary Butanol	ND		mg/kg	125	16.2
2,2-Dimethylbutane	ND		mg/kg	10.0	3.08
4-Methyl-1-pentene	ND		mg/kg	10.0	1.56
Cyclopentane	ND		mg/kg	10.0	2.60
2,3-Dimethylbutane	ND		mg/kg	10.0	4.13
2-Methylpentane	ND		mg/kg	10.0	2.71
Methyl tert butyl ether	ND		mg/kg	10.0	2.06
3-Methylpentane	ND		mg/kg	10.0	1.58
1-Hexene	ND		mg/kg	10.0	1.40
n-Hexane	ND		mg/kg	10.0	1.64
Isopropyl Ether	ND		mg/kg	10.0	1.21
trans-2-Hexene	ND		mg/kg	10.0	1.30
2-Methyl-2-pentene	ND		mg/kg	10.0	1.53
cis-2-Hexene	ND		mg/kg	10.0	1.36
Ethyl-Tert-Butyl-Ether	ND		mg/kg	10.0	1.52
2,2-Dimethylpentane	ND		mg/kg	10.0	1.34
Methylcyclopentane	ND		mg/kg	10.0	1.34
2,4-Dimethylpentane	ND		mg/kg	10.0	1.24
2,2,3-Trimethylbutane	ND		mg/kg	10.0	1.35
1,2-Dichloroethane	ND		mg/kg	10.0	1.48
3,3-Dimethylpentane	ND		mg/kg	10.0	1.86

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### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260D  
 Analytical Date: 05/02/23 17:19  
 Analyst: RAY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01 Batch: WG1774659-6					
Cyclohexane	ND		mg/kg	10.0	1.24
2-Methylhexane	ND		mg/kg	10.0	1.58
Benzene	2.87	J	mg/kg	10.0	1.52
2,3-Dimethylpentane	ND		mg/kg	10.0	1.32
Thiophene	ND		mg/kg	10.0	1.42
1,1-Dimethylcyclopentane	ND		mg/kg	10.0	1.20
3-Methylhexane	ND		mg/kg	10.0	1.60
Tertiary-Amyl Methyl Ether	ND		mg/kg	10.0	1.23
1,3-Dimethylcyclopentane (cis)	ND		mg/kg	10.0	1.50
3-Ethylpentane	ND		mg/kg	10.0	1.44
1-Heptene/1,2-DMCP (trans)	ND		mg/kg	20.0	2.92
Isooctane	ND		mg/kg	10.0	1.09
trans-3-Heptene	ND		mg/kg	10.0	1.56
Heptane	ND		mg/kg	10.0	1.74
trans-2-Heptene	ND		mg/kg	10.0	1.28
cis-2-Heptene	ND		mg/kg	10.0	1.94
2,2-Dimethylhexane	ND		mg/kg	10.0	1.45
Methylcyclohexane	ND		mg/kg	10.0	1.35
2,5-Dimethylhexane	ND		mg/kg	10.0	1.74
2,4-Dimethylhexane	ND		mg/kg	10.0	1.22
Ethylcyclopentane	ND		mg/kg	10.0	1.32
2,2,3-Trimethylpentane	ND		mg/kg	10.0	1.74
2,3,4-Trimethylpentane	ND		mg/kg	10.0	1.30
2,3,3-Trimethylpentane	ND		mg/kg	10.0	1.98
2,3-Dimethylhexane	ND		mg/kg	10.0	2.42
2-Methylheptane	ND		mg/kg	10.0	1.69
4-Methylheptane	ND		mg/kg	10.0	1.72
3-Methylheptane	ND		mg/kg	10.0	1.42
3-Ethylhexane	ND		mg/kg	10.0	1.79

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260D  
 Analytical Date: 05/02/23 17:19  
 Analyst: RAY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01 Batch: WG1774659-6					
Toluene	ND		mg/kg	10.0	1.36
2-Methylthiophene	ND		mg/kg	10.0	0.850
1,4-Dimethylcyclohexane (trans)	ND		mg/kg	10.0	1.30
3-Methylthiophene	ND		mg/kg	10.0	1.17
1-Octene	ND		mg/kg	25.0	1.54
Octane	ND		mg/kg	10.0	1.18
1,2-Dimethylcyclohexane (trans)	ND		mg/kg	10.0	1.47
1,2-Dibromoethane	ND		mg/kg	10.0	1.60
cis-2-Octene	ND		mg/kg	10.0	1.14
Isopropylcyclopentane	ND		mg/kg	10.0	1.46
1,2-Dimethylcyclohexane (cis)	ND		mg/kg	10.0	2.90
2,5-Dimethylheptane	ND		mg/kg	10.0	1.68
3,5-Dimethylheptane	ND		mg/kg	10.0	1.41
3,3-Dimethylheptane	ND		mg/kg	10.0	1.21
1,1,4-Trimethylcyclohexane	ND		mg/kg	10.0	0.995
2,3-Dimethylheptane	ND		mg/kg	10.0	1.14
3,4-Dimethylheptane	ND		mg/kg	10.0	1.70
4-Methyloctane	ND		mg/kg	10.0	1.67
2-Methyloctane	ND		mg/kg	10.0	2.56
Ethylbenzene	ND		mg/kg	10.0	1.08
2-Ethylthiophene	ND		mg/kg	10.0	0.880
3-Methyloctane	ND		mg/kg	10.0	1.12
3,3-Diethylpentane	ND		mg/kg	10.0	1.16
p/m-Xylene	ND		mg/kg	20.0	1.90
1-Nonene	ND		mg/kg	25.0	1.35
trans-3-Nonene	ND		mg/kg	10.0	1.18
cis-3-Nonene	ND		mg/kg	10.0	1.87
Nonane (C9)	ND		mg/kg	10.0	1.56
Styrene	ND		mg/kg	10.0	1.01

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260D  
 Analytical Date: 05/02/23 17:19  
 Analyst: RAY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01 Batch: WG1774659-6					
o-Xylene	ND		mg/kg	10.0	1.04
Xylene (Total) <sup>1</sup>	ND		mg/kg	10.0	1.04
2-Nonene	ND		mg/kg	25.0	1.27
Isopropylcyclohexane	ND		mg/kg	10.0	1.06
Isopropylbenzene	ND		mg/kg	10.0	0.935
3,3-Dimethyloctane	ND		mg/kg	10.0	1.01
n-Propylbenzene	ND		mg/kg	10.0	0.885
2-Methylnonane	ND		mg/kg	10.0	1.42
3-Methylnonane	ND		mg/kg	10.0	1.40
1-Methyl-3-Ethylbenzene	ND		mg/kg	10.0	1.58
1-Methyl-4-Ethylbenzene	ND		mg/kg	10.0	1.41
1,3,5-Trimethylbenzene	ND		mg/kg	10.0	1.15
1-Decene	ND		mg/kg	10.0	1.30
Isobutylcyclohexane	ND		mg/kg	10.0	0.815
1-Methyl-2-Ethylbenzene	ND		mg/kg	10.0	0.850
Decane (C10)	ND		mg/kg	10.0	1.36
tert-Butylbenzene	ND		mg/kg	10.0	1.06
1,2,4-Trimethylbenzene	ND		mg/kg	10.0	1.04
Isobutylbenzene	ND		mg/kg	10.0	1.35
sec-Butylbenzene	ND		mg/kg	10.0	1.30
1-Methyl-3-Isopropylbenzene	ND		mg/kg	10.0	1.29
1-Methyl-4-Isopropylbenzene	ND		mg/kg	10.0	1.06
1,2,3-Trimethylbenzene	ND		mg/kg	10.0	1.12
1-Methyl-2-Isopropylbenzene	ND		mg/kg	10.0	1.08
Indane	ND		mg/kg	10.0	0.615
1,3-Diethylbenzene	ND		mg/kg	10.0	1.24
1-Methyl-3-N-Propylbenzene	ND		mg/kg	10.0	1.01
Indene	ND		mg/kg	10.0	0.580
1-Methyl-4-N-Propylbenzene	ND		mg/kg	10.0	1.25

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260D  
 Analytical Date: 05/02/23 17:19  
 Analyst: RAY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01 Batch: WG1774659-6					
n-Butylbenzene	ND		mg/kg	10.0	0.985
1,2-Dimethyl-4-Ethylbenzene	ND		mg/kg	10.0	1.22
1,2-Diethylbenzene	ND		mg/kg	10.0	1.48
1-Methyl-2-N-Propylbenzene	ND		mg/kg	10.0	1.24
1,4-Dimethyl-2-Ethylbenzene	ND		mg/kg	10.0	0.935
Undecane	ND		mg/kg	10.0	1.11
1,3-Dimethyl-4-Ethylbenzene	ND		mg/kg	10.0	0.970
1,3-Dimethyl-5-Ethylbenzene	ND		mg/kg	10.0	1.18
1,3-Dimethyl-2-Ethylbenzene	ND		mg/kg	10.0	0.745
1,2-Dimethyl-3-Ethylbenzene	ND		mg/kg	10.0	0.635
1,2,4,5-Tetramethylbenzene	ND		mg/kg	10.0	0.775
1,2,3,5-Tetramethylbenzene	ND		mg/kg	10.0	0.760
N-Pentylbenzene	ND		mg/kg	10.0	1.24
1,2,3,4-Tetramethylbenzene	ND		mg/kg	10.0	1.07
1,3-Dimethyl-5-tert-Butylbenzene	ND		mg/kg	10.0	1.42
Dodecane (C12)	ND		mg/kg	25.0	3.28
1,3,5-Triethylbenzene	ND		mg/kg	10.0	1.90
Naphthalene	ND		mg/kg	10.0	4.18
Benzothiophene	ND		mg/kg	10.0	5.28
1,2,4-Triethylbenzene	ND		mg/kg	10.0	1.70
Hexylbenzene	ND		mg/kg	10.0	1.92
MMT	ND		mg/kg	25.0	6.43
Tridecane	ND		mg/kg	25.0	6.96
2-Methylnaphthalene	ND		mg/kg	25.0	6.61
1-Methylnaphthalene	ND		mg/kg	25.0	7.34
Tetradecane (C14)	ND		mg/kg	25.0	3.06
Pentadecane	ND		mg/kg	25.0	5.58



