

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 08/25/2014
REM 8535
LOCATION 429116
DOC 2141747

SITE INVESTIGATION AND REMEDIATION WORKPLAN

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

OGCC Employee:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No:

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

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

OGCC Operator Number: <u>10335</u>	Contact Name and Telephone: <u>Jess Peonio</u>
Name of Operator: <u>Axia Energy, LLC</u>	No: <u>720-746-5212</u>
Address: <u>1430 Larimer St. - #400</u>	Fax: <u>NA</u>
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80202</u>	
API Number: <u>05-081-07729-01</u> County: <u>Moffat</u>	
Facility Name: <u>Bulldog #20-12H-892</u> Facility Number: <u>COGCC Facility #429116</u>	
Well Name: <u>Bulldog</u> Well Number: <u>#20-12H-892</u>	
Location: (QtrQtr, Sec, Twp, Rng, Meridian): <u>SW/NW, Section 20, T8N/R92W</u> Latitude: <u>40.632925</u> Longitude: <u>-107.750883</u>	

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Water Based Cuttings

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

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

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: _____

Potential receptors (water wells within 1/4 mi, surface waters, etc.): NA

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

Impacted Media (check):	Extent of Impact:	How Determined:
<input type="checkbox"/> Soils	_____	_____
<input type="checkbox"/> Vegetation	_____	_____
<input type="checkbox"/> Groundwater	_____	_____
<input type="checkbox"/> Surface Water	_____	_____

REMEDIALATION WORKPLAN

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

Describe how source is to be removed:
See attached.

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



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.):
NA.

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.
See attached.

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:
NA

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):
None required.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 7-1-14	Date Site Investigation Completed: 7-28-14	Date Remediation Plan Submitted: NA
Remediation Start Date: NA	Anticipated Completion Date: NA	Actual Completion Date: NA

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

Print Name: Jess Peonio Signed: Jess Peonio
Title: Regulatory Manager Date: 7-30-14

OGCC Approved: Kris Neidel Title: EPS I Date: 9/23/14

Bulldog #20-12H-892 – Facility ID #429116 - Form 27 – Final Remediation #8535 - Cuttings Pit Testing/Evaluation & Reclamation

WORK PLAN/DISCUSSION (previously submitted with initial Form 27)

The subject pit was reclaimed in 2012 without a full sampling/testing protocol being conducted. A Form 4 was recently submitted concerning the excavation of the pit for sampling and proper testing and reclamation. Axia Energy proposes excavating the pit, setting any previously mixed cuttings material to the side in self-containment for testing. Each wall and the bottom of the previous cuttings pit (see attached) will be sampled during excavation to confirm that no contamination or liner leak occurred. Over excavation of contaminated pit walls and bottom will be performed on those areas showing field indicators or laboratory evidence of contamination if necessary. Once clean pit boundaries are confirmed, the pit will be backfilled and reclaimed properly. The cuttings will be tested to determine compliance with Table 910-1 standards and land treated in accordance with Rule 907.e.2 if necessary prior to implementing the cuttings into the pad location. If Table 910-1 standards cannot be met in a timely manner, the cuttings will be disposed of at a commercial disposal facility.

Sampling results will be provided when analysis completed to confirm the pit closure was done in accordance with COGCC rules and regulations. If analysis shows remediation is necessary, a supplemental Form 27 will be submitted with remediation plans.

SAMPLING DISCUSSION

This sampling narrative outlines the sampling activities conducted during the closure of the reserve pit located on the Bulldog #20-12H-892 pad. This narrative is being provided in support of Axia's reserve pit closure documentation to detail what closure, and background samples were taken, where they were taken, and for what purpose.

Reserve Pit Contents 6/24/2014 (L707553)

- Reserve pit contents were sampled in situ. Portions of the cuttings were overlying the north pit wall. The pit cuttings were composite sampled from 5 aliquots collected with direct push and excavation equipment. Approximately equal parts of the 5 cuttings aliquots were homogenized and analyzed for complete COGCC table 910-1 standards. Sample aliquots were collected from 3-7 feet below the surface.

Cuttings samples are represented in the 20-12 tabulated data spreadsheet. Cuttings samples are noted as *20-12 Cut Comp* in the table. The attached BULLDOG #20-12H-892 Cuttings Sample Locations map shows composite sample aliquot locations. The lab data report for this sample and associated background samples are attached. The sample values can be found on lab reports L707553, L708790, and L710979 and the tabulated spreadsheet.

- The reserve pit contents samples were tested for complete COGCC table 910-1 standards. All analytes were found to be below COGCC Table 910-1 standards except for arsenic (As). Laboratory analytical sensitivity for As exceeds Table 910-1 concentrations. Native background

soil samples within the area showed elevated concentrations of naturally occurring As to be present within the area, reference Background Samples section below.

Post Closure Sample 6/24/2014, 7/7/2014, and 7/17/2014 (L707553 and L708790)

- Axia removed portions of the pit contents and liner prior to explorative sampling. The backfilled pit underwent explorative sampling using either direct push sampling equipment to reach the pit extents, or using an excavator to delineate and collect a sample of the pit boundaries. Cuttings were found in the pit which were subsequently removed with an excavator and post closure sampled consisting of six grab samples taken from various points located at the pit bottom (x2) and each pit side wall. Pit closure samples were collected using hand tools from the exposed pit boundaries. The pit bottom was approximately 10-13.5 feet below the pad surface. Explorative and post closure samples are represented in the 20-12 tabulated data spreadsheet. Pit closure samples are denoted with SS within their nomenclature. The exploration sample names from the data tabulation describe the approximate sample locations and depths. The attached BULLDOG #20-12H-892 Sample Locations map shows all pit and background sample locations. The lab data reports for these samples are attached. The sample values can be found on lab reports L707553, L708790, and L710979 and the tabulated spreadsheet.

- Post closure values showed elevated concentrations for arsenic (As). Native background soil samples within the area showed elevated concentrations of naturally occurring As to be present within the area, reference Background Samples section below.

Background Samples 6/24/2014 and 7/17/2014 (L707553 and L710979)

- In an effort to identify naturally occurring concentrations of As similar to that which was previously identified in the closure samples, Axia collected background samples from native undisturbed locations around the area to the north and south of the Pad. The background samples were collected concurrent with pit exploration and pit closure samples and can be found on 20-12 tabulated data spreadsheet (denoted with green headers). Sample Type for the above mentioned samples is defined as background with a BG in the nomenclature. The sample values can be found on lab reports L707553 and L710979. These samples are shown on the sample locations maps and denoted with a BG in the nomenclature.

