

December 23, 2014

REM 8677

Document 2313498

Great Western Operating Company, LLC
1801 Broadway, Suite 500
Denver, Colorado 80202

Attention: Mr. Scot A. Donato, EH&S/Regulatory Manager

Subject: Mershon Production Site
Impacted Soil Removal, Excavation Soil Sampling, Ground Water Sampling, and
Granular Activated Carbon Installation
Weld County, Colorado
Project Number E14447.E2

Dear Mr. Donato:

As requested, A. G. Wassenaar, Inc. (AGW) documented excavation of petroleum-impacted soils and conducted soil and ground water sampling at the Mershon production site operated by Great Western Operating Company, LLC (GWOC). This letter summarizes the project activities and analytical results.

Site Characteristics

The subject site is located in an industrial area southeast of the town of Windsor, Colorado. It is in the southwest $\frac{1}{4}$ of the southeast $\frac{1}{4}$ of Section 26, Township 6 North, Range 67 West. The ground surface is generally level, with a slight gradient to the south. A high pressure gas line operated by DCP Midstream is located to the west of the former produced water vessel related to the release.

Excavation Oversight and Soil Sampling Activities

September 18, 2014

At GWOC's request, AGW visited the site on September 18, 2014, following the identification of visibly impacted soils beneath a produced water vessel. AGW collected three soil samples for field evaluation and laboratory analysis. Sample SS-Pit was collected from the approximately 14 feet below ground surface (bgs), beneath the location of the former produced water vessel. Soil samples SS-E-11M and SS-E-16M were collected from test pits excavated 36 and 52 feet east of the produced water vessel, at approximately 10 feet bgs and 12 feet bgs, respectively. During this project, AGW followed sampling procedures, equipment decontamination methods, and chain-of-custody procedures in general accordance with U. S. Environmental Protection Agency (EPA) guidelines.

On the day of collection, the selected samples were submitted to Origins Laboratory, Inc. (Origins) in Denver, Colorado for analysis. Origins analyzed each submitted soil sample for gasoline range organics (GRO) and diesel range organics (DRO) by EPA Method 8015C. In accordance with requirements of the Colorado Oil and Gas Conservation Commission (COGCC), the GRO and DRO values were added together to obtain the total petroleum hydrocarbon (TPH) concentration for comparison to the COGCC Table 910-1 TPH concentration. The samples were also analyzed for electrical conductivity (EC) by EPA Method 120.1 and for pH by EPA Method 9045D.

Based on the September 18, 2014 sampling results, sample SS-Pit contained a TPH concentration of 9,590 parts per million (ppm), which is greater than the COGCC Table 910-1 concentration of 500 ppm. The soil samples collected from the two test pits to the east did not contain detectable concentrations of TPH. None of the pH or EC results were greater than COGCC Table 910-1 concentrations.

The soil sample results are depicted on Figure 1 in Attachment B, and included in Table 1 in Attachment C. The laboratory analytical report is included in Attachment D.

In accordance with their requirements, GWOC notified the COGCC, as well as the surface owner and Weld County, of the release on September 26, 2014. On September 29, 2014, GWOC submitted a Form 19 Spill/Release Report. A supplemental Spill/Release Report was submitted on October 3, 2014, and a Form 27 Site Investigation and Remediation Workplan was submitted on October 7, 2014. COGCC approved the Form 27 on October 14, 2014, and work at this site will proceed under Remediation Project No. 8677. Copies of all COGCC forms and notifications are included in Attachment A.

October 3, 2014

On October 3, 2014, AGW was onsite during excavation by Mundt Energy Services, LLC (Mundt Energy) of approximately 200 cubic yards of soil exhibiting staining and odors. The impacted soils were trucked to Waste Management's North Weld Landfill in Ault, Colorado for disposal. The maximum depth of the excavation was approximately 14 feet deep. Ground water was encountered approximately 12-13 feet bgs.

Following excavation, AGW collected four soil samples for field evaluation and laboratory analysis. Soil samples SS-North, SS-East, SS-South, and SS-West were collected from the excavation cavity walls. Due to the presence of ground water at the base of the excavation cavity, a soil sample was not collected from the base. AGW did collect one "grab" ground water sample, designated GW-Pit, from ground water which infiltrated the base of the excavation.

On the day of collection, the selected samples were submitted to Origins for analysis. Origins analyzed each submitted soil sample for GRO and DRO by EPA Method 8015C, for EC by EPA

Method 120.1, and for pH by EPA Method 9045D. The ground water sample was analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8260C.

Based on the October 3, 2014 soil and ground water sampling results, soil samples collected from the northern and southern walls of the excavation (SS-North and SS-South) did not contain TPH, EC, or pH values greater than Table 910-1 concentrations. The soil sample collected from the western wall of the excavation contained a TPH concentration of 7,700 ppm, and the sample collected from the eastern wall of the excavation contained a TPH concentration of 5,860 ppm. Additionally, the concentration of benzene in ground water sample GW-Pit (a grab sample) was 1,190 parts per billion (ppb), which exceeds the Table 910-1 concentration of 5 ppb.

The soil sample results are depicted on Figure 1 in Attachment B, and included in Table 1 in Attachment C. The laboratory analytical report is included in Attachment D.

October 20, 2014

On October 20, 2014, AGW was onsite during excavation by Mundt Energy of approximately 150 additional cubic yards of soil east of the existing excavation. The impacted soils were trucked to Waste Management's North Weld Landfill in Ault, Colorado for disposal.

AGW collected a confirmation soil sample, designated S-2, from the eastern wall of the expanded excavation. AGW also directed the excavation of additional test pits to the east (S-5) and west (S-2) sides of the DCP pipeline west of the excavation. "Grab" ground water samples, designated W-1 and W-2, were collected from two test pits advanced approximately 20 feet and 55 feet south of the existing excavation.

On the day of collection, the selected samples were submitted to Origins for analysis. Origins analyzed each submitted soil sample for GRO and DRO by EPA Method 8015C, for EC by EPA Method 120.1, and for pH by EPA Method 9045D. The ground water samples were analyzed for BTEX by EPA Method 8260C. The laboratory analytical report is included in Attachment C.

Based on the October 20, 2014 soil and ground water sampling results, the soil sample collected from the eastern wall of the expanded excavation and the sample collected from the western side of the DCP pipeline did not contain TPH, EC, or pH values greater than Table 910-1 concentrations. The soil sample collected from the eastern side of the DCP pipeline contained a TPH concentration of 564 ppm. The concentrations of benzene in ground water samples W-1 and W-2 were 41.2 ppb and 14.2 ppb, respectively, which exceed the Table 910-1 concentration of 5 ppb.

The soil sample results are depicted on Figure 1 in Attachment B, and included in Table 1 in Attachment C. The laboratory analytical report is included in Attachment D.

To enhance remediation, approximately 250 pounds of an activated carbon and oxygen releasing remediation compound called COGAC (manufactured by Remington Technologies of Loveland, Colorado) was placed at the base of the excavation cavity prior to backfilling.

Conclusions

Based on the soil analytical results obtained during September and October, 2014, impacted soils at the Mershon production site were present in the vicinity of a former produced water vessel. Approximately 350 cubic yards of impacted soils have been excavated and landfilled. Limited impacted soils remain in place in the vicinity of the DCP pipeline west of the backfilled excavation. The remaining impacted soils could not be accessed due to the proximity of the gas lines but this soil should bioremediate in situ given the limited volume remaining and the removal of other potential sources. Impacted ground water is also present in the vicinity of the former produced water vessel. The lateral extent of impacted ground water has not been determined.

The removal of the majority of impacted soils and the introduction of the COGAC amendment material should help expedite remediation of any remaining impacted soil and ground water.

Ground water monitoring wells will be installed at the site and sampled to further determine the extent of ground water contamination and to monitor natural attenuation of impacted ground water.