**Project Name:** GASCO HYDROCARBON INVESTIGATIO  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 05/02/23 17:19  
Analyst: RAY

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - Mansfield Lab for sample(s): 01 Batch: WG1774659-6					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	104		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	93		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Lab Number:** L2320537

**Project Number:** 000029-02.78 T12A

**Report Date:** 05/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01 Batch: WG1774659-3 WG1774659-4								
1-Pentene	76		79		50-130	4		30
Pentane	82		85		50-130	4		30
Tertiary Butanol	84		85		50-130	1		30
Cyclopentane	86		89		50-130	3		30
2-Methylpentane	89		92		50-130	3		30
Methyl tert butyl ether	80		85		50-130	6		30
3-Methylpentane	93		96		50-130	3		30
1-Hexene	93		97		50-130	4		30
n-Hexane	84		86		50-130	2		30
Isopropyl Ether	84		88		50-130	5		30
Ethyl-Tert-Butyl-Ether	84		87		50-130	4		30
Methylcyclopentane	91		92		50-130	1		30
2,4-Dimethylpentane	90		95		50-130	5		30
Cyclohexane	93		97		50-130	4		30
2-Methylhexane	92		94		50-130	2		30
Benzene	91		94		50-130	3		30
2,3-Dimethylpentane	91		94		50-130	3		30
3-Methylhexane	82		82		50-130	0		30
Tertiary-Amyl Methyl Ether	80		82		50-130	2		30
Isooctane	89		92		50-130	3		30
Heptane	92		95		50-130	3		30
Methylcyclohexane	91		93		50-130	2		30
2-Methylheptane	91		92		50-130	1		30

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Lab Number:** L2320537

**Project Number:** 000029-02.78 T12A

**Report Date:** 05/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01 Batch: WG1774659-3 WG1774659-4								
3-Methylheptane	87		90		50-130	3		30
Toluene	91		93		50-130	2		30
Octane	89		90		50-130	1		30
Ethylbenzene	87		89		50-130	2		30
p/m-Xylene	90		92		50-130	2		30
Nonane (C9)	82		84		50-130	2		30
o-Xylene	89		91		50-130	2		30
Isopropylbenzene	89		91		50-130	2		30
n-Propylbenzene	91		92		50-130	1		30
1-Methyl-3-Ethylbenzene	88		90		50-130	2		30
1-Methyl-4-Ethylbenzene	92		95		50-130	3		30
1,3,5-Trimethylbenzene	90		93		50-130	3		30
1-Decene	72		74		50-130	3		30
1-Methyl-2-Ethylbenzene	91		92		50-130	1		30
Decane (C10)	84		88		50-130	5		30
1,2,4-Trimethylbenzene	85		87		50-130	2		30
sec-Butylbenzene	92		95		50-130	3		30
1-Methyl-4-N-Propylbenzene	84		86		50-130	2		30
n-Butylbenzene	86		88		50-130	2		30
1,2-Diethylbenzene	85		88		50-130	3		30
Undecane	85		87		50-130	2		30
N-Pentylbenzene	84		86		50-130	2		30
Dodecane (C12)	97		100		50-130	3		30

**Lab Control Sample Analysis****Batch Quality Control****Project Name:** GASCO HYDROCARBON INVESTIGATION**Lab Number:** L2320537**Project Number:** 000029-02.78 T12A**Report Date:** 05/09/23

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
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PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01 Batch: WG1774659-3 WG1774659-4

<b>Surrogate</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>
Dibromofluoromethane	102		102		70-130
Toluene-d8	104		104		70-130
4-Bromofluorobenzene	96		96		70-130

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537

**Report Date:** 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1774659-7 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
3-Methyl-1-butene	ND	ND	mg/kg	NC		30
Isopentane	ND	ND	mg/kg	NC		30
1-Pentene	ND	ND	mg/kg	NC		30
2-Methyl-1-Butene	ND	ND	mg/kg	NC		30
Pentane	ND	ND	mg/kg	NC		30
trans-2-Pentene	ND	ND	mg/kg	NC		30
Isoprene	ND	ND	mg/kg	NC		30
cis-2-Pentene	ND	ND	mg/kg	NC		30
Tertiary Butanol	ND	ND	mg/kg	NC		30
2,2-Dimethylbutane	ND	ND	mg/kg	NC		30
4-Methyl-1-pentene	ND	ND	mg/kg	NC		30
Cyclopentane	ND	ND	mg/kg	NC		30
2,3-Dimethylbutane	ND	ND	mg/kg	NC		30
2-Methylpentane	ND	ND	mg/kg	NC		30
Methyl tert butyl ether	ND	ND	mg/kg	NC		30
3-Methylpentane	ND	ND	mg/kg	NC		30
1-Hexene	ND	ND	mg/kg	NC		30
n-Hexane	ND	ND	mg/kg	NC		30
Isopropyl Ether	ND	ND	mg/kg	NC		30
trans-2-Hexene	ND	ND	mg/kg	NC		30
2-Methyl-2-pentene	ND	ND	mg/kg	NC		30

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATIO

**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537

**Report Date:** 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1774659-7 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
cis-2-Hexene	ND	ND	mg/kg	NC		30
Ethyl-Tert-Butyl-Ether	ND	ND	mg/kg	NC		30
2,2-Dimethylpentane	ND	ND	mg/kg	NC		30
Methylcyclopentane	ND	ND	mg/kg	NC		30
2,4-Dimethylpentane	ND	ND	mg/kg	NC		30
2,2,3-Trimethylbutane	ND	ND	mg/kg	NC		30
1,2-Dichloroethane	ND	ND	mg/kg	NC		30
3,3-Dimethylpentane	ND	ND	mg/kg	NC		30
Cyclohexane	ND	ND	mg/kg	NC		30
2-Methylhexane	ND	ND	mg/kg	NC		30
Benzene	2.84J	2.82J	mg/kg	NC		30
2,3-Dimethylpentane	ND	ND	mg/kg	NC		30
Thiophene	ND	ND	mg/kg	NC		30
1,1-Dimethylcyclopentane	ND	ND	mg/kg	NC		30
3-Methylhexane	ND	ND	mg/kg	NC		30
Tertiary-Amyl Methyl Ether	ND	ND	mg/kg	NC		30
1,3-Dimethylcyclopentane (cis)	ND	ND	mg/kg	NC		30
3-Ethylpentane	ND	ND	mg/kg	NC		30
1-Heptene/1,2-DMCP (trans)	ND	ND	mg/kg	NC		30
Isooctane	ND	ND	mg/kg	NC		30
trans-3-Heptene	ND	ND	mg/kg	NC		30

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537

**Report Date:** 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1774659-7 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
Heptane	ND	ND	mg/kg	NC		30
trans-2-Heptene	ND	ND	mg/kg	NC		30
cis-2-Heptene	ND	ND	mg/kg	NC		30
2,2-Dimethylhexane	ND	ND	mg/kg	NC		30
Methylcyclohexane	3.92J	3.47J	mg/kg	NC		30
2,5-Dimethylhexane	ND	ND	mg/kg	NC		30
2,4-Dimethylhexane	ND	ND	mg/kg	NC		30
Ethylcyclopentane	ND	ND	mg/kg	NC		30
2,2,3-Trimethylpentane	ND	ND	mg/kg	NC		30
2,3,4-Trimethylpentane	2.12J	2.00J	mg/kg	NC		30
2,3,3-Trimethylpentane	2.11J	1.98J	mg/kg	NC		30
2,3-Dimethylhexane	ND	ND	mg/kg	NC		30
2-Methylheptane	3.61J	3.84J	mg/kg	NC		30
4-Methylheptane	ND	ND	mg/kg	NC		30
3-Methylheptane	ND	ND	mg/kg	NC		30
3-Ethylhexane	ND	ND	mg/kg	NC		30
Toluene	ND	ND	mg/kg	NC		30
2-Methylthiophene	ND	ND	mg/kg	NC		30
1,4-Dimethylcyclohexane (trans)	9.60	11.6	mg/kg	19		30
3-Methylthiophene	ND	ND	mg/kg	NC		30
1-Octene	ND	ND	mg/kg	NC		30

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537

**Report Date:** 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1774659-7 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
Octane	ND	ND	mg/kg	NC		30
1,2-Dimethylcyclohexane (trans)	21.3	22.3	mg/kg	5		30
1,2-Dibromoethane	ND	ND	mg/kg	NC		30
cis-2-Octene	ND	ND	mg/kg	NC		30
Isopropylcyclopentane	ND	ND	mg/kg	NC		30
1,2-Dimethylcyclohexane (cis)	15.2	15.6	mg/kg	3		30
2,5-Dimethylheptane	8.06J	8.33J	mg/kg	NC		30
3,5-Dimethylheptane	3.02J	2.91J	mg/kg	NC		30
3,3-Dimethylheptane	1.27J	1.24J	mg/kg	NC		30
1,1,4-Trimethylcyclohexane	ND	ND	mg/kg	NC		30
2,3-Dimethylheptane	24.3	26.4	mg/kg	8		30
3,4-Dimethylheptane	10.2	10.5	mg/kg	3		30
4-Methyloctane	6.52J	7.50J	mg/kg	NC		30
2-Methyloctane	6.80J	5.79J	mg/kg	NC		30
Ethylbenzene	ND	ND	mg/kg	NC		30
2-Ethylthiophene	ND	ND	mg/kg	NC		30
3-Methyloctane	16.9	17.3	mg/kg	2		30
3,3-Diethylpentane	ND	ND	mg/kg	NC		30
p/m-Xylene	2.68J	2.25J	mg/kg	NC		30
1-Nonene	ND	ND	mg/kg	NC		30
trans-3-Nonene	ND	ND	mg/kg	NC		30



# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537

**Report Date:** 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1774659-7 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
cis-3-Nonene	ND	ND	mg/kg	NC		30
Nonane (C9)	ND	ND	mg/kg	NC		30
Styrene	ND	ND	mg/kg	NC		30
o-Xylene	2.51J	2.34J	mg/kg	NC		30
Xylene (Total) <sup>1</sup>	5.19J	4.59J	mg/kg	NC		30
2-Nonene	ND	ND	mg/kg	NC		30
Isopropylcyclohexane	ND	ND	mg/kg	NC		30
Isopropylbenzene	14.7	14.7	mg/kg	0		30
3,3-Dimethyloctane	6.24J	6.79J	mg/kg	NC		30
n-Propylbenzene	7.69J	7.38J	mg/kg	NC		30
2-Methylnonane	ND	ND	mg/kg	NC		30
3-Methylnonane	14.4	10.0	mg/kg	36	Q	30
1-Methyl-3-Ethylbenzene	ND	ND	mg/kg	NC		30
1-Methyl-4-Ethylbenzene	ND	ND	mg/kg	NC		30
1,3,5-Trimethylbenzene	1.62J	1.56J	mg/kg	NC		30
1-Decene	ND	ND	mg/kg	NC		30
Isobutylcyclohexane	ND	ND	mg/kg	NC		30
1-Methyl-2-Ethylbenzene	7.76J	7.31J	mg/kg	NC		30
Decane (C10)	10.7	ND	mg/kg	NC		30
tert-Butylbenzene	2.74J	2.84J	mg/kg	NC		30
1,2,4-Trimethylbenzene	2.60J	1.25J	mg/kg	NC		30

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537

**Report Date:** 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1774659-7 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
Isobutylbenzene	11.4	10.6	mg/kg	7		30
sec-Butylbenzene	21.3	20.2	mg/kg	5		30
1-Methyl-3-Isopropylbenzene	ND	ND	mg/kg	NC		30
1-Methyl-4-Isopropylbenzene	ND	ND	mg/kg	NC		30
1,2,3-Trimethylbenzene	ND	ND	mg/kg	NC		30
1-Methyl-2-Isopropylbenzene	7.04J	6.96J	mg/kg	NC		30
Indane	9.89	9.73	mg/kg	2		30
1,3-Diethylbenzene	35.0	33.1	mg/kg	6		30
1-Methyl-3-N-Propylbenzene	ND	ND	mg/kg	NC		30
Indene	2.31J	2.42J	mg/kg	NC		30
1-Methyl-4-N-Propylbenzene	5.65J	5.14J	mg/kg	NC		30
n-Butylbenzene	20.6	19.3	mg/kg	7		30
1,2-Dimethyl-4-Ethylbenzene	ND	ND	mg/kg	NC		30
1,2-Diethylbenzene	23.8	22.7	mg/kg	5		30
1-Methyl-2-N-Propylbenzene	ND	1.42J	mg/kg	NC		30
1,4-Dimethyl-2-Ethylbenzene	ND	ND	mg/kg	NC		30
Undecane	45.0	40.5	mg/kg	11		30
1,3-Dimethyl-4-Ethylbenzene	ND	ND	mg/kg	NC		30
1,3-Dimethyl-5-Ethylbenzene	41.3	37.0	mg/kg	11		30
1,3-Dimethyl-2-Ethylbenzene	28.0	25.3	mg/kg	10		30
1,2-Dimethyl-3-Ethylbenzene	ND	ND	mg/kg	NC		30

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATIO

**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537

**Report Date:** 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1774659-7 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
1,2,4,5-Tetramethylbenzene	154	137	mg/kg	12		30
1,2,3,5-Tetramethylbenzene	ND	ND	mg/kg	NC		30
N-Pentylbenzene	15.1	12.7	mg/kg	17		30
1,2,3,4-Tetramethylbenzene	ND	ND	mg/kg	NC		30
1,3-Dimethyl-5-tert-Butylbenzene	ND	ND	mg/kg	NC		30
Dodecane (C12)	ND	ND	mg/kg	NC		30
1,3,5-Triethylbenzene	ND	ND	mg/kg	NC		30
Naphthalene	13.3	11.6	mg/kg	14		30
Benzothiophene	ND	ND	mg/kg	NC		30
1,2,4-Triethylbenzene	25.2	ND	mg/kg	NC		30
Hexylbenzene	ND	ND	mg/kg	NC		30
MMT	ND	ND	mg/kg	NC		30
Tridecane	47.6	46.7	mg/kg	2		30
2-Methylnaphthalene	ND	ND	mg/kg	NC		30
1-Methylnaphthalene	ND	ND	mg/kg	NC		30
Tetradecane (C14)	ND	ND	mg/kg	NC		30
Pentadecane	ND	ND	mg/kg	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	123		123		70-130

Project Name: GASCO HYDROCARBON INVESTIGATIO

Project Number: 000029-02.78 T12A

**Lab Duplicate Analysis**

Batch Quality Control

Lab Number: L2320537

Report Date: 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1774659-7 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Toluene-d8	109		110		70-130
4-Bromofluorobenzene	86		85		70-130

# SEMIVOLATILES

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**SAMPLE RESULTS**

**Lab ID:** L2320537-01  
**Client ID:** MW2112-041723-NAPL  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Oil  
**Analytical Method:** 1,8270E-SIM(M)  
**Analytical Date:** 04/26/23 18:46  
**Analyst:** CNC  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 3580A  
**Extraction Date:** 04/21/23 13:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	536		mg/kg	1.44	0.287	1
C1-Decalins	2010		mg/kg	1.44	0.287	1
C2-Decalins	3090		mg/kg	1.44	0.287	1
C3-Decalins	1910		mg/kg	1.44	0.287	1
C4-Decalins	1980		mg/kg	1.44	0.287	1
Naphthalene	26.2		mg/kg	2.89	0.831	1
C1-Naphthalenes	38.4		mg/kg	2.89	0.831	1
C2-Naphthalenes	3350		mg/kg	2.89	0.831	1
C3-Naphthalenes	4100		mg/kg	2.89	0.831	1
C4-Naphthalenes	2110		mg/kg	2.89	0.831	1
2-Methylnaphthalene	2.32	J	mg/kg	2.89	0.745	1
1-Methylnaphthalene	45.8		mg/kg	2.89	0.910	1
Benzothiophene	3.34		mg/kg	2.89	0.905	1
C1-Benzo(b)thiophenes	191		mg/kg	2.89	0.905	1
C2-Benzo(b)thiophenes	172		mg/kg	2.89	0.905	1
C3-Benzo(b)thiophenes	336		mg/kg	2.89	0.905	1
Biphenyl	1.36	J	mg/kg	2.89	0.893	1
2,6-Dimethylnaphthalene	2360		mg/kg	2.89	0.687	1
Dibenzofuran	36.8		mg/kg	2.89	0.910	1
Acenaphthylene	24.8		mg/kg	2.89	0.551	1
Acenaphthene	471		mg/kg	2.89	0.509	1
2,3,5-Trimethylnaphthalene	617		mg/kg	2.89	0.473	1
Fluorene	403		mg/kg	2.89	0.771	1
C1-Fluorenes	617		mg/kg	2.89	0.771	1
C2-Fluorenes	755		mg/kg	2.89	0.771	1
C3-Fluorenes	531		mg/kg	2.89	0.771	1
Dibenzothiophene	13.0		mg/kg	2.89	0.797	1
C1-Dibenzothiophenes BS	251		mg/kg	2.89	0.797	1

**Project Name:** GASCO HYDROCARBON INVESTIGATION**Lab Number:** L2320537**Project Number:** 000029-02.78 T12A**Report Date:** 05/09/23**SAMPLE RESULTS**

**Lab ID:** L2320537-01  
**Client ID:** MW2112-041723-NAPL  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs - Mansfield Lab</b>						
C2-Dibenzothiophenes	298		mg/kg	2.89	0.797	1
C3-Dibenzothiophenes	198		mg/kg	2.89	0.797	1
C4-Dibenzothiophenes	96.2		mg/kg	2.89	0.797	1
Phenanthrene	8.26		mg/kg	2.89	0.958	1
C1-Phenanthrenes/Anthracenes	447		mg/kg	2.89	0.958	1
C2-Phenanthrenes/Anthr BS	851		mg/kg	2.89	0.958	1
C3-Phenanthrenes/Anthracenes	517		mg/kg	2.89	0.958	1
C4-Phenanthrenes/Anthracenes	184		mg/kg	2.89	0.958	1
Retene	ND		mg/kg	2.89	0.709	1
Anthracene	34.9		mg/kg	2.89	0.596	1
Carbazole	8.39		mg/kg	2.89	0.945	1
1-Methylphenanthrene	189		mg/kg	2.89	0.763	1
Fluoranthene	30.2		mg/kg	2.89	0.918	1
Benzo(b)fluorene	17.4		mg/kg	2.89	0.837	1
Pyrene	77.0		mg/kg	2.89	0.760	1
C1-Fluoranthenes/Pyrenes	143		mg/kg	2.89	0.760	1
C2-Fluoranthenes/Pyrenes	141		mg/kg	2.89	0.760	1
C3-Fluoranthenes/Pyrenes	91.9		mg/kg	2.89	0.760	1
C4-Fluoranthenes/Pyrenes	44.3		mg/kg	2.89	0.760	1
Naphthobenzothiophenes	15.1	J	mg/kg	2.89	0.809	1
C1-Naphthobenzothiophenes	25.3		mg/kg	2.89	0.809	1
C2-Naphthobenzothiophenes	21.8		mg/kg	2.89	0.809	1
C3-Naphthobenzothiophenes	13.1		mg/kg	2.89	0.809	1
C4-Naphthobenzothiophenes	7.97		mg/kg	2.89	0.809	1
Benz(a)anthracene	20.4		mg/kg	2.89	0.589	1
Chrysene	33.3		mg/kg	2.89	0.584	1
C1-Chrysenes	66.1		mg/kg	2.89	0.584	1
C2-Chrysenes BS	68.4		mg/kg	2.89	0.584	1
C3-Chrysenes	48.6		mg/kg	2.89	0.584	1
C4-Chrysenes	21.6		mg/kg	2.89	0.584	1
Benzo(b)fluoranthene	4.56		mg/kg	2.89	0.752	1
Benzo(j)+(k)fluoranthene	3.74		mg/kg	2.89	0.574	1
Benzo(a)fluoranthene	0.832	J	mg/kg	2.89	0.574	1
Benzo(e)pyrene	8.14		mg/kg	2.89	0.596	1
Benzo(a)pyrene	9.35		mg/kg	2.89	0.825	1
Perylene	3.00		mg/kg	2.89	0.558	1
Indeno(1,2,3-cd)pyrene	2.90		mg/kg	2.89	0.784	1

