



189 North Cedar Street
Buffalo, WY 82834

Phone # (307) 684-5891
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Projection: NAD 1983, UTM Z12N Meters
Source: Esri, DigitalGlobe, GeoEye, i-cubed,
Earthstar Geographics, CNES/Airbus DS, USDA,
USGS, AEX, Getmapping, Aerogrid, IGN, IGP,
swisstopo, and the GIS User Community

Vaquero Juhan 26-94 Spill Response Confirmation Sampling Sample Location Map

Garfield County, Colorado



Legend

- ◆ Excavation Area Composite Sample
- ◆ Background Sample
- Excavation Area

0 20 40 80 120 160 Feet



Vaquero Energy, Inc.

Project: WY002589.0001

Date: 8/22/2014

Map By: CAS

Appendix:

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APPENDIX C.

LAB REPORT, CHAIN OF CUSTODY, FIELD FORMS

ANALYTICAL SUMMARY REPORT

August 20, 2014

ARCADIS US INC
189 N Cedar St
Buffalo, WY 82834-2363

Work Order: C14080200

Project Name: Vaquero Rifle Spill #2589

Energy Laboratories, Inc. Casper WY received the following 3 samples for ARCADIS US INC on 8/6/2014 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C14080200-001	RS-BG	08/05/14 10:00	08/06/14	Soil	Metals by ICP/ICPMS, Total Metals, Saturated Paste Conductivity Mercury, Total pH, Saturated Paste Percent Moisture Digestion, Total Metals CVAA Permanganate Digest Saturated Paste Sodium Adsorption Ratio
C14080200-002	RS-Comp-Floor	08/05/14 11:45	08/06/14	Soil	Metals by ICP/ICPMS, Total Metals, Saturated Paste Conductivity Mercury, Total Ultrasonic Extraction Diesel Range Organics Gasoline Range Organics pH, Saturated Paste Percent Moisture Digestion, Total Metals CVAA Permanganate Digest Saturated Paste Sodium Adsorption Ratio Soil Sonication Extraction Semi-Volatile Organic Compounds Volatile Organics, Methanol Extraction SW8260B VOCs, Standard List
C14080200-003	RS-Comp-WC	08/05/14 9:30	08/06/14	Soil	Metals by ICP/ICPMS, Total Mercury, Total Ultrasonic Extraction Diesel Range Organics Gasoline Range Organics Polychlorinated Biphenyls (PCB's) Percent Moisture Digestion, Total Metals CVAA Permanganate Digest Sonication Extraction Soil Sonication Extraction Semi-Volatile Organic Compounds Volatile Organics, Methanol Extraction

ANALYTICAL SUMMARY REPORT

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: ARCADIS US INC
Project: Vaquero Rifle Spill #2589
Sample Delivery Group: C14080200

Report Date: 08/20/14

CASE NARRATIVE

BRANCH LABORATORY SUBCONTRACT ANALYSIS

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589
Lab ID: C14080200-001
Client Sample ID: RS-BG

Report Date: 08/20/14
Collection Date: 08/05/14 10:00
Date Received: 08/06/14
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	3.5	%		0.1		D2974	08/11/14 15:35 / dm
SATURATED PASTE EXTRACT							
Conductivity, sat. paste	0.68	mmhos/cm		0.01		ASAM10-3	08/19/14 13:04 / rw
pH, sat. paste	7.5	s.u.		0.1		ASAM10-3.2	08/19/14 09:09 / rw
Calcium, sat. paste	3.32	meq/L		0.05		SW6010B	08/19/14 16:54 / sf
Magnesium, sat. paste	1.61	meq/L		0.08		SW6010B	08/19/14 16:54 / sf
Sodium, sat. paste	2.3	meq/L	D	0.1		SW6010B	08/19/14 16:54 / sf
Sodium Adsorption Ratio (SAR)	1.5	unitless		0.1		USDA20B	08/20/14 10:46 / smm
METALS - TOTAL							
Arsenic	15.8	mg/kg-dry	D	2.1		SW6010B	08/12/14 16:51 / sf
Barium	270	mg/kg-dry		5.0		SW6010B	08/12/14 16:51 / sf
Cadmium	0.6	mg/kg-dry		0.5		SW6020	08/15/14 04:08 / cp
Chromium	21.7	mg/kg-dry		2.5		SW6010B	08/12/14 16:51 / sf
Lead	11.6	mg/kg-dry		2.5		SW6010B	08/12/14 16:51 / sf
Mercury	ND	mg/kg-dry		0.05		SW7471B	08/12/14 10:32 / kja
Selenium	ND	mg/kg-dry		5.0		SW6010B	08/12/14 16:51 / sf
Silver	ND	mg/kg-dry		0.5		SW6010B	08/12/14 16:51 / sf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589
Lab ID: C14080200-002
Client Sample ID: RS-Comp-Floor

Report Date: 08/20/14
Collection Date: 08/05/14 11:45
Date Received: 08/06/14
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	8.3	%		0.1		D2974	08/11/14 15:40 / dm
SATURATED PASTE EXTRACT							
Conductivity, sat. paste	4.19	mmhos/cm		0.01		ASAM10-3	08/19/14 13:04 / rw
pH, sat. paste	7.3	s.u.		0.1		ASAM10-3.2	08/19/14 09:09 / rw
Calcium, sat. paste	27.5	meq/L		0.05		SW6010B	08/19/14 16:58 / sf
Magnesium, sat. paste	16.8	meq/L		0.08		SW6010B	08/19/14 16:58 / sf
Sodium, sat. paste	10.2	meq/L	D	0.1		SW6010B	08/19/14 16:58 / sf
Sodium Adsorption Ratio (SAR)	2.2	unitless		0.1		USDA20B	08/20/14 10:46 / smm
METALS - TOTAL							
Arsenic	16.3	mg/kg-dry	D	2.2		SW6010B	08/12/14 16:55 / sf
Barium	251	mg/kg-dry		5.0		SW6010B	08/12/14 16:55 / sf
Cadmium	0.6	mg/kg-dry		0.5		SW6020	08/15/14 03:33 / cp
Chromium	21.8	mg/kg-dry		2.5		SW6010B	08/12/14 16:55 / sf
Lead	11.8	mg/kg-dry		2.5		SW6010B	08/12/14 16:55 / sf
Mercury	ND	mg/kg-dry		0.05		SW7471B	08/12/14 10:34 / kja
Selenium	6.4	mg/kg-dry		5.0		SW6010B	08/12/14 16:55 / sf
Silver	ND	mg/kg-dry		0.5		SW6010B	08/12/14 16:55 / sf
VOLATILE ORGANIC COMPOUNDS							
1,1,1,2-Tetrachloroethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,1,1-Trichloroethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,1,2,2-Tetrachloroethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,1,2-Trichloroethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,1-Dichloroethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,1-Dichloroethene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,1-Dichloropropene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,2,3-Trichlorobenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,2,3-Trichloropropane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,2,4-Trichlorobenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,2,4-Trimethylbenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,2-Dibromo-3-chloropropane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,2-Dibromoethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,2-Dichlorobenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,2-Dichloroethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,2-Dichloropropane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,3,5-Trimethylbenzene	0.75	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,3-Dichlorobenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,3-Dichloropropane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
1,4-Dichlorobenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
2,2-Dichloropropane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
2-Chlorotoluene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
4-Chlorotoluene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr

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Definitions: QCL - Quality control limit.
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ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589
Lab ID: C14080200-002
Client Sample ID: RS-Comp-Floor

Report Date: 08/20/14
Collection Date: 08/05/14 11:45
Date Received: 08/06/14
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Bromobenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Bromochloromethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Bromodichloromethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Bromoform	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Bromomethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Carbon tetrachloride	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Chlorobenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Chlorodibromomethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Chloroethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Chloroform	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Chloromethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
cis-1,2-Dichloroethene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
cis-1,3-Dichloropropene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Dibromomethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Dichlorodifluoromethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Ethylbenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Hexachlorobutadiene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Isopropylbenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
m+p-Xylenes	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Methyl ethyl ketone	ND	mg/kg		2.0		SW8260B	08/14/14 21:01 / jlr
Methylene chloride	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Naphthalene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
n-Butylbenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
n-Propylbenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
o-Xylene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
p-Isopropyltoluene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
sec-Butylbenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Styrene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
tert-Butylbenzene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Tetrachloroethene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Toluene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
trans-1,2-Dichloroethene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
trans-1,3-Dichloropropene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Trichloroethene	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Trichlorofluoromethane	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Vinyl chloride	ND	mg/kg		0.20		SW8260B	08/14/14 21:01 / jlr
Surr: 1,2-Dichlorobenzene-d4	96.0	%REC		70-130		SW8260B	08/14/14 21:01 / jlr
Surr: Dibromofluoromethane	106	%REC		70-130		SW8260B	08/14/14 21:01 / jlr
Surr: p-Bromofluorobenzene	98.0	%REC		70-130		SW8260B	08/14/14 21:01 / jlr
Surr: Toluene-d8	97.0	%REC		70-130		SW8260B	08/14/14 21:01 / jlr

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589
Lab ID: C14080200-002
Client Sample ID: RS-Comp-Floor

Report Date: 08/20/14
Collection Date: 08/05/14 11:45
Date Received: 08/06/14
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
ORGANIC CHARACTERISTICS							
Diesel Range Organics (DRO)	64	mg/kg		10		SW8015B	08/14/14 15:04 / ph
Surr: o-Terphenyl	75.0	%REC		59.8-128		SW8015B	08/14/14 15:04 / ph
Gasoline Range Organics (GRO)	23	mg/kg		3.5		SW8015B	08/11/14 21:06 / cns
Surr: Trifluorotoluene	78.0	%REC		50-115		SW8015B	08/11/14 21:06 / cns
SEMI-VOLATILE ORGANIC COMPOUNDS							
1,2,4-Trichlorobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
1,2-Dichlorobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
1,3-Dichlorobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
1,4-Dichlorobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
1-Methylnaphthalene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
2,4,5-Trichlorophenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
2,4,6-Trichlorophenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
2,4-Dichlorophenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
2,4-Dimethylphenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
2,4-Dinitrophenol	ND	mg/kg		1.7		SW8270C	08/14/14 18:02 / eli-b
2,4-Dinitrotoluene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
2,6-Dinitrotoluene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
2-Chloronaphthalene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
2-Chlorophenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
2-Methylnaphthalene	0.35	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
2-Nitrophenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
3,3'-Dichlorobenzidine	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
4,6-Dinitro-2-methylphenol	ND	mg/kg		1.7		SW8270C	08/14/14 18:02 / eli-b
4-Bromophenyl phenyl ether	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
4-Chloro-3-methylphenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
4-Chlorophenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
4-Chlorophenyl phenyl ether	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
4-Nitrophenol	ND	mg/kg		1.7		SW8270C	08/14/14 18:02 / eli-b
Acenaphthene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Acenaphthylene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Anthracene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Azobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Benzidine	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Benzo(a)anthracene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Benzo(a)pyrene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Benzo(b)fluoranthene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Benzo(g,h,i)perylene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Benzo(k)fluoranthene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
bis(-2-chloroethoxy)Methane	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
bis(-2-chloroethyl)Ether	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
bis(2-chloroisopropyl)Ether	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
bis(2-ethylhexyl)Phthalate	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

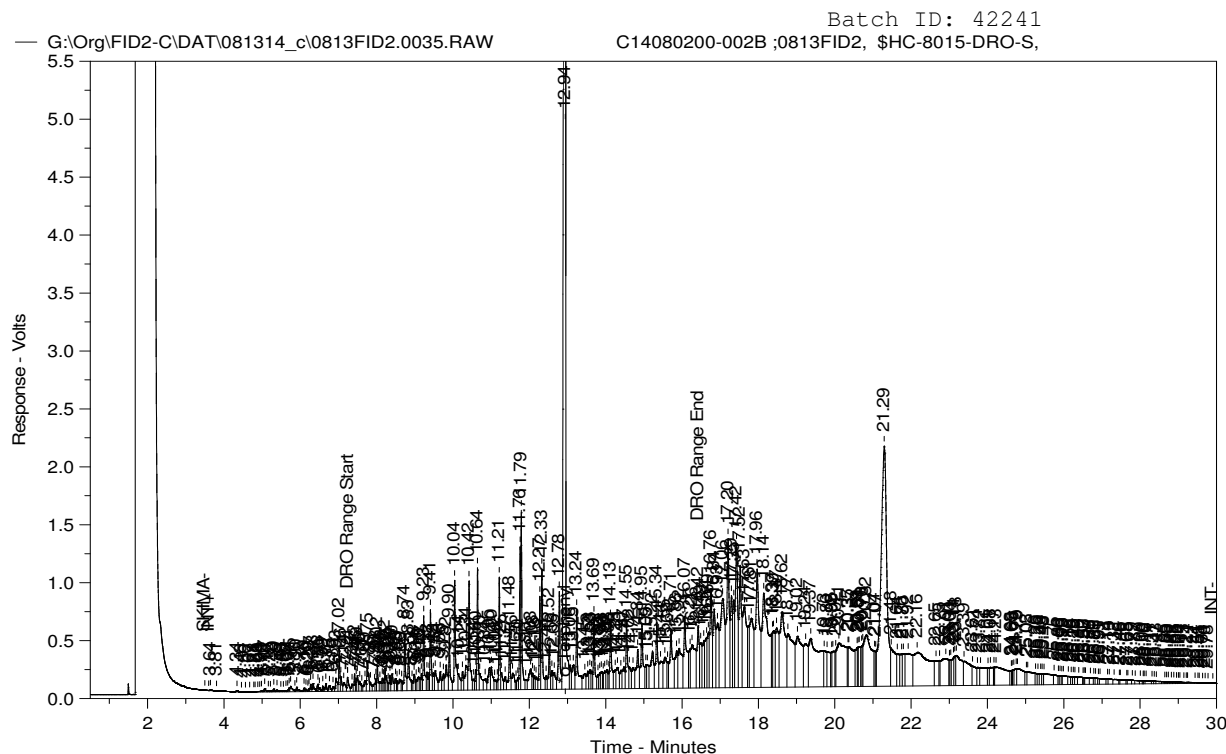
Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589
Lab ID: C14080200-002
Client Sample ID: RS-Comp-Floor