- The sampling effort yielded background As concentrations above those found in the post closure samples.

In conclusion, this pit has been closed and meets both the COGCC 900 series and 1000 series rules for pit closure. All analyte concentrations were found to be below COGCC table 910-1 allowable concentrations or below native background levels.

SUMMARY TABLE OF SAMPLING RESULTS VS TABLE 910-1

A summary table of the laboratory results is attached.

The lab analyses from the sampling are also attached.

PROPOSED RECLAMATION PLAN/DISCUSSION

Pit sampling and lab analysis indicate arsenic concentrations which exceed COGCC standards. Background sampling that was conducted show background arsenic concentrations which exceed pit samples demonstrating that arsenic is naturally occurring in the immediate area and arsenic levels in/around the pit are not due to operations.

All other pit/cuttings samples collected are below Table 910-1 contaminant concentration limits.

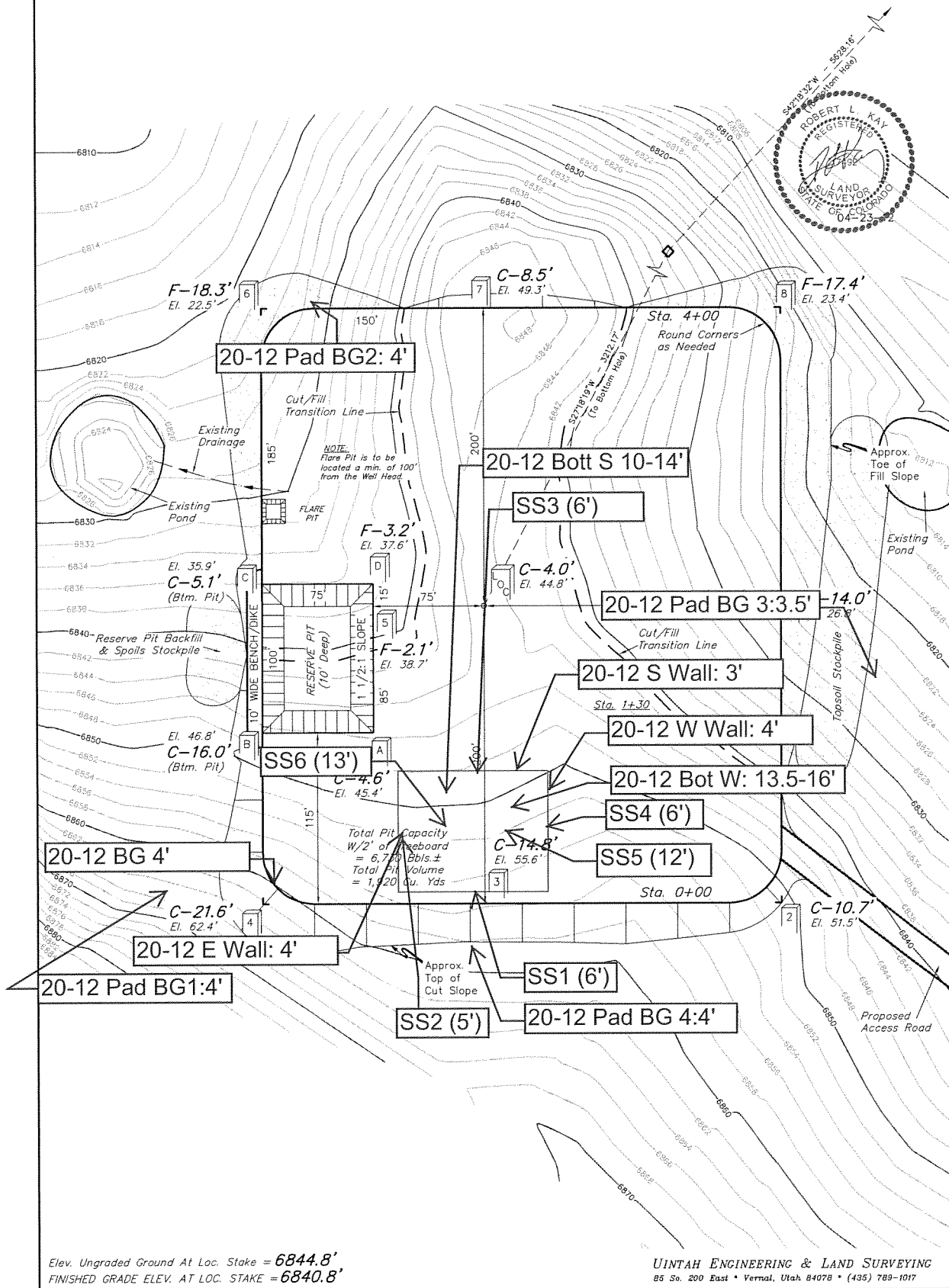
Axia Energy respectfully requests approval to fully close the subject cuttings pit without additional remediation based on the above and attached sampling and laboratory results.

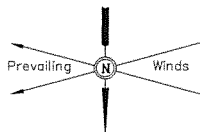
[illegible]