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**SAMPLE RESULTS**

**Lab ID:** L2320537-01  
**Client ID:** MW2112-041723-NAPL  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Dibenz(a,h)+(a,c)anthracene	1.54	J	mg/kg	2.89	0.781	1
Benzo(g,h,i)perylene	5.35		mg/kg	2.89	0.768	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	85		50-130
Phenanthrene-d10	102		50-130
Benzo(a)pyrene-d12	110		50-130



**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**SAMPLE RESULTS**

**Lab ID:** L2320537-02  
**Client ID:** MW2112-041723-NET  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sheen Net  
**Analytical Method:** 1,8270E-SIM(M)  
**Analytical Date:** 05/01/23 22:58  
**Analyst:** MJS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** ALPHA OP-013  
**Extraction Date:** 04/24/23 13:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Benz(a)anthracene	39900		ng Abs	1000	130.	1
Chrysene	59500		ng Abs	1000	127.	1
C1-Chrysenes	136000		ng Abs	1000	127.	1
C2-Chrysenes BS	159000		ng Abs	1000	127.	1
C3-Chrysenes	109000		ng Abs	1000	127.	1
C4-Chrysenes	49700		ng Abs	1000	127.	1
Benzo(b)fluoranthene	10500		ng Abs	1000	123.	1
Benzo(j)+(k)fluoranthene	6940		ng Abs	1000	141.	1
Benzo(a)fluoranthene	1900		ng Abs	1000	141.	1
Benzo(e)pyrene	19400		ng Abs	1000	162.	1
Benzo(a)pyrene	23900		ng Abs	1000	162.	1
Perylene	6980		ng Abs	1000	251.	1
Indeno(1,2,3-cd)pyrene	6900		ng Abs	1000	206.	1
Dibenz(a,h)+(a,c)anthracene	2830		ng Abs	1000	136.	1
Benzo(g,h,i)perylene	12700		ng Abs	1000	164.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Benzo(a)pyrene-d12	116		50-130

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**SAMPLE RESULTS**

**Lab ID:** L2320537-02 D  
**Client ID:** MW2112-041723-NET  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sheen Net  
**Analytical Method:** 1,8270E-SIM(M)  
**Analytical Date:** 05/04/23 17:57  
**Analyst:** MJS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** ALPHA OP-013  
**Extraction Date:** 04/24/23 13:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	1620000		ng Abs	2000	332.	4
C1-Decalins	4580000		ng Abs	2000	332.	4
C2-Decalins	7660000		ng Abs	2000	332.	4
C3-Decalins	5110000		ng Abs	2000	332.	4
C4-Decalins	5340000		ng Abs	2000	332.	4
Naphthalene	67300		ng Abs	4000	1180	4
C1-Naphthalenes	83800		ng Abs	4000	1180	4
C2-Naphthalenes	7040000		ng Abs	4000	1180	4
C3-Naphthalenes	8480000		ng Abs	4000	1180	4
C4-Naphthalenes	4400000		ng Abs	4000	1180	4
2-Methylnaphthalene	4480		ng Abs	4000	1130	4
1-Methylnaphthalene	106000		ng Abs	4000	608.	4
Benzothiophene	5490		ng Abs	4000	880.	4
C1-Benzo(b)thiophenes	497000		ng Abs	4000	880.	4
C2-Benzo(b)thiophenes	380000		ng Abs	4000	880.	4
C3-Benzo(b)thiophenes	735000		ng Abs	4000	880.	4
Biphenyl	4920		ng Abs	4000	808.	4
2,6-Dimethylnaphthalene	5350000		ng Abs	4000	852.	4
Dibenzofuran	77800		ng Abs	4000	984.	4
Acenaphthylene	42200		ng Abs	4000	776.	4
Acenaphthene	991000		ng Abs	4000	1100	4
2,3,5-Trimethylnaphthalene	1360000		ng Abs	4000	680.	4
Fluorene	814000		ng Abs	4000	1260	4
C1-Fluorenes	1310000		ng Abs	4000	1260	4
C2-Fluorenes	1730000		ng Abs	4000	1260	4
C3-Fluorenes	1300000		ng Abs	4000	1260	4
Dibenzothiophene	29200		ng Abs	4000	548.	4
C1-Dibenzothiophenes BS	496000		ng Abs	4000	548.	4

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**SAMPLE RESULTS**

**Lab ID:** L2320537-02 D  
**Client ID:** MW2112-041723-NET  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs - Mansfield Lab</b>						
C2-Dibenzothiophenes	637000		ng Abs	4000	548.	4
C3-Dibenzothiophenes	454000		ng Abs	4000	548.	4
C4-Dibenzothiophenes	219000		ng Abs	4000	548.	4
Phenanthrene	18100		ng Abs	4000	1030	4
C1-Phenanthrenes/Anthracenes	910000		ng Abs	4000	1030	4
C2-Phenanthrenes/Anthr BS	1780000		ng Abs	4000	1030	4
C3-Phenanthrenes/Anthracenes	1190000		ng Abs	4000	1030	4
C4-Phenanthrenes/Anthracenes	474000		ng Abs	4000	1030	4
Retene	ND		ng Abs	4000	1030	4
Anthracene	52900		ng Abs	4000	664.	4
Carbazole	25000		ng Abs	4000	1040	4
1-Methylphenanthrene	391000		ng Abs	4000	844.	4
Fluoranthene	53200		ng Abs	4000	440.	4
Benzo(b)fluorene	37500		ng Abs	4000	632.	4
Pyrene	147000		ng Abs	4000	600.	4
C1-Fluoranthenes/Pyrenes	304000		ng Abs	4000	600.	4
C2-Fluoranthenes/Pyrenes	316000		ng Abs	4000	600.	4
C3-Fluoranthenes/Pyrenes	242000		ng Abs	4000	600.	4
C4-Fluoranthenes/Pyrenes	124000		ng Abs	4000	600.	4
Naphthobenzothiophenes	35700		ng Abs	4000	656.	4
C1-Naphthobenzothiophenes	61500		ng Abs	4000	656.	4
C2-Naphthobenzothiophenes	65400		ng Abs	4000	656.	4
C3-Naphthobenzothiophenes	46300		ng Abs	4000	656.	4
C4-Naphthobenzothiophenes	31200		ng Abs	4000	656.	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	85		50-130
Phenanthrene-d10	107		50-130

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8270E-SIM(M)  
**Analytical Date:** 04/26/23 13:01  
**Analyst:** CNC

**Extraction Method:** EPA 3580A  
**Extraction Date:** 04/21/23 13:40

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 01 Batch: WG1769534-1					
cis/trans-Decalin	ND		mg/kg	1.50	0.298
C1-Decalins	ND		mg/kg	1.50	0.298
C2-Decalins	ND		mg/kg	1.50	0.298
C3-Decalins	ND		mg/kg	1.50	0.298
C4-Decalins	ND		mg/kg	1.50	0.298
Naphthalene	ND		mg/kg	3.00	0.862
C1-Naphthalenes	ND		mg/kg	3.00	0.862
C2-Naphthalenes	ND		mg/kg	3.00	0.862
C3-Naphthalenes	ND		mg/kg	3.00	0.862
C4-Naphthalenes	ND		mg/kg	3.00	0.862
2-Methylnaphthalene	ND		mg/kg	3.00	0.774
1-Methylnaphthalene	ND		mg/kg	3.00	0.945
Benzothiophene	ND		mg/kg	3.00	0.940
C1-Benzo(b)thiophenes	ND		mg/kg	3.00	0.940
C2-Benzo(b)thiophenes	ND		mg/kg	3.00	0.940
C3-Benzo(b)thiophenes	ND		mg/kg	3.00	0.940
Biphenyl	ND		mg/kg	3.00	0.927
2,6-Dimethylnaphthalene	ND		mg/kg	3.00	0.713
Dibenzofuran	ND		mg/kg	3.00	0.945
Acenaphthylene	0.804	J	mg/kg	3.00	0.572
Acenaphthene	ND		mg/kg	3.00	0.529
2,3,5-Trimethylnaphthalene	ND		mg/kg	3.00	0.491
Fluorene	ND		mg/kg	3.00	0.800
C1-Fluorenes	ND		mg/kg	3.00	0.800
C2-Fluorenes	ND		mg/kg	3.00	0.800
C3-Fluorenes	ND		mg/kg	3.00	0.800
Dibenzothiophene	ND		mg/kg	3.00	0.827
C1-Dibenzothiophenes BS	ND		mg/kg	3.00	0.827
C2-Dibenzothiophenes	ND		mg/kg	3.00	0.827

**Project Name:** GASCO HYDROCARBON INVESTIGATIO  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8270E-SIM(M)  
**Analytical Date:** 04/26/23 13:01  
**Analyst:** CNC

