



# ALS Paragon



## Total Volatile Petroleum Hydrocarbons Case Narrative

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### **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 Paragon on 03/11/2009. The samples were received at ambient temperature.
2. These samples were prepared and analyzed according to SW-846, 3rd Edition procedures. Specifically, the soil samples were prepared by heating and purging 1g of sample mixed with 5ml of reagent water using purge and trap procedures based on Method 5030B. The calibration curve was also prepared using the heated purge.
3. The samples were analyzed using a GC with a DB-624 capillary column and a flame ionization detector (FID) according to Paragon Analytics Standard Operating Procedure 425 Revision 12 generally based on SW-846 Methods 8000B and 8015B. The procedures are based on these methods because SW-846 does not have a specific method for TVPH or gasoline range organics. The only true modification from these methods is that TVPH is a multicomponent mixture and is quantitated by summing the entire range, rather than individual peaks. The carbon range integrated in this test extends from C<sub>6</sub> to C<sub>10</sub>. All positive results in this range were quantitated using the responses from the initial calibration curve using the internal standard technique.
4. All initial and continuing calibration criteria were met.
5. The method blank associated with this project was below the MDL for gasoline 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 acceptable limits with the following exception:

Surrogate	Sample	Direction
2,3,4-Trifluorotoluene	2	High

Sample 2 had an elevated surrogate recovery. Examination of the chromatogram demonstrates interference of the sample peak by component peaks in the gasoline range.

10. All internal standard recoveries were within acceptance criteria.
11. Due to matrix interferences sample 2 was analyzed at a dilution. The reporting limits have been adjusted accordingly.
12. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in Paragon Analytics Standard Operating Procedure 939 Revision 3.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics 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

Joe Nantz  
Organics Final Data Reviewer

3.22.09  
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.
- 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-4  
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.

# ALS Paragon

## Sample Number(s) Cross-Reference Table

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**Paragon OrderNum:** 0903072

**Client Name:** Colorado Oil & Gas Conservation Commission

**Client Project Name:**

**Client Project Number:** Complaint 200204739

**Client PO Number:** OE PHA 09000000004

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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 <b>special handling</b> in addition to standard Paragon procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody <b>seals</b> on <b>shipping containers</b> intact?	<input checked="" type="radio"/> NONE	YES	NO
3. Are Custody seals on <b>sample containers</b> intact?	<input checked="" type="radio"/> NONE	YES	NO
4. Is there a <b>COC (Chain-of-Custody)</b> present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the <b>COC and bottle labels complete and legible</b> ?		<input checked="" type="radio"/> YES	NO
6. Is the <b>COC in agreement</b> with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	NO
7. Were <b>airbills / shipping documents</b> present and/or removable?	DROP OFF	<input checked="" type="radio"/> YES	NO
8. Are all aqueous <b>samples requiring preservation preserved correctly?</b> (excluding volatiles)	<input checked="" type="radio"/> N/A	YES	NO
9. Are all aqueous <b>non-preserved samples pH 4-9?</b>	<input checked="" type="radio"/> N/A	YES	NO
10. Is there <b>sufficient sample</b> for the requested analyses?		<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the <b>proper containers</b> for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within <b>holding times</b> for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received <b>intact?</b> (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	NO
14. Are all samples requiring <b>no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon)</b> headspace free? <b>Size of bubble:</b> _____ < green pea _____ > green pea	<input checked="" type="radio"/> N/A	YES	NO
15. Do perchlorate LCMS-MS samples <b>have</b> 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 <b>residual chlorine?</b> (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 <b>shipped on ice?</b>		YES	<input checked="" type="radio"/> NO
18. Were cooler temperatures measured at 0.1-6.0°C? <b>IR gun used*:</b> <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

# Gasoline Range Organics

Method SW8015B

Method Blank

Lab Name: ALS Paragon

Work Order Number: 0903072

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200204739

Lab ID: HCG090318-1MB

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 18-Mar-09

Date Analyzed: 18-Mar-09

Prep Method: SW5030 Rev B

Prep Batch: HCG090318-1

QC Batch ID: HCG090318-1-1

Run ID: HCG090318-1A

Cleanup: NONE

Basis: N/A

File Name: 00939.dat

Sample Aliquot: 1 g

Final Volume: 5 ml

Result Units: MG/KG

Clean DF: 1

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.5	0.5	U	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
193533-92-5	2,3,4-TRIFLUOROTOLUENE	0.507		0.5	101	76 - 126