Report Date: 08/20/14
Collection Date: 08/05/14 11:45
DateReceived: 08/06/14
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
SEMI-VOLATILE ORGANIC COMPOUNDS							
Butylbenzylphthalate	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Chrysene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Dibenzo(a,h)anthracene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Diethyl phthalate	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Dimethyl phthalate	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Di-n-butyl phthalate	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Di-n-octyl phthalate	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Fluoranthene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Fluorene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Hexachlorobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Hexachlorobutadiene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Hexachlorocyclopentadiene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Hexachloroethane	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Indeno(1,2,3-cd)pyrene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Isophorone	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
m+p-Cresols	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Naphthalene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Nitrobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
n-Nitrosodimethylamine	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
n-Nitroso-di-n-propylamine	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
n-Nitrosodiphenylamine	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
o-Cresol	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Pentachlorophenol	ND	mg/kg		1.7		SW8270C	08/14/14 18:02 / eli-b
Phenanthrene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Phenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Pyrene	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Pyridine	ND	mg/kg		0.33		SW8270C	08/14/14 18:02 / eli-b
Surr: 2,4,6-Tribromophenol	67.0	%REC		65-124		SW8270C	08/14/14 18:02 / eli-b
Surr: 2-Fluorobiphenyl	65.0	%REC	S	67-102		SW8270C	08/14/14 18:02 / eli-b
Surr: 2-Fluorophenol	59.0	%REC		50-108		SW8270C	08/14/14 18:02 / eli-b
Surr: Nitrobenzene-d5	64.0	%REC		62-95		SW8270C	08/14/14 18:02 / eli-b
Surr: Phenol-d5	63.0	%REC		56-102		SW8270C	08/14/14 18:02 / eli-b
Surr: Terphenyl-d14	75.0	%REC		65-121		SW8270C	08/14/14 18:02 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
S - Spike recovery outside of advisory limits.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



DIESEL RANGE ORGANICS CHROMATOGRAM

Sample Name: C14080200-002B ;0813FID2, \$HC-8015-DRO-S,
Raw File: G:\Org\FID2-C\DAT\081314_c\0813FID2.0035.RAW
Date & Time Acquired: 8/14/2014 15:04:12
Method File: G:\org\FID2-C\Methods\FID2_BASE_CAL_080814_R.met
Calibration File: \\cafle\organics\DRO\org\FID2-C\Cals\FID2_080814_R.CAL
Sample Weight: 34.2 Dilution: 1 S.A.: 1

Mean RF for Hydrocarbon Range Calculations: 46778.52
Rt range for Diesel Range Organics (C10 to C28): 7.13 to 16.48
Rt range for Oil Range Organics (C28 to C40+): 16.34 to End Time

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.943	58.48	44.017	75.27	-

DRO Area:1.026787E+08 DRO AMOUNT: 64.18116
TEH Area:3.147464E+08 TEH AMOUNT: 196.7379
Oil Area:2.104551E+08 OIL AMOUNT: 131.5488

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589
Lab ID: C14080200-003
Client Sample ID: RS-Comp-WC

Report Date: 08/20/14
Collection Date: 08/05/14 09:30
Date Received: 08/06/14
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	9.8	%		0.1		D2974	08/11/14 15:40 / dm
METALS - TOTAL							
Arsenic	10.4	mg/kg-dry	D	2.2		SW6010B	08/12/14 16:59 / sf
Barium	295	mg/kg-dry		5.0		SW6010B	08/12/14 16:59 / sf
Cadmium	ND	mg/kg-dry		0.5		SW6010B	08/13/14 16:24 / sf
Chromium	24.1	mg/kg-dry		2.5		SW6010B	08/12/14 16:59 / sf
Lead	16.3	mg/kg-dry		2.5		SW6010B	08/12/14 16:59 / sf
Mercury	ND	mg/kg-dry		0.05		SW7471B	08/12/14 10:36 / kja
Selenium	ND	mg/kg-dry		5.0		SW6010B	08/12/14 16:59 / sf
Silver	ND	mg/kg-dry		0.5		SW6010B	08/12/14 16:59 / sf
ORGANIC CHARACTERISTICS							
Diesel Range Organics (DRO)	906	mg/kg		64		SW8015B	08/13/14 21:56 / ph
Surr: o-Terphenyl	105	%REC		59.8-128		SW8015B	08/13/14 21:56 / ph
Gasoline Range Organics (GRO)	199	mg/kg		4.2		SW8015B	08/11/14 21:41 / cns
Surr: Trifluorotoluene	82.0	%REC		50-115		SW8015B	08/11/14 21:41 / cns
SEMI-VOLATILE ORGANIC COMPOUNDS							
1,2,4-Trichlorobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
1,2-Dichlorobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
1,3-Dichlorobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
1,4-Dichlorobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
1-Methylnaphthalene	0.52	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
2,4,5-Trichlorophenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
2,4,6-Trichlorophenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
2,4-Dichlorophenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
2,4-Dimethylphenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
2,4-Dinitrophenol	ND	mg/kg		1.7		SW8270C	08/14/14 18:32 / eli-b
2,4-Dinitrotoluene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
2,6-Dinitrotoluene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
2-Chloronaphthalene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
2-Chlorophenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
2-Methylnaphthalene	0.93	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
2-Nitrophenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
3,3'-Dichlorobenzidine	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
4,6-Dinitro-2-methylphenol	ND	mg/kg		1.7		SW8270C	08/14/14 18:32 / eli-b
4-Bromophenyl phenyl ether	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
4-Chloro-3-methylphenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
4-Chlorophenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
4-Chlorophenyl phenyl ether	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
4-Nitrophenol	ND	mg/kg		1.7		SW8270C	08/14/14 18:32 / eli-b
Acenaphthene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589
Lab ID: C14080200-003
Client Sample ID: RS-Comp-WC

Report Date: 08/20/14
Collection Date: 08/05/14 09:30
Date Received: 08/06/14
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
SEMI-VOLATILE ORGANIC COMPOUNDS							
Acenaphthylene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Anthracene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Azobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Benzidine	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Benzo(a)anthracene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Benzo(a)pyrene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Benzo(b)fluoranthene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Benzo(g,h,i)perylene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Benzo(k)fluoranthene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
bis(-2-chloroethoxy)Methane	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
bis(-2-chloroethyl)Ether	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
bis(2-chloroisopropyl)Ether	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
bis(2-ethylhexyl)Phthalate	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Butylbenzylphthalate	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Chrysene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Dibenzo(a,h)anthracene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Diethyl phthalate	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Dimethyl phthalate	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Di-n-butyl phthalate	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Di-n-octyl phthalate	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Fluoranthene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Fluorene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Hexachlorobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Hexachlorobutadiene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Hexachlorocyclopentadiene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Hexachloroethane	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Indeno(1,2,3-cd)pyrene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Isophorone	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
m+p-Cresols	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Naphthalene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Nitrobenzene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
n-Nitrosodimethylamine	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
n-Nitroso-di-n-propylamine	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
n-Nitrosodiphenylamine	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
o-Cresol	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Pentachlorophenol	ND	mg/kg		1.7		SW8270C	08/14/14 18:32 / eli-b
Phenanthrene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Phenol	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Pyrene	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Pyridine	ND	mg/kg		0.33		SW8270C	08/14/14 18:32 / eli-b
Surr: 2,4,6-Tribromophenol	71.0	%REC		65-124		SW8270C	08/14/14 18:32 / eli-b
Surr: 2-Fluorobiphenyl	66.0	%REC	S	67-102		SW8270C	08/14/14 18:32 / eli-b
Surr: 2-Fluorophenol	65.0	%REC		50-108		SW8270C	08/14/14 18:32 / eli-b

Report RL - Analyte reporting limit.

Definitions: QCL - Quality control limit.

S - Spike recovery outside of advisory limits.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

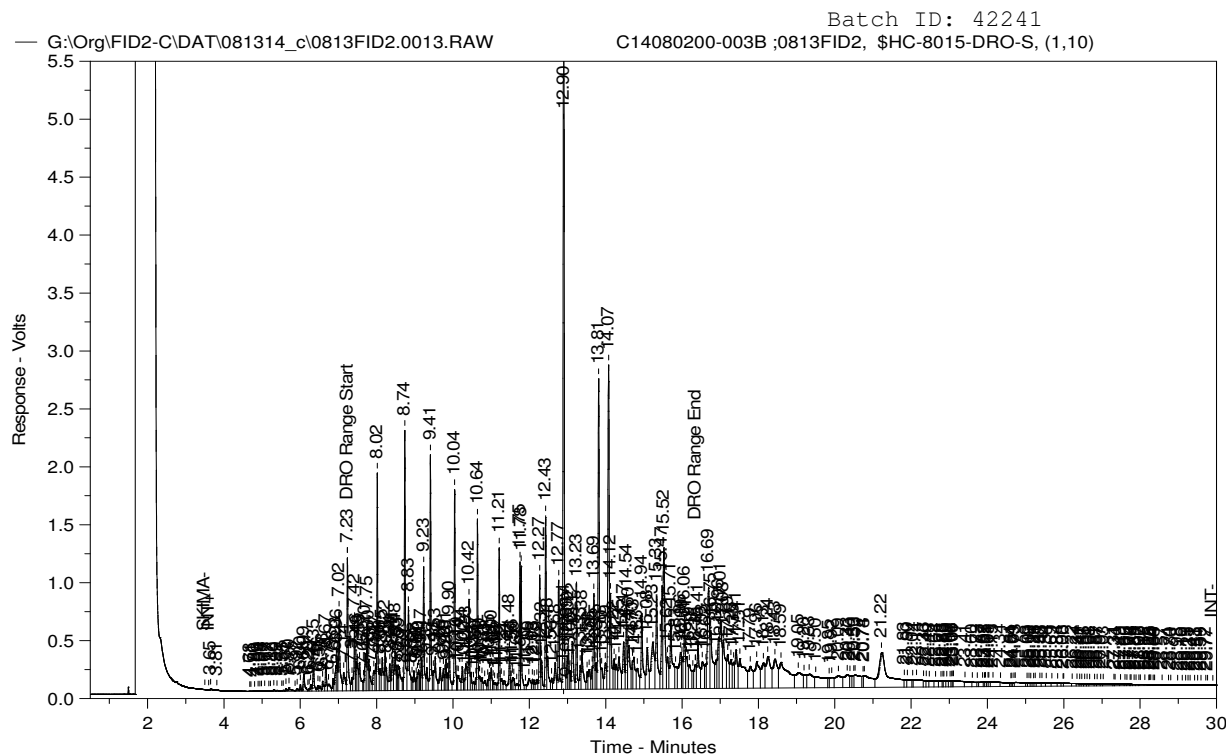
Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589
Lab ID: C14080200-003
Client Sample ID: RS-Comp-WC

Report Date: 08/20/14
Collection Date: 08/05/14 09:30
Date Received: 08/06/14
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
SEMI-VOLATILE ORGANIC COMPOUNDS							
Surr: Nitrobenzene-d5	73.0	%REC		62-95		SW8270C	08/14/14 18:32 / eli-b
Surr: Phenol-d5	67.0	%REC		56-102		SW8270C	08/14/14 18:32 / eli-b
Surr: Terphenyl-d14	74.0	%REC		65-121		SW8270C	08/14/14 18:32 / eli-b
POLYCHLORINATED BIPHENYLS (PCBS)							
Aroclor 1016	ND	mg/kg		0.017		SW8082	08/12/14 18:22 / eli-b
Aroclor 1221	ND	mg/kg		0.017		SW8082	08/12/14 18:22 / eli-b
Aroclor 1232	ND	mg/kg		0.017		SW8082	08/12/14 18:22 / eli-b
Aroclor 1242	ND	mg/kg		0.017		SW8082	08/12/14 18:22 / eli-b
Aroclor 1248	ND	mg/kg		0.017		SW8082	08/12/14 18:22 / eli-b
Aroclor 1254	ND	mg/kg		0.017		SW8082	08/12/14 18:22 / eli-b
Aroclor 1260	ND	mg/kg		0.017		SW8082	08/12/14 18:22 / eli-b
Aroclor 1262	ND	mg/kg		0.017		SW8082	08/12/14 18:22 / eli-b
Aroclor 1268	ND	mg/kg		0.017		SW8082	08/12/14 18:22 / eli-b
Surr: Decachlorobiphenyl	97.0	%REC		50-126		SW8082	08/12/14 18:22 / eli-b
Surr: Tetrachloro-m-xylene	69.0	%REC		42-115		SW8082	08/12/14 18:22 / eli-b
- Sample extract received a Sulfuric Acid Clean-up (EPA Method 3665) and a Sulfur Clean-up (EPA Method 3660) prior to analysis.							