**Extraction Method:** EPA 3580A  
**Extraction Date:** 04/21/23 13:40

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 01 Batch: WG1769534-1					
C3-Dibenzothiophenes	ND		mg/kg	3.00	0.827
C4-Dibenzothiophenes	ND		mg/kg	3.00	0.827
Phenanthrene	ND		mg/kg	3.00	0.994
C1-Phenanthrenes/Anthracenes	ND		mg/kg	3.00	0.994
C2-Phenanthrenes/Anthr BS	ND		mg/kg	3.00	0.994
C3-Phenanthrenes/Anthracenes	ND		mg/kg	3.00	0.994
C4-Phenanthrenes/Anthracenes	ND		mg/kg	3.00	0.994
Retene	ND		mg/kg	3.00	0.736
Anthracene	ND		mg/kg	3.00	0.618
Carbazole	ND		mg/kg	3.00	0.981
1-Methylphenanthrene	ND		mg/kg	3.00	0.792
Fluoranthene	ND		mg/kg	3.00	0.953
Benzo(b)fluorene	ND		mg/kg	3.00	0.869
Pyrene	ND		mg/kg	3.00	0.789
C1-Fluoranthenes/Pyrenes	ND		mg/kg	3.00	0.789
C2-Fluoranthenes/Pyrenes	ND		mg/kg	3.00	0.789
C3-Fluoranthenes/Pyrenes	ND		mg/kg	3.00	0.789
C4-Fluoranthenes/Pyrenes	ND		mg/kg	3.00	0.789
Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
C1-Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
C2-Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
C3-Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
C4-Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
Benz(a)anthracene	ND		mg/kg	3.00	0.612
Chrysene	ND		mg/kg	3.00	0.606
C1-Chrysenes	ND		mg/kg	3.00	0.606
C2-Chrysenes BS	ND		mg/kg	3.00	0.606
C3-Chrysenes	ND		mg/kg	3.00	0.606
C4-Chrysenes	ND		mg/kg	3.00	0.606

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8270E-SIM(M)  
**Analytical Date:** 04/26/23 13:01  
**Analyst:** CNC

**Extraction Method:** EPA 3580A  
**Extraction Date:** 04/21/23 13:40

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 01 Batch: WG1769534-1					
Benzo(b)fluoranthene	ND		mg/kg	3.00	0.780
Benzo(j)+(k)fluoranthene	ND		mg/kg	3.00	0.595
Benzo(a)fluoranthene	ND		mg/kg	3.00	0.595
Benzo(e)pyrene	ND		mg/kg	3.00	0.619
Benzo(a)pyrene	ND		mg/kg	3.00	0.856
Perylene	ND		mg/kg	3.00	0.579
Indeno(1,2,3-cd)pyrene	ND		mg/kg	3.00	0.814
Dibenz(a,h)+(a,c)anthracene	ND		mg/kg	3.00	0.810
Benzo(g,h,i)perylene	ND		mg/kg	3.00	0.797

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	88		50-130
Phenanthrene-d10	93		50-130
Benzo(a)pyrene-d12	93		50-130

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

### Method Blank Analysis Batch Quality Control

**Analytical Method:** 1,8270E-SIM(M)  
**Analytical Date:** 05/01/23 18:43  
**Analyst:** MJS

**Extraction Method:** ALPHA OP-013  
**Extraction Date:** 04/24/23 13:11

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 02 Batch: WG1770361-1					
cis/trans-Decalin	ND		ng Abs	10.0	1.66
C1-Decalins	ND		ng Abs	10.0	1.66
C2-Decalins	ND		ng Abs	10.0	1.66
C3-Decalins	ND		ng Abs	10.0	1.66
C4-Decalins	ND		ng Abs	10.0	1.66
Naphthalene	ND		ng Abs	20.0	5.92
C1-Naphthalenes	ND		ng Abs	20.0	5.92
C2-Naphthalenes	ND		ng Abs	20.0	5.92
C3-Naphthalenes	ND		ng Abs	20.0	5.92
C4-Naphthalenes	ND		ng Abs	20.0	5.92
2-Methylnaphthalene	ND		ng Abs	20.0	5.64
1-Methylnaphthalene	ND		ng Abs	20.0	3.04
Benzothiophene	ND		ng Abs	20.0	4.40
C1-Benzo(b)thiophenes	ND		ng Abs	20.0	4.40
C2-Benzo(b)thiophenes	ND		ng Abs	20.0	4.40
C3-Benzo(b)thiophenes	ND		ng Abs	20.0	4.40
Biphenyl	ND		ng Abs	20.0	4.04
2,6-Dimethylnaphthalene	ND		ng Abs	20.0	4.26
Dibenzofuran	ND		ng Abs	20.0	4.92
Acenaphthylene	ND		ng Abs	20.0	3.88
Acenaphthene	ND		ng Abs	20.0	5.48
2,3,5-Trimethylnaphthalene	ND		ng Abs	20.0	3.40
Fluorene	ND		ng Abs	20.0	6.32
C1-Fluorenes	ND		ng Abs	20.0	6.32
C2-Fluorenes	ND		ng Abs	20.0	6.32
C3-Fluorenes	ND		ng Abs	20.0	6.32
Dibenzothiophene	ND		ng Abs	20.0	2.74
C1-Dibenzothiophenes BS	ND		ng Abs	20.0	2.74
C2-Dibenzothiophenes	3.48	J	ng Abs	20.0	2.74

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

### Method Blank Analysis Batch Quality Control

**Analytical Method:** 1,8270E-SIM(M)  
**Analytical Date:** 05/01/23 18:43  
**Analyst:** MJS

**Extraction Method:** ALPHA OP-013  
**Extraction Date:** 04/24/23 13:11

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 02 Batch: WG1770361-1					
C3-Dibenzothiophenes	ND		ng Abs	20.0	2.74
C4-Dibenzothiophenes	ND		ng Abs	20.0	2.74
Phenanthrene	ND		ng Abs	20.0	5.16
C1-Phenanthrenes/Anthracenes	ND		ng Abs	20.0	5.16
C2-Phenanthrenes/Anthr BS	ND		ng Abs	20.0	5.16
C3-Phenanthrenes/Anthracenes	ND		ng Abs	20.0	5.16
C4-Phenanthrenes/Anthracenes	ND		ng Abs	20.0	5.16
Retene	ND		ng Abs	20.0	5.16
Anthracene	ND		ng Abs	20.0	3.32
Carbazole	ND		ng Abs	20.0	5.18
1-Methylphenanthrene	ND		ng Abs	20.0	4.22
Fluoranthene	ND		ng Abs	20.0	2.20
Benzo(b)fluorene	ND		ng Abs	20.0	3.16
Pyrene	ND		ng Abs	20.0	3.00
C1-Fluoranthenes/Pyrenes	ND		ng Abs	20.0	3.00
C2-Fluoranthenes/Pyrenes	ND		ng Abs	20.0	3.00
C3-Fluoranthenes/Pyrenes	ND		ng Abs	20.0	3.00
C4-Fluoranthenes/Pyrenes	ND		ng Abs	20.0	3.00
Naphthobenzothiophenes	ND		ng Abs	20.0	3.28
C1-Naphthobenzothiophenes	ND		ng Abs	20.0	3.28
C2-Naphthobenzothiophenes	ND		ng Abs	20.0	3.28
C3-Naphthobenzothiophenes	ND		ng Abs	20.0	3.28
C4-Naphthobenzothiophenes	ND		ng Abs	20.0	3.28
Benz(a)anthracene	ND		ng Abs	20.0	2.60
Chrysene	ND		ng Abs	20.0	2.54
C1-Chrysenes	ND		ng Abs	20.0	2.54
C2-Chrysenes BS	ND		ng Abs	20.0	2.54
C3-Chrysenes	ND		ng Abs	20.0	2.54
C4-Chrysenes	ND		ng Abs	20.0	2.54



**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

### Method Blank Analysis Batch Quality Control

**Analytical Method:** 1,8270E-SIM(M)  
**Analytical Date:** 05/01/23 18:43  
**Analyst:** MJS

**Extraction Method:** ALPHA OP-013  
**Extraction Date:** 04/24/23 13:11

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 02 Batch: WG1770361-1					
Benzo(b)fluoranthene	ND		ng Abs	20.0	2.46
Benzo(j)+(k)fluoranthene	ND		ng Abs	20.0	2.82
Benzo(a)fluoranthene	ND		ng Abs	20.0	2.82
Benzo(e)pyrene	ND		ng Abs	20.0	3.24
Benzo(a)pyrene	ND		ng Abs	20.0	3.24
Perylene	ND		ng Abs	20.0	5.02
Indeno(1,2,3-cd)pyrene	4.70	J	ng Abs	20.0	4.12
Dibenz(a,h)+(a,c)anthracene	3.16	J	ng Abs	20.0	2.72
Benzo(g,h,i)perylene	5.09	J	ng Abs	20.0	3.28

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	84		50-130
Phenanthrene-d10	91		50-130
Benzo(a)pyrene-d12	105		50-130

# **Lab Control Sample Analysis** Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Lab Number:** L2320537

**Project Number:** 000029-02.78 T12A

**Report Date:** 05/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01 Batch: WG1769534-2 WG1769534-3								
Naphthalene	100		102		50-130	2		30
2-Methylnaphthalene	93		94		50-130	1		30
Acenaphthylene	96		98		50-130	2		30
Acenaphthene	97		99		50-130	2		30
Fluorene	98		101		50-130	3		30
Phenanthrene	98		100		50-130	2		30
Anthracene	106		108		50-130	2		30
Fluoranthene	94		96		50-130	2		30
Pyrene	94		97		50-130	3		30
Benz(a)anthracene	101		105		50-130	4		30
Chrysene	101		103		50-130	2		30
Benzo(b)fluoranthene	92		97		50-130	5		30
Benzo(j)+(k)fluoranthene	99		99		50-130	0		30
Benzo(a)pyrene	87		88		50-130	1		30
Indeno(1,2,3-cd)pyrene	81		85		50-130	5		30
Dibenz(a,h)+(a,c)anthracene	82		83		50-130	1		30
Benzo(g,h,i)perylene	84		84		50-130	0		30