Thank you for the opportunity to assist you with this project. If you have any questions or require further information, please call us at (303) 759-8373.

Sincerely,

A. G. WASSENAAR, INC.

A handwritten signature in black ink that reads "Rachel A. Peterson". The signature is written in a cursive, flowing style. Below the signature is a horizontal line.

Rachel A. Peterson, P.G.
Project Manager

RAP/dd
Attachments

ATTACHMENT A

COGCC FORMS 19 AND 27

State of Colorado Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

400695452

Date Received:

09/28/2014

Spill report taken by:

ALLISON, RICK

Spill/Release Point ID:

439123

SPILL/RELEASE REPORT (INITIAL)

This form is to be submitted by the party responsible for the oil and gas spill or release. Any spill or release which may impact waters of the State must be reported as soon as practicable; any spill over 20 bbls must be reported within 24 hours and all spills over five bbls must be reported within ten days. Submit a Site Investigation and Remediation Workplan (Form 27) when requested by the Director.

OPERATOR INFORMATION

Name of Operator: <u>GREAT WESTERN OPERATING COMPANY LLC</u>	Operator No: <u>10110</u>	Phone Numbers Phone: <u>(303) 398-0537</u> Mobile: <u>(303) 398-0537</u> Email: <u>sdonato@gwogco.com</u>
Address: <u>1801 BROADWAY #500</u>		
City: <u>DENVER</u>	State: <u>CO</u> Zip: <u>80202</u>	
Contact Person: <u>Scot Donato</u>		

INITIAL SPILL/RELEASE REPORT

Initial Spill/Release Report Doc# 400695452Initial Report Date: 09/25/2014 Date of Discovery: 09/25/2014 Spill Type: Historical Release

Spill/Release Point Location:

Location of Spill/Release: QTRQTR SWSE SEC 26 TWP 6N RNG 67W MERIDIAN 6Latitude: 40.452920 Longitude: -104.857360Municipality (if within municipal boundaries): Windsor County: WELD

Reference Location:

Facility Type: PARTIALLY-BURIED VESSEL ☒ Facility/Location ID No 333241☐ No Existing Facility or Location ID No.☐ Well API No. (Only if the reference facility is well) 05- -

Fluid(s) Spilled/Released (please answer Yes/No):

Was one (1) barrel or more spilled outside of berms or secondary containment? No

Secondary containment, including walls & floor regardless of construction material, must be sufficiently impervious to contain any discharge from primary containment until cleanup occurs.

Were Five (5) barrels or more spilled? No

Estimated Total Spill Volume: use same ranges as others for values

Estimated Oil Spill Volume(bbl): 0Estimated Condensate Spill Volume(bbl): 0Estimated Flow Back Fluid Spill Volume(bbl): 0Estimated Produced Water Spill Volume(bbl): UnknownEstimated Other E&P Waste Spill Volume(bbl): 0Estimated Drilling Fluid Spill Volume(bbl): 0

Specify: historical release: unknown quantity of produced water released

Land Use:

Current Land Use: OTHER Other(Specify): vacant and industrialWeather Condition: clear, sunnySurface Owner: FEE Other(Specify):

Check if impacted or threatened by spill/Release (please answer Yes/No to all that apply):

Waters of the State ☐ Residence/Occupied Structure ☐ Livestock ☐ Public Byway ☐ Surface Water Supply Area ☐

As defined in COGCC 100-Series Rules

Describe what is known about the spill/release event (what happened -- including how it was stopped, contained, and recovered):

A fiberglass produced water vessel was being removed and potential impacts were observed in soils beneath the removed vessel. Limited excavation and stockpiling of visibly impacted were conducted.

List Agencies and Other Parties Notified:

OTHER NOTIFICATIONS

<u>Date</u>	<u>Agency/Party</u>	<u>Contact</u>	<u>Phone</u>	<u>Response</u>
9/25/2014	Weld County	Tom Parko	970-353-6100	N/A
9/25/2014	Surface Owner	Broe Group	-	
			-	

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: _____ Print Name: Rachel Peterson

Title: Project Manager Date: 09/28/2014 Email: petersonr@agwassenaar.com

Attachment Check List

<u>Att Doc Num</u>	<u>Name</u>
2614945	EMAIL 24 HOUR NOTIFICATION
400695452	SPILL/RELEASE REPORT(INITIAL)
400695856	TOPOGRAPHIC MAP
400697277	FORM 19 SUBMITTED

Total Attach: 4 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	Operator's 24 notification is attached.	9/29/2014 8:49:33 AM

Total: 1 comment(s)

State of Colorado Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

400701233

Date Received:

10/03/2014

Spill report taken by:

ALLISON, RICK

Spill/Release Point ID:

439123

SPILL/RELEASE REPORT (SUPPLEMENTAL)

This form is to be submitted by the party responsible for the oil and gas spill or release. Any spill or release which may impact waters of the State must be reported as soon as practicable; any spill over 20 bbls must be reported within 24 hours and all spills over five bbls must be reported within ten days. Submit a Site Investigation and Remediation Workplan (Form 27) when requested by the Director.

OPERATOR INFORMATION

Name of Operator: <u>GREAT WESTERN OPERATING COMPANY LLC</u>	Operator No: <u>10110</u>	Phone Numbers
Address: <u>1801 BROADWAY #500</u>		Phone: <u>(303) 398-0537</u>
City: <u>DENVER</u>	State: <u>CO</u>	Mobile: <u>(303) 398-0537</u>
Zip: <u>80202</u>		Email: <u>sdonato@gwogco.com</u>
Contact Person: <u>Scot Donato</u>		

INITIAL SPILL/RELEASE REPORT

Initial Spill/Release Report Doc# 400695452

Initial Report Date: 09/25/2014 Date of Discovery: 09/25/2014 Spill Type: Historical Release

Spill/Release Point Location:

Location of Spill/Release: QTRQTR SWSE SEC 26 TWP 6N RNG 67W MERIDIAN 6Latitude: 40.452920 Longitude: -104.857360Municipality (if within municipal boundaries): Windsor County: WELD

Reference Location:

Facility Type: PARTIALLY-BURIED VESSEL ☒ Facility/Location ID No 333241☐ No Existing Facility or Location ID No.☐ Well API No. (Only if the reference facility is well) 05- -

Fluid(s) Spilled/Released (please answer Yes/No):

Was one (1) barrel or more spilled outside of berms or secondary containment? No

Secondary containment, including walls & floor regardless of construction material, must be sufficiently impervious to contain any discharge from primary containment until cleanup occurs.

Were Five (5) barrels or more spilled? No

Estimated Total Spill Volume: use same ranges as others for values

Estimated Oil Spill Volume(bbl): 0Estimated Condensate Spill Volume(bbl): 0Estimated Flow Back Fluid Spill Volume(bbl): 0Estimated Produced Water Spill Volume(bbl): UnknownEstimated Other E&P Waste Spill Volume(bbl): 0Estimated Drilling Fluid Spill Volume(bbl): 0Specify: historical release: unknown quantity of produced water released

Land Use:

Current Land Use: OTHER Other(Specify): vacant and industrialWeather Condition: clear, sunnySurface Owner: FEE Other(Specify):

Check if impacted or threatened by spill/Release (please answer Yes/No to all that apply):

Waters of the State ☐ Residence/Occupied Structure ☐ Livestock ☐ Public Byway ☐ Surface Water Supply Area ☐

As defined in COGCC 100-Series Rules

Describe what is known about the spill/release event (what happened -- including how it was stopped, contained, and recovered):

A fiberglass produced water vessel was being removed and potential impacts were observed in soils beneath the removed vessel. Limited excavation and stockpiling of visibly impacted were conducted.

