



ALS Paragon



Total Extractable Hydrocarbons (Diesel) Case Narrative

Colorado Oil & Gas Conservation Commission

Complaint 200204739

Work Order Number: 0903072

1. This report consists of 2 soil samples. The samples were received intact by ALS Paragon on 03/11/2009. The samples were received at ambient temperature.
2. The soil samples were extracted by adding a methanol/water solution to the soil followed by hexane according to SOP 603 Revision 11, which was developed at ALS Paragon. This mixture is shaken and the hexane portion of the two-phase solution is removed for analysis.
3. The extracts were then analyzed using GC with a DB-5.625 capillary column and a flame ionization detector (FID) according to SOP 406 Revision 14 generally based on SW-846 Method 8000B and Method 8015B. The procedures are based on this general method because SW-846 does not have a specific method for total extractable petroleum hydrocarbons (TEPH) or diesel range organics. The only true modification from this method is that TEPH is a multicomponent mixture and is quantitated by summing the entire range, rather than individual peaks. All positive results were quantitated using the responses from the initial calibration curve using the external standard technique. Also, a confirmation column is not used, because the analyte is a multicomponent mixture and the specific carbon range of the peaks detected is specified on the individual sample reporting forms.
4. All initial and continuing calibration criteria were met.
5. The method blank associated with this project was below the MDL for diesel range organics.
6. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.
7. All matrix spike and matrix spike duplicate recoveries and RPDs were within the acceptance criteria.
8. All samples were extracted and analyzed within the established holding time.
9. All surrogate recoveries were within the acceptance criteria.



10. Sample 2 was analyzed at a dilution in order to bring the target analyte within the calibration range of the instrument. The reporting limits have been adjusted accordingly.
11. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in SOP 939 Revision 3.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS Paragon certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Mindy Norton
Mindy Norton
Organics Primary Data Reviewer

3.19.09
Date

Eric Bayless
Eric Bayless
Organics Final Data Reviewer

3/20/09
Date



*ALS Paragon
Data Qualifier Flags
Fuels*

- G:** This flag indicates that a pattern resembling gasoline was detected in this sample.
- D:** This flag indicates that a pattern resembling diesel was detected in this sample.
- M:** This flag indicates that a pattern resembling motor oil was detected in this sample.
- C:** This flag indicates that a pattern resembling crude oil was detected in this sample.
- 4:** This flag indicates that a pattern resembling JP-4 was detected in this sample.
- 5:** This flag indicates that a pattern resembling JP-5 was detected in this sample.
- H:** This flag indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L:** This flag indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
- Z:** This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
gasoline
JP-8
diesel
mineral spirits
motor oil
Stoddard solvent
bunker C

Multiple flags may be used to indicate the presence of more than one product or component.

*ALS Paragon
Data Qualifier Flags
Chromatography and Mass Spectrometry*

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
- J:** This flag indicates an estimated value. This flag is used as follows: (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.
- B:** This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.
- E:** This flag identifies compounds whose concentration exceeds the upper level of the calibration range.
- A:** This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.
- X:** This flag indicates that the analyte was diluted below an accurate quantitation level.
- *:** This flag indicates that a spike recovery is equal to or outside the control criteria used.
- +:** This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria.

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Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0903072

Client Name: Colorado Oil & Gas Conservation Commission

Client Project Name:

Client Project Number: Complaint 200204739

Client PO Number: OE PHA 09000000004

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Sandoval 100309 B	0903072-1		SOIL	10-Mar-09	8:33
Sandoval 100309 S	0903072-2		SOIL	10-Mar-09	9:35

CONDITION OF SAMPLE UPON RECEIPT FORM

Paragon Analytics

Client: COCG

Workorder No: 0903072

Project Manager: AW

Initials: me Date: 3-11-09

1. Does this project require any special handling in addition to standard Paragon procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	<input checked="" type="radio"/> NONE	YES	NO
3. Are Custody seals on sample containers intact?	<input checked="" type="radio"/> NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible ?		<input checked="" type="radio"/> YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	<input checked="" type="radio"/> YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	<input checked="" type="radio"/> N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	<input checked="" type="radio"/> N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: _____ < green pea _____ > green pea	<input checked="" type="radio"/> N/A	YES	NO
15. Do perchlorate LCMS-MS samples have headspace? (at least 1/3 of container required)	<input checked="" type="radio"/> N/A	YES	NO
16. Were samples checked for and free from the presence of residual chlorine? (Applicable when PM has indicated samples are from a chlorinated water source; note if field preservation with sodium thiosulfate was not observed.)	<input checked="" type="radio"/> N/A	YES	NO
17. Were the samples shipped on ice?		YES	<input checked="" type="radio"/> NO
18. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <input checked="" type="radio"/> #2 <input type="radio"/> #4 <input type="radio"/> RAD ONLY		YES	<input checked="" type="radio"/> NO
Cooler #: _____			
Temperature (°C): <u>Amb</u>			
No. of custody seals on cooler: <u>0</u>			
DOT Survey/Acceptance Information	External µR/hr reading: <u>12</u>		
	Background µR/hr reading: <u>11</u>		
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / <input checked="" type="radio"/> NA (if no. see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO / NA Contact: _____ Date/Time: _____

Project Manager Signature / Date: [Signature] 3/11/09

*IR Gun #2: Oakton, SN 29922500201-0066

*IR Gun #4: Oakton, SN 2372220101-0002

Diesel Range Organics

Method SW8015MB

Method Blank

Lab Name: ALS Paragon

Work Order Number: 0903072

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200204739

Lab ID: EX090312-1MB

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 12-Mar-09

Date Analyzed: 12-Mar-09

Prep Method: METHOD

Prep Batch: EX090312-1

QCBatchID: EX090312-1-1

Run ID: HCD090312-3A

Cleanup: NONE

Basis: N/A

File Name: F3F33595

Sample Aliquot: 20 g

Final Volume: 5 ml

Result Units: MG/KG

Clean DF: 1

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	5	5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	11.3		12.5	91	47 - 142