**Lab Control Sample Analysis****Batch Quality Control****Project Name:** GASCO HYDROCARBON INVESTIGATION**Lab Number:** L2320537**Project Number:** 000029-02.78 T12A**Report Date:** 05/09/23

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
PAHs - Mansfield Lab Associated sample(s): 01 Batch: WG1769534-2 WG1769534-3								

<b>Surrogate</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>
Naphthalene-d8	93		94		50-130
Phenanthrene-d10	93		95		50-130
Benzo(a)pyrene-d12	94		93		50-130

# **Lab Control Sample Analysis** **Batch Quality Control**

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Lab Number:** L2320537

**Project Number:** 000029-02.78 T12A

**Report Date:** 05/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 02 Batch: WG1770361-2 WG1770361-3								
Naphthalene	111		93		50-130	18		30
2-Methylnaphthalene	121		97		50-130	22		30
Acenaphthylene	92		93		50-130	1		30
Acenaphthene	94		105		50-130	11		30
Fluorene	106		119		50-130	12		30
Phenanthrene	104		113		50-130	8		30
Anthracene	102		110		50-130	8		30
Fluoranthene	101		99		50-130	2		30
Pyrene	107		105		50-130	2		30
Benz(a)anthracene	103		97		50-130	6		30
Chrysene	94		91		50-130	3		30
Benzo(b)fluoranthene	104		104		50-130	0		30
Benzo(j)+(k)fluoranthene	96		97		50-130	1		30
Benzo(a)pyrene	97		96		50-130	1		30
Indeno(1,2,3-cd)pyrene	108		110		50-130	2		30
Dibenz(a,h)+(a,c)anthracene	113		124		50-130	9		30
Benzo(g,h,i)perylene	102		101		50-130	1		30

**Lab Control Sample Analysis****Batch Quality Control****Project Name:** GASCO HYDROCARBON INVESTIGATION**Lab Number:** L2320537**Project Number:** 000029-02.78 T12A**Report Date:** 05/09/23

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
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PAHs - Mansfield Lab Associated sample(s): 02 Batch: WG1770361-2 WG1770361-3

<b>Surrogate</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>
Naphthalene-d8	104		78		50-130
Phenanthrene-d10	94		103		50-130
Benzo(a)pyrene-d12	103		105		50-130

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Lab Number:** L2320537  
**Report Date:** 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1769534-4 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
cis/trans-Decalin	536	576	mg/kg	7.1		30
C1-Decalins	2010	2200	mg/kg	9		30
C2-Decalins	3090	3320	mg/kg	7		30
C3-Decalins	1910	2020	mg/kg	6		30
C4-Decalins	1980	2010	mg/kg	2		30
Naphthalene	26.2	25.4	mg/kg	3		30
C1-Naphthalenes	38.4	40.3	mg/kg	5		30
C2-Naphthalenes	3350	3260	mg/kg	3		30
C3-Naphthalenes	4100	3880	mg/kg	6		30
C4-Naphthalenes	2110	1990	mg/kg	6		30
2-Methylnaphthalene	2.32J	1.66J	mg/kg	NC		30
1-Methylnaphthalene	45.8	45.2	mg/kg	1		30
Benzothiophene	3.34	3.34	mg/kg	0		30
C1-Benzo(b)thiophenes	191	189	mg/kg	1		30
C2-Benzo(b)thiophenes	172	167	mg/kg	3		30
C3-Benzo(b)thiophenes	336	322	mg/kg	4		30
Biphenyl	1.36J	1.18J	mg/kg	NC		30
2,6-Dimethylnaphthalene	2360	2300	mg/kg	3		30
Dibenzofuran	36.8	35.3	mg/kg	4		30
Acenaphthylene	24.8	23.6	mg/kg	5		30
Acenaphthene	471	449	mg/kg	5		30

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537

**Report Date:** 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1769534-4 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
2,3,5-Trimethylnaphthalene	617	578	mg/kg	7		30
Fluorene	403	381	mg/kg	6		30
C1-Fluorenes	617	588	mg/kg	5		30
C2-Fluorenes	755	729	mg/kg	4		30
C3-Fluorenes	531	515	mg/kg	3		30
Dibenzothiophene	13.0	12.8	mg/kg	2		30
C1-Dibenzothiophenes BS	251	241	mg/kg	4		30
C2-Dibenzothiophenes	298	287	mg/kg	4		30
C3-Dibenzothiophenes	198	193	mg/kg	3		30
C4-Dibenzothiophenes	96.2	90.6	mg/kg	6		30
Phenanthrene	8.26	7.72	mg/kg	7		30
C1-Phenanthrenes/Anthracenes	447	428	mg/kg	4		30
C2-Phenanthrenes/Anthr BS	851	817	mg/kg	4		30
C3-Phenanthrenes/Anthracenes	517	501	mg/kg	3		30
C4-Phenanthrenes/Anthracenes	184	182	mg/kg	1		30
Retene	ND	ND	mg/kg	NC		30
Anthracene	34.9	35.7	mg/kg	2		30
Carbazole	8.39	10.2	mg/kg	19		30
1-Methylphenanthrene	189	180	mg/kg	5		30
Fluoranthene	30.2	27.6	mg/kg	9		30
Benzo(b)fluorene	17.4	16.7	mg/kg	4		30

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537

**Report Date:** 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1769534-4 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
Pyrene	77.0	75.2	mg/kg	2		30
C1-Fluoranthenes/Pyrenes	143	138	mg/kg	4		30
C2-Fluoranthenes/Pyrenes	141	137	mg/kg	3		30
C3-Fluoranthenes/Pyrenes	91.9	90.4	mg/kg	2		30
C4-Fluoranthenes/Pyrenes	44.3	44.7	mg/kg	1		30
Naphthobenzothiophenes	15.1J	14.7J	mg/kg	NC		30
C1-Naphthobenzothiophenes	25.3	24.3	mg/kg	4		30
C2-Naphthobenzothiophenes	21.8	22.3	mg/kg	2		30
C3-Naphthobenzothiophenes	13.1	13.3	mg/kg	2		30
C4-Naphthobenzothiophenes	7.97	8.69	mg/kg	9		30
Benz(a)anthracene	20.4	18.4	mg/kg	10		30
Chrysene	33.3	31.9	mg/kg	4		30
C1-Chrysenes	66.1	64.1	mg/kg	3		30
C2-Chrysenes BS	68.4	67.6	mg/kg	1		30
C3-Chrysenes	48.6	49.4	mg/kg	2		30
C4-Chrysenes	21.6	22.1	mg/kg	2		30
Benzo(b)fluoranthene	4.56	3.97	mg/kg	14		30
Benzo(j)+(k)fluoranthene	3.74	2.82J	mg/kg	NC		30
Benzo(a)fluoranthene	0.832J	0.817J	mg/kg	NC		30
Benzo(e)pyrene	8.14	8.15	mg/kg	0		30
Benzo(a)pyrene	9.35	8.85	mg/kg	5		30



Project Name: GASCO HYDROCARBON INVESTIGATION

Project Number: 000029-02.78 T12A

**Lab Duplicate Analysis**

Batch Quality Control

Lab Number: L2320537

Report Date: 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1769534-4 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
Perylene	3.00	2.66J	mg/kg	NC		30
Indeno(1,2,3-cd)pyrene	2.90	2.25J	mg/kg	NC		30
Dibenz(a,h)+(a,c)anthracene	1.54J	0.917J	mg/kg	NC		30
Benzo(g,h,i)perylene	5.35	4.50	mg/kg	17		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	85		87		50-130
Phenanthrene-d10	102		99		50-130
Benzo(a)pyrene-d12	110		111		50-130

# **PETROLEUM HYDROCARBONS**

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**SAMPLE RESULTS**

**Lab ID:** L2320537-01  
**Client ID:** MW2112-041723-NAPL  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Oil  
**Analytical Method:** 1,8015D(M)  
**Analytical Date:** 04/25/23 03:30  
**Analyst:** AMV  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 3580A  
**Extraction Date:** 04/21/23 13:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		mg/kg	193	57.2	1
n-Decane (C10)	194		mg/kg	193	61.5	1
n-Undecane (C11)	595		mg/kg	193	57.5	1
n-Dodecane (C12)	ND		mg/kg	193	42.0	1
n-Tridecane (C13)	1200		mg/kg	193	52.9	1
2,6,10-Trimethyldodecane (1380)	6840		mg/kg	193	29.0	1
n-Tetradecane (C14)	918		mg/kg	193	29.0	1
2,6,10-Trimethyltridecane (1470)	7240		mg/kg	193	23.0	1
n-Pentadecane (C15)	ND		mg/kg	193	23.0	1
n-Hexadecane (C16)	ND		mg/kg	193	29.0	1
Norpristane (1650)	7720		mg/kg	193	63.6	1
n-Heptadecane (C17)	357		mg/kg	193	63.6	1
Pristane	13300		mg/kg	193	41.2	1
n-Octadecane (C18)	ND		mg/kg	193	38.7	1
Phytane	8500		mg/kg	193	24.2	1
n-Nonadecane (C19)	132	J	mg/kg	193	49.5	1
n-Eicosane (C20)	239		mg/kg	193	27.3	1
n-Heneicosane (C21)	582		mg/kg	193	23.1	1
n-Docosane (C22)	ND		mg/kg	193	20.1	1
n-Tricosane (C23)	53.4	J	mg/kg	193	24.5	1
n-Tetracosane (C24)	ND		mg/kg	193	32.2	1
n-Pentacosane (C25)	178	JC	mg/kg	193	102.	1
n-Hexacosane (C26)	ND		mg/kg	193	28.3	1
n-Heptacosane (C27)	ND		mg/kg	193	23.2	1
n-Octacosane (C28)	ND		mg/kg	193	41.3	1
n-Nonacosane (C29)	ND		mg/kg	193	128.	1
n-Triacontane (C30)	ND		mg/kg	193	22.1	1
n-Hentriacontane (C31)	ND		mg/kg	193	27.3	1