GRO = gasoline range organics
DRO = diesel range organics
Background Sample

FIGURE #1

SCALE: 1" = 60'
DATE: 03-23-12
DRAWN BY: Z.L.
REVISED: 04-11-12
REVISED: 04-18-12

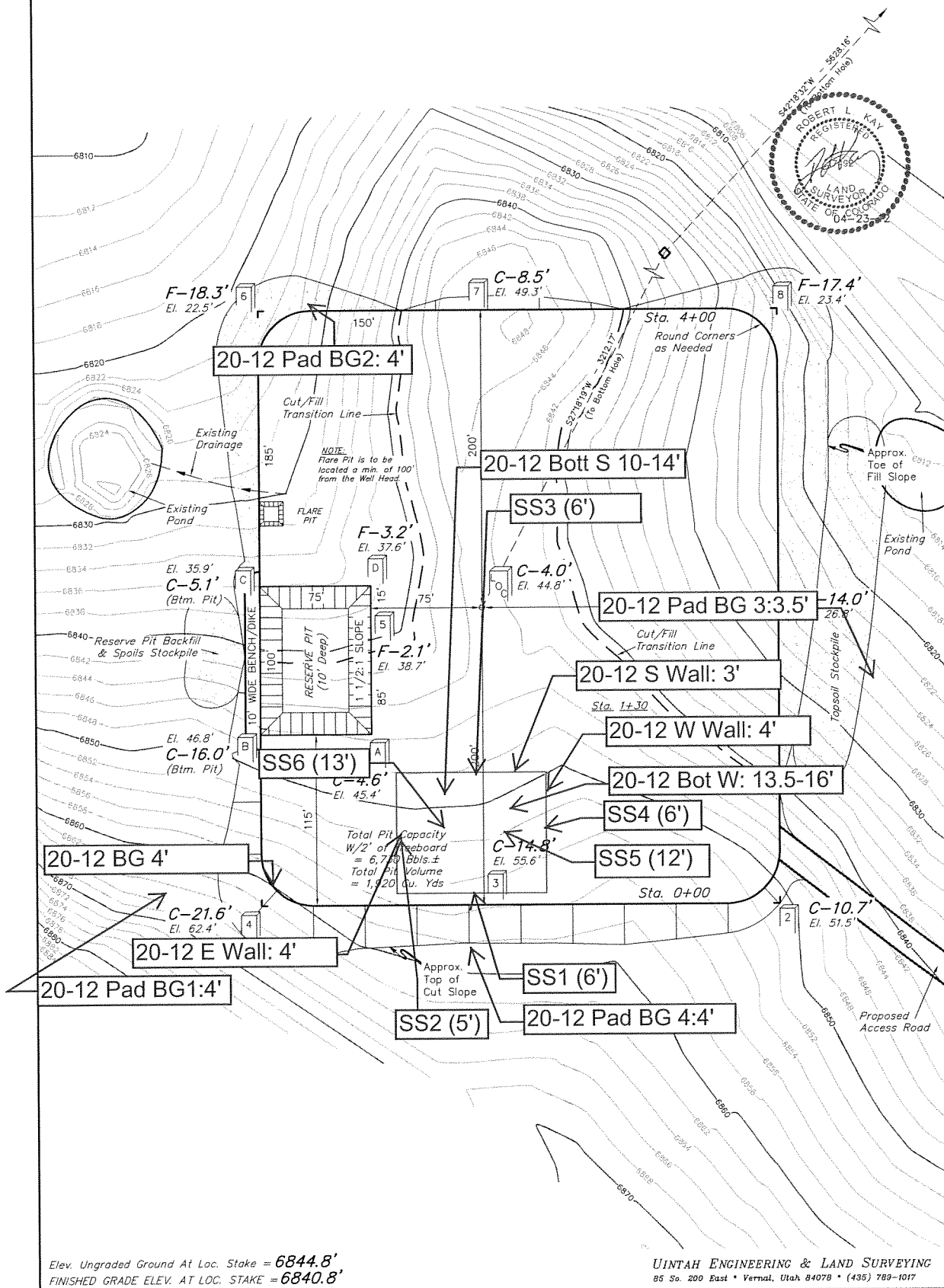




AXIA ENERGY
CONSTRUCTION LAYOUT FOR
BULLDOG #20-12H-892
SECTION 20, T8N, R92W, 6th P.M.
1641' FNL 712' FWL

FIGURE #1

SCALE: 1" = 60'
DATE: 03-23-12
DRAWN BY: Z.L.
REVISED: 04-11-12
REVISED: 04-18-12



Elev. Ungraded Ground At Loc. Stake = 6844.8'
FINISHED GRADE ELEV. AT LOC. STAKE = 6840.8'

UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East • Vernal, Utah 84078 • (435) 789-1017



July 7, 2014

Andrew Peroulis
PO Box 683
Craig, CO 81625

Re: Bulldog #20-12H-892 - Cuttings Pit Reclamation

Mr. Peroulis:

Axia Energy, in an effort to minimize waste, has implemented a testing and beneficial re-use plan for the water based cuttings that were the result of the drilling of the Bulldog #20-12H-892 located on your property. All cuttings that were experienced during the oil based mud drilling interval were captured on location during drilling and disposed of at a commercial waste facility.

The testing and beneficial re-use plan for the water based cuttings involves:

- Removal and disposal of the cuttings pit liner
- Soil sampling and laboratory analysis of each of the pit walls as well as the base of the pit - to insure the pit liner was effective
- Mixing and drying of the water based cuttings
- Testing of the water based cuttings mixture against the Colorado Oil & Gas Conservation (COGCC) Table 910-1 stringent thresholds to insure no contaminated soils/cuttings
- When cuttings have been cleared by COGCC for re-use, the implementation/spreading of the cuttings mixture onto the pad surface for re-use

The COGCC requires written surface owner approval for the above plan. By signing below, you confirm your approval of Axia Energy's testing and beneficial re-use plan. Your confirmation of approval is greatly appreciated.

Should you have any questions or concerns with the above plan, please contact me at (720) 746-5212 or Jerry Holder at (970) 290-8909 and a representative of Axia Energy would be happy to meet with you to discuss further.

Thank you,

Jess Peonio
Senior Drilling Engineer & Regulatory Manager

Consent of Surface Owner
Bulldog #20-12H-892

Andrew Peroulis



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Est. 1970

Robert Stockton
Olsson Associates- Grand Junction, CO
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

Report Summary

Tuesday July 08, 2014

Report Number: L707553

Samples Received: 06/28/14

Client Project: 014-1670

Description: Bulldog Pit Closure

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Daphne Richards , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-01