List Agencies and Other Parties Notified:

OTHER NOTIFICATIONS

Date	Agency/Party	Contact	Phone	Response
9/25/2014	Weld County	Tom Parko	970-353-6100	N/A
9/25/2014	Surface Owner	Broe Group	-	
			-	

SPILL/RELEASE DETAIL REPORTS

#1	Supplemental Report Date: 10/03/2014		
FLUIDS	BBL's SPILLED	BBL's RECOVERED	Unknown
OIL	0	0	<input type="checkbox"/>
CONDENSATE	0	0	<input type="checkbox"/>
PRODUCED WATER			<input checked="" type="checkbox"/>
DRILLING FLUID	0	0	<input type="checkbox"/>
FLOW BACK FLUID	0	0	<input type="checkbox"/>
OTHER E&P WASTE	0	0	<input type="checkbox"/>

specify: Historical release: unknown quantity of produced water released

Was spill/release completely contained within berms or secondary containment? NO Was an Emergency Pit constructed? NO

Secondary containment, including walls & floor regardless of construction material, must be sufficiently impervious to contain any discharge from primary containment until cleanup occurs.

A Form 15 Pit Report shall be submitted within 30 calendar days after the construction of an emergency pit

Impacted Media (Check all that apply) ☒ Soil ☐ Groundwater ☐ Surface Water ☐ Dry Drainage Feature

Surface Area Impacted: Length of Impact (feet): _____ Width of Impact (feet): _____

Depth of Impact (feet BGS): _____ Depth of Impact (inches BGS): _____

How was extent determined?

Extent will be determined during further excavation and sampling.

Soil/Geology Description:

Poorly sorted clays, silts, and coarse sands.

Depth to Groundwater (feet BGS) 14 Number Water Wells within 1/2 mile radius: 18

If less than 1 mile, distance in feet to nearest

Water Well	_____	None <input checked="" type="checkbox"/>	Surface Water	_____	None <input checked="" type="checkbox"/>
Wetlands	_____	None <input checked="" type="checkbox"/>	Springs	_____	None <input checked="" type="checkbox"/>
Livestock	_____	None <input checked="" type="checkbox"/>	Occupied Building	_____	None <input checked="" type="checkbox"/>

Additional Spill Details Not Provided Above:

A produced water vessel was being removed and potential impacts were observed in soils beneath the removed vessel on September 18, 2014. Laboratory analytical results received on September 25, 2014 confirmed the release. Additional soil excavation and sampling was conducted on October 3, 2014 to further determine the extent of impact. Additional laboratory results will be submitted to COGCC when available.

CORRECTIVE ACTIONS

#1	Supplemental Report Date: 10/03/2014
----	--------------------------------------

Cause of Spill (Check all that apply) ☐ Human Error ☐ Equipment Failure ☒ Historical-Unknown
☐ Other (specify) _____

Describe Incident & Root Cause (include specific equipment and point of failure)

A produced water vessel was being removed and potential impacts were observed in soils beneath the removed vessel on September 18, 2014. The incident was a result of a historical release of unknown origins.

Describe measures taken to prevent the problem(s) from reoccurring:

Volume of Soil Excavated (cubic yards): 200

Disposition of Excavated Soil (attach documentation) ☒ Offsite Disposal ☐ Onsite Treatment
☐ Other (specify) _____

Volume of Impacted Ground Water Removed (bbls): _____

Volume of Impacted Surface Water Removed (bbls): _____

REQUEST FOR CLOSURE

Spill/Release Reports should be closed when impacts have been remediated or when further investigation and corrective actions will take place under an approved Form 27.

Basis for Closure: ☐ Corrective Actions Completed (documentation attached)
☐ Work proceeding under an approved Form 27
Form 27 Remediation Project No: _____

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: _____ Print Name: Rachel Peterson
Title: Project Manager Date: 10/03/2014 Email: petersonr@agwassenaar.com

Attachment Check List

Att Doc Num	Name
400701233	FORM 19 SUBMITTED
400701249	TOPOGRAPHIC MAP

Total Attach: 2 Files

General Comments

User Group	Comment	Comment Date

Total: 0 comment(s)

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY
Received 10/7/2014

Project No. 8677

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee:

☒ Spill Complaint
Inspection NOAV
Tracking No: 400695452

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☒ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☒ Other (describe): site improvements

OGCC Operator Number: 10110

Name of Operator: Great Western Operating Company, LLC

Address: 1801 Broadway, Suite 500

City: Denver State: CO Zip: 80202

Contact Name and Telephone:

Scot Donato, EH&S/Regulatory Manager

No: 303-398-0537

Fax: 866-742-1784

API Number:

County: Weld

Facility Name: Mershon

Facility Number: 333241

Well Name:

Well Number:

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SWSE 26 6N 67W 6 Latitude: 40.45292 Longitude: -104.85736

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): produced water

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☐ Y ☐ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): vacant, industrial

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Nunn Clay Loam, 0 to 1 percent slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): None, see Form 19 submitted 09/28/2014

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):

Extent of Impact:

How Determined:



Soils

To be determined during further excavation and sampling



Vegetation



Groundwater



Surface Water

REMEDIALATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

Limited excavation and stockpiling of visibly impacted soils on September 18, 2014. Collected initial soil samples for laboratory analysis. September 25, 2014 lab results confirmed release. Approximately 250 cubic yards of additional impacted soils were excavated and sent for disposal at Waste Management's North Weld County facility on October 3, 2014.

Describe how source is to be removed:

Initial soil excavation based on staining, odors, and final laboratory analytical results has been completed at location of former produced water vessel.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

Source removal will be conducted through impacted soil removal. Confirmation soil samples will be collected and analyzed for GRO/DRO/pH/EC. Removed soils will be disposed of properly at an approved offsite disposal facility.



REMEDIATION WORKPLAN (Cont.)

Tracking Number: 4006954542
Name of Operator: Great Western Operating Co.
OGCC Operator No: 10110
Received Date: 10/7/2014
Well Name & No: _____
Facility Name & No: Mershon

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

The vertical extent of soil impact will be determined during soil excavation activities in order to ensure that impacted soils are not in contact with ground water. If ground water is not encountered during further excavation, ground water investigation and remediation will not be conducted. If ground water is encountered during excavation activities, a grab ground water sample will be collected.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

The site will be reclaimed in accordance with the 1000 series rules.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☒ Y ☐ N If yes, describe:

Further definition of site impacts will be completed during additional site investigation activities.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Impacted soils will be disposed of at a licensed disposal facility.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 09/18/14 Date Site Investigation Completed: _____ Date Remediation Plan Submitted: _____
Remediation Start Date: 10/03/14 Anticipated Completion Date: _____ Actual Completion Date: _____

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Scot A. Donato Signed: [Signature]