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**SAMPLE RESULTS**

**Lab ID:** L2320537-01  
**Client ID:** MW2112-041723-NAPL  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Dotriacontane (C32)	ND		mg/kg	193	24.3	1
n-Tritriacontane (C33)	ND		mg/kg	193	27.1	1
n-Tettratriacontane (C34)	ND		mg/kg	193	30.6	1
n-Pentatriacontane (C35)	ND		mg/kg	193	33.6	1
n-Hexatriacontane (C36)	ND		mg/kg	193	38.3	1
n-Heptatriacontane (C37)	ND		mg/kg	193	42.8	1
n-Octatriacontane (C38)	ND		mg/kg	193	44.9	1
n-Nonatriacontane (C39)	ND		mg/kg	193	62.6	1
n-Tetracontane (C40)	ND		mg/kg	193	62.6	1
Total Petroleum Hydrocarbons (C9-C44)	879000		mg/kg	6360	1400	1
Total Saturated Hydrocarbons	48000	J	mg/kg	193	20.1	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	103		50-130
d50-Tetracosane	96		50-130

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**SAMPLE RESULTS**

**Lab ID:** L2320537-02  
**Client ID:** MW2112-041723-NET  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sheen Net  
**Analytical Method:** 1,8015D(M)  
**Analytical Date:** 04/27/23 22:33  
**Analyst:** WR  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** ALPHA OP-013  
**Extraction Date:** 04/24/23 13:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		ug Abs	100	29.7	1
n-Decane (C10)	251		ug Abs	100	31.9	1
n-Undecane (C11)	872		ug Abs	100	29.9	1
n-Dodecane (C12)	ND		ug Abs	100	21.8	1
n-Tridecane (C13)	ND		ug Abs	100	27.4	1
2,6,10-Trimethyldodecane (1380)	2910		ug Abs	100	15.0	1
n-Tetradecane (C14)	742		ug Abs	100	15.0	1
2,6,10-Trimethyltridecane (1470)	1360		ug Abs	100	11.9	1
n-Pentadecane (C15)	2040		ug Abs	100	11.9	1
n-Hexadecane (C16)	1310		ug Abs	100	15.1	1
Norpristane (1650)	1620		ug Abs	100	33.0	1
n-Heptadecane (C17)	291		ug Abs	100	33.0	1
Pristane	25500	E	ug Abs	100	21.4	1
n-Octadecane (C18)	842		ug Abs	100	20.1	1
Phytane	16800		ug Abs	100	12.6	1
n-Nonadecane (C19)	ND		ug Abs	100	25.7	1
n-Eicosane (C20)	1140		ug Abs	100	14.2	1
n-Heneicosane (C21)	1070		ug Abs	100	12.0	1
n-Docosane (C22)	230		ug Abs	100	10.4	1
n-Tricosane (C23)	ND		ug Abs	100	12.7	1
n-Tetracosane (C24)	ND		ug Abs	100	16.7	1
n-Pentacosane (C25)	120		ug Abs	100	52.9	1
n-Hexacosane (C26)	50.8	J	ug Abs	100	14.7	1
n-Heptacosane (C27)	ND		ug Abs	100	12.0	1
n-Octacosane (C28)	ND		ug Abs	100	21.4	1
n-Nonacosane (C29)	ND		ug Abs	100	66.6	1
n-Triacontane (C30)	18.4	J	ug Abs	100	11.5	1
n-Hentriacontane (C31)	ND		ug Abs	100	14.2	1

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**SAMPLE RESULTS**

**Lab ID:** L2320537-02  
**Client ID:** MW2112-041723-NET  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Dotriacontane (C32)	30.1	J	ug Abs	100	12.6	1
n-Tritriacontane (C33)	ND		ug Abs	100	14.1	1
n-Tetratriacontane (C34)	ND		ug Abs	100	15.9	1
n-Pentatriacontane (C35)	ND		ug Abs	100	17.4	1
n-Hexatriacontane (C36)	ND		ug Abs	100	19.9	1
n-Heptatriacontane (C37)	ND		ug Abs	100	22.2	1
n-Octatriacontane (C38)	ND		ug Abs	100	23.3	1
n-Nonatriacontane (C39)	ND		ug Abs	100	32.5	1
n-Tetracontane (C40)	ND		ug Abs	100	32.5	1
Total Petroleum Hydrocarbons (C9-C44)	1680000		ug Abs	3300	726.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	0	Q	50-130
d50-Tetracosane	174	Q	50-130

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**SAMPLE RESULTS**

**Lab ID:** L2320537-02 D  
**Client ID:** MW2112-041723-NET  
**Sample Location:** OR

**Date Collected:** 04/17/23 09:30  
**Date Received:** 04/18/23  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sheen Net  
**Analytical Method:** 1,8015D(M)  
**Analytical Date:** 05/04/23 16:45  
**Analyst:** WR  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** ALPHA OP-013  
**Extraction Date:** 04/24/23 13:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
Pristane	28900		ug Abs	1000	214.	10
Total Saturated Hydrocarbons	60600	J	ug Abs	100	10.4	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	0	Q	50-130
d50-Tetracosane	0		50-130

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

### Method Blank Analysis Batch Quality Control

**Analytical Method:** 1,8015D(M)  
**Analytical Date:** 04/24/23 17:20  
**Analyst:** AMV

**Extraction Method:** EPA 3580A  
**Extraction Date:** 04/21/23 13:40

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - Mansfield Lab for sample(s): 01 Batch: WG1769534-1					
n-Nonane (C9)	ND		mg/kg	200	59.3
n-Decane (C10)	ND		mg/kg	200	63.8
n-Undecane (C11)	ND		mg/kg	200	59.7
n-Dodecane (C12)	ND		mg/kg	200	43.6
n-Tridecane (C13)	ND		mg/kg	200	54.9
2,6,10-Trimethyldodecane (1380)	ND		mg/kg	200	30.1
n-Tetradecane (C14)	ND		mg/kg	200	30.1
2,6,10-Trimethyltridecane (1470)	ND		mg/kg	200	23.9
n-Pentadecane (C15)	ND		mg/kg	200	23.9
n-Hexadecane (C16)	ND		mg/kg	200	30.1
Norpristane (1650)	ND		mg/kg	200	66.0
n-Heptadecane (C17)	ND		mg/kg	200	66.0
Pristane	ND		mg/kg	200	42.7
n-Octadecane (C18)	53.2	J	mg/kg	200	40.1
Phytane	ND		mg/kg	200	25.1
n-Nonadecane (C19)	ND		mg/kg	200	51.4
n-Eicosane (C20)	ND		mg/kg	200	28.3
n-Heneicosane (C21)	ND		mg/kg	200	23.9
n-Docosane (C22)	ND		mg/kg	200	20.9
n-Tricosane (C23)	ND		mg/kg	200	25.4
n-Tetracosane (C24)	ND		mg/kg	200	33.5
n-Pentacosane (C25)	122	JC	mg/kg	200	106.
n-Hexacosane (C26)	ND		mg/kg	200	29.4
n-Heptacosane (C27)	ND		mg/kg	200	24.1
n-Octacosane (C28)	ND		mg/kg	200	42.9
n-Nonacosane (C29)	ND		mg/kg	200	133.
n-Triacontane (C30)	ND		mg/kg	200	22.9
n-Hentriacontane (C31)	ND		mg/kg	200	28.3
n-Dotriacontane (C32)	ND		mg/kg	200	25.2



**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8015D(M)  
 Analytical Date: 04/24/23 17:20  
 Analyst: AMV

Extraction Method: EPA 3580A  
 Extraction Date: 04/21/23 13:40

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - Mansfield Lab for sample(s): 01 Batch: WG1769534-1					
n-Tritriacontane (C33)	ND		mg/kg	200	28.1
n-Tetratriacontane (C34)	ND		mg/kg	200	31.8
n-Pentatriacontane (C35)	ND		mg/kg	200	34.9
n-Hexatriacontane (C36)	ND		mg/kg	200	39.8
n-Heptatriacontane (C37)	ND		mg/kg	200	44.4
n-Octatriacontane (C38)	ND		mg/kg	200	46.6
n-Nonatriacontane (C39)	ND		mg/kg	200	64.9
n-Tetracontane (C40)	ND		mg/kg	200	64.9
Total Petroleum Hydrocarbons (C9-C44)	ND		mg/kg	6600	1450
Total Saturated Hydrocarbons	175	J	mg/kg	200	20.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	102		50-130
d50-Tetracosane	99		50-130

**Project Name:** GASCO HYDROCARBON INVESTIGATIO  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

### Method Blank Analysis Batch Quality Control

**Analytical Method:** 1,8015D(M)  
**Analytical Date:** 04/27/23 16:44  
**Analyst:** WR

**Extraction Method:** ALPHA OP-013  
**Extraction Date:** 04/24/23 13:11

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - Mansfield Lab for sample(s): 02 Batch: WG1770361-1					
n-Nonane (C9)	ND		ug Abs	2.00	0.593
n-Decane (C10)	ND		ug Abs	2.00	0.638
n-Undecane (C11)	ND		ug Abs	2.00	0.597
n-Dodecane (C12)	ND		ug Abs	2.00	0.436
n-Tridecane (C13)	ND		ug Abs	2.00	0.549
2,6,10-Trimethyldodecane (1380)	ND		ug Abs	2.00	0.301
n-Tetradecane (C14)	ND		ug Abs	2.00	0.301
2,6,10-Trimethyltridecane (1470)	ND		ug Abs	2.00	0.239
n-Pentadecane (C15)	ND		ug Abs	2.00	0.239
n-Hexadecane (C16)	ND		ug Abs	2.00	0.301
Norpristane (1650)	ND		ug Abs	2.00	0.660
n-Heptadecane (C17)	ND		ug Abs	2.00	0.660
Pristane	ND		ug Abs	2.00	0.427
n-Octadecane (C18)	0.996	JC	ug Abs	2.00	0.401
Phytane	ND		ug Abs	2.00	0.251
n-Nonadecane (C19)	ND		ug Abs	2.00	0.514
n-Eicosane (C20)	ND		ug Abs	2.00	0.283
n-Heneicosane (C21)	ND		ug Abs	2.00	0.239
n-Docosane (C22)	ND		ug Abs	2.00	0.209
n-Tricosane (C23)	ND		ug Abs	2.00	0.254
n-Tetracosane (C24)	ND		ug Abs	2.00	0.335
n-Pentacosane (C25)	1.20	JC	ug Abs	2.00	1.06
n-Hexacosane (C26)	ND		ug Abs	2.00	0.294
n-Heptacosane (C27)	ND		ug Abs	2.00	0.241
n-Octacosane (C28)	ND		ug Abs	2.00	0.429
n-Nonacosane (C29)	ND		ug Abs	2.00	1.33
n-Triacontane (C30)	ND		ug Abs	2.00	0.229
n-Hentriacontane (C31)	ND		ug Abs	2.00	0.283
n-Dotriacontane (C32)	ND		ug Abs	2.00	0.252