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



DIESEL RANGE ORGANICS CHROMATOGRAM

Sample Name: C14080200-003B ;0813FID2, \$HC-8015-DRO-S, (1,10)

Raw File: G:\Org\FID2-C\DAT\081314_c\0813FID2.0013.RAW

Date & Time Acquired: 8/13/2014 21:56:26

Method File: G:\org\FID2-C\Methods\FID2_BASE_CAL_080814_R.met

Calibration File: \\cafle\organics\DRO\org\FID2-C\Cals\FID2_080814_R.CAL

Sample Weight: 31.2

Dilution: 10

S.A.: 1

Mean RF for Hydrocarbon Range Calculations: 46778.52

Rt range for Diesel Range Organics (C10 to C28): 7.13 to 16.48

Rt range for Oil Range Organics (C28 to C40+): 16.34 to End Time

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC
*o-Terphenyl	12.899	64.103	67.29	104.97

DRO Area: 1.32269E+08 DRO AMOUNT: 906.2686

TEH Area: 2.032892E+08 TEH AMOUNT: 1392.878

Oil Area: 6.720667E+07 OIL AMOUNT: 460.4805



QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589

Report Date: 08/20/14
Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	ASAM10-3							Analytical Run: COND1-C_140819A		
Lab ID:	CCV1_140819A	Continuing Calibration Verification Standard							08/19/14 13:03	
Conductivity, sat. paste		5.09	mmhos/cm	0.010	102	90	110			
Method:	ASAM10-3							Batch: 42325		
Lab ID:	LCS1-42325	Laboratory Control Sample				Run: COND1-C_140819A			08/19/14 13:04	
Conductivity, sat. paste		3.43	mmhos/cm	0.010	100	80	120			
Lab ID:	C14080200-002ADUP	Sample Duplicate				Run: COND1-C_140819A			08/19/14 13:05	
Conductivity, sat. paste		4.40	mmhos/cm	0.010				4.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589

Report Date: 08/20/14
Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASAM10-3.2										Batch: 42325
Lab ID: C14080200-002ADUP	Sample Duplicate					Run: ORION 3 STAR PH_140819A				08/19/14 09:09
pH, sat. paste		7.27	s.u.	0.10				0.4	20	
Lab ID: LCS1_140819A	Laboratory Control Sample					Run: ORION 3 STAR PH_140819A				08/19/14 09:09
pH, sat. paste		6.88	s.u.	0.10	97	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	SW6010B							Analytical Run: ICP2-C_140812A		
Lab ID:	ICV	6	Initial Calibration Verification Standard					08/12/14 11:22		
Arsenic		0.983	mg/L	0.10	98	90	110			
Barium		0.987	mg/L	0.10	99	90	110			
Chromium		1.00	mg/L	0.050	100	90	110			
Lead		1.02	mg/L	0.050	102	90	110			
Selenium		1.03	mg/L	0.10	103	90	110			
Silver		0.488	mg/L	0.010	98	90	110			
Lab ID:	ICSA	6	Interference Check Sample A					08/12/14 11:50		
Arsenic		-0.0211	mg/L	0.10						
Barium		0.000900	mg/L	0.10						
Chromium		0.00130	mg/L	0.050						
Lead		-0.0275	mg/L	0.050						
Selenium		-0.0103	mg/L	0.10						
Silver		-0.00440	mg/L	0.010						
Lab ID:	ICSAB	6	Interference Check Sample AB					08/12/14 11:54		
Arsenic		-0.0374	mg/L	0.10						
Barium		0.498	mg/L	0.10	100	80	120			
Chromium		0.502	mg/L	0.050	100	80	120			
Lead		0.973	mg/L	0.050	97	80	120			
Selenium		-0.0262	mg/L	0.10						
Silver		1.05	mg/L	0.010	105	80	120			
Method:	SW6010B							Batch: 42233		
Lab ID:	MB-42233	6	Method Blank			Run: ICP2-C_140812A		08/12/14 16:35		
Arsenic		ND	mg/kg	0.4						
Barium		ND	mg/kg	0.1						
Chromium		0.3	mg/kg	0.06						
Lead		1	mg/kg	0.3						
Selenium		ND	mg/kg	0.7						
Silver		ND	mg/kg	0.08						
Lab ID:	LFB-42233	6	Laboratory Fortified Blank			Run: ICP2-C_140812A		08/12/14 16:39		
Arsenic		23	mg/kg	1.0	94	80	120			
Barium		25	mg/kg	1.0	100	80	120			
Chromium		24	mg/kg	1.0	95	80	120			
Lead		25	mg/kg	1.0	96	80	120			
Selenium		23	mg/kg	1.0	94	80	120			
Silver		12	mg/kg	1.0	96	80	120			
Lab ID:	LCS3-42233	6	Laboratory Control Sample			Run: ICP2-C_140812A		08/12/14 16:43		
Arsenic		300	mg/kg	2.0	88	72.3	120			
Barium		580	mg/kg	1.0	95	80	120			
Chromium		71	mg/kg	1.0	93	72.8	120			
Lead		190	mg/kg	1.5	103	75.9	120			
Selenium		190	mg/kg	3.3	95	72.4	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589

Report Date: 08/20/14
Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 42233
Lab ID: LCS3-42233	6	Laboratory Control Sample				Run: ICP2-C_140812A				08/12/14 16:43
Silver		68	mg/kg	1.0	99	67.8	120			
Lab ID: C14080200-003ADIL	6	Serial Dilution				Run: ICP2-C_140812A				08/12/14 17:24
Arsenic		25	mg/kg-dry	11					10	N
Barium		300	mg/kg-dry	3.8				2.5	10	
Chromium		25	mg/kg-dry	1.6				4.6	10	
Lead		15	mg/kg-dry	8.6					10	N
Selenium		32	mg/kg-dry	18					10	N
Silver		ND	mg/kg-dry	2.1					10	
Lab ID: C14080200-003AMS3	6	Sample Matrix Spike				Run: ICP2-C_140812A				08/12/14 17:28
Arsenic		36	mg/kg-dry	2.2	93	75	125			
Barium		330	mg/kg-dry	1.0		75	125			A
Chromium		49	mg/kg-dry	1.0	92	75	125			
Lead		45	mg/kg-dry	1.7	103	75	125			
Selenium		27	mg/kg-dry	3.7	98	75	125			
Silver		13	mg/kg-dry	1.0	95	75	125			
Lab ID: C14080200-003AMSD	6	Sample Matrix Spike Duplicate				Run: ICP2-C_140812A				08/12/14 17:32
Arsenic		39	mg/kg-dry	2.2	103	75	125	7.5	20	
Barium		360	mg/kg-dry	1.0		75	125	7.2	20	A
Chromium		51	mg/kg-dry	1.0	97	75	125	2.8	20	
Lead		42	mg/kg-dry	1.7	92	75	125	7.1	20	
Selenium		31	mg/kg-dry	3.7	111	75	125	13	20	
Silver		13	mg/kg-dry	1.0	98	75	125	2.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589

Report Date: 08/20/14
Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	SW6010B							Analytical Run: ICP4-C_140813A		
Lab ID:	ICV	Initial Calibration Verification Standard							08/13/14 12:05	
Cadmium		0.476	mg/L	0.010	95	90	110			
Lab ID:	ICSA	Interference Check Sample A							08/13/14 12:20	
Cadmium		0.00161	mg/L	0.010						
Lab ID:	ICSAB	Interference Check Sample AB							08/13/14 12:24	
Cadmium		0.930	mg/L	0.010	93	80	120			
Method:	SW6010B							Batch: 42233		
Lab ID:	MB-42233	Method Blank				Run: ICP4-C_140813A			08/13/14 16:02	
Cadmium		ND	mg/kg	0.02						
Lab ID:	LFB-42233	Laboratory Fortified Blank				Run: ICP4-C_140813A			08/13/14 16:05	
Cadmium		12	mg/kg	1.0	96	80	120			
Lab ID:	LCS3-42233	Laboratory Control Sample				Run: ICP4-C_140813A			08/13/14 16:20	
Cadmium		130	mg/kg	1.0	97	73	120			
Lab ID:	C14080200-003ADIL	Serial Dilution				Run: ICP4-C_140813A			08/13/14 16:27	
Cadmium		ND	mg/kg-dry	1.0					10	
Lab ID:	C14080200-003AMS3	Sample Matrix Spike				Run: ICP4-C_140813A			08/13/14 16:31	
Cadmium		13	mg/kg-dry	1.0	94	75	125			
Lab ID:	C14080200-003AMSD	Sample Matrix Spike Duplicate				Run: ICP4-C_140813A			08/13/14 16:35	
Cadmium		14	mg/kg-dry	1.0	98	75	125	4.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B								Analytical Run: ICP4-C_140819A		
Lab ID: ICV	3	Initial Calibration Verification Standard							08/19/14 13:14	
Calcium		49.8	mg/L	0.50	100	90	110			
Magnesium		49.8	mg/L	0.50	100	90	110			
Sodium		49.5	mg/L	0.50	99	90	110			
Lab ID: ICSA	3	Interference Check Sample A							08/19/14 13:28	
Calcium		460	mg/L	0.50	92	80	120			
Magnesium		495	mg/L	0.50	99	80	120			
Sodium		-0.0290	mg/L	0.50						
Lab ID: ICSAB	3	Interference Check Sample AB							08/19/14 13:33	
Calcium		460	mg/L	0.50	92	80	120			
Magnesium		497	mg/L	0.50	99	80	120			
Sodium		-0.184	mg/L	0.50						
Method: SW6010B								Batch: 42325		
Lab ID: MB-42325	3	Method Blank				Run: ICP4-C_140819A			08/19/14 16:47	
Calcium		0.05	mg/L	0.03						
Magnesium		ND	mg/L	0.02						
Sodium		ND	mg/L	0.5						
Lab ID: LCS1-42325	3	Laboratory Control Sample				Run: ICP4-C_140819A			08/19/14 16:50	
Calcium		575	mg/L	1.0	94	70	130			
Magnesium		142	mg/L	1.0	95	70	130			
Sodium		153	mg/L	2.4	95	70	130			
Lab ID: C14080200-002ADUP	3	Sample Duplicate				Run: ICP4-C_140819A			08/19/14 17:02	
Calcium		582	mg/L	1.0				5.4	30	
Magnesium		215	mg/L	1.0				5.6	30	
Sodium		250	mg/L	2.4				6.7	30	
Lab ID: C14080255-004ADIL	3	Serial Dilution				Run: ICP4-C_140819A			08/19/14 17:31	
Calcium		82.7	mg/L	1.0		0	0	0.5	10	
Magnesium		22.9	mg/L	1.0		0	0	1.8	10	
Sodium		436	mg/L	12		0	0	1.0	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589

Report Date: 08/20/14
Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	SW6020							Analytical Run: ICPMS2-C_140814A		
Lab ID:	ICV	Initial Calibration Verification Standard							08/14/14 15:12	
Cadmium		0.0501	mg/L	0.0010	100	90	110			
Lab ID:	ICSA	Interference Check Sample A							08/14/14 15:15	
Cadmium		2.70E-05	mg/L	0.0010						
Lab ID:	ICSAB	Interference Check Sample AB							08/14/14 15:19	
Cadmium		0.00962	mg/L	0.0010	96	70	130			
Method:	SW6020							Batch: 42233		
Lab ID:	MB-42233	Method Blank				Run: ICPMS2-C_140814A			08/15/14 03:20	
Cadmium		ND	mg/kg	0.004						
Lab ID:	LFB-42233	Laboratory Fortified Blank				Run: ICPMS2-C_140814A			08/15/14 03:23	
Cadmium		12	mg/kg	1.0	100	80	120			
Lab ID:	LCS3-42233	Laboratory Control Sample				Run: ICPMS2-C_140814A			08/15/14 03:27	
Cadmium		130	mg/kg	1.0	99	73	120			
Lab ID:	C14080200-002ADIL	Serial Dilution				Run: ICPMS2-C_140814A			08/15/14 03:37	
Cadmium		0.58	mg/kg-dry	1.0					10	N
Lab ID:	C14080200-003AMS3	Sample Matrix Spike				Run: ICPMS2-C_140814A			08/15/14 03:44	
Cadmium		14	mg/kg-dry	1.0	99	75	125			
Lab ID:	C14080200-003AMSD	Sample Matrix Spike Duplicate				Run: ICPMS2-C_140814A			08/15/14 04:01	
Cadmium		15	mg/kg-dry	1.0	103	75	125	3.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589

Report Date: 08/20/14
Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	SW7471B							Analytical Run: CVAA_C203_140812A		
Lab ID:	ICV	Initial Calibration Verification Standard							08/12/14 10:22	
Mercury		0.0054	mg/kg	0.050	108	90	110			
Method:	SW7471B							Batch: 42248		
Lab ID:	MB-42248	Method Blank				Run: CVAA_C203_140812A			08/12/14 10:26	
Mercury		ND	mg/kg	0.003						
Lab ID:	LFB-42248	Laboratory Fortified Blank				Run: CVAA_C203_140812A			08/12/14 10:28	
Mercury		1.0	mg/kg	0.050	101	85	115			
Lab ID:	LCS3-42248	Laboratory Control Sample				Run: CVAA_C203_140812A			08/12/14 10:30	
Mercury		4.4	mg/kg	0.20	89	70.8	127			
Lab ID:	C14080200-003AMS	Sample Matrix Spike				Run: CVAA_C203_140812A			08/12/14 10:38	
Mercury		1.3	mg/kg-dry	0.050	110	75	125			
Lab ID:	C14080200-003AMSD	Sample Matrix Spike Duplicate				Run: CVAA_C203_140812A			08/12/14 10:39	
Mercury		1.2	mg/kg-dry	0.050	102	75	125	6.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC
Project: Vaquero Rifle Spill #2589

Report Date: 08/20/14
Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8015B										Batch: 42228
Lab ID: MB-42228	2	Method Blank					Run: PIDFID1-C_140811A			08/11/14 12:17
Gasoline Range Organics (GRO)		ND	mg/kg	2.0						
Surr: Trifluorotoluene				0.40	83	70	130			
Lab ID: LCS-42228		Laboratory Control Sample					Run: PIDFID1-C_140811A			08/11/14 12:52
Surr: Trifluorotoluene				0.40	91	70	130			
Lab ID: LCSD-42228		Laboratory Control Sample Duplicate					Run: PIDFID1-C_140811A			08/11/14 13:28
Surr: Trifluorotoluene				0.40	96	70	130			
Lab ID: C14080200-002BMS		Sample Matrix Spike					Run: PIDFID1-C_140811A			08/11/14 14:38
Surr: Trifluorotoluene				0.74	93	50	115			
Lab ID: C14080200-002BMSD		Sample Matrix Spike Duplicate					Run: PIDFID1-C_140811A			08/11/14 15:13
Surr: Trifluorotoluene				0.74	84	50	115			
Method: SW8015B										Batch: 42241
Lab ID: MB-42241	2	Method Blank					Run: FID2-C_140813A			08/13/14 14:57
Diesel Range Organics (DRO)		ND	mg/kg	10						
Surr: o-Terphenyl				6.7	89	59.8	128			
Lab ID: LCS-42241	2	Laboratory Control Sample					Run: FID2-C_140813A			08/13/14 15:43
Diesel Range Organics (DRO)		616	mg/kg	10	92	58.7	106			
Surr: o-Terphenyl				6.7	92	59.8	128			
Lab ID: LCSD-42241	2	Laboratory Control Sample Duplicate					Run: FID2-C_140813A			08/13/14 16:30
Diesel Range Organics (DRO)		604	mg/kg	10	91	58.7	106	2.0	20	
Surr: o-Terphenyl				6.7	98	59.8	128			
Lab ID: C14080236-001AMS	2	Sample Matrix Spike					Run: FID2-C_140813A			08/14/14 17:23
Diesel Range Organics (DRO)		416	mg/kg	10	47	60	140			S
Surr: o-Terphenyl				6.2	69	59.8	128			
Lab ID: C14080236-001AMSD	2	Sample Matrix Spike Duplicate					Run: FID2-C_140813A			08/14/14 18:10
Diesel Range Organics (DRO)		430	mg/kg	10	48	60	140	3.4	20	S
Surr: o-Terphenyl				6.3	73	59.8	128			

Qualifiers:

RL - Analyte reporting limit.