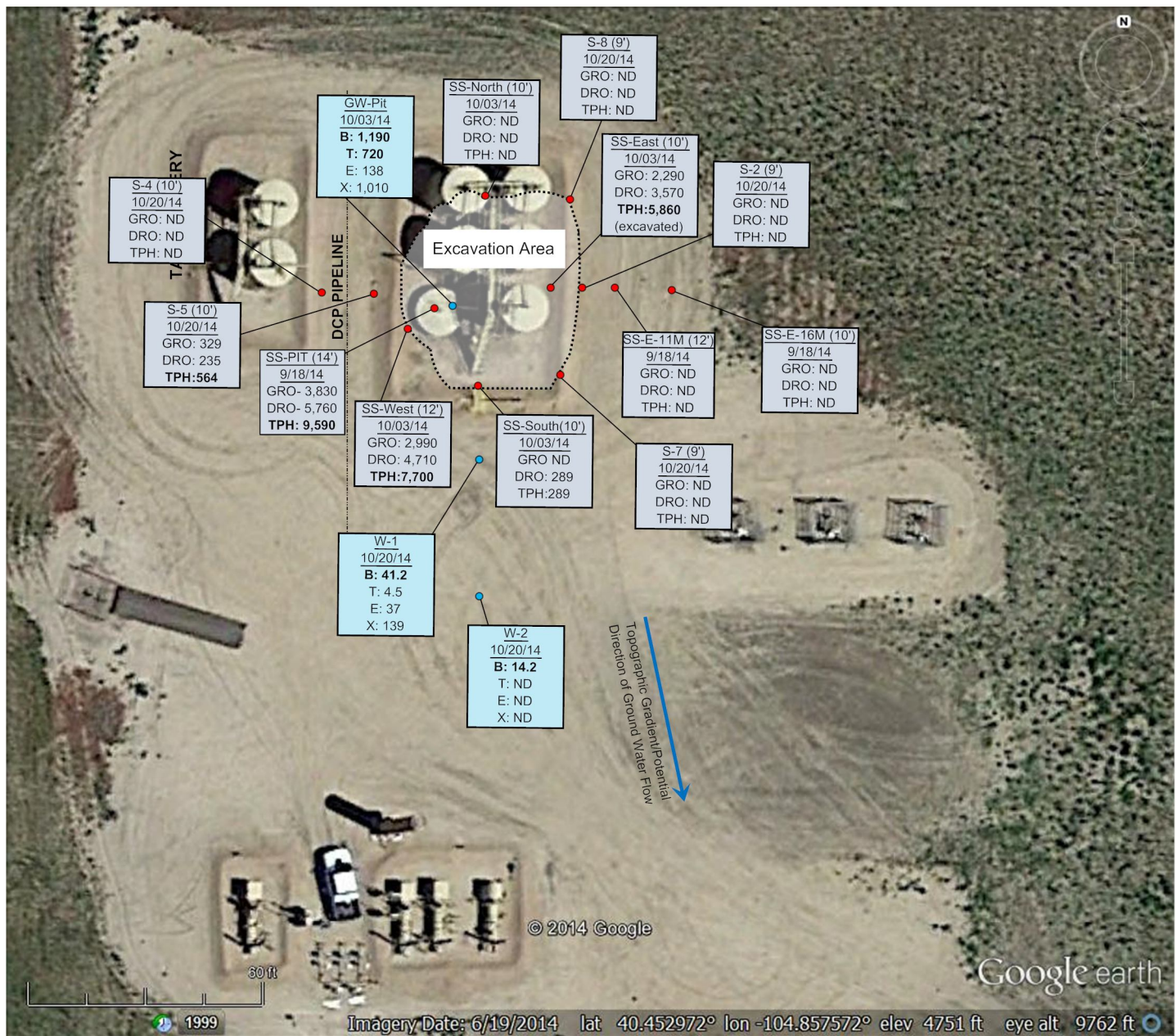
Title: EH&S/Regulatory Manager Date: 10/07/14

OGCC Approved: _____ Title: Northeast EPS Date: 10/14/2014

Condition of Approval: Conduct the additional site investigation within 45 days of approval of this Form 27. Submit a summary of site assessment results and any proposed remedial actions within 90 days of approval of this Form 27.

ATTACHMENT B

DIAGRAM



LEGEND

- Soil Sample Name (depth in feet)
date of collection
- Ground Water Sample
date of collection

GRO: Gasoline Range Organics
DRO: Diesel Range Organics
TPH: Total Petroleum Hydrocarbons (GRO + DRO)
B: Benzene, T: Toluene, E: Ethylbenzene, X: Total Xylenes
ND: Not detected above laboratory detection limits

pH and Specific Conductivity Results are not depicted; all pH and EC results were less than COGCC Table 910-1 concentrations
Soil concentrations are in milligrams per kilogram (mg/kg)
Ground water concentrations are in micrograms per liter (ug/L)
Concentrations in **BOLD** exceed applicable COGCC Table 910-1 concentrations



Approximate Scale: 1" = 40'

A.G. WASSENAAR **INC.**
GEOTECHNICAL • ENVIRONMENTAL
CONSULTANTS

Soil Sampling Analytical Results
Mershon Production Site
Weld County, Colorado
September and October 2014
AGW Project Number: E14447.EC
Figure 1

ATTACHMENT C

SOIL SAMPLE ANALYTICAL RESULTS

<u>Soil Sample</u>	<u>Date of Sample Collection</u>	<u>Depth of Collection (feet bgs)</u>	<u>GRO</u>	<u>DRO</u>	<u>TPH</u> (GRO+DRO)	<u>EC</u>	<u>pH</u>	<u>Disposition of impacted soil</u>
SS-Pit	09/18/14	14	3,830	5,760	9,590	2.32	7.81	IP
SS-E-11M	09/18/14	12	ND	ND	ND	0.182	7.60	N/A, not impacted
SS-E-16M	09/18/14	10	ND	ND	ND	0.183	8.13	N/A, not impacted
SS-North	10/03/14	10	ND	ND	ND	0.0467	7.87	N/A, not impacted
SS-East	10/03/14	10	2,290	3,570	5,860	0.0550	7.66	excavated
SS-South	10/03/14	10	ND	289	289	0.464	7.73	N/A, not impacted
SS-West	10/03/14	12	2,990	4,710	7,700	0.0929	7.76	IP
S-2	10/20/14	9	ND	ND	ND	0.255	7.64	N/A, not impacted
S-4	10/20/14	10	ND	ND	ND	0.232	8.10	N/A, not impacted
S-5	10/20/14	10	329	235	564	0.237	8.44	IP
S-7	10/20/14	9	ND	ND	ND	0.116	8.08	N/A, not impacted
S-8	10/20/14	9	ND	ND	ND	0.0914	7.57	N/A, not impacted
COGCC Table 910-1 Concentrations					500	<4	6-9	

GRO: Gasoline Range Organics

DRO: Diesel Range Organics

TPH: Total Petroleum Hydrocarbons. In accordance with requirements of the COGCC, the GRO and DRO values were added together to obtain the TPH concentration

EC: Electrical Conductivity

bgs: below ground surface

GRO/DRO/TPH concentrations are in milligrams per kilogram (mg/kg)

EC concentrations are in milli mhos per centimeter (mmhos/cm)

IP: left in place

N/A: Not Applicable

Values in **BOLD** exceed applicable COGCC Table 910-1 concentrations

ATTACHMENT D

LABORATORY ANALYTICAL RESULTS

September 24, 2014

A.G. Wassenaar

Rachel Peterson

2180 South Ivanhoe Street - Suite 5

Denver

CO 80222

Project Name - Mershon Pad

Project Number - [none]

Attached are your analytical results for Mershon Pad received by Origins Laboratory, Inc. September 18, 2014. This project is associated with Origins project number X409181-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: [none]

Project: Mershon Pad

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-PIT	X409181-01	Soil	September 18, 2014 10:00	09/18/2014 14:52
SS-E-11M	X409181-02	Soil	September 18, 2014 10:45	09/18/2014 14:52
SS-E-16M	X409181-03	Soil	September 18, 2014 12:45	09/18/2014 14:52

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: [none]

Project: Mershon Pad

Origins Laboratory

F-012207-01-R1

Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: X409181

Client: A.G. Wassenaar

Client Project ID: Mershon Pad

Checklist Completed by: Jesse Smith

Shipped Via: H/D

(JFS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 9/18/14 1455

Airbill #: NA

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: _____

Cooler Number/Temperature: 1 / 1.9 °C 1 °C 1 °C (Describe: _____) °C

Thermometer ID: TC002

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	X			
Is there ice present (document if blue ice is used)?	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
Are short holding time analyses or samples with HTs due within 48 hours present ⁽¹⁾ ?	X			
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	X			
For volatiles in water — is there headspace (> 1/2 inch bubble) present? If yes, contact client and note in narrative.			X	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)(pH < 2 for samples preserved with HNO ₃ HCl, -P ₂ SO ₄) / pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH.			X	
Additional Comments (if any): _____				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to be taken in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) Jesse Smith

9-18-14 1027
Date/Time Reviewed

Origins Laboratory, Inc.