Date Received : June 28, 2014
Description : Bulldog Pit Closure

Site ID : 20-12

Sample ID : 20-12 S WALL 3 FT

Project # : 014-1670

Collected By : Robert Stockton
Collection Date : 06/24/14 15:17

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	06/29/14	1
Chromium, Trivalent	6.7	2.0	mg/kg	Calc.	07/07/14	1
ORP	40.		mV	2580 B-2011	07/03/14	1
pH	8.2		su	9045D	06/30/14	1
Sodium Adsorption Ratio	0.84			Calc.	07/06/14	1
Specific Conductance	310		umhos/cm	9050AMod	07/05/14	1
Mercury	BDL	0.020	mg/kg	7471	07/02/14	1
Arsenic	2.4	2.0	mg/kg	6010B	07/03/14	1
Barium	140	0.50	mg/kg	6010B	07/03/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/03/14	1
Chromium	6.7	1.0	mg/kg	6010B	07/03/14	1
Copper	4.6	2.0	mg/kg	6010B	07/03/14	1
Lead	4.5	0.50	mg/kg	6010B	07/03/14	1
Nickel	3.0	2.0	mg/kg	6010B	07/03/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/03/14	1
Silver	BDL	1.0	mg/kg	6010B	07/03/14	1
Zinc	23.	3.0	mg/kg	6010B	07/03/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/03/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/03/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/03/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene (FID)	97.0		% Rec.	8021/8015	07/03/14	5
a,a,a-Trifluorotoluene (PID)	101.		% Rec.	8021/8015	07/03/14	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	07/06/14	1
Surrogate recovery(%)						
o-Terphenyl	75.9		% Rec.	3546/DRO	07/06/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)
L707553-01 (PH) - 8.2@21.4c



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REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-01

Date Received : June 28, 2014
Description : Bulldog Pit Closure
Sample ID : 20-12 S WALL 3 FT
Collected By : Robert Stockton
Collection Date : 06/24/14 15:17

Site ID : 20-12

Project # : 014-1670

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
Surrogate Recovery						
p-Terphenyl-d14	87.6		% Rec.	8270C-SIM	07/05/14	1
Nitrobenzene-d5	86.5		% Rec.	8270C-SIM	07/05/14	1
2-Fluorobiphenyl	78.4		% Rec.	8270C-SIM	07/05/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/08/14 15:49 Printed: 07/08/14 15:50
L707553-01 (PH) - 8.2@21.4c



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REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-02

Date Received : June 28, 2014
Description : Bulldog Pit Closure

Site ID : 20-12

Sample ID : 20-12 BOTT S 10-14 FT

Project # : 014-1670

Collected By : Robert Stockton
Collection Date : 06/24/14 16:20

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	06/29/14	1
Chromium, Trivalent	7.6	2.0	mg/kg	Calc.	07/07/14	1
ORP	40.		mV	2580 B-2011	07/03/14	1
pH	8.7		su	9045D	06/30/14	1
Sodium Adsorption Ratio	1.5			Calc.	07/08/14	1
Specific Conductance	220		umhos/cm	9050AMod	07/05/14	1
Mercury	BDL	0.020	mg/kg	7471	07/02/14	1
Arsenic	2.6	2.0	mg/kg	6010B	07/03/14	1
Barium	150	0.50	mg/kg	6010B	07/03/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/03/14	1
Chromium	7.6	1.0	mg/kg	6010B	07/03/14	1
Copper	5.3	2.0	mg/kg	6010B	07/03/14	1
Lead	4.7	0.50	mg/kg	6010B	07/03/14	1
Nickel	3.7	2.0	mg/kg	6010B	07/03/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/03/14	1
Silver	BDL	1.0	mg/kg	6010B	07/03/14	1
Zinc	24.	3.0	mg/kg	6010B	07/03/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/03/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/03/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/03/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene (FID)	97.2		% Rec.	8021/8015	07/03/14	5
a,a,a-Trifluorotoluene (PID)	101.		% Rec.	8021/8015	07/03/14	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	07/06/14	1
Surrogate recovery(%)						
o-Terphenyl	74.7		% Rec.	3546/DRO	07/06/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)
L707553-02 (PH) - 8.7@21.4c



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REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-02

Date Received : June 28, 2014
Description : Bulldog Pit Closure

Site ID : 20-12

Sample ID : 20-12 BOTT S 10-14 FT

Project # : 014-1670

Collected By : Robert Stockton
Collection Date : 06/24/14 16:20

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo (b) fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo (g,h,i) perylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo (k) fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Dibenz (a,h) anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Indeno (1,2,3-cd) pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
Surrogate Recovery						
p-Terphenyl-d14	84.1		% Rec.	8270C-SIM	07/05/14	1
Nitrobenzene-d5	88.5		% Rec.	8270C-SIM	07/05/14	1
2-Fluorobiphenyl	78.2		% Rec.	8270C-SIM	07/05/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

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Reported: 07/08/14 15:49 Printed: 07/08/14 15:50
L707553-02 (PH) - 8.7021.4c



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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-03

Date Received : June 28, 2014
Description : Bulldog Pit Closure
Sample ID : 20-12 E WALL 4 FT
Collected By : Robert Stockton
Collection Date : 06/24/14 15:12

Site ID : 20-12

Project # : 014-1670

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	06/29/14	1
Chromium, Trivalent	6.0	2.0	mg/kg	Calc.	07/07/14	1
ORP	60.		mV	2580 B-2011	07/03/14	1
pH	8.1		su	9045D	06/30/14	1
Sodium Adsorption Ratio	3.4			Calc.	07/06/14	1
Specific Conductance	1200		umhos/cm	9050AMod	07/05/14	1
Mercury	BDL	0.020	mg/kg	7471	07/02/14	1
Arsenic	2.6	2.0	mg/kg	6010B	07/03/14	1
Barium	170	0.50	mg/kg	6010B	07/03/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/03/14	1
Chromium	6.0	1.0	mg/kg	6010B	07/03/14	1
Copper	4.6	2.0	mg/kg	6010B	07/03/14	1
Lead	4.5	0.50	mg/kg	6010B	07/03/14	1
Nickel	3.2	2.0	mg/kg	6010B	07/03/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/03/14	1
Silver	BDL	1.0	mg/kg	6010B	07/03/14	1
Zinc	22.	3.0	mg/kg	6010B	07/03/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/03/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/03/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/03/14	5
Surrogate Recovery-%			% Rec.			
a,a,a-Trifluorotoluene (FID)	97.2		% Rec.	8021/8015	07/03/14	5
a,a,a-Trifluorotoluene (PID)	101.		% Rec.	8021/8015	07/03/14	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	07/06/14	1
Surrogate recovery(%)			% Rec.			
o-Terphenyl	61.7		% Rec.	3546/DRO	07/06/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)
L707553-03 (PH) - 8.1@21.6c



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REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-03

Date Received : June 28, 2014
Description : Bulldog Pit Closure
Sample ID : 20-12 E WALL 4 FT
Collected By : Robert Stockton
Collection Date : 06/24/14 15:12