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537  
**Report Date:** 05/09/23

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8015D(M)  
**Analytical Date:** 04/27/23 16:44  
**Analyst:** WR

**Extraction Method:** ALPHA OP-013  
**Extraction Date:** 04/24/23 13:11

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - Mansfield Lab for sample(s): 02 Batch: WG1770361-1					
n-Tritriacontane (C33)	ND		ug Abs	2.00	0.281
n-Tetratriacontane (C34)	ND		ug Abs	2.00	0.318
n-Pentatriacontane (C35)	ND		ug Abs	2.00	0.349
n-Hexatriacontane (C36)	ND		ug Abs	2.00	0.398
n-Heptatriacontane (C37)	ND		ug Abs	2.00	0.444
n-Octatriacontane (C38)	ND		ug Abs	2.00	0.466
n-Nonatriacontane (C39)	ND		ug Abs	2.00	0.649
n-Tetracontane (C40)	ND		ug Abs	2.00	0.649
Total Petroleum Hydrocarbons (C9-C44)	ND		ug Abs	66.0	14.5
Total Saturated Hydrocarbons	2.20	J	ug Abs	2.00	0.209

Surrogate	%Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	97		50-130
d50-Tetracosane	94		50-130

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Lab Number:** L2320537

**Project Number:** 000029-02.78 T12A

**Report Date:** 05/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - Mansfield Lab Associated sample(s): 01 Batch: WG1769534-2 WG1769534-3								
Nonane (C9)	95		95		50-130	0		30
n-Decane (C10)	96		98		50-130	2		30
n-Dodecane (C12)	98		100		50-130	2		30
n-Tetradecane (C14)	98		100		50-130	2		30
n-Hexadecane (C16)	109		110		50-130	1		30
n-Octadecane (C18)	106		108		50-130	2		30
n-Nonadecane (C19)	101		103		50-130	2		30
n-Eicosane (C20)	100		102		50-130	2		30
n-Docosane (C22)	100		102		50-130	2		30
n-Tetracosane (C24)	102		104		50-130	2		30
n-Hexacosane (C26)	99		101		50-130	2		30
n-Octacosane (C28)	98		100		50-130	2		30
n-Triacontane (C30)	98		100		50-130	2		30
n-Hexatriacontane (C36)	89		90		50-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
ortho-terphenyl	101		101		50-130
d50-Tetracosane	98		99		50-130

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATION

**Lab Number:** L2320537

**Project Number:** 000029-02.78 T12A

**Report Date:** 05/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - Mansfield Lab Associated sample(s): 02 Batch: WG1770361-2 WG1770361-3								
Nonane (C9)	73		74		50-130	1		30
n-Decane (C10)	84		84		50-130	0		30
n-Dodecane (C12)	91		91		50-130	0		30
n-Tetradecane (C14)	92		92		50-130	0		30
n-Hexadecane (C16)	105		105		50-130	0		30
n-Octadecane (C18)	103		102		50-130	1		30
n-Nonadecane (C19)	99		98		50-130	1		30
n-Eicosane (C20)	98		97		50-130	1		30
n-Docosane (C22)	98		97		50-130	1		30
n-Tetracosane (C24)	99		98		50-130	1		30
n-Hexacosane (C26)	95		94		50-130	1		30
n-Octacosane (C28)	94		93		50-130	1		30
n-Triacontane (C30)	93		92		50-130	1		30
n-Hexatriacontane (C36)	83		82		50-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
ortho-terphenyl	96		96		50-130
d50-Tetracosane	93		93		50-130

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** GASCO HYDROCARBON INVESTIGATIO

**Project Number:** 000029-02.78 T12A

**Lab Number:** L2320537

**Report Date:** 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1769534-4 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
n-Nonane (C9)	ND	ND	mg/kg	NC		30
n-Decane (C10)	194	200	mg/kg	3		30
n-Undecane (C11)	595	451	mg/kg	28		30
n-Dodecane (C12)	ND	ND	mg/kg	NC		30
n-Tridecane (C13)	1200	1290	mg/kg	7		30
2,6,10-Trimethyldodecane (1380)	6840	6950	mg/kg	2		30
n-Tetradecane (C14)	918	891	mg/kg	3		30
2,6,10-Trimethyltridecane (1470)	7240	7190	mg/kg	1		30
n-Pentadecane (C15)	ND	ND	mg/kg	NC		30
n-Hexadecane (C16)	ND	ND	mg/kg	NC		30
Norpristane (1650)	7720	7840	mg/kg	2		30
n-Heptadecane (C17)	357	334	mg/kg	7		30
Pristane	13300	13400	mg/kg	1		30
n-Octadecane (C18)	ND	ND	mg/kg	NC		30
Phytane	8500	8710	mg/kg	2		30
n-Nonadecane (C19)	132J	136J	mg/kg	NC		30
n-Eicosane (C20)	239	176J	mg/kg	NC		30
n-Heneicosane (C21)	582	626	mg/kg	7		30
n-Docosane (C22)	ND	ND	mg/kg	NC		30
n-Tricosane (C23)	53.4J	62.5J	mg/kg	NC		30
n-Tetracosane (C24)	ND	ND	mg/kg	NC		30

**Project Name:** GASCO HYDROCARBON INVESTIGATION  
**Project Number:** 000029-02.78 T12A

# **Lab Duplicate Analysis** **Batch Quality Control**

**Lab Number:** L2320537  
**Report Date:** 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1769534-4 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						
n-Pentacosane (C25)	178JC	172JC	mg/kg	NC		30
n-Hexacosane (C26)	ND	ND	mg/kg	NC		30
n-Heptacosane (C27)	ND	ND	mg/kg	NC		30
n-Octacosane (C28)	ND	ND	mg/kg	NC		30
n-Nonacosane (C29)	ND	ND	mg/kg	NC		30
n-Triacontane (C30)	ND	ND	mg/kg	NC		30
n-Hentriacontane (C31)	ND	ND	mg/kg	NC		30
n-Dotriacontane (C32)	ND	ND	mg/kg	NC		30
n-Tritriacontane (C33)	ND	ND	mg/kg	NC		30
n-Tetratriacontane (C34)	ND	ND	mg/kg	NC		30
n-Pentatriacontane (C35)	ND	ND	mg/kg	NC		30
n-Hexatriacontane (C36)	ND	ND	mg/kg	NC		30
n-Heptatriacontane (C37)	ND	ND	mg/kg	NC		30
n-Octatriacontane (C38)	ND	ND	mg/kg	NC		30
n-Nonatriacontane (C39)	ND	ND	mg/kg	NC		30
n-Tetracontane (C40)	ND	ND	mg/kg	NC		30
Total Petroleum Hydrocarbons (C9-C44)	879000	884000	mg/kg	1		30
Total Saturated Hydrocarbons	48000J	48400J	mg/kg	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
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Project Name: GASCO HYDROCARBON INVESTIGATIO

Project Number: 000029-02.78 T12A

**Lab Duplicate Analysis**

Batch Quality Control

Lab Number: L2320537

Report Date: 05/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1769534-4 QC Sample: L2320537-01 Client ID: MW2112-041723-NAPL						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	103		101		50-130
d50-Tetracosane	96		96		50-130



**Project Name:** GASCO HYDROCARBON INVESTIGATION**Lab Number:** L2320537**Project Number:** 000029-02.78 T12A**Report Date:** 05/09/23**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information****Cooler**                      **Custody Seal**

A                                  Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2320537-01A	Vial unpreserved 20ml hard-cap	A	NA		6.0	Y	Absent		A2-PIANO8260(365),A2-SHC(365),A2-ALKPAH(365)
L2320537-02A	Glass 120ml/4oz w/1:4 Acetone:Hexane	A	NA		6.0	Y	Absent		A2-SHC(14),A2-ALKPAH(14)
L2320537-02B	Glass 120ml/4oz w/1:4 Acetone:Hexane	A	NA		6.0	Y	Absent		A2-SHC(14),A2-ALKPAH(14)

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## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
	Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

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**Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

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## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



**Alpha Analytical, Inc.**Facility: **Company-wide**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**

Revision 19

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**Certification Information**

The following analytes are not included in our Primary NELAP Scope of Accreditation:

**Westborough Facility****EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 625/625.1:** alpha-Terpineol**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

**Westborough Facility:****Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,****EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H-B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,****SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.****EPA 522, EPA 537.1.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.





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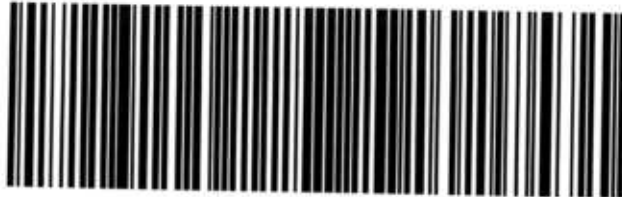


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