Jesse Pellegrini

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: [none]

Project: Mershon Pad

SS-PIT**9/18/2014 10:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409181-01 (Soil)**Conductance/Specific Conductance by EPA 120.1**

Specific Conductance (EC)	2.32		mmhos/cm	1	4118016	09/18/2014	09/19/2014
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GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	3830	50.0	mg/kg	1	4118011	09/18/2014	09/23/2014
Diesel (C10-C28)	5760	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	146 %	59-131			"	"	" S-DUP
------------------------	-------	--------	--	--	---	---	---------

pH in Soil by EPA 9045D

pH	7.81		pH Units	1	4118015	09/18/2014	09/19/2014
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: [none]

Project: Mershon Pad

SS-E-11M**9/18/2014 10:45:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X409181-02 (Soil)**Conductance/Specific Conductance by EPA 120.1**

Specific Conductance (EC)	0.182		mmhos/cm	1	4118016	09/18/2014	09/19/2014
---------------------------	-------	--	----------	---	---------	------------	------------

GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	4118011	09/18/2014	09/20/2014
Diesel (C10-C28)	ND	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	73.6 %	59-131			"	"	"
------------------------	--------	--------	--	--	---	---	---

pH in Soil by EPA 9045D

pH	7.60		pH Units	1	4118015	09/18/2014	09/19/2014
----	------	--	----------	---	---------	------------	------------

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: [none]

Project: Mershon Pad

SS-E-16M**9/18/2014 12:45:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409181-03 (Soil)**Conductance/Specific Conductance by EPA 120.1**

Specific Conductance (EC)	0.183		mmhos/cm	1	4118016	09/18/2014	09/19/2014
---------------------------	-------	--	----------	---	---------	------------	------------

GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	4118011	09/18/2014	09/20/2014
Diesel (C10-C28)	ND	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	68.1 %	59-131			"	"	"
------------------------	--------	--------	--	--	---	---	---

pH in Soil by EPA 9045D

pH	8.13		pH Units	1	4118015	09/18/2014	09/19/2014
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

A.G. Wassenaar
2180 South Ivanhoe Street - Suite 5
Denver CO 80222

Rachel Peterson
Project Number: [none]
Project: Mershon Pad

Classical Chemistry Parameters - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4I18015 - NO PREP										
Duplicate (4I18015-DUP1)		Source: X409181-01			Prepared: 09/18/2014 Analyzed: 09/19/2014					
pH	7.83		pH Units		7.81			0.230	25	
Batch 4I18016 - NO PREP										
Blank (4I18016-BLK1)		Prepared: 09/18/2014 Analyzed: 09/19/2014								
Specific Conductance (EC)	0.00190		mmhos/cm							
Duplicate (4I18016-DUP1)		Source: X409181-01			Prepared: 09/18/2014 Analyzed: 09/19/2014					
Specific Conductance (EC)	2.48		mmhos/cm		2.32			6.67	25	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: [none]

Project: Mershon Pad

Notes and Definitions

S-DUP Duplicate analysis confirmed surrogate failure due to matrix effects.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



October 07, 2014

A.G. Wassenaar

Rachel Peterson

2180 South Ivanhoe Street - Suite 5

Denver

CO 80222

Project Name - E14447.E4

Project Number - E14447.E4

Attached are your analytical results for E14447.E4 received by Origins Laboratory, Inc. October 03, 2014. This project is associated with Origins project number X410038-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: E14447.E4

Project: E14447.E4

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-North	X410038-01	Soil	October 3, 2014 12:45	10/03/2014 14:22
SS-South	X410038-02	Soil	October 3, 2014 12:45	10/03/2014 14:22
SS-East	X410038-03	Soil	October 3, 2014 12:45	10/03/2014 14:22
SS-West	X410038-04	Soil	October 3, 2014 12:45	10/03/2014 14:22
GW-PIT	X410038-05	Water	October 3, 2014 12:30	10/03/2014 14:22

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

A.G. Wassenaar
2180 South Ivanhoe Street - Suite 5
Denver CO 80222

Rachel Peterson
Project Number: E14447.E4
Project: E14447.E4

ORIGINS
LABORATORY, INC



www.originslaboratory.com

X410038

page 1 of 1

Client: AG Wassenaar, Inc Project Manager/Send Report To: Rachel Peterson
Address: 2180 S. Ivanhoe St #5 Email Address: Rachel.Peterson@originslab.com
Denver CO 80222 Project Name/Number: E14447.E4
Telephone Number: 303-791-8373 Samples Collected By: David S. Kowalski

1/25 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9445

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis/Method	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air/Summit		
SS-North	10/3/14	12:45	1	X					X		EC/pH/DO/DO ₂	1
SS-South	10/3/14	12:45	1	X					X		EC/pH/DO/DO ₂	2
SS-East	10/3/14	12:45	1	X					X		EC/pH/DO/DO ₂	3
SS-West	10/3/14	12:45	1	X					X		EC/pH/DO/DO ₂	4
SS-South GWS-15	10/3/14	12:32	3	X	X			X			DO/EX	5
												6
												7
												8
												9
												10
Relinquished By: 	Date: 10/3/14	Time: 2:22										Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input checked="" type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input type="checkbox"/> 14 ⁰
Relinquished By: 	Date: 10/3/14	Time: 14:22										

Comments:

Date Results Needed: 11/03 AM

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: E14447.E4

Project: E14447.E4

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: XU10038

Client: D.G.

Client Project ID: E14447.E

Checklist Completed by: Ndm.

Shipped Via: HD.

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 10-3-14 1420

Airbill #:

Matrix(s) Received: (Check all that apply): X Solid X Water Other:

Cooler Number/Temperature: 1 4.4 °C / °C / °C (Describe) °C

Thermometer ID: 1002

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 8°C ⁽¹⁾ ?	<u>X</u>			
Is there ice present (document if blue ice is used)?	<u>X</u>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Were all samples received intact ⁽¹⁾ ?	<u>X</u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u>X</u>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<u>X</u>			<u>PH.</u>
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u>X</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u>X</u>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<u>X</u>			
For volatiles in water — is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<u>X</u>	<u>X</u>	<u>90</u>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for sub-contracted analyses in order to ensure assay integrity; pH < 2 for samples preserved with HNO ₃ , HCl, 1-250:4) / (pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<u>X</u>		<u>X</u>	<u>+ICL</u>
Additional Comments (if any):				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to be taken in the additional comments (above) and the case narrative.

Reviewed by (Project Manager): [Signature]

Date/Time Reviewed: 10-3-14

Origins Laboratory, Inc.

[Signature]

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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: E14447.E4

Project: E14447.E4

SS-North

10/3/2014 12:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410038-01 (Soil)

Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	0.0467		mmhos/cm	1	4J03007	10/03/2014	10/07/2014
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GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	4J03009	10/03/2014	10/03/2014
Diesel (C10-C28)	ND	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	64.0 %	59-131			"	"	"
------------------------	--------	--------	--	--	---	---	---

pH in Soil by EPA 9045D

pH	7.87		pH Units	1	4J03008	10/03/2014	10/07/2014
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: E14447.E4

Project: E14447.E4

SS-South**10/3/2014 12:45:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410038-02 (Soil)**Conductance/Specific Conductance by EPA 120.1**

Specific Conductance (EC)	0.464		mmhos/cm	1	4J03007	10/03/2014	10/07/2014
---------------------------	-------	--	----------	---	---------	------------	------------

GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	4J03009	10/03/2014	10/03/2014
Diesel (C10-C28)	289	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	76.5 %	59-131			"	"	"
------------------------	--------	--------	--	--	---	---	---

pH in Soil by EPA 9045D

pH	7.73		pH Units	1	4J03008	10/03/2014	10/07/2014
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: E14447.E4

Project: E14447.E4

SS-East

10/3/2014 12:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410038-03 (Soil)**Conductance/Specific Conductance by EPA 120.1**

Specific Conductance (EC)	0.0550		mmhos/cm	1	4J03007	10/03/2014	10/07/2014
---------------------------	--------	--	----------	---	---------	------------	------------

GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	2290	50.0	mg/kg	1	4J03009	10/03/2014	10/03/2014
Diesel (C10-C28)	3570	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	99.0 %	59-131			"	"	"
------------------------	--------	--------	--	--	---	---	---

pH in Soil by EPA 9045D

pH	7.66		pH Units	1	4J03008	10/03/2014	10/07/2014
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Origins Laboratory, Inc.