Site ID : 20-12

Project # : 014-1670

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Naphthalene	0.054	0.020	mg/kg	8270C-SIM	07/05/14	1
Phenanthrene	0.0080	0.0060	mg/kg	8270C-SIM	07/05/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
1-Methylnaphthalene	0.054	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Methylnaphthalene	0.096	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
Surrogate Recovery						
p-Terphenyl-d14	74.8		% Rec.	8270C-SIM	07/05/14	1
Nitrobenzene-d5	95.1		% Rec.	8270C-SIM	07/05/14	1
2-Fluorobiphenyl	84.3		% Rec.	8270C-SIM	07/05/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L707553-03 (PH) - 8.1021.6c



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REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-04

Date Received : June 28, 2014
Description : Bulldog Pit Closure

Site ID : 20-12

Sample ID : 20-12 BOT W 13.5-16 FT

Project # : 014-1670

Collected By : Robert Stockton
Collection Date : 06/24/14 15:45

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	06/29/14	1
Chromium, Trivalent	7.5	2.0	mg/kg	Calc.	07/07/14	1
ORP	50.		mV	2580 B-2011	07/03/14	1
pH	8.8		su	9045D	06/30/14	1
Sodium Adsorption Ratio	1.2			Calc.	07/06/14	1
Specific Conductance	170		umhos/cm	9050AMod	07/05/14	1
Mercury	BDL	0.020	mg/kg	7471	07/02/14	1
Arsenic	BDL	2.0	mg/kg	6010B	07/03/14	1
Barium	150	0.50	mg/kg	6010B	07/03/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/03/14	1
Chromium	7.5	1.0	mg/kg	6010B	07/03/14	1
Copper	5.1	2.0	mg/kg	6010B	07/03/14	1
Lead	3.9	0.50	mg/kg	6010B	07/03/14	1
Nickel	3.7	2.0	mg/kg	6010B	07/03/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/03/14	1
Silver	BDL	1.0	mg/kg	6010B	07/03/14	1
Zinc	22.	3.0	mg/kg	6010B	07/03/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/03/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/03/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/03/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene (FID)	97.0		% Rec.	8021/8015	07/03/14	5
a,a,a-Trifluorotoluene (PID)	101.		% Rec.	8021/8015	07/03/14	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	07/06/14	1
Surrogate recovery(%)						
o-Terphenyl	76.6		% Rec.	3546/DRO	07/06/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)
L707553-04 (PH) - 8.8@21.2c



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REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-04

Date Received : June 28, 2014
Description : Bulldog Pit Closure

Site ID : 20-12

Sample ID : 20-12 BOT W 13.5-16 FT

Project # : 014-1670

Collected By : Robert Stockton
Collection Date : 06/24/14 15:45

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo (b) fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo (g,h,i) perylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo (k) fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Dibenz (a,h) anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Indeno (1,2,3-cd) pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
Surrogate Recovery						
p-Terphenyl-d14	76.2		% Rec.	8270C-SIM	07/05/14	1
Nitrobenzene-d5	86.8		% Rec.	8270C-SIM	07/05/14	1
2-Fluorobiphenyl	79.1		% Rec.	8270C-SIM	07/05/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

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REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-05

Date Received : June 28, 2014
Description : Bulldog Pit Closure
Sample ID : 20-12 W WALL 4 FT
Collected By : Robert Stockton
Collection Date : 06/24/14 15:49

Site ID : 20-12

Project # : 014-1670

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	06/29/14	1
Chromium, Trivalent	11.	2.0	mg/kg	Calc.	07/07/14	1
ORP	70.		mV	2580 B-2011	07/03/14	1
pH	8.2		su	9045D	06/30/14	1
Sodium Adsorption Ratio	2.1			Calc.	07/06/14	1
Specific Conductance	760		umhos/cm	9050AMod	07/05/14	1
Mercury	BDL	0.020	mg/kg	7471	07/02/14	1
Arsenic	3.2	2.0	mg/kg	6010B	07/03/14	1
Barium	160	0.50	mg/kg	6010B	07/03/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/03/14	1
Chromium	11.	1.0	mg/kg	6010B	07/03/14	1
Copper	8.3	2.0	mg/kg	6010B	07/03/14	1
Lead	8.3	0.50	mg/kg	6010B	07/03/14	1
Nickel	6.6	2.0	mg/kg	6010B	07/03/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/03/14	1
Silver	BDL	1.0	mg/kg	6010B	07/03/14	1
Zinc	38.	3.0	mg/kg	6010B	07/03/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/03/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/03/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/03/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene (FID)	96.9		% Rec.	8021/8015	07/03/14	5
a,a,a-Trifluorotoluene (PID)	101.		% Rec.	8021/8015	07/03/14	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	07/06/14	1
Surrogate recovery(%)						
o-Terphenyl	67.2		% Rec.	3546/DRO	07/06/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)
L707553-05 (PH) - 8.2@21.2c



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REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-05

Date Received : June 28, 2014
Description : Bulldog Pit Closure
Sample ID : 20-12 W WALL 4 FT
Collected By : Robert Stockton
Collection Date : 06/24/14 15:49

Site ID : 20-12

Project # : 014-1670

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
Surrogate Recovery						
p-Terphenyl-d14	71.3		% Rec.	8270C-SIM	07/05/14	1
Nitrobenzene-d5	90.5		% Rec.	8270C-SIM	07/05/14	1
2-Fluorobiphenyl	80.0		% Rec.	8270C-SIM	07/05/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-06

Date Received : June 28, 2014
Description : Bulldog Pit Closure
Sample ID : 2012-BG 4 FT
Collected By : Robert Stockton
Collection Date : 06/24/14 15:24

Site ID : 20-12

Project # : 014-1670

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	06/29/14	1
Chromium, Trivalent	6.1	2.0	mg/kg	Calc.	07/07/14	1
ORP	70.		mV	2580 B-2011	07/03/14	1
pH	8.4		su	9045D	06/30/14	1
Sodium Adsorption Ratio	1.9			Calc.	07/08/14	1
Specific Conductance	330		umhos/cm	9050AMod	07/05/14	1
Mercury	BDL	0.020	mg/kg	7471	07/02/14	1
Arsenic	BDL	2.0	mg/kg	6010B	07/03/14	1
Barium	130	0.50	mg/kg	6010B	07/03/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/03/14	1
Chromium	6.1	1.0	mg/kg	6010B	07/03/14	1
Copper	5.7	2.0	mg/kg	6010B	07/03/14	1
Lead	4.5	0.50	mg/kg	6010B	07/03/14	1
Nickel	3.8	2.0	mg/kg	6010B	07/03/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/03/14	1
Silver	BDL	1.0	mg/kg	6010B	07/03/14	1
Zinc	23.	3.0	mg/kg	6010B	07/03/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/03/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/03/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/03/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	97.0		% Rec.	8021/8015	07/03/14	5
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021/8015	07/03/14	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	07/06/14	1
Surrogate recovery(%)						
o-Terphenyl	73.8		% Rec.	3546/DRO	07/06/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L707553-06 (PH) - 8.4@21.3c