S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8082										Batch: B_82061
Lab ID: MB-82061	11	Method Blank				Run: SUB-B228806				08/12/14 13:54
Aroclor 1016		ND	mg/kg	0.017						
Aroclor 1221		ND	mg/kg	0.017						
Aroclor 1232		ND	mg/kg	0.017						
Aroclor 1242		ND	mg/kg	0.017						
Aroclor 1248		ND	mg/kg	0.017						
Aroclor 1254		ND	mg/kg	0.017						
Aroclor 1260		ND	mg/kg	0.017						
Aroclor 1262		ND	mg/kg	0.017						
Aroclor 1268		ND	mg/kg	0.017						
Surr: Decachlorobiphenyl				0.0017	90	50	126			
Surr: Tetrachloro-m-xylene				0.0017	58	42	115			
- Sample extract received a Sulfuric Acid Clean-up (EPA Method 3665) and a Sulfur Clean-up (EPA Method 3660) prior to analysis.										
Lab ID: AR1660-82061	4	Laboratory Control Sample				Run: SUB-B228806				08/12/14 15:41
Aroclor 1016		0.280	mg/kg	0.017	86	45	140			
Aroclor 1260		0.307	mg/kg	0.017	94	66	135			
Surr: Decachlorobiphenyl				0.0017	94	50	126			
Surr: Tetrachloro-m-xylene				0.0017	65	42	115			
- Sample extract received a Sulfuric Acid Clean-up (EPA Method 3665) and a Sulfur Clean-up (EPA Method 3660) prior to analysis.										
Lab ID: C14080200-003C	4	Sample Matrix Spike				Run: SUB-B228806				08/12/14 18:49
Aroclor 1016		0.279	mg/kg	0.017	84	45	140			
Aroclor 1260		0.334	mg/kg	0.017	101	66	135			
Surr: Decachlorobiphenyl				0.0017	99	50	126			
Surr: Tetrachloro-m-xylene				0.0017	71	42	115			
- Sample extract received a Sulfuric Acid Clean-up (EPA Method 3665) and a Sulfur Clean-up (EPA Method 3660) prior to analysis.										
Lab ID: C14080200-003C	4	Sample Matrix Spike Duplicate				Run: SUB-B228806				08/12/14 19:16
Aroclor 1016		0.277	mg/kg	0.017	83	45	140	0.9	40	
Aroclor 1260		0.318	mg/kg	0.017	95	66	135	5.1	40	
Surr: Decachlorobiphenyl				0.0017	95	50	126			
Surr: Tetrachloro-m-xylene				0.0017	70	42	115			
- Sample extract received a Sulfuric Acid Clean-up (EPA Method 3665) and a Sulfur Clean-up (EPA Method 3660) prior to analysis.										