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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: E14447.E4

Project: E14447.E4

SS-West

10/3/2014 12:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410038-04 (Soil)

Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	0.0929		mmhos/cm	1	4J03007	10/03/2014	10/07/2014
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GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	2990	50.0	mg/kg	1	4J03009	10/03/2014	10/04/2014
Diesel (C10-C28)	4710	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	115 %	59-131			"	"	"
------------------------	-------	--------	--	--	---	---	---

pH in Soil by EPA 9045D

pH	7.76		pH Units	1	4J03008	10/03/2014	10/07/2014
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: E14447.E4

Project: E14447.E4

GW-PIT

10/3/2014 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410038-05 (Water)

BTEX by EPA 8260C

Benzene	1190	20.0	ug/L	20	4J03004	10/03/2014	10/06/2014
Toluene	720	20.0	"	"	"	"	"
Ethylbenzene	138	20.0	"	"	"	"	"
Xylenes, total	1010	20.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4

104 % 87.3-113

" " "

Surrogate: Toluene-d8

100 % 90.9-108

" " "

Surrogate: 4-Bromofluorobenzene

99.2 % 88.6-111

" " "

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: E14447.E4

Project: E14447.E4

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4J03004 - EPA 5030B (Water)

Blank (4J03004-BLK1)

Prepared: 10/03/2014 Analyzed: 10/06/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5	103		87.3-113			
Surrogate: Toluene-d8	63		"	62.5	100		90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5	97.6		88.6-111			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: E14447.E4

Project: E14447.E4

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4J03004 - EPA 5030B (Water)

LCS (4J03004-BS1)

Prepared: 10/03/2014 Analyzed: 10/06/2014

Benzene	53.1	1.0	ug/L	50.0	106	75-126
Toluene	55.9	1.0	"	50.0	112	78.7-126
Ethylbenzene	50.6	1.0	"	50.0	101	81-130
m,p-Xylene	103	2.0	"	100	103	77.2-133
o-Xylene	51.1	1.0	"	50.0	102	77.9-126
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5	96.8	87.3-113
Surrogate: Toluene-d8	63		"	62.5	101	90.9-108
Surrogate: 4-Bromofluorobenzene	62		"	62.5	98.9	88.6-111

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: E14447.E4

Project: E14447.E4

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4J03004 - EPA 5030B (Water)

Matrix Spike (4J03004-MS1)		Source: X410019-01			Prepared: 10/03/2014 Analyzed: 10/06/2014					
Benzene	57.6	1.0	ug/L	50.0	ND	115	74-130			
Toluene	60.7	1.0	"	50.0	ND	121	73-131			
Ethylbenzene	55.8	1.0	"	50.0	ND	112	76-132			
m,p-Xylene	111	2.0	"	100	ND	111	69-139			
o-Xylene	54.5	1.0	"	50.0	ND	109	74-131			
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		97.0	87.3-113			
Surrogate: Toluene-d8	64		"	62.5		102	90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

A.G. Wassenaar

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Denver CO 80222

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Project Number: E14447.E4

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4J03004 - EPA 5030B (Water)

Matrix Spike Dup (4J03004-MSD1)		Source: X410019-01			Prepared: 10/03/2014 Analyzed: 10/06/2014				QM-07	
Benzene	62.3	1.0	ug/L	50.0	ND	125	74-130	7.74	20	
Toluene	66.6	1.0	"	50.0	ND	133	73-131	9.19	20	
Ethylbenzene	60.0	1.0	"	50.0	ND	120	76-132	7.39	20	
m,p-Xylene	122	2.0	"	100	ND	122	69-139	9.15	20	
o-Xylene	59.1	1.0	"	50.0	ND	118	74-131	8.05	20	
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.6	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	88.6-111			

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Noelle Doyle Mathis, President

A.G. Wassenaar
2180 South Ivanhoe Street - Suite 5
Denver CO 80222

Rachel Peterson
Project Number: E14447.E4
Project: E14447.E4

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Extractable Petroleum Hydrocarbons by 8015M - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4J03009 - EPA 3580

Blank (4J03009-BLK1)

Prepared: 10/03/2014 Analyzed: 10/03/2014

Gasoline (C6-C10)	ND	50.0	mg/kg
Diesel (C10-C28)	ND	50.0	"

Surrogate: o-Terphenyl	35		g	50.0	70.3	59-131
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LCS (4J03009-BS1)

Prepared: 10/03/2014 Analyzed: 10/03/2014

Gasoline (C6-C10)	893	50.0	mg/kg	1000	89.3	59-133
Diesel (C10-C28)	948	50.0	"	1000	94.8	64-121

Surrogate: o-Terphenyl	38		g	50.0	76.3	59-131
------------------------	----	--	---	------	------	--------

Matrix Spike (4J03009-MS1)

Source: X410033-01

Prepared: 10/03/2014 Analyzed: 10/05/2014

Gasoline (C6-C10)	976	50.0	mg/kg	1000	ND	97.6	57-139
Diesel (C10-C28)	929	50.0	"	1000	13.8	91.6	53-125

Surrogate: o-Terphenyl	45		g	50.0	90.1	59-131
------------------------	----	--	---	------	------	--------

Matrix Spike Dup (4J03009-MSD1)

Source: X410033-01

Prepared: 10/03/2014 Analyzed: 10/05/2014

Gasoline (C6-C10)	890	50.0	mg/kg	1000	ND	89.0	57-139	9.31	20
Diesel (C10-C28)	824	50.0	"	1000	13.8	81.0	53-125	12.1	20

Surrogate: o-Terphenyl	45		g	50.0	90.1	59-131
------------------------	----	--	---	------	------	--------

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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: E14447.E4

Project: E14447.E4

Classical Chemistry Parameters - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4J03007 - Default Prep GenChem										
Blank (4J03007-BLK1)					Prepared: 10/03/2014 Analyzed: 10/07/2014					
Specific Conductance (EC)	0.00130		mmhos/cm							
Duplicate (4J03007-DUP1)					Source: X410038-01 Prepared: 10/03/2014 Analyzed: 10/07/2014					
Specific Conductance (EC)	0.0557		mmhos/cm		0.0467			17.6	25	
Batch 4J03008 - Default Prep GenChem										
Duplicate (4J03008-DUP1)					Source: X410038-02 Prepared: 10/03/2014 Analyzed: 10/07/2014					
pH	7.77		pH Units		7.73			0.490	25	

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Noelle Doyle Mathis, President

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Rachel Peterson

Project Number: E14447.E4

Project: E14447.E4

Notes and Definitions

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

October 27, 2014

A.G. Wassenaar

Joe Pieterick

2180 South Ivanhoe Street - Suite 5

Denver

CO 80222

Project Name - E14447.EC

Project Number - E14447.EC

Attached are your analytical results for E14447.EC received by Origins Laboratory, Inc. October 20, 2014. This project is associated with Origins project number X410206-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S-2	X410206-01	Soil	October 20, 2014 9:51	10/20/2014 14:01
W-1	X410206-02	Water	October 20, 2014 10:14	10/20/2014 14:01
W-2	X410206-03	Water	October 20, 2014 11:36	10/20/2014 14:01
S-4	X410206-04	Soil	October 20, 2014 10:43	10/20/2014 14:01
S-5	X410206-05	Soil	October 20, 2014 11:04	10/20/2014 14:01