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Est. 1970

REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-06

Date Received : June 28, 2014
Description : Bulldog Pit Closure

Site ID : 20-12

Sample ID : 2012-BG 4 FT

Project # : 014-1670

Collected By : Robert Stockton
Collection Date : 06/24/14 15:24

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo (b) fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo (g,h,i) perylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo (k) fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Dibenz (a,h) anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Indeno (1,2,3-cd) pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
Surrogate Recovery						
p-Terphenyl-d14	76.0		% Rec.	8270C-SIM	07/05/14	1
Nitrobenzene-d5	93.9		% Rec.	8270C-SIM	07/05/14	1
2-Fluorobiphenyl	82.0		% Rec.	8270C-SIM	07/05/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

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Reported: 07/08/14 15:49 Printed: 07/08/14 15:50
L707553-06 (PH) - 8.4021.3c



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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-07

Date Received : June 28, 2014
Description : Bulldog Pit Closure

Site ID : 20-12

Sample ID : 20-12 CUT COMP

Project # : 014-1670

Collected By : Robert Stockton
Collection Date : 06/24/14 16:28

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	06/29/14	1
Chromium, Trivalent	9.7	2.0	mg/kg	Calc.	07/07/14	1
ORP	70.		mV	2580 B-2011	07/03/14	1
pH	8.3		su	9045D	06/30/14	1
Sodium Adsorption Ratio	4.0			Calc.	07/08/14	1
Specific Conductance	980		umhos/cm	9050AMod	07/05/14	1
Mercury	BDL	0.020	mg/kg	7471	07/02/14	1
Arsenic	2.6	2.0	mg/kg	6010B	07/03/14	1
Barium	1600	0.50	mg/kg	6010B	07/03/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/03/14	1
Chromium	9.7	1.0	mg/kg	6010B	07/03/14	1
Copper	8.3	2.0	mg/kg	6010B	07/03/14	1
Lead	7.0	0.50	mg/kg	6010B	07/03/14	1
Nickel	5.7	2.0	mg/kg	6010B	07/03/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/03/14	1
Silver	BDL	1.0	mg/kg	6010B	07/03/14	1
Zinc	33.	3.0	mg/kg	6010B	07/03/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/03/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/03/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/03/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/03/14	5
Surrogate Recovery-%			% Rec.	8021/8015	07/03/14	5
a,a,a-Trifluorotoluene (FID)	97.1		% Rec.	8021/8015	07/03/14	5
a,a,a-Trifluorotoluene (PID)	101.					
TPH (GC/FID) High Fraction	18.	4.0	mg/kg	3546/DRO	07/06/14	1
Surrogate recovery (%)			% Rec.	3546/DRO	07/06/14	1
o-Terphenyl	52.8					
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthene	0.0098	0.0060	mg/kg	8270C-SIM	07/05/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)
L707553-07 (PH) - 8.3@21.5c



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Est. 1970

REPORT OF ANALYSIS

July 08, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

ESC Sample # : L707553-07

Date Received : June 28, 2014
Description : Bulldog Pit Closure

Site ID : 20-12

Sample ID : 20-12 CUT COMP

Project # : 014-1670

Collected By : Robert Stockton
Collection Date : 06/24/14 16:28

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo (b) fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo (g,h,i) perylene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Benzo (k) fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Dibenz (a,h) anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Fluorene	0.016	0.0060	mg/kg	8270C-SIM	07/05/14	1
Indeno (1,2,3-cd) pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
Naphthalene	0.11	0.020	mg/kg	8270C-SIM	07/05/14	1
Phenanthrene	0.040	0.0060	mg/kg	8270C-SIM	07/05/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/05/14	1
1-Methylnaphthalene	0.16	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Methylnaphthalene	0.26	0.020	mg/kg	8270C-SIM	07/05/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/05/14	1
Surrogate Recovery						
p-Terphenyl-d14	73.4		% Rec.	8270C-SIM	07/05/14	1
Nitrobenzene-d5	116.		% Rec.	8270C-SIM	07/05/14	1
2-Fluorobiphenyl	93.8		% Rec.	8270C-SIM	07/05/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

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Reported: 07/08/14 15:49 Printed: 07/08/14 15:50
L707553-07 (PH) - 8.3@21.5c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L707553-01	WG729830	SAMP	Silver	R2955411	B3
L707553-02	WG729830	SAMP	Chromium	R2955411	O1
	WG729830	SAMP	Silver	R2955411	B3
L707553-03	WG729830	SAMP	Silver	R2955411	B3
L707553-05	WG729308	SAMP	Chromium, Hexavalent	R2952105	T9
L707553-06	WG729946	SAMP	Barium	R2955383	O1J5J3J6

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
B3	(ESC) - The indicated compound was found in the associated method blank, but all reported samples were non-detect.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low
O1	(ESC) The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T9	(ESC) - Additional method/sample information: The sample result represents blank correction

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
07/08/14 at 15:50:19

TSR Signing Reports: 288
R5 - Desired TAT

Log all PAHs as PAHSIM.