Data Package ID: HCG0903072-1

Date Printed: Thursday, March 19, 2009

ALS Paragon

LIMS Version: 6.252A

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# Gasoline Range Organics

Method SW8015B

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: 18-Mar-09

Date Analyzed: 18-Mar-09

Prep Method: SW5030 Rev B

Prep Batch: HCG090318-1

QC Batch ID: HCG090318-1-1

Run ID: HCG090318-1A

Cleanup: NONE

Basis: Dry Weight

File Name: 00940.dat

Sample Aliquot: 1.02 g

Final Volume: 5 ml

Result Units: MG/KG

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.53	0.53	U	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
193533-92-5	2,3,4-TRIFLUOROTOLUENE	0.536		0.526	102	76 - 126

Data Package ID: HCG0903072-1

# Gasoline Range Organics

Method SW8015B

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: 18-Mar-09

Date Analyzed: 18-Mar-09

Prep Method: SW5030 Rev B

Prep Batch: HCG090318-1

QC Batch ID: HCG090318-1-1

Run ID: HCG090318-1A

Cleanup: NONE

Basis: Dry Weight

File Name: 00945.dat

Sample Aliquot: 2 g

Final Volume: 5 ml

Result Units: MG/KG

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1000	3400	260	G	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
193533-92-5	2,3,4-TRIFLUOROTOLUENE	337	*	258	131	76 - 126

Data Package ID: HCG0903072-1

Date Printed: Thursday, March 19, 2009

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LIMS Version: 6.252A

# Gasoline Range Organics

## Method SW8015B

### 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: HCG090318-1LCS	Sample Matrix: SOIL % Moisture: N/A Date Collected: N/A Date Extracted: 03/18/2009 Date Analyzed: 03/18/2009 Prep Method: SW5030B	Prep Batch: HCG090318-1 QCBatchID: HCG090318-1-1 Run ID: HCG090318-1A Cleanup: NONE Basis: N/A File Name: 00938.dat	Sample Aliquot: 1 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
8006-61-9	GASOLINE RANGE ORGANICS	5	4.89	0.5		98	79 - 118%

Lab ID: HCG090318-1LCSD	Sample Matrix: SOIL % Moisture: N/A Date Collected: N/A Date Extracted: 03/18/2009 Date Analyzed: 03/18/2009 Prep Method: SW5030B	Prep Batch: HCG090318-1 QCBatchID: HCG090318-1-1 Run ID: HCG090318-1A Cleanup: NONE Basis: N/A File Name: 00950.dat	Sample Aliquot: 1 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
8006-61-9	GASOLINE RANGE ORGANICS	5	4.93	0.5		99	20	1

### Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
193533-92-5	2,3,4-TRIFLUOROTOLUENE	0.5	103		103		76 - 126

Data Package ID: HCG0903072-1

# Gasoline Range Organics

Method SW8015B

## 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: 18-Mar-09

Date Analyzed: 18-Mar-09

Prep Method: SW5030 Rev B

Prep Batch: HCG090318-1

QCBatchID: HCG090318-1-1

Run ID: HCG090318-1A

Cleanup: NONE

Basis: Dry Weight

Sample Aliquot: 1 g

Final Volume: 5 ml

Result Units: MG/KG

File Name: 00948.dat

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
8006-61-9	GASOLINE RANGE ORGANICS	0.53	U	6.04		0.536	5.36	113	79 - 118%

Field ID: Sandoval 100309 B

LabID: 0903072-1MSD

Sample Matrix: SOIL

% Moisture: 6.8

Date Collected: 10-Mar-09

Date Extracted: 18-Mar-09

Date Analyzed: 18-Mar-09

Prep Method: SW5030 Rev B

Prep Batch: HCG090318-1

QCBatchID: HCG090318-1-1

Run ID: HCG090318-1A

Cleanup: NONE

Basis: Dry Weight

Sample Aliquot: 1 g

Final Volume: 5 ml

Result Units: MG/KG

File Name: 00949.dat

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
8006-61-9	GASOLINE RANGE ORGANICS	5.32		5.36	99	0.536	40	13

### Surrogate Recovery MS/MSD

CASNO	Target Analyte	Spike Added	MS % Rec.	MS Flag	MSD % Rec.	MSD Flag	Control Limits
193533-92-5	2,3,4-TRIFLUOROTOLUENE	0.536	102		100		76 - 126

Data Package ID: HCG0903072-1