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

www.originslaboratory.com

X410206

ORIGINS
LABORATORY, INC

page 1 of 1

Client: A.G. WASSenaar, INC
 Address: 2180 S. IVANHOE ST., #5
DENVER, CO 80222
 Telephone Number: 303-981-2107

Project Manager/Send Report To: Joe Pieterick
 Email Address: pieterick@agwassenaar.com
joepieterick@agwassenaar.com
 Project Name/Number: E14447.EC
 Samples Collected By: Joe Pieterick

Job: E14447.EC MERSHON SITE

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysts/Method	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa #			Other
S-2	10-20-14	9:51	2						X			DR0, GAO, PH, EC	1
W-1		10:14	3		X							BTEx (P260)	2
W-2		11:36	3		X							BTEx (P260)	3
S-3		10:30	2						X			DR0, GAO, PH, EC	4
S-4		10:43	2						X			DR0, GAO, PH, EC	5
S-5		11:04	2						X			DR0, GAO, PH, EC	6
													7
													8
													9
													10
Relinquished By: <u>Joe Pieterick</u>	Date: <u>10-20-14</u>	Time: <u>14:01</u>											Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input checked="" type="checkbox"/> Standard <input checked="" type="checkbox"/> 5.2
Relinquished By: <u>[Signature]</u>	Date: <u>10-20-14</u>	Time: <u>14:01</u>											Standard <input checked="" type="checkbox"/> 5.2

Data Recv'd Standard

Comments: Job: E14447.EC MERSHON

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Origins Laboratory, Inc.

Joe Pieterick

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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: X410206

Client: A.G. Wassenaar

Client Project ID: E14447-EC

Checklist Completed by: Jeff Smith

Shipped Via: (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 10/20/14

Airbill #: NA

Matrix(s) Received: (Check all that apply): X Soil/Solid X Water Other:

Cooler Number/Temperature: 1 / 5.2 °C 1 / 1 °C 1 / 1 °C (Describe)

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	X	<u>10/20/14</u>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	X	<u>X</u>		<u>PH</u>
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		X		
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH < 2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	X			<u>PH</u>
Additional Comments (if any): I removed S-3 from COC upon Joe P. request via phone conversation. Joe P. also requested during phone conversation that S-2, S-4, and S-5 for GRO/DRO be be revised for a 24 hr TAT. <u>10/20/14 Jeff Smith</u>				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

JP
Reviewed by (Project Manager)

10-20-14
Date/Time Reviewed

Origins Laboratory, Inc.

Jeff Pellegrini

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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

S-2**10/20/2014 9:51:00AM**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X410206-01 (Soil)**GRO (TVPH)/DRO (TEPH)by EPA 8015C**

Gasoline (C6-C10)	ND	50.0	mg/kg	1	4J20009	10/20/2014	10/20/2014
Diesel (C10-C28)	ND	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	88.0 %	59-131			"	"	"
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pH in Soil by EPA 9045D

pH	7.64		pH Units	1	4J21005	10/21/2014	10/21/2014
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.255		mmhos/cm	"	4J21006	10/21/2014	10/21/2014
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Origins Laboratory, Inc.



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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

W-1

10/20/2014 10:14:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.

X410206-02 (Water)

BTEX by EPA 8260C

Benzene	41.2	1.0	ug/L	1	4J27006	10/27/2014	10/27/2014
Toluene	4.5	1.0	"	"	"	"	"
Ethylbenzene	37.0	1.0	"	"	"	"	"
Xylenes, total	139	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	100 %	87.3-113			"	"	"
Surrogate: Toluene-d8	103 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	99.8 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

W-2

10/20/2014 11:36:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410206-03 (Water)

BTEX by EPA 8260C

Benzene	14.2	1.0	ug/L	1	4J27006	10/27/2014	10/27/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	102 %	87.3-113			"	"	"
Surrogate: Toluene-d8	98.9 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	98.2 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

S-4**10/20/2014 10:43:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410206-04 (Soil)**GRO (TVPH)/DRO (TEPH)by EPA 8015C**

Gasoline (C6-C10)	ND	50.0	mg/kg	1	4J20009	10/20/2014	10/20/2014
Diesel (C10-C28)	ND	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	85.8 %	59-131			"	"	"
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pH in Soil by EPA 9045D

pH	8.10		pH Units	1	4J21005	10/21/2014	10/21/2014
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.232		mmhos/cm	"	4J21006	10/21/2014	10/21/2014
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Origins Laboratory, Inc.



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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

S-5**10/20/2014 11:04:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410206-05 (Soil)**GRO (TVPH)/DRO (TEPH)by EPA 8015C**

Gasoline (C6-C10)	235	50.0	mg/kg	1	4J20009	10/20/2014	10/20/2014
Diesel (C10-C28)	329	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	87.2 %	59-131			"	"	"
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pH in Soil by EPA 9045D

pH	8.44		pH Units	1	4J21005	10/21/2014	10/21/2014
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.237		mmhos/cm	"	4J21006	10/21/2014	10/21/2014
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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4J27006 - EPA 5030B (Water)

Blank (4J27006-BLK1)

Prepared: 10/27/2014 Analyzed: 10/27/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	67		"	62.5	107		87.3-113			
Surrogate: Toluene-d8	61		"	62.5	97.2		90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5	97.9		88.6-111			

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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4J27006 - EPA 5030B (Water)

LCS (4J27006-BS1)

Prepared: 10/27/2014 Analyzed: 10/27/2014

Benzene	55.6	1.0	ug/L	50.0	111	75-126
Toluene	54.4	1.0	"	50.0	109	78.7-126
Ethylbenzene	54.4	1.0	"	50.0	109	81-130
m,p-Xylene	109	2.0	"	100	109	77.2-133
o-Xylene	54.0	1.0	"	50.0	108	77.9-126
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5	98.4	87.3-113
Surrogate: Toluene-d8	62		"	62.5	98.9	90.9-108
Surrogate: 4-Bromofluorobenzene	62		"	62.5	99.1	88.6-111

Origins Laboratory, Inc.



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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4J27006 - EPA 5030B (Water)

Matrix Spike (4J27006-MS1)		Source: X410248-15			Prepared: 10/27/2014 Analyzed: 10/27/2014					
Benzene	53.1	1.0	ug/L	50.0	ND	106	74-130			
Toluene	52.8	1.0	"	50.0	ND	106	73-131			
Ethylbenzene	53.9	1.0	"	50.0	ND	108	76-132			
m,p-Xylene	107	2.0	"	100	ND	107	69-139			
o-Xylene	51.9	1.0	"	50.0	ND	104	74-131			
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		96.9	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		99.4	90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		102	88.6-111			

Origins Laboratory, Inc.



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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4J27006 - EPA 5030B (Water)

Matrix Spike Dup (4J27006-MSD1)		Source: X410248-15			Prepared: 10/27/2014 Analyzed: 10/27/2014					
Benzene	46.0	1.0	ug/L	50.0	ND	92.1	74-130	14.2	20	
Toluene	45.2	1.0	"	50.0	ND	90.4	73-131	15.4	20	
Ethylbenzene	43.6	1.0	"	50.0	ND	87.2	76-132	21.1	20	QM-07
m,p-Xylene	88.6	2.0	"	100	ND	88.6	69-139	18.4	20	
o-Xylene	46.6	1.0	"	50.0	ND	93.2	74-131	10.7	20	
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.7	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		99.5	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.7	88.6-111			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Extractable Petroleum Hydrocarbons by 8015M - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4J20009 - EPA 3580

Blank (4J20009-BLK1)

Prepared: 10/20/2014 Analyzed: 10/20/2014

Gasoline (C6-C10)

ND

50.0

mg/kg

Diesel (C10-C28)

ND

50.0

"

Surrogate: o-Terphenyl

47

g

50.0

94.5

59-131

LCS (4J20009-BS1)

Prepared: 10/20/2014 Analyzed: 10/20/2014

Gasoline (C6-C10)

931

50.0

mg/kg

1000

93.1

59-133

Diesel (C10-C28)

900

50.0

"

1000

90.0

64-121

Surrogate: o-Terphenyl

46

g

50.0

92.6

59-131

Matrix Spike (4J20009-MS1)

Source: X410206-01

Prepared: 10/20/2014 Analyzed: 10/20/2014

Gasoline (C6-C10)

979

50.0

mg/kg

1000

ND

97.9

57-139

Diesel (C10-C28)

965

50.0

"

1000

32.7

93.3

53-125

Surrogate: o-Terphenyl

49

g

50.0

98.4

59-131

Matrix Spike Dup (4J20009-MSD1)

Source: X410206-01

Prepared: 10/20/2014 Analyzed: 10/20/2014

Gasoline (C6-C10)

937

50.0

mg/kg

1000

ND

93.7

57-139

4.40

20

Diesel (C10-C28)

960

50.0

"

1000

32.7

92.7

53-125

0.611

20

Surrogate: o-Terphenyl

46

g

50.0

92.0

59-131

Origins Laboratory, Inc.