Sample: L707553-01 Account: OLSSONCO Received: 06/28/14 09:00 Due Date: 07/07/14 00:00 RPT Date: 07/08/14 15:49
Sample: L707553-02 Account: OLSSONCO Received: 06/28/14 09:00 Due Date: 07/07/14 00:00 RPT Date: 07/08/14 15:49
Sample: L707553-03 Account: OLSSONCO Received: 06/28/14 09:00 Due Date: 07/07/14 00:00 RPT Date: 07/08/14 15:49
Sample: L707553-04 Account: OLSSONCO Received: 06/28/14 09:00 Due Date: 07/07/14 00:00 RPT Date: 07/08/14 15:49
Sample: L707553-05 Account: OLSSONCO Received: 06/28/14 09:00 Due Date: 07/07/14 00:00 RPT Date: 07/08/14 15:49
Sample: L707553-06 Account: OLSSONCO Received: 06/28/14 09:00 Due Date: 07/07/14 00:00 RPT Date: 07/08/14 15:49
Sample: L707553-07 Account: OLSSONCO Received: 06/28/14 09:00 Due Date: 07/07/14 00:00 RPT Date: 07/08/14 15:49



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Quality Assurance Report
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Tax I.D. 62-0814289

Est. 1970

July 08, 2014

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Chromium, Hexavalent	< 2	mg/kg			WG729308	06/29/14 14:26
Mercury	< .02	mg/kg			WG729622	07/02/14 09:21
Arsenic	< 1	mg/kg			WG729946	07/03/14 14:26
Barium	< .25	mg/kg			WG729946	07/03/14 14:26
Cadmium	< .25	mg/kg			WG729946	07/03/14 14:26
Chromium	< .5	mg/kg			WG729946	07/03/14 14:26
Copper	< 1	mg/kg			WG729946	07/03/14 14:26
Lead	< .25	mg/kg			WG729946	07/03/14 14:26
Nickel	< 1	mg/kg			WG729946	07/03/14 14:26
Selenium	< 1	mg/kg			WG729946	07/03/14 14:26
Silver	< .5	mg/kg			WG729946	07/03/14 14:26
Zinc	< 1.5	mg/kg			WG729946	07/03/14 14:26
Arsenic	< 1	mg/kg			WG729830	07/03/14 14:02
Barium	< .25	mg/kg			WG729830	07/03/14 14:02
Cadmium	< .25	mg/kg			WG729830	07/03/14 14:02
Chromium	< .5	mg/kg			WG729830	07/03/14 14:02
Copper	< 1	mg/kg			WG729830	07/03/14 14:02
Lead	< .25	mg/kg			WG729830	07/03/14 14:02
Nickel	< 1	mg/kg			WG729830	07/03/14 14:02
Selenium	< 1	mg/kg			WG729830	07/03/14 14:02
Silver	< .5	mg/kg			WG729830	07/03/14 14:02
Zinc	< 1.5	mg/kg			WG729830	07/03/14 14:02
Benzene	< .0005	mg/kg			WG729365	07/03/14 13:24
Ethylbenzene	< .0005	mg/kg			WG729365	07/03/14 13:24
Toluene	< .005	mg/kg			WG729365	07/03/14 13:24
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG729365	07/03/14 13:24
Total Xylene	< .0015	mg/kg			WG729365	07/03/14 13:24
a,a,a-Trifluorotoluene (FID)		% Rec.	98.10	59-128	WG729365	07/03/14 13:24
a,a,a-Trifluorotoluene (PID)		% Rec.	102.0	54-144	WG729365	07/03/14 13:24
Specific Conductance	1.60	umhos/cm			WG729913	07/05/14 16:19
1-Methylnaphthalene	< .02	mg/kg			WG730006	07/05/14 14:01
2-Chloronaphthalene	< .02	mg/kg			WG730006	07/05/14 14:01
2-Methylnaphthalene	< .02	mg/kg			WG730006	07/05/14 14:01
Acenaphthene	< .006	mg/kg			WG730006	07/05/14 14:01
Acenaphthylene	< .006	mg/kg			WG730006	07/05/14 14:01
Anthracene	< .006	mg/kg			WG730006	07/05/14 14:01
Benzo(a)anthracene	< .006	mg/kg			WG730006	07/05/14 14:01
Benzo(a)pyrene	< .006	mg/kg			WG730006	07/05/14 14:01
Benzo(b)fluoranthene	< .006	mg/kg			WG730006	07/05/14 14:01
Benzo(g,h,i)perylene	< .006	mg/kg			WG730006	07/05/14 14:01
Benzo(k)fluoranthene	< .006	mg/kg			WG730006	07/05/14 14:01
Chrysene	< .006	mg/kg			WG730006	07/05/14 14:01
Dibenz(a,h)anthracene	< .006	mg/kg			WG730006	07/05/14 14:01
Fluoranthene	< .006	mg/kg			WG730006	07/05/14 14:01
Fluorene	< .006	mg/kg			WG730006	07/05/14 14:01
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG730006	07/05/14 14:01
Naphthalene	< .02	mg/kg			WG730006	07/05/14 14:01

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Phenanthrene	< .006	mg/kg			WG730006	07/05/14 14:01
Pyrene	< .006	mg/kg			WG730006	07/05/14 14:01
2-Fluorobiphenyl		% Rec.	88.10	38.2-135	WG730006	07/05/14 14:01
Nitrobenzene-d5		% Rec.	99.90	28.4-151	WG730006	07/05/14 14:01
p-Terphenyl-d14		% Rec.	79.50	34.2-141	WG730006	07/05/14 14:01
TPH (GC/FID) High Fraction	< 4	mg/kg			WG729998	07/06/14 12:40
o-Terphenyl		% Rec.	86.70	50-150	WG729998	07/06/14 12:40

Analyte	Units	Result	Duplicate		Limit	Ref Samp	Batch
			Duplicate	RPD			
Chromium, Hexavalent	mg/kg	0.0	0.0	0.0	20	L707493-02	WG729308
pH	su	7.80	7.80	0.514	1	L707359-01	WG729385
pH	su	8.30	8.30	0.120	1	L707553-07	WG729385
Mercury	mg/kg	0.0	0.00265	20.0	20	L707553-01	WG729622
ORP	mV	90.0	90.0	0.0	20	L705691-02	WG729907
ORP	mV	88.0	90.0	2.25	20	L707944-04	WG729907
Specific Conductance	umhos/cm	2400	2400	1.43	20	L707503-01	WG729913
Specific Conductance	umhos/cm	1700	1700	2.33	20	L707821-03	WG729913