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										Batch: 42279
Lab ID: LCS-42279										08/14/14 17:35
64 Laboratory Control Sample										Run: GCMS2_140814C
1,1,1,2-Tetrachloroethane		1.9	mg/kg	0.20	94	60	121			
1,1,1-Trichloroethane		2.0	mg/kg	0.20	99	37	143			
1,1,2,2-Tetrachloroethane		2.1	mg/kg	0.20	103	61	113			
1,1,2-Trichloroethane		1.9	mg/kg	0.20	93	62	115			
1,1-Dichloroethane		2.1	mg/kg	0.20	103	41	140			
1,1-Dichloroethene		2.0	mg/kg	0.20	100	27	155			
1,1-Dichloropropene		1.9	mg/kg	0.20	96	47	136			
1,2,3-Trichlorobenzene		2.2	mg/kg	0.20	105	21	148			
1,2,3-Trichloropropane		1.9	mg/kg	0.20	94	38	133			
1,2,4-Trichlorobenzene		2.0	mg/kg	0.20	96	31	135			
1,2,4-Trimethylbenzene		1.7	mg/kg	0.20	87	56	125			
1,2-Dibromo-3-chloropropane		2.1	mg/kg	0.20	107	52	126			
1,2-Dibromoethane		1.8	mg/kg	0.20	91	61	119			
1,2-Dichlorobenzene		1.8	mg/kg	0.20	89	61	113			
1,2-Dichloroethane		2.0	mg/kg	0.20	100	45	135			
1,2-Dichloropropane		2.0	mg/kg	0.20	99	64	111			
1,3,5-Trimethylbenzene		1.7	mg/kg	0.20	87	55	126			
1,3-Dichlorobenzene		1.7	mg/kg	0.20	87	58	117			
1,3-Dichloropropane		1.9	mg/kg	0.20	96	63	116			
1,4-Dichlorobenzene		1.8	mg/kg	0.20	90	57	124			
2,2-Dichloropropane		2.1	mg/kg	0.20	104	40	154			
2-Chlorotoluene		1.6	mg/kg	0.20	82	54	124			
4-Chlorotoluene		1.7	mg/kg	0.20	85	58	124			
Benzene		1.9	mg/kg	0.20	93	60	119			
Bromobenzene		1.6	mg/kg	0.20	82	57	126			
Bromochloromethane		2.1	mg/kg	0.20	103	47	125			
Bromodichloromethane		2.0	mg/kg	0.20	98	53	116			
Bromoform		1.7	mg/kg	0.20	86	61	106			
Bromomethane		1.8	mg/kg	0.20	89	12	153			
Carbon tetrachloride		2.0	mg/kg	0.20	100	33	144			
Chlorobenzene		1.8	mg/kg	0.20	88	59	116			
Chlorodibromomethane		1.9	mg/kg	0.20	94	54	117			
Chloroethane		2.0	mg/kg	0.20	99	20	172			
Chloroform		2.0	mg/kg	0.20	99	43	135			
Chloromethane		1.6	mg/kg	0.20	78	16	168			
cis-1,2-Dichloroethene		1.9	mg/kg	0.20	95	49	123			
cis-1,3-Dichloropropene		1.8	mg/kg	0.20	91	60	113			
Dibromomethane		1.9	mg/kg	0.20	95	58	117			
Dichlorodifluoromethane		1.5	mg/kg	0.20	73	26	149			
Ethylbenzene		1.8	mg/kg	0.20	90	59	123			
Hexachlorobutadiene		1.9	mg/kg	0.20	95	50	132			
Isopropylbenzene		1.9	mg/kg	0.20	95	54	128			
m+p-Xylenes		3.6	mg/kg	0.20	91	57	128			
Methyl ethyl ketone		22	mg/kg	2.0	111	32	151			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										Batch: 42279
Lab ID: LCS-42279	64	Laboratory Control Sample				Run: GCMS2_140814C			08/14/14 17:35	
Methylene chloride		2.1	mg/kg	0.20	103	23	155			
Naphthalene		2.2	mg/kg	0.20	102	20	146			
n-Butylbenzene		1.8	mg/kg	0.20	92	64	124			
n-Propylbenzene		1.7	mg/kg	0.20	87	55	132			
o-Xylene		1.9	mg/kg	0.20	94	55	126			
p-Isopropyltoluene		1.8	mg/kg	0.20	88	62	128			
sec-Butylbenzene		1.8	mg/kg	0.20	90	56	128			
Styrene		1.8	mg/kg	0.20	91	58	127			
tert-Butylbenzene		1.7	mg/kg	0.20	87	55	127			
Tetrachloroethene		1.8	mg/kg	0.20	88	51	139			
Toluene		1.8	mg/kg	0.20	92	61	125			
trans-1,2-Dichloroethene		1.9	mg/kg	0.20	95	43	135			
trans-1,3-Dichloropropene		1.9	mg/kg	0.20	97	58	123			
Trichloroethene		1.7	mg/kg	0.20	85	51	118			
Trichlorofluoromethane		2.1	mg/kg	0.20	103	28	150			
Vinyl chloride		1.2	mg/kg	0.20	60	10	135			
Surr: 1,2-Dichlorobenzene-d4				0.20	92	52	122			
Surr: Dibromofluoromethane				0.20	102	57	130			
Surr: p-Bromofluorobenzene				0.20	90	66	121			
Surr: Toluene-d8				0.20	96	54	121			
Lab ID: C14080200-002DMS	64	Sample Matrix Spike				Run: GCMS2_140814C			08/14/14 18:44	
1,1,1,2-Tetrachloroethane		1.8	mg/kg	0.20	91	60	121			
1,1,1-Trichloroethane		1.9	mg/kg	0.20	96	37	143			
1,1,2,2-Tetrachloroethane		2.0	mg/kg	0.20	101	61	113			
1,1,2-Trichloroethane		1.8	mg/kg	0.20	92	62	115			
1,1-Dichloroethane		1.9	mg/kg	0.20	95	41	140			
1,1-Dichloroethene		1.9	mg/kg	0.20	92	27	155			
1,1-Dichloropropene		1.9	mg/kg	0.20	94	47	136			
1,2,3-Trichlorobenzene		2.4	mg/kg	0.20	119	21	148			
1,2,3-Trichloropropane		1.9	mg/kg	0.20	95	38	133			
1,2,4-Trichlorobenzene		2.1	mg/kg	0.20	104	31	135			
1,2,4-Trimethylbenzene		1.8	mg/kg	0.20	91	56	125			
1,2-Dibromo-3-chloropropane		2.4	mg/kg	0.20	121	52	126			
1,2-Dibromoethane		1.8	mg/kg	0.20	91	61	119			
1,2-Dichlorobenzene		1.7	mg/kg	0.20	87	61	113			
1,2-Dichloroethane		1.9	mg/kg	0.20	94	45	135			
1,2-Dichloropropane		1.9	mg/kg	0.20	95	64	111			
1,3,5-Trimethylbenzene		2.4	mg/kg	0.20	122	55	126			
1,3-Dichlorobenzene		1.7	mg/kg	0.20	86	58	117			
1,3-Dichloropropane		1.8	mg/kg	0.20	91	63	116			
1,4-Dichlorobenzene		1.8	mg/kg	0.20	89	57	124			
2,2-Dichloropropane		2.0	mg/kg	0.20	99	40	154			
2-Chlorotoluene		1.7	mg/kg	0.20	82	54	124			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										Batch: 42279
Lab ID: C14080200-002DMS	64	Sample Matrix Spike				Run: GCMS2_140814C				08/14/14 18:44
4-Chlorotoluene		1.7	mg/kg	0.20	85	58	124			
Benzene		1.8	mg/kg	0.20	90	60	119			
Bromobenzene		1.6	mg/kg	0.20	82	57	126			
Bromochloromethane		1.9	mg/kg	0.20	96	47	125			
Bromodichloromethane		1.9	mg/kg	0.20	95	53	116			
Bromoform		1.7	mg/kg	0.20	87	61	106			
Bromomethane		1.5	mg/kg	0.20	77	12	153			
Carbon tetrachloride		1.9	mg/kg	0.20	96	33	144			
Chlorobenzene		1.7	mg/kg	0.20	85	59	116			
Chlorodibromomethane		1.9	mg/kg	0.20	93	54	117			
Chloroethane		1.8	mg/kg	0.20	88	20	172			
Chloroform		1.9	mg/kg	0.20	95	43	135			
Chloromethane		1.4	mg/kg	0.20	68	16	168			
cis-1,2-Dichloroethene		1.8	mg/kg	0.20	91	49	123			
cis-1,3-Dichloropropene		1.8	mg/kg	0.20	90	60	113			
Dibromomethane		1.8	mg/kg	0.20	92	58	117			
Dichlorodifluoromethane		1.3	mg/kg	0.20	63	26	149			
Ethylbenzene		1.8	mg/kg	0.20	88	59	123			
Hexachlorobutadiene		2.1	mg/kg	0.20	106	50	132			
Isopropylbenzene		1.9	mg/kg	0.20	94	54	128			
m+p-Xylenes		3.7	mg/kg	0.20	91	57	128			
Methyl ethyl ketone		20	mg/kg	2.0	102	32	151			
Methylene chloride		1.9	mg/kg	0.20	94	23	155			
Naphthalene		2.6	mg/kg	0.20	128	20	146			
n-Butylbenzene		1.9	mg/kg	0.20	96	64	124			
n-Propylbenzene		1.7	mg/kg	0.20	87	55	132			
o-Xylene		2.0	mg/kg	0.20	98	55	126			
p-Isopropyltoluene		1.8	mg/kg	0.20	88	62	128			
sec-Butylbenzene		1.8	mg/kg	0.20	91	56	128			
Styrene		1.8	mg/kg	0.20	90	58	127			
tert-Butylbenzene		1.8	mg/kg	0.20	88	55	127			
Tetrachloroethene		1.7	mg/kg	0.20	87	51	139			
Toluene		1.8	mg/kg	0.20	90	61	125			
trans-1,2-Dichloroethene		1.8	mg/kg	0.20	90	43	135			
trans-1,3-Dichloropropene		1.9	mg/kg	0.20	96	58	123			
Trichloroethene		1.7	mg/kg	0.20	83	51	118			
Trichlorofluoromethane		1.9	mg/kg	0.20	94	28	150			
Vinyl chloride		1.0	mg/kg	0.20	51	10	135			
Surr: 1,2-Dichlorobenzene-d4				0.20	89	52	122			
Surr: Dibromofluoromethane				0.20	97	57	130			
Surr: p-Bromofluorobenzene				0.20	89	66	121			
Surr: Toluene-d8				0.20	93	54	121			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										Batch: 42279
Lab ID: MB-42279	64	Method Blank				Run: GCMS2_140814C				08/14/14 20:26
1,1,1,2-Tetrachloroethane		ND	mg/kg	0.20						
1,1,1-Trichloroethane		ND	mg/kg	0.20						
1,1,2,2-Tetrachloroethane		ND	mg/kg	0.20						
1,1,2-Trichloroethane		ND	mg/kg	0.20						
1,1-Dichloroethane		ND	mg/kg	0.20						
1,1-Dichloroethene		ND	mg/kg	0.20						
1,1-Dichloropropene		ND	mg/kg	0.20						
1,2,3-Trichlorobenzene		ND	mg/kg	0.20						
1,2,3-Trichloropropane		ND	mg/kg	0.20						
1,2,4-Trichlorobenzene		ND	mg/kg	0.20						
1,2,4-Trimethylbenzene		ND	mg/kg	0.20						
1,2-Dibromo-3-chloropropane		ND	mg/kg	0.20						
1,2-Dibromoethane		ND	mg/kg	0.20						
1,2-Dichlorobenzene		ND	mg/kg	0.20						
1,2-Dichloroethane		ND	mg/kg	0.20						
1,2-Dichloropropane		ND	mg/kg	0.20						
1,3,5-Trimethylbenzene		ND	mg/kg	0.20						
1,3-Dichlorobenzene		ND	mg/kg	0.20						
1,3-Dichloropropane		ND	mg/kg	0.20						
1,4-Dichlorobenzene		ND	mg/kg	0.20						
2,2-Dichloropropane		ND	mg/kg	0.20						
2-Chlorotoluene		ND	mg/kg	0.20						
4-Chlorotoluene		ND	mg/kg	0.20						
Benzene		ND	mg/kg	0.20						
Bromobenzene		ND	mg/kg	0.20						
Bromochloromethane		ND	mg/kg	0.20						
Bromodichloromethane		ND	mg/kg	0.20						
Bromoform		ND	mg/kg	0.20						
Bromomethane		ND	mg/kg	0.20						
Carbon tetrachloride		ND	mg/kg	0.20						
Chlorobenzene		ND	mg/kg	0.20						
Chlorodibromomethane		ND	mg/kg	0.20						
Chloroethane		ND	mg/kg	0.20						
Chloroform		ND	mg/kg	0.20						
Chloromethane		ND	mg/kg	0.20						
cis-1,2-Dichloroethene		ND	mg/kg	0.20						
cis-1,3-Dichloropropene		ND	mg/kg	0.20						
Dibromomethane		ND	mg/kg	0.20						
Dichlorodifluoromethane		ND	mg/kg	0.20						
Ethylbenzene		ND	mg/kg	0.20						
Hexachlorobutadiene		ND	mg/kg	0.20						
Isopropylbenzene		ND	mg/kg	0.20						
m+p-Xylenes		ND	mg/kg	0.20						
Methyl ethyl ketone		ND	mg/kg	2.0						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										Batch: 42279
Lab ID: MB-42279	64	Method Blank				Run: GCMS2_140814C				08/14/14 20:26
Methylene chloride		ND	mg/kg	0.20						
Naphthalene		ND	mg/kg	0.20						
n-Butylbenzene		ND	mg/kg	0.20						
n-Propylbenzene		ND	mg/kg	0.20						
o-Xylene		ND	mg/kg	0.20						
p-Isopropyltoluene		ND	mg/kg	0.20						
sec-Butylbenzene		ND	mg/kg	0.20						
Styrene		ND	mg/kg	0.20						
tert-Butylbenzene		ND	mg/kg	0.20						
Tetrachloroethene		ND	mg/kg	0.20						
Toluene		ND	mg/kg	0.20						
trans-1,2-Dichloroethene		ND	mg/kg	0.20						
trans-1,3-Dichloropropene		ND	mg/kg	0.20						
Trichloroethene		ND	mg/kg	0.20						
Trichlorofluoromethane		ND	mg/kg	0.20						
Vinyl chloride		ND	mg/kg	0.20						
Surr: 1,2-Dichlorobenzene-d4				0.20	92	70	130			
Surr: Dibromofluoromethane				0.20	99	70	130			
Surr: p-Bromofluorobenzene				0.20	97	70	130			
Surr: Toluene-d8				0.20	93	70	130			
Lab ID: LCS-42279	64	Laboratory Control Sample				Run: GCMS2_140814D				08/14/14 17:35
1,1,1,2-Tetrachloroethane		1.9	mg/kg	0.20	94	70	130			
1,1,1-Trichloroethane		2.0	mg/kg	0.20	99	70	130			
1,1,2,2-Tetrachloroethane		2.1	mg/kg	0.20	103	70	130			
1,1,2-Trichloroethane		1.9	mg/kg	0.20	93	70	130			
1,1-Dichloroethane		2.1	mg/kg	0.20	103	70	130			
1,1-Dichloroethene		2.0	mg/kg	0.20	100	70	130			
1,1-Dichloropropene		1.9	mg/kg	0.20	96	70	130			
1,2,3-Trichlorobenzene		2.2	mg/kg	0.20	105	70	130			
1,2,3-Trichloropropane		1.9	mg/kg	0.20	94	70	130			
1,2,4-Trichlorobenzene		2.0	mg/kg	0.20	96	70	130			
1,2,4-Trimethylbenzene		1.7	mg/kg	0.20	87	70	130			
1,2-Dibromo-3-chloropropane		2.1	mg/kg	0.20	107	70	130			
1,2-Dibromoethane		1.8	mg/kg	0.20	91	70	130			
1,2-Dichlorobenzene		1.8	mg/kg	0.20	89	70	130			
1,2-Dichloroethane		2.0	mg/kg	0.20	100	70	130			
1,2-Dichloropropane		2.0	mg/kg	0.20	99	70	130			
1,3,5-Trimethylbenzene		1.7	mg/kg	0.20	87	70	130			
1,3-Dichlorobenzene		1.7	mg/kg	0.20	87	70	130			
1,3-Dichloropropane		1.9	mg/kg	0.20	96	70	130			