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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

Classical Chemistry Parameters - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4J21005 - NO PREP										
Duplicate (4J21005-DUP1)	Source: X410205-01				Prepared: 10/21/2014 Analyzed: 10/21/2014					
pH	7.70		pH Units		7.58			1.58	25	
Batch 4J21006 - NO PREP										
Blank (4J21006-BLK1)					Prepared: 10/21/2014 Analyzed: 10/21/2014					
Specific Conductance (EC)	0.00180		mmhos/cm							
Duplicate (4J21006-DUP1)	Source: X410205-01				Prepared: 10/21/2014 Analyzed: 10/21/2014					
Specific Conductance (EC)	0.264		mmhos/cm		0.283			6.95	25	

Origins Laboratory, Inc.



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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: E14447.EC

Notes and Definitions

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jen Pellegrini For Noelle Doyle Mathis, President



October 30, 2014

A.G. Wassenaar

Joe Pieterick

2180 South Ivanhoe Street - Suite 5

Denver

CO 80222

Project Name - Mershon

Project Number - E14447.EC

Attached are your analytical results for Mershon received by Origins Laboratory, Inc. October 24, 2014. This project is associated with Origins project number X410294-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: Mershon

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S-7	X410294-01	Soil	October 24, 2014 10:19	10/24/2014 14:33
S-8	X410294-02	Soil	October 24, 2014 12:51	10/24/2014 14:33

Origins Laboratory, Inc.



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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: Mershon

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page 1 of 1

xy 10294

ORIGINS
LABORATORY, INC

Client: A.G. WASSenaar, INC.
Address: 2180 S. IVANHOE ST. #5
DENVER, CO 80222
Telephone Number: 303.981-2107
Email Address: pieterick@agwastenari.com

Project Manager: Joe Pieterick
Project Name: MERSHON
Project Number: E14447.EC
Samples Collected By: Joe Pieterick

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix				Analysis				Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summary	Other	DRO	GRD	PH	NO ₃		
S-7	10-24-14	10:19	2					X					X	X	X		
S-8	10-24-14	12:51	2					X					X	X	X		
Relinquished By: Joe Pieterick	Date: 10-24-14	Time: 14:33		Received By: [Signature]				Received By: [Signature]				Date: 10/24/14	Time: 14:33	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 6-5			
Relinquished By:	Date:	Time:		Received By:				Received By:				Date:	Time:				

Date Results Needed

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Origins Laboratory, Inc.

Joe Pellegrini

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: Mershon

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: X410294

Client: A.G. Wassenaar

Client Project ID: Mershon

Checklist Completed by: Jen Pellegrini

Shipped Via: H/D
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 10-27-14

Airbill #: N/A

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: _____

Cooler Number/Temperature: 1 / 4.5 °C 1 / _____ °C 1 / _____ °C (Describe)

Thermometer ID: T803

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water — is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH < 2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager)

Date/Time Reviewed

Origins Laboratory, Inc.

Jen Pellegrini

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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: Mershon

S-7**10/24/2014 10:19:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410294-01 (Soil)**GRO (TVPH)/DRO (TEPH)by EPA 8015C**

Gasoline (C6-C10)	ND	50.0	mg/kg	1	4J27009	10/27/2014	10/27/2014
Diesel (C10-C28)	ND	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	92.4 %	59-131			"	"	"
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pH in Soil by EPA 9045D

pH	8.08		pH Units	1	4J24017	10/24/2014	10/24/2014
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.116		mmhos/cm	"	4J24018	"	10/27/2014
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Origins Laboratory, Inc.



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A.G. Wassenaar

2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: Mershon

S-8**10/24/2014 12:51:00PM**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X410294-02 (Soil)**GRO (TVPH)/DRO (TEPH)by EPA 8015C**

Gasoline (C6-C10)	ND	50.0	mg/kg	1	4J27009	10/27/2014	10/27/2014
Diesel (C10-C28)	ND	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	81.8 %	59-131			"	"	"
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pH in Soil by EPA 9045D

pH	7.57		pH Units	1	4J24017	10/24/2014	10/24/2014
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0914		mmhos/cm	"	4J24018	"	10/27/2014
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Origins Laboratory, Inc.



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A.G. Wassenaar
2180 South Ivanhoe Street - Suite 5
Denver CO 80222

Joe Pieterick
Project Number: E14447.EC
Project: Mershon

Extractable Petroleum Hydrocarbons by 8015M - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4J27009 - EPA 3580										
Blank (4J27009-BLK1)					Prepared: 10/27/2014 Analyzed: 10/27/2014					
Gasoline (C6-C10)	ND	50.0	mg/kg							
Diesel (C10-C28)	ND	50.0	"							
Surrogate: o-Terphenyl	50		g	50.0		99.9	59-131			
LCS (4J27009-BS1)					Prepared: 10/27/2014 Analyzed: 10/27/2014					
Gasoline (C6-C10)	892	50.0	mg/kg	1000		89.2	59-133			
Diesel (C10-C28)	907	50.0	"	1000		90.7	64-121			
Surrogate: o-Terphenyl	47		g	50.0		94.0	59-131			
Matrix Spike (4J27009-MS1)					Source: X410294-01		Prepared: 10/27/2014 Analyzed: 10/27/2014			
Gasoline (C6-C10)	851	50.0	mg/kg	1000	ND	85.1	57-139			
Diesel (C10-C28)	853	50.0	"	1000	15.9	83.7	53-125			
Surrogate: o-Terphenyl	43		g	50.0		85.1	59-131			
Matrix Spike Dup (4J27009-MSD1)					Source: X410294-01		Prepared: 10/27/2014 Analyzed: 10/27/2014			
Gasoline (C6-C10)	923	50.0	mg/kg	1000	ND	92.3	57-139	8.21	20	
Diesel (C10-C28)	939	50.0	"	1000	15.9	92.3	53-125	9.64	20	
Surrogate: o-Terphenyl	48		g	50.0		96.1	59-131			

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2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: Mershon

Classical Chemistry Parameters - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4J24017 - NO PREP										
Duplicate (4J24017-DUP1)		Source: X410284-01			Prepared: 10/24/2014 Analyzed: 10/24/2014					
pH	7.30		pH Units		7.42			1.60	25	
Batch 4J24018 - NO PREP										
Blank (4J24018-BLK1)		Prepared: 10/24/2014 Analyzed: 10/26/2014								
Specific Conductance (EC)	0.00210		mmhos/cm							
Duplicate (4J24018-DUP1)		Source: X410284-01			Prepared: 10/24/2014 Analyzed: 10/26/2014					
Specific Conductance (EC)	0.0380		mmhos/cm		0.0410			7.59	25	

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2180 South Ivanhoe Street - Suite 5

Denver CO 80222

Joe Pieterick

Project Number: E14447.EC

Project: Mershon

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President