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Chromium, Hexavalent	mg/kg	125	138.	110.	80-120	WG729308
pH	su	6.33	6.33	100.	98.3-101.7	WG729385
Mercury	mg/kg	12.4	11.6	94.0	71.6-128	WG729622
ORP	mV	100	110.	110.	90-110	WG729907
Arsenic	mg/kg	237	221.	93.0	83.1-117	WG729946
Barium	mg/kg	252	236.	93.0	84.1-116	WG729946
Cadmium	mg/kg	191	166.	87.0	83.2-117	WG729946
Chromium	mg/kg	128	119.	93.0	81.3-118	WG729946
Copper	mg/kg	123	115.	94.0	83.7-116	WG729946
Lead	mg/kg	103	92.0	89.0	83.1-117	WG729946
Nickel	mg/kg	118	106.	90.0	82-118	WG729946
Selenium	mg/kg	110	105.	96.0	78.7-122	WG729946
Silver	mg/kg	47.3	43.8	93.0	66.2-134	WG729946
Zinc	mg/kg	183	166.	90.0	82-118	WG729946
Arsenic	mg/kg	237	225.	95.0	83.1-117	WG729830
Barium	mg/kg	252	226.	90.0	84.1-116	WG729830

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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July 08, 2014

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Cadmium	mg/kg	191	170.	89.0	83.2-117	WG729830
Chromium	mg/kg	128	118.	92.0	81.3-118	WG729830
Copper	mg/kg	123	112.	91.0	83.7-116	WG729830
Lead	mg/kg	103	95.5	93.0	83.1-117	WG729830
Nickel	mg/kg	118	103.	87.0	82-118	WG729830
Selenium	mg/kg	110	102.	93.0	78.7-122	WG729830
Silver	mg/kg	47.3	44.9	95.0	66.2-134	WG729830
Zinc	mg/kg	183	168.	92.0	82-118	WG729830
Benzene	mg/kg	.05	0.0488	97.6	70-130	WG729365
Ethylbenzene	mg/kg	.05	0.0496	99.3	70-130	WG729365
Toluene	mg/kg	.05	0.0494	98.8	70-130	WG729365
Total Xylene	mg/kg	.15	0.151	101.	70-130	WG729365
a,a,a-Trifluorotoluene (PID)				102.0	54-144	WG729365
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.35	97.3	63.5-137	WG729365
a,a,a-Trifluorotoluene (FID)				98.70	59-128	WG729365
Specific Conductance	umhos/cm	1040	1000	96.2	85-115	WG729913
1-Methylnaphthalene	mg/kg	.08	0.0734	91.8	48.9-127	WG730006
2-Chloronaphthalene	mg/kg	.08	0.0714	89.2	48.8-125	WG730006
2-Methylnaphthalene	mg/kg	.08	0.0737	92.1	45.7-131	WG730006
Acenaphthene	mg/kg	.08	0.0727	90.8	48.7-127	WG730006
Acenaphthylene	mg/kg	.08	0.0710	88.7	47.9-128	WG730006
Anthracene	mg/kg	.08	0.0682	85.2	51.3-136	WG730006
Benzo(a)anthracene	mg/kg	.08	0.0683	85.4	55-126	WG730006
Benzo(a)pyrene	mg/kg	.08	0.0679	84.9	51.9-127	WG730006
Benzo(b)fluoranthene	mg/kg	.08	0.0696	87.0	54-125	WG730006
Benzo(g,h,i)perylene	mg/kg	.08	0.0675	84.4	53.8-136	WG730006
Benzo(k)fluoranthene	mg/kg	.08	0.0675	84.4	53.9-132	WG730006
Chrysene	mg/kg	.08	0.0682	85.3	55.7-133	WG730006
Dibenz(a,h)anthracene	mg/kg	.08	0.0675	84.4	52.6-137	WG730006
Fluoranthene	mg/kg	.08	0.0739	92.3	54-132	WG730006
Fluorene	mg/kg	.08	0.0718	89.8	48.7-127	WG730006
Indeno(1,2,3-cd)pyrene	mg/kg	.08	0.0682	85.3	53.8-138	WG730006
Naphthalene	mg/kg	.08	0.0699	87.4	42-127	WG730006
Phenanthrene	mg/kg	.08	0.0675	84.3	49.6-126	WG730006
Pyrene	mg/kg	.08	0.0681	85.1	54-129	WG730006
2-Fluorobiphenyl				86.60	38.2-135	WG730006
Nitrobenzene-d5				104.0	28.4-151	WG730006
p-Terphenyl-d14				77.10	34.2-141	WG730006
TPH (GC/FID) High Fraction	mg/kg	60	49.6	82.7	50-150	WG729998
o-Terphenyl				77.10	50-150	WG729998

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Chromium, Hexavalent	mg/kg	138.	138.	110.	80-120	0.0	20	WG729308
pH	su	6.32	6.33	100.	98.3-101.7	0.158	20	WG729385
ORP	mV	110.	110.	110.	90-110	0.0	20	WG729907

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Level II

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Est. 1970

July 08, 2014

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Laboratory Control Sample Duplicate								
Arsenic	mg/kg	208.	221.	88.0	83.1-117	6.00	20	WG729946
Barium	mg/kg	227.	236.	90.0	84.1-116	4.00	20	WG729946
Cadmium	mg/kg	160.	166.	84.0	83.2-117	4.00	20	WG729946
Chromium	mg/kg	113.	119.	88.0	81.3-118	6.00	20	WG729946
Copper	mg/kg	110.	115.	89.0	83.7-116	5.00	20	WG729946
Lead	mg/kg	86.3	92.0	84.0	83.1-117	6.00	20	WG729946
Nickel	mg/kg	101.	106.	85.0	82-118	5.00	20	WG729946
Selenium	mg/kg	96.6	105.	88.0	78.7-122	9.00	20	WG729946
Silver	mg/kg	43.2	43.8	91.0	66.2-134	1.00	20	WG729946
Zinc	mg/kg	160.	166.	87.0	82-118	3.00	20	WG729946
Arsenic	mg/kg	236.	225.	99.0	83.1-117	5.00	20	WG729830
Barium	mg/kg	242.	226.	96.0	84.1-116	7.00	20	WG729830
Cadmium	mg/kg	177.	170.	92.0	83.2-117	4.00	20	WG729830
Chromium	mg/kg	124.	118.	97.0	81.3-118	5.00	20	WG729830
Copper	mg/kg	118.	112.	96.0	83.7-116	5.00	20	WG729830
Lead	mg/kg	99.3	95.5	96.0	83.1-117	4.00	20	WG729830
Nickel	mg/kg	108.	103.	92.0	82-118	5.00	20	WG729830
Selenium	mg/kg	106.	102.	96.0	78.7-122	4.00	20	WG729830
Silver	mg/kg	48.1