1,4-Dichlorobenzene		1.8	mg/kg	0.20	90	70	130			
2,2-Dichloropropane		2.1	mg/kg	0.20	104	70	130			
2-Chlorotoluene		1.6	mg/kg	0.20	82	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										Batch: 42279
Lab ID: LCS-42279										08/14/14 17:35
64 Laboratory Control Sample										Run: GCMS2_140814D
4-Chlorotoluene		1.7	mg/kg	0.20	85	70	130			
Benzene		1.9	mg/kg	0.20	93	70	130			
Bromobenzene		1.6	mg/kg	0.20	82	70	130			
Bromochloromethane		2.1	mg/kg	0.20	103	70	130			
Bromodichloromethane		2.0	mg/kg	0.20	98	70	130			
Bromoform		1.7	mg/kg	0.20	86	70	130			
Bromomethane		1.8	mg/kg	0.20	89	70	130			
Carbon tetrachloride		2.0	mg/kg	0.20	100	70	130			
Chlorobenzene		1.8	mg/kg	0.20	88	70	130			
Chlorodibromomethane		1.9	mg/kg	0.20	94	70	130			
Chloroethane		2.0	mg/kg	0.20	99	70	130			
Chloroform		2.0	mg/kg	0.20	99	70	130			
Chloromethane		1.6	mg/kg	0.20	78	70	130			
cis-1,2-Dichloroethene		1.9	mg/kg	0.20	95	70	130			
cis-1,3-Dichloropropene		1.8	mg/kg	0.20	91	70	130			
Dibromomethane		1.9	mg/kg	0.20	95	70	130			
Dichlorodifluoromethane		1.5	mg/kg	0.20	73	70	130			
Ethylbenzene		1.8	mg/kg	0.20	90	70	130			
Hexachlorobutadiene		1.9	mg/kg	0.20	95	70	130			
Isopropylbenzene		1.9	mg/kg	0.20	95	70	130			
m+p-Xylenes		3.6	mg/kg	0.20	91	70	130			
Methyl ethyl ketone		22	mg/kg	2.0	111	70	130			
Methylene chloride		2.1	mg/kg	0.20	103	70	130			
Naphthalene		2.2	mg/kg	0.20	102	70	130			
n-Butylbenzene		1.8	mg/kg	0.20	92	70	130			
n-Propylbenzene		1.7	mg/kg	0.20	87	70	130			
o-Xylene		1.9	mg/kg	0.20	94	70	130			
p-Isopropyltoluene		1.8	mg/kg	0.20	88	70	130			
sec-Butylbenzene		1.8	mg/kg	0.20	90	70	130			
Styrene		1.8	mg/kg	0.20	91	70	130			
tert-Butylbenzene		1.7	mg/kg	0.20	87	70	130			
Tetrachloroethene		1.8	mg/kg	0.20	88	70	130			
Toluene		1.8	mg/kg	0.20	92	70	130			
trans-1,2-Dichloroethene		1.9	mg/kg	0.20	95	70	130			
trans-1,3-Dichloropropene		1.9	mg/kg	0.20	97	70	130			
Trichloroethene		1.7	mg/kg	0.20	85	70	130			
Trichlorofluoromethane		2.1	mg/kg	0.20	103	70	130			
Vinyl chloride		1.2	mg/kg	0.20	60	70	130			S
Surr: 1,2-Dichlorobenzene-d4				0.20	92	70	130			
Surr: Dibromofluoromethane				0.20	102	70	130			
Surr: p-Bromofluorobenzene				0.20	90	70	130			
Surr: Toluene-d8				0.20	96	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										Batch: 42279
Lab ID: C14080200-002DMS	64	Sample Matrix Spike				Run: GCMS2_140814D				08/14/14 18:44
1,1,1,2-Tetrachloroethane		1.8	mg/kg	0.20	91	70	130			
1,1,1-Trichloroethane		1.9	mg/kg	0.20	96	70	130			
1,1,2,2-Tetrachloroethane		2.0	mg/kg	0.20	101	70	130			
1,1,2-Trichloroethane		1.8	mg/kg	0.20	92	70	130			
1,1-Dichloroethane		1.9	mg/kg	0.20	95	70	130			
1,1-Dichloroethene		1.9	mg/kg	0.20	92	70	130			
1,1-Dichloropropene		1.9	mg/kg	0.20	94	70	130			
1,2,3-Trichlorobenzene		2.4	mg/kg	0.20	119	70	130			
1,2,3-Trichloropropane		1.9	mg/kg	0.20	95	70	130			
1,2,4-Trichlorobenzene		2.1	mg/kg	0.20	104	70	130			
1,2,4-Trimethylbenzene		1.8	mg/kg	0.20	91	70	130			
1,2-Dibromo-3-chloropropane		2.4	mg/kg	0.20	121	70	130			
1,2-Dibromoethane		1.8	mg/kg	0.20	91	70	130			
1,2-Dichlorobenzene		1.7	mg/kg	0.20	87	70	130			
1,2-Dichloroethane		1.9	mg/kg	0.20	94	70	130			
1,2-Dichloropropane		1.9	mg/kg	0.20	95	70	130			
1,3,5-Trimethylbenzene		2.4	mg/kg	0.20	122	70	130			
1,3-Dichlorobenzene		1.7	mg/kg	0.20	86	70	130			
1,3-Dichloropropane		1.8	mg/kg	0.20	91	70	130			
1,4-Dichlorobenzene		1.8	mg/kg	0.20	89	70	130			
2,2-Dichloropropane		2.0	mg/kg	0.20	99	70	130			
2-Chlorotoluene		1.7	mg/kg	0.20	82	70	130			
4-Chlorotoluene		1.7	mg/kg	0.20	85	70	130			
Benzene		1.8	mg/kg	0.20	90	70	130			
Bromobenzene		1.6	mg/kg	0.20	82	70	130			
Bromochloromethane		1.9	mg/kg	0.20	96	70	130			
Bromodichloromethane		1.9	mg/kg	0.20	95	70	130			
Bromoform		1.7	mg/kg	0.20	87	70	130			
Bromomethane		1.5	mg/kg	0.20	77	70	130			
Carbon tetrachloride		1.9	mg/kg	0.20	96	70	130			
Chlorobenzene		1.7	mg/kg	0.20	85	70	130			
Chlorodibromomethane		1.9	mg/kg	0.20	93	70	130			
Chloroethane		1.8	mg/kg	0.20	88	70	130			
Chloroform		1.9	mg/kg	0.20	95	70	130			
Chloromethane		1.4	mg/kg	0.20	68	70	130			S
cis-1,2-Dichloroethene		1.8	mg/kg	0.20	91	70	130			
cis-1,3-Dichloropropene		1.8	mg/kg	0.20	90	70	130			
Dibromomethane		1.8	mg/kg	0.20	92	70	130			
Dichlorodifluoromethane		1.3	mg/kg	0.20	63	70	130			S
Ethylbenzene		1.8	mg/kg	0.20	88	70	130			
Hexachlorobutadiene		2.1	mg/kg	0.20	106	70	130			
Isopropylbenzene		1.9	mg/kg	0.20	94	70	130			
m+p-Xylenes		3.7	mg/kg	0.20	91	70	130			
Methyl ethyl ketone		20	mg/kg	2.0	102	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										Batch: 42279
Lab ID: C14080200-002DMS	64	Sample Matrix Spike		Run: GCMS2_140814D				08/14/14 18:44		
Methylene chloride		1.9	mg/kg	0.20	94	70	130			
Naphthalene		2.6	mg/kg	0.20	128	70	130			
n-Butylbenzene		1.9	mg/kg	0.20	96	70	130			
n-Propylbenzene		1.7	mg/kg	0.20	87	70	130			
o-Xylene		2.0	mg/kg	0.20	98	70	130			
p-Isopropyltoluene		1.8	mg/kg	0.20	88	70	130			
sec-Butylbenzene		1.8	mg/kg	0.20	91	70	130			
Styrene		1.8	mg/kg	0.20	90	70	130			
tert-Butylbenzene		1.8	mg/kg	0.20	88	70	130			
Tetrachloroethene		1.7	mg/kg	0.20	87	70	130			
Toluene		1.8	mg/kg	0.20	90	70	130			
trans-1,2-Dichloroethene		1.8	mg/kg	0.20	90	70	130			
trans-1,3-Dichloropropene		1.9	mg/kg	0.20	96	70	130			
Trichloroethene		1.7	mg/kg	0.20	83	70	130			
Trichlorofluoromethane		1.9	mg/kg	0.20	94	70	130			
Vinyl chloride		1.0	mg/kg	0.20	51	70	130			S
Surr: 1,2-Dichlorobenzene-d4				0.20	89	70	130			
Surr: Dibromofluoromethane				0.20	97	70	130			
Surr: p-Bromofluorobenzene				0.20	89	70	130			
Surr: Toluene-d8				0.20	93	70	130			
Lab ID: MB-42279	64	Method Blank		Run: GCMS2_140814D				08/14/14 20:26		
1,1,1,2-Tetrachloroethane		ND	mg/kg	0.20						
1,1,1-Trichloroethane		ND	mg/kg	0.20						
1,1,2,2-Tetrachloroethane		ND	mg/kg	0.20						
1,1,2-Trichloroethane		ND	mg/kg	0.20						
1,1-Dichloroethane		ND	mg/kg	0.20						
1,1-Dichloroethene		ND	mg/kg	0.20						
1,1-Dichloropropene		ND	mg/kg	0.20						
1,2,3-Trichlorobenzene		ND	mg/kg	0.20						
1,2,3-Trichloropropane		ND	mg/kg	0.20						
1,2,4-Trichlorobenzene		ND	mg/kg	0.20						
1,2,4-Trimethylbenzene		ND	mg/kg	0.20						
1,2-Dibromo-3-chloropropane		ND	mg/kg	0.20						
1,2-Dibromoethane		ND	mg/kg	0.20						
1,2-Dichlorobenzene		ND	mg/kg	0.20						
1,2-Dichloroethane		ND	mg/kg	0.20						
1,2-Dichloropropane		ND	mg/kg	0.20						
1,3,5-Trimethylbenzene		ND	mg/kg	0.20						
1,3-Dichlorobenzene		ND	mg/kg	0.20						
1,3-Dichloropropane		ND	mg/kg	0.20						
1,4-Dichlorobenzene		ND	mg/kg	0.20						
2,2-Dichloropropane		ND	mg/kg	0.20						
2-Chlorotoluene		ND	mg/kg	0.20						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										Batch: 42279
Lab ID: MB-42279	64	Method Blank				Run: GCMS2_140814D				08/14/14 20:26
4-Chlorotoluene		ND	mg/kg	0.20						
Benzene		ND	mg/kg	0.20						
Bromobenzene		ND	mg/kg	0.20						
Bromochloromethane		ND	mg/kg	0.20						
Bromodichloromethane		ND	mg/kg	0.20						
Bromoform		ND	mg/kg	0.20						
Bromomethane		ND	mg/kg	0.20						
Carbon tetrachloride		ND	mg/kg	0.20						
Chlorobenzene		ND	mg/kg	0.20						
Chlorodibromomethane		ND	mg/kg	0.20						
Chloroethane		ND	mg/kg	0.20						
Chloroform		ND	mg/kg	0.20						
Chloromethane		ND	mg/kg	0.20						
cis-1,2-Dichloroethene		ND	mg/kg	0.20						
cis-1,3-Dichloropropene		ND	mg/kg	0.20						
Dibromomethane		ND	mg/kg	0.20						
Dichlorodifluoromethane		ND	mg/kg	0.20						
Ethylbenzene		ND	mg/kg	0.20						
Hexachlorobutadiene		ND	mg/kg	0.20						
Isopropylbenzene		ND	mg/kg	0.20						
m+p-Xylenes		ND	mg/kg	0.20						
Methyl ethyl ketone		ND	mg/kg	2.0						
Methylene chloride		ND	mg/kg	0.20						
Naphthalene		ND	mg/kg	0.20						
n-Butylbenzene		ND	mg/kg	0.20						
n-Propylbenzene		ND	mg/kg	0.20						
o-Xylene		ND	mg/kg	0.20						
p-Isopropyltoluene		ND	mg/kg	0.20						
sec-Butylbenzene		ND	mg/kg	0.20						
Styrene		ND	mg/kg	0.20						
tert-Butylbenzene		ND	mg/kg	0.20						
Tetrachloroethene		ND	mg/kg	0.20						
Toluene		ND	mg/kg	0.20						
trans-1,2-Dichloroethene		ND	mg/kg	0.20						
trans-1,3-Dichloropropene		ND	mg/kg	0.20						
Trichloroethene		ND	mg/kg	0.20						
Trichlorofluoromethane		ND	mg/kg	0.20						
Vinyl chloride		ND	mg/kg	0.20						
Surr: 1,2-Dichlorobenzene-d4				0.20	92	70	130			
Surr: Dibromofluoromethane				0.20	99	70	130			
Surr: p-Bromofluorobenzene				0.20	97	70	130			
Surr: Toluene-d8				0.20	93	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B								Analytical Run: R189919		
Lab ID: 14-Aug-14_CCV_7	64	Continuing Calibration Verification Standard								08/14/14 19:18
1,1,1,2-Tetrachloroethane	10	mg/kg	1.0	104	70	130				
1,1,1-Trichloroethane	11	mg/kg	1.0	112	70	130				
1,1,2,2-Tetrachloroethane	11	mg/kg	1.0	108	70	130				
1,1,2-Trichloroethane	10	mg/kg	1.0	103	70	130				
1,1-Dichloroethane	10	mg/kg	1.0	100	70	130				
1,1-Dichloroethene	10	mg/kg	1.0	101	80	120				
1,1-Dichloropropene	11	mg/kg	1.0	109	70	130				
1,2,3-Trichlorobenzene	14	mg/kg	1.0	144	70	130				S
1,2,3-Trichloropropane	11	mg/kg	1.0	112	70	130				
1,2,4-Trichlorobenzene	13	mg/kg	1.0	126	70	130				
1,2,4-Trimethylbenzene	11	mg/kg	1.0	110	70	130				
1,2-Dibromo-3-chloropropane	14	mg/kg	1.0	136	70	130				S
1,2-Dibromoethane	10	mg/kg	1.0	102	70	130				
1,2-Dichlorobenzene	11	mg/kg	1.0	110	70	130				
1,2-Dichloroethane	11	mg/kg	1.0	107	70	130				
1,2-Dichloropropane	11	mg/kg	1.0	109	80	120				
1,3,5-Trimethylbenzene	11	mg/kg	1.0	110	70	130				
1,3-Dichlorobenzene	11	mg/kg	1.0	108	70	130				
1,3-Dichloropropane	10	mg/kg	1.0	103	70	130				
1,4-Dichlorobenzene	11	mg/kg	1.0	105	70	130				
2,2-Dichloropropane	11	mg/kg	1.0	114	70	130				
2-Chlorotoluene	11	mg/kg	1.0	106	70	130				
4-Chlorotoluene	10	mg/kg	1.0	105	70	130				
Benzene	11	mg/kg	1.0	109	70	130				
Bromobenzene	10	mg/kg	1.0	105	70	130				
Bromochloromethane	11	mg/kg	1.0	108	70	130				
Bromodichloromethane	11	mg/kg	1.0	109	70	130				
Bromoform	11	mg/kg	1.0	108	70	130				
Bromomethane	10	mg/kg	1.0	102	70	130				
Carbon tetrachloride	11	mg/kg	1.0	113	70	130				
Chlorobenzene	10	mg/kg	1.0	100	70	130				
Chlorodibromomethane	10	mg/kg	1.0	104	70	130				
Chloroethane	10	mg/kg	1.0	103	70	130				
Chloroform	11	mg/kg	1.0	108	80	120				
Chloromethane	11	mg/kg	1.0	112	70	130				
cis-1,2-Dichloroethene	11	mg/kg	1.0	107	70	130				
cis-1,3-Dichloropropene	11	mg/kg	1.0	109	70	130				
Dibromomethane	11	mg/kg	1.0	107	70	130				
Dichlorodifluoromethane	13	mg/kg	1.0	134	70	130				S
Ethylbenzene	10	mg/kg	1.0	103	80	120				
Hexachlorobutadiene	11	mg/kg	1.0	113	70	130				
Isopropylbenzene	11	mg/kg	1.0	107	70	130				
m+p-Xylenes	21	mg/kg	1.0	103	70	130				
Methyl ethyl ketone	98	mg/kg	10	98	70	130				

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B								Analytical Run: R189919		
Lab ID: 14-Aug-14_CCV_7	64	Continuing Calibration Verification Standard								08/14/14 19:18
Methylene chloride		9.7	mg/kg	1.0	97	70	130			
Naphthalene		14	mg/kg	1.0	144	70	130			S
n-Butylbenzene		11	mg/kg	1.0	113	70	130			
n-Propylbenzene		11	mg/kg	1.0	112	70	130			
o-Xylene		10	mg/kg	1.0	104	70	130			
p-Isopropyltoluene		11	mg/kg	1.0	107	70	130			
sec-Butylbenzene		11	mg/kg	1.0	110	70	130			
Styrene		10	mg/kg	1.0	104	70	130			
tert-Butylbenzene		11	mg/kg	1.0	108	70	130			
Tetrachloroethene		10	mg/kg	1.0	100	70	130			
Toluene		11	mg/kg	1.0	109	80	120			
trans-1,2-Dichloroethene		9.8	mg/kg	1.0	98	70	130			
trans-1,3-Dichloropropene		11	mg/kg	1.0	108	70	130			
Trichloroethene		10	mg/kg	1.0	103	70	130			
Trichlorofluoromethane		11	mg/kg	1.0	110	70	130			
Vinyl chloride		11	mg/kg	1.0	112	80	120			
Surr: 1,2-Dichlorobenzene-d4				0.20	107	70	130			
Surr: Dibromofluoromethane				0.20	106	70	130			
Surr: p-Bromofluorobenzene				0.20	107	70	130			
Surr: Toluene-d8				0.20	105	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8270C										Batch: B_82171
Lab ID: MB-82171	70	Method Blank				Run: SUB-B228970				08/14/14 17:02
1,2,4-Trichlorobenzene		ND	mg/kg	0.33						
1,2-Dichlorobenzene		ND	mg/kg	0.33						
1,3-Dichlorobenzene		ND	mg/kg	0.33						
1,4-Dichlorobenzene		ND	mg/kg	0.33						
1-Methylnaphthalene		ND	mg/kg	0.33						
2,4,5-Trichlorophenol		ND	mg/kg	0.33						
2,4,6-Trichlorophenol		ND	mg/kg	0.33						
2,4-Dichlorophenol		ND	mg/kg	0.33						
2,4-Dimethylphenol		ND	mg/kg	0.33						
2,4-Dinitrophenol		ND	mg/kg	1.7						
2,4-Dinitrotoluene		ND	mg/kg	0.33						
2,6-Dinitrotoluene		ND	mg/kg	0.33						
2-Chloronaphthalene		ND	mg/kg	0.33						
2-Chlorophenol		ND	mg/kg	0.33						
2-Methylnaphthalene		ND	mg/kg	0.33						
2-Nitrophenol		ND	mg/kg	0.33						
3,3'-Dichlorobenzidine		ND	mg/kg	0.33						
4,6-Dinitro-2-methylphenol		ND	mg/kg	1.7						
4-Bromophenyl phenyl ether		ND	mg/kg	0.33						
4-Chloro-3-methylphenol		ND	mg/kg	0.33						
4-Chlorophenol		ND	mg/kg	0.33						
4-Chlorophenyl phenyl ether		ND	mg/kg	0.33						
4-Nitrophenol		ND	mg/kg	1.7						
Acenaphthene		ND	mg/kg	0.33						
Acenaphthylene		ND	mg/kg	0.33						
Anthracene		ND	mg/kg	0.33						
Azobenzene		ND	mg/kg	0.33						
Benzidine		ND	mg/kg	0.33						
Benzo(a)anthracene		ND	mg/kg	0.33						
Benzo(a)pyrene		ND	mg/kg	0.33						
Benzo(b)fluoranthene		ND	mg/kg	0.33						
Benzo(g,h,i)perylene		ND	mg/kg	0.33						
Benzo(k)fluoranthene		ND	mg/kg	0.33						
bis(-2-chloroethoxy)Methane		ND	mg/kg	0.33						
bis(-2-chloroethyl)Ether		ND	mg/kg	0.33						
bis(2-chloroisopropyl)Ether		ND	mg/kg	0.33						
bis(2-ethylhexyl)Phthalate		ND	mg/kg	0.33						
Butylbenzylphthalate		ND	mg/kg	0.33						
Chrysene		ND	mg/kg	0.33						
Dibenzo(a,h)anthracene		ND	mg/kg	0.33						
Diethyl phthalate		ND	mg/kg	0.33						
Dimethyl phthalate		ND	mg/kg	0.33						
Di-n-butyl phthalate		ND	mg/kg	0.33						
Di-n-octyl phthalate		ND	mg/kg	0.33						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8270C										Batch: B_82171
Lab ID: MB-82171	70	Method Blank				Run: SUB-B228970				08/14/14 17:02
Fluoranthene		ND	mg/kg	0.33						
Fluorene		ND	mg/kg	0.33						
Hexachlorobenzene		ND	mg/kg	0.33						
Hexachlorobutadiene		ND	mg/kg	0.33						
Hexachlorocyclopentadiene		ND	mg/kg	0.33						
Hexachloroethane		ND	mg/kg	0.33						
Indeno(1,2,3-cd)pyrene		ND	mg/kg	0.33						
Isophorone		ND	mg/kg	0.33						
m+p-Cresols		ND	mg/kg	0.33						
Naphthalene		ND	mg/kg	0.33						
Nitrobenzene		ND	mg/kg	0.33						
n-Nitrosodimethylamine		ND	mg/kg	0.33						
n-Nitroso-di-n-propylamine		ND	mg/kg	0.33						
n-Nitrosodiphenylamine		ND	mg/kg	0.33						
o-Cresol		ND	mg/kg	0.33						
Pentachlorophenol		ND	mg/kg	1.7						
Phenanthrene		ND	mg/kg	0.33						
Phenol		ND	mg/kg	0.33						
Pyrene		ND	mg/kg	0.33						
Pyridine		ND	mg/kg	0.33						
Surr: 2,4,6-Tribromophenol				0.33	59	65	124			S
Surr: 2-Fluorobiphenyl				0.33	67	67	102			
Surr: 2-Fluorophenol				0.33	62	50	108			
Surr: Nitrobenzene-d5				0.33	65	62	95			
Surr: Phenol-d5				0.33	62	56	102			
Surr: Terphenyl-d14				0.33	88	65	121			
Lab ID: LCS-82171	70	Laboratory Control Sample				Run: SUB-B228970				08/14/14 17:32
1,2,4-Trichlorobenzene		2.60	mg/kg	0.33	78	53	99			
1,2-Dichlorobenzene		2.46	mg/kg	0.33	74	57	80			
1,3-Dichlorobenzene		2.48	mg/kg	0.33	75	55	77			
1,4-Dichlorobenzene		2.26	mg/kg	0.33	68	53	77			
1-Methylnaphthalene		2.69	mg/kg	0.33	81	56	101			
2,4,5-Trichlorophenol		2.97	mg/kg	0.33	89	36	110			
2,4,6-Trichlorophenol		2.76	mg/kg	0.33	83	67	110			
2,4-Dichlorophenol		2.80	mg/kg	0.33	84	66	96			
2,4-Dimethylphenol		2.74	mg/kg	0.33	82	60	105			
2,4-Dinitrophenol		2.42	mg/kg	1.7	73	60	106			
2,4-Dinitrotoluene		3.06	mg/kg	0.33	92	67	111			
2,6-Dinitrotoluene		3.09	mg/kg	0.33	93	69	110			
2-Chloronaphthalene		2.89	mg/kg	0.33	87	64	95			
2-Chlorophenol		2.69	mg/kg	0.33	81	64	88			
2-Methylnaphthalene		2.98	mg/kg	0.33	90	49	101			
2-Nitrophenol		2.67	mg/kg	0.33	80	58	97			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8270C										Batch: B_82171
Lab ID: LCS-82171										08/14/14 17:32
70 Laboratory Control Sample										Run: SUB-B228970
3,3'-Dichlorobenzidine		2.17	mg/kg	0.33	65	41	77			
4,6-Dinitro-2-methylphenol		2.76	mg/kg	1.7	83	59	102			
4-Bromophenyl phenyl ether		2.91	mg/kg	0.33	87	66	103			
4-Chloro-3-methylphenol		2.64	mg/kg	0.33	79	63	109			
4-Chlorophenol		2.85	mg/kg	0.33	85	52	116			
4-Chlorophenyl phenyl ether		2.83	mg/kg	0.33	85	62	107			
4-Nitrophenol		2.49	mg/kg	1.7	75	43	129			
Acenaphthene		2.73	mg/kg	0.33	82	68	95			
Acenaphthylene		2.62	mg/kg	0.33	79	69	92			
Anthracene		2.94	mg/kg	0.33	88	67	109			
Azobenzene		2.88	mg/kg	0.33	86	68	99			
Benzidine		0.667	mg/kg	0.33	20	10	104			
Benzo(a)anthracene		2.65	mg/kg	0.33	80	66	115			
Benzo(a)pyrene		2.92	mg/kg	0.33	88	60	115			
Benzo(b)fluoranthene		2.55	mg/kg	0.33	77	57	123			
Benzo(g,h,i)perylene		3.13	mg/kg	0.33	94	70	108			
Benzo(k)fluoranthene		3.02	mg/kg	0.33	91	57	110			
bis(-2-chloroethoxy)Methane		2.65	mg/kg	0.33	80	54	99			
bis(-2-chloroethyl)Ether		2.37	mg/kg	0.33	71	52	101			
bis(2-chloroisopropyl)Ether		2.58	mg/kg	0.33	77	64	84			
bis(2-ethylhexyl)Phthalate		2.85	mg/kg	0.33	85	57	123			
Butylbenzylphthalate		3.04	mg/kg	0.33	91	69	106			
Chrysene		3.07	mg/kg	0.33	92	63	107			
Dibenzo(a,h)anthracene		2.89	mg/kg	0.33	87	65	110			
Diethyl phthalate		2.98	mg/kg	0.33	89	66	105			
Dimethyl phthalate		2.89	mg/kg	0.33	87	68	103			
Di-n-butyl phthalate		2.97	mg/kg	0.33	89	68	106			
Di-n-octyl phthalate		3.02	mg/kg	0.33	91	67	108			
Fluoranthene		2.96	mg/kg	0.33	89	79	110			
Fluorene		2.69	mg/kg	0.33	81	69	98			
Hexachlorobenzene		2.79	mg/kg	0.33	84	65	101			
Hexachlorobutadiene		2.62	mg/kg	0.33	79	49	96			
Hexachlorocyclopentadiene		2.56	mg/kg	0.33	77	57	94			
Hexachloroethane		2.35	mg/kg	0.33	70	55	78			
Indeno(1,2,3-cd)pyrene		2.33	mg/kg	0.33	70	57	126			
Isophorone		2.71	mg/kg	0.33	81	53	104			
m+p-Cresols		3.14	mg/kg	0.33	94	54	101			
Naphthalene		2.57	mg/kg	0.33	77	56	100			
Nitrobenzene		2.63	mg/kg	0.33	79	55	94			
n-Nitrosodimethylamine		2.26	mg/kg	0.33	68	44	85			
n-Nitroso-di-n-propylamine		2.78	mg/kg	0.33	84	60	99			
n-Nitrosodiphenylamine		3.29	mg/kg	0.33	99	49	115			
o-Cresol		3.07	mg/kg	0.33	92	59	101			
Pentachlorophenol		2.81	mg/kg	1.7	84	59	122			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8270C										Batch: B_82171
Lab ID: LCS-82171	70	Laboratory Control Sample				Run: SUB-B228970			08/14/14 17:32	
Phenanthrene		2.74	mg/kg	0.33	82	67	105			
Phenol		2.85	mg/kg	0.33	85	59	103			
Pyrene		2.84	mg/kg	0.33	85	70	106			
Pyridine		1.45	mg/kg	0.33	44	24	62			
Surr: 2,4,6-Tribromophenol				0.33	83	65	124			
Surr: 2-Fluorobiphenyl				0.33	74	67	102			
Surr: 2-Fluorophenol				0.33	73	50	108			
Surr: Nitrobenzene-d5				0.33	76	62	95			
Surr: Phenol-d5				0.33	75	56	102			
Surr: Terphenyl-d14				0.33	83	65	121			
Lab ID: C14080200-003C	70	Sample Matrix Spike				Run: SUB-B228970			08/14/14 19:02	
1,2,4-Trichlorobenzene		2.40	mg/kg	0.33	72	53	99	0.0	40	
1,2-Dichlorobenzene		2.07	mg/kg	0.33	62	57	80	0.0	40	
1,3-Dichlorobenzene		2.11	mg/kg	0.33	63	55	77	0.0	40	
1,4-Dichlorobenzene		2.08	mg/kg	0.33	62	53	77	0.0	40	
1-Methylnaphthalene		3.28	mg/kg	0.33	83	56	101	0.0	40	
2,4,5-Trichlorophenol		2.37	mg/kg	0.33	71	36	110	0.0	40	
2,4,6-Trichlorophenol		2.61	mg/kg	0.33	78	67	110	0.0	40	
2,4-Dichlorophenol		2.13	mg/kg	0.33	64	66	96	0.0	40	S
2,4-Dimethylphenol		2.69	mg/kg	0.33	81	60	105	0.0	40	
2,4-Dinitrophenol		1.29	mg/kg	1.7	39	60	106	0.0	40	S
2,4-Dinitrotoluene		2.72	mg/kg	0.33	82	67	111	0.0	40	
2,6-Dinitrotoluene		2.73	mg/kg	0.33	82	69	110	0.0	40	
2-Chloronaphthalene		2.47	mg/kg	0.33	74	64	95	0.0	40	
2-Chlorophenol		2.53	mg/kg	0.33	76	64	88	0.0	40	
2-Methylnaphthalene		3.80	mg/kg	0.33	86	49	101	0.0	40	
2-Nitrophenol		2.47	mg/kg	0.33	74	58	97	0.0	40	
3,3'-Dichlorobenzidine		1.70	mg/kg	0.33	51	41	77	0.0	40	
4,6-Dinitro-2-methylphenol		2.43	mg/kg	1.7	73	59	102	0.0	40	
4-Bromophenyl phenyl ether		2.72	mg/kg	0.33	82	66	103	0.0	40	
4-Chloro-3-methylphenol		2.54	mg/kg	0.33	76	63	109	0.0	40	
4-Chlorophenol		2.74	mg/kg	0.33	82	52	116	0.0	40	
4-Chlorophenyl phenyl ether		2.46	mg/kg	0.33	74	62	107	0.0	40	
4-Nitrophenol		1.60	mg/kg	1.7	48	43	129	0.0	40	
Acenaphthene		2.43	mg/kg	0.33	73	68	95	0.0	40	
Acenaphthylene		2.32	mg/kg	0.33	70	69	92	0.0	40	
Anthracene		2.80	mg/kg	0.33	84	67	109	0.0	40	
Azobenzene		2.85	mg/kg	0.33	85	68	99	0.0	40	
Benzidine		0.453	mg/kg	0.33	14	10	104	0.0	40	
Benzo(a)anthracene		2.51	mg/kg	0.33	75	66	115	0.0	40	
Benzo(a)pyrene		2.55	mg/kg	0.33	76	60	115	0.0	40	
Benzo(b)fluoranthene		2.56	mg/kg	0.33	77	57	123	0.0	40	
Benzo(g,h,i)perylene		2.65	mg/kg	0.33	79	70	108	0.0	40	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8270C										Batch: B_82171
Lab ID: C14080200-003C	70 Sample Matrix Spike					Run: SUB-B228970			08/14/14 19:02	
Benzo(k)fluoranthene		2.39	mg/kg	0.33	72	57	110	0.0	40	
bis(-2-chloroethoxy)Methane		2.49	mg/kg	0.33	75	54	99	0.0	40	
bis(-2-chloroethyl)Ether		2.48	mg/kg	0.33	74	52	101	0.0	40	
bis(2-chloroisopropyl)Ether		2.40	mg/kg	0.33	72	64	84	0.0	40	
bis(2-ethylhexyl)Phthalate		2.79	mg/kg	0.33	84	57	123	0.0	40	
Butylbenzylphthalate		2.88	mg/kg	0.33	86	69	106	0.0	40	
Chrysene		2.65	mg/kg	0.33	80	63	107	0.0	40	
Dibenzo(a,h)anthracene		2.55	mg/kg	0.33	77	65	110	0.0	40	
Diethyl phthalate		2.57	mg/kg	0.33	77	66	105	0.0	40	
Dimethyl phthalate		2.49	mg/kg	0.33	75	68	103	0.0	40	
Di-n-butyl phthalate		2.81	mg/kg	0.33	84	68	106	0.0	40	
Di-n-octyl phthalate		2.73	mg/kg	0.33	82	67	108	0.0	40	
Fluoranthene		2.76	mg/kg	0.33	83	79	110	0.0	40	
Fluorene		2.44	mg/kg	0.33	71	69	98	0.0	40	
Hexachlorobenzene		2.68	mg/kg	0.33	80	65	101	0.0	40	
Hexachlorobutadiene		2.40	mg/kg	0.33	72	49	96	0.0	40	
Hexachlorocyclopentadiene		2.06	mg/kg	0.33	62	57	94	0.0	40	
Hexachloroethane		2.23	mg/kg	0.33	67	55	78	0.0	40	
Indeno(1,2,3-cd)pyrene		2.40	mg/kg	0.33	72	57	126	0.0	40	
Isophorone		2.33	mg/kg	0.33	70	53	104	0.0	40	
m+p-Cresols		2.71	mg/kg	0.33	81	54	101	0.0	40	
Naphthalene		2.58	mg/kg	0.33	72	56	100	0.0	40	
Nitrobenzene		2.62	mg/kg	0.33	79	55	94	0.0	40	
n-Nitrosodimethylamine		1.93	mg/kg	0.33	58	44	85	0.0	40	
n-Nitroso-di-n-propylamine		2.53	mg/kg	0.33	76	60	99	0.0	40	
n-Nitrosodiphenylamine		3.37	mg/kg	0.33	101	49	115	0.0	40	
o-Cresol		2.72	mg/kg	0.33	82	59	101	0.0	40	
Pentachlorophenol		2.31	mg/kg	1.7	69	59	122	0.0	40	
Phenanthrene		2.72	mg/kg	0.33	78	67	105	0.0	40	
Phenol		2.61	mg/kg	0.33	78	59	103	0.0	40	
Pyrene		2.89	mg/kg	0.33	87	70	106	0.0	40	
Pyridine		1.22	mg/kg	0.33	37	24	62	0.0	40	
Surr: 2,4,6-Tribromophenol				0.33	75	65	124			
Surr: 2-Fluorobiphenyl				0.33	68	67	102			
Surr: 2-Fluorophenol				0.33	68	50	108			
Surr: Nitrobenzene-d5				0.33	68	62	95			
Surr: Phenol-d5				0.33	71	56	102			
Surr: Terphenyl-d14				0.33	76	65	121			
Lab ID: C14080200-003C	70 Sample Matrix Spike Duplicate					Run: SUB-B228970			08/14/14 19:32	
1,2,4-Trichlorobenzene		2.39	mg/kg	0.33	72	53	99	0.7	40	
1,2-Dichlorobenzene		2.04	mg/kg	0.33	61	57	80	1.6	40	
1,3-Dichlorobenzene		2.16	mg/kg	0.33	65	55	77	2.2	40	
1,4-Dichlorobenzene		1.96	mg/kg	0.33	59	53	77	5.9	40	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8270C										Batch: B_82171
Lab ID: C14080200-003C	70	Sample Matrix Spike Duplicate				Run: SUB-B228970			08/14/14 19:32	
1-Methylnaphthalene		3.15	mg/kg	0.33	79	56	101	4.1	40	
2,4,5-Trichlorophenol		2.52	mg/kg	0.33	76	36	110	6.4	40	
2,4,6-Trichlorophenol		2.80	mg/kg	0.33	84	67	110	7.0	40	
2,4-Dichlorophenol		2.76	mg/kg	0.33	83	66	96	26	40	
2,4-Dimethylphenol		2.73	mg/kg	0.33	82	60	105	1.4	40	
2,4-Dinitrophenol		1.35	mg/kg	1.7	40	60	106		40	S
2,4-Dinitrotoluene		2.91	mg/kg	0.33	87	67	111	6.9	40	
2,6-Dinitrotoluene		2.92	mg/kg	0.33	88	69	110	6.5	40	
2-Chloronaphthalene		2.68	mg/kg	0.33	81	64	95	8.3	40	
2-Chlorophenol		2.35	mg/kg	0.33	70	64	88	7.7	40	
2-Methylnaphthalene		3.73	mg/kg	0.33	84	49	101	1.8	40	
2-Nitrophenol		2.46	mg/kg	0.33	74	58	97	0.4	40	
3,3'-Dichlorobenzidine		1.68	mg/kg	0.33	50	41	77	1.2	40	
4,6-Dinitro-2-methylphenol		2.07	mg/kg	1.7	62	59	102	16	40	
4-Bromophenyl phenyl ether		2.70	mg/kg	0.33	81	66	103	0.9	40	
4-Chloro-3-methylphenol		2.46	mg/kg	0.33	74	63	109	2.9	40	
4-Chlorophenol		2.50	mg/kg	0.33	75	52	116	9.2	40	
4-Chlorophenyl phenyl ether		2.61	mg/kg	0.33	78	62	107	5.9	40	
4-Nitrophenol		3.00	mg/kg	1.7	90	43	129		40	
Acenaphthene		2.59	mg/kg	0.33	78	68	95	6.1	40	
Acenaphthylene		2.51	mg/kg	0.33	75	69	92	8.1	40	
Anthracene		2.79	mg/kg	0.33	84	67	109	0.5	40	
Azobenzene		2.87	mg/kg	0.33	86	68	99	0.9	40	
Benzidine		0.603	mg/kg	0.33	18	10	104	28	40	
Benzo(a)anthracene		2.49	mg/kg	0.33	75	66	115	0.7	40	
Benzo(a)pyrene		2.64	mg/kg	0.33	79	60	115	3.5	40	
Benzo(b)fluoranthene		2.64	mg/kg	0.33	79	57	123	3.1	40	
Benzo(g,h,i)perylene		2.65	mg/kg	0.33	79	70	108	0.0	40	
Benzo(k)fluoranthene		2.45	mg/kg	0.33	74	57	110	2.5	40	
bis(-2-chloroethoxy)Methane		2.49	mg/kg	0.33	75	54	99	0.0	40	
bis(-2-chloroethyl)Ether		2.33	mg/kg	0.33	70	52	101	6.0	40	
bis(2-chloroisopropyl)Ether		2.28	mg/kg	0.33	69	64	84	5.0	40	
bis(2-ethylhexyl)Phthalate		2.79	mg/kg	0.33	84	57	123	0.1	40	
Butylbenzylphthalate		2.79	mg/kg	0.33	84	69	106	3.3	40	
Chrysene		2.44	mg/kg	0.33	73	63	107	8.2	40	
Dibenzo(a,h)anthracene		2.58	mg/kg	0.33	77	65	110	0.9	40	
Diethyl phthalate		2.75	mg/kg	0.33	83	66	105	6.9	40	
Dimethyl phthalate		2.74	mg/kg	0.33	82	68	103	9.4	40	
Di-n-butyl phthalate		2.80	mg/kg	0.33	84	68	106	0.1	40	
Di-n-octyl phthalate		2.82	mg/kg	0.33	85	67	108	3.0	40	
Fluoranthene		2.86	mg/kg	0.33	86	79	110	3.4	40	
Fluorene		2.67	mg/kg	0.33	78	69	98	8.9	40	
Hexachlorobenzene		2.63	mg/kg	0.33	79	65	101	1.6	40	
Hexachlorobutadiene		2.38	mg/kg	0.33	72	49	96	0.8	40	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: ARCADIS US INC

Report Date: 08/20/14

Project: Vaquero Rifle Spill #2589

Work Order: C14080200

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8270C										Batch: B_82171
Lab ID: C14080200-003C										08/14/14 19:32
70 Sample Matrix Spike Duplicate										Run: SUB-B228970
Hexachlorocyclopentadiene		1.97	mg/kg	0.33	59	57	94	4.5	40	
Hexachloroethane		2.02	mg/kg	0.33	61	55	78	10	40	
Indeno(1,2,3-cd)pyrene		2.74	mg/kg	0.33	82	57	126	13	40	
Isophorone		2.28	mg/kg	0.33	68	53	104	2.0	40	
m+p-Cresols		2.53	mg/kg	0.33	76	54	101	6.6	40	
Naphthalene		2.66	mg/kg	0.33	74	56	100	2.9	40	
Nitrobenzene		2.48	mg/kg	0.33	75	55	94	5.4	40	
n-Nitrosodimethylamine		1.76	mg/kg	0.33	53	44	85	9.2	40	
n-Nitroso-di-n-propylamine		2.33	mg/kg	0.33	70	60	99	8.0	40	
n-Nitrosodiphenylamine		3.37	mg/kg	0.33	101	49	115	0.0	40	
o-Cresol		2.66	mg/kg	0.33	80	59	101	2.0	40	
Pentachlorophenol		2.00	mg/kg	1.7	60	59	122	15	40	
Phenanthrene		2.72	mg/kg	0.33	78	67	105	0.0	40	
Phenol		2.49	mg/kg	0.33	75	59	103	4.7	40	
Pyrene		2.64	mg/kg	0.33	79	70	106	8.9	40	
Pyridine		1.05	mg/kg	0.33	31	24	62	15	40	
Surr: 2,4,6-Tribromophenol				0.33	77	65	124			
Surr: 2-Fluorobiphenyl				0.33	71	67	102			
Surr: 2-Fluorophenol				0.33	60	50	108			
Surr: Nitrobenzene-d5				0.33	66	62	95			
Surr: Phenol-d5				0.33	68	56	102			
Surr: Terphenyl-d14				0.33	74	65	121			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Workorder Receipt Checklist

ARCADIS US INC

C14080200

Login completed by: Kerri Schroeder

Date Received: 8/6/2014

Reviewed by: BL2000\smead

Received by: dw

Reviewed Date: 8/7/2014

Carrier Drop Box
name:

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	17.6°C No Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None

[illegible]

Company Name: Accadis-US			Project Name, PWS, Permit, Etc. Vaquero Rifle Spill #2589			Sample Origin State: CO			EPA/State Compliance: Yes <input type="checkbox"/> No <input type="checkbox"/>		
Report Mail Address (Required): 189 N. Cedar Buftalo, WY 82834			Contact Name: Ben Shoup			Phone/Fax: 307 684-5891			Cell: Moran		
<input type="checkbox"/> No Hard Copy Email: Ben.Shoup@accadis-us.com			Invoice Address (Required): 189 N. Cedar Buftalo, WY 82834			Invoice Contact & Phone:			Purchase Order:		
Special Report/Formats: <input type="checkbox"/> DW <input type="checkbox"/> POTW/MWTP <input type="checkbox"/> State: _____ <input type="checkbox"/> Other: _____			<input type="checkbox"/> EDD/EDT (Electronic Data) Format: _____ <input type="checkbox"/> LEVEL IV <input type="checkbox"/> NELAC			Number of Containers Sample Type: A W S V B O D W Air Water Soils/Solids Vegetation Bioassay Other DW - Drinking Water			ANALYSIS REQUESTED Total metals EC SAR PH TPH - 8015 - PRO GRO - 8015 BTEX - 8260 Short 8270 PCB - 8082		
SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)			Collection Date			Collection Time					
1 RS-B7			8/5/14			10:00			42 pH		
2 RS-Camp-Floor			11			11:45			42 pH		
3 RS-Camp-WC			11			09:30			42 pH		
4											
5											
6											
7											
8											
9											
10											
Custody Record MUST be Signed			Relinquished by (print): /Max Moran			Date/Time: 8/5/14 / 19:50			Signature: [Signature]		
Sample Disposal:			Return to Client:			Lab Disposal:			Received by Laboratory:		
									Date/Time: _____		
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Infrastructure Water Environment Buildings

Sample ID: RS Comp - Floor Date: 8/5/14

Time: 11:45 Sampler: Moran

Contaminant: Produced water

Sample Type: Grab / Composite

Sample Depth: ~~0-3'~~ 6"-3'

Potential for Ground water: Low / Med / High Est. Depth to Groundwater: _____

Surface water Impact: Yes / No

Sensitive Receptors: _____

Visual Staining: Yes / No

Odor: Yes / No

PID Reading: 65 ppm Conductivity: _____

Sample Description:

Sandy loam with aggregates. This is a 4-part composite sample at the base of excavation for contaminated soil.

Client: Vaquero Energy Project: RtFu Spill

Project #: 2589 County: Garfield State: CO

Location: Porcupine Rd, RtFu, Co

QTR/QTR/T/R: SW 1/4 Sec 26 Coordinates: _____

T6S R94W



Infrastructure · Water · Environment · Buildings

Sample ID: RS-BE7 Date: 8/5/14

Time: 10:00 Sampler: Moran

Contaminant: Produced water

Sample Type: ☒ Grab ☐ Composite Sample Depth: 0-8"

Potential for Ground water: ☒ Low ☐ Med ☐ High Est. Depth to Groundwater: _____

Surface water Impact: Yes ☐ No ☒ Sensitive Receptors: _____

Visual Staining: Yes ☐ No ☒ Odor: Yes ☐ No ☒

PID Reading: 0.5ppm Conductivity: _____

Sample Description:

Background sample for metals and salts
soil is sandy loam w/ gravels.

Client: Vaquero Energy Project: RipH Spill

Project #: 2589 County: Garfield State: CO

Location: Porcupine Rd, RipH, CO

QTR/QTR/T/R: SWSW Sec 26 Coordinates: 39.49125, -107.861667

TGS R94W

Sample ID: RS-Comp-WC Date: 08/5/14

Time: 09:30 Sampler: Moran

Contaminant: Produced water

Sample Type: Grab / Composite Sample Depth: 0-8"

Potential for Ground water: Low / Med / High Est. Depth to Groundwater: _____

Surface water Impact: Yes / No Sensitive Receptors: _____

Visual Staining: Yes / No Odor: Yes / No

PID Reading: 600ppm Conductivity: _____

Sample Description:

Waste characteristic sample from PW spill.
Soil is loamy with aggregates

Client: Vaquero Energy Project: Rifle Spill

Project #: 2589 County: Garfield State: CO

Location: Porcupine Rd, Rifle, CO

QTR/QTR/T/R: SWSW Sec 26 Coordinates: 39.49125, -107.861667
T6S R94W

APPENDIX D.

FORM 19, FORM 27

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
4/21/2014

SPILL/RELEASE REPORT

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.

Spill report taken by: _____

FACILITY ID: _____

OPERATOR INFORMATION

Name of Operator: _____ OGCC Operator No: _____	Phone Numbers No: _____ Fax: _____ E-Mail: _____
Address: _____	
City: _____ State: _____ Zip: _____	
Contact Person: _____	

DESCRIPTION OF SPILL OR RELEASE

Date of Incident: _____ Facility Name & No.: _____	County: _____
Type of Facility (well, tank battery, flow line, pit): _____	QtrQtr: _____ Section: _____
Well Name and Number: _____	Township: _____ Range: _____
API Number: _____	Meridian: _____
Specify volume spilled and recovered (in bbls) for the following materials: Oil spilled: _____ Oil recov'd: _____ Water spilled: _____ Water recov'd: _____ Other spilled: _____ Other recov'd: _____	
Ground Water impacted? Yes No	Surface Water impacted? Yes No
Contained within berm? Yes No	Area and vertical extent of spill: _____ x _____
Current land use: _____	Weather conditions: _____
Soil/geology description: _____	
IF LESS THAN A MILE, report distance IN FEET to nearest.... Surface water: _____ wetlands: _____ buildings: _____	
Livestock: _____ water wells: _____ Depth to shallowest ground water: _____	
Cause of spill (e.g., equipment failure, human error, etc.): _____ Detailed description of the spill/release incident: _____	

CORRECTIVE ACTION

Describe immediate response (how stopped, contained and recovered):

Describe any emergency pits constructed:

How was the extent of contamination determined:

Further remediation activities proposed (attach separate sheet if needed):

Describe measures taken to prevent problem from reoccurring:

OTHER NOTIFICATIONS

List the parties and agencies notified (County, BLM, EPA, DOT, Local Emergency Planning Coordinator or other).

Date	Agency	Contact	Phone	Response

Spill/Release Tracking No: **2148614**



REMEDIATION WORKPLAN (Cont.)

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: _____
Facility Name & No: _____

OGCC Employee: _____

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

No groundwater impacted.

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.

Site reclamation requires the refilling of the excavated area with clean soil. Once refilled, the excavation area must be recompacted and covered with road gravel to match to current roadway.

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:

Subsequent to soil excavation and disposal, analytical confirmation data indicates site restoration is complete.

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

Waste will be disposed at Green Leaf Environmental Service, located at 15655 45 1/2 Rd, De Beque, Colorado 81630, (970) 283-8992.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 4/17/2014 Date Site Investigation Completed: 8/5/2014 Date Remediation Plan Submitted: _____
Remediation Start Date: 8/5/2014 Anticipated Completion Date: 8/29/2014 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: Michael J. Walsh, WY-PG #150

Signed: Michael J. Walsh

Title: Project Geologist

Date: 8/28/2014

OGCC Approved: _____ Title: _____ Date: _____

APPENDIX E.

PHOTO LOG

Photographic Log

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Unexcavated Area



Photo No 1:

Description: View of the Produced Water contaminated area. Meter run and pipeline are shown behind the contaminated area.

Note: Personnel were instructed to rough the surface to allow ventilation of gases.



Photo No 2:

Description: Another view of the unexcavated area with meter run in the foreground and a tank battery in the background.



Photo No 3:

Description: View of the unexcavated area.