Data Package ID: HCD0903072-1

Date Printed: Thursday, March 19, 2009

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LIMS Version: 6.252A

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Diesel Range Organics

Method SW8015MB

Sample Results

Lab Name: ALS Paragon

Work Order Number: 0903072

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200204739

Field ID:	Sandoval 100309 B
Lab ID:	0903072-1

Sample Matrix: SOIL

% Moisture: 6.8

Date Collected: 10-Mar-09

Date Extracted: 12-Mar-09

Date Analyzed: 12-Mar-09

Prep Method: METHOD

Prep Batch: EX090312-1

QC Batch ID: EX090312-1-1

Run ID: HCD090312-3A

Cleanup: NONE

Basis: Dry Weight

File Name: F3F33598

Sample Aliquot: 20.33 g

Final Volume: 5 ml

Result Units: MG/KG

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	19	5.3	L,Z,M	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	12.4		13.2	94	47 - 142

The chromatogram for Diesel Range Organics indicates the presence of hydrocarbons in the range of C10-C40.

Data Package ID: HCD0903072-1

Diesel Range Organics

Method SW8015MB

Sample Results

Lab Name: ALS Paragon

Work Order Number: 0903072

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200204739

Field ID:	Sandoval 100309 S
Lab ID:	0903072-2

Sample Matrix: SOIL

% Moisture: 3.1

Date Collected: 10-Mar-09

Date Extracted: 12-Mar-09

Date Analyzed: 12-Mar-09

Prep Method: METHOD

Prep Batch: EX090312-1

QC Batch ID: EX090312-1-1

Run ID: HCD090312-3A

Cleanup: NONE

Basis: Dry Weight

File Name: F3F33602

Sample Aliquot: 20.08 g

Final Volume: 5 ml

Result Units: MG/KG

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	5	3200	26	L,Z,M,H	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	12.2		12.8	95	47 - 142

The chromatogram for Diesel Range Organics indicates the presence of hydrocarbons in the range of C8-C40+.

Data Package ID: HCD0903072-1

Diesel Range Organics

Method SW8015MB

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Paragon

Work Order Number: 0903072

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200204739

Lab ID: EX090312-1LCS	Sample Matrix: SOIL % Moisture: N/A Date Collected: N/A Date Extracted: 03/12/2009 Date Analyzed: 03/12/2009 Prep Method: METHOD	Prep Batch: EX090312-1 QCBatchID: EX090312-1-1 Run ID: HCD090312-3A Cleanup: NONE Basis: N/A File Name: F3F33596	Sample Aliquot: 20 g Final Volume: 5 ml Result Units: MG/KG Clean DF: 1
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CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
68334-30-5	Diesel Range Organics	50	55.9	5		112	43 - 139%

Lab ID: EX090312-1LCSD	Sample Matrix: SOIL % Moisture: N/A Date Collected: N/A Date Extracted: 03/12/2009 Date Analyzed: 03/12/2009 Prep Method: METHOD	Prep Batch: EX090312-1 QCBatchID: EX090312-1-1 Run ID: HCD090312-3A Cleanup: NONE Basis: N/A File Name: F3F33597	Sample Aliquot: 20 g Final Volume: 5 ml Result Units: MG/KG Clean DF: 1
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CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
68334-30-5	Diesel Range Organics	50	55.6	5		111	20	1

Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
84-15-1	O-TERPHENYL	12.5	85		81		47 - 142

Data Package ID: HCD0903072-1

Date Printed: Thursday, March 19, 2009

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Diesel Range Organics

Method SW8015MB

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Paragon
Work Order Number: 0903072
Client Name: Colorado Oil & Gas Conservation Commission
ClientProject ID: Complaint 200204739

Field ID: Sandoval 100309 B LabID: 0903072-1MS	Sample Matrix: SOIL % Moisture: 6.8 Date Collected: 10-Mar-09 Date Extracted: 12-Mar-09 Date Analyzed: 12-Mar-09 Prep Method: METHOD	Prep Batch: EX090312-1 QCBatchID: EX090312-1-1 Run ID: HCD090312-3A Cleanup: NONE Basis: Dry Weight	Sample Aliquot: 20.21 g Final Volume: 5 ml Result Units: MG/KG File Name: F3F33599
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CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
68334-30-5	Diesel Range Organics	19	L,Z,M	83		5.31	53.1	120	43 - 139%

Field ID: Sandoval 100309 B LabID: 0903072-1MSD	Sample Matrix: SOIL % Moisture: 6.8 Date Collected: 10-Mar-09 Date Extracted: 12-Mar-09 Date Analyzed: 12-Mar-09 Prep Method: METHOD	Prep Batch: EX090312-1 QCBatchID: EX090312-1-1 Run ID: HCD090312-3A Cleanup: NONE Basis: Dry Weight	Sample Aliquot: 20.4 g Final Volume: 5 ml Result Units: MG/KG File Name: F3F33600
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CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
68334-30-5	Diesel Range Organics	81.9		52.6	119	5.26	20	1

Surrogate Recovery MS/MSD

CASNO	Target Analyte	Spike Added	MS % Rec.	MS Flag	MSD % Rec.	MSD Flag	Control Limits
84-15-1	O-TERPHENYL	13.3	95		94		47 - 142

Data Package ID: HCD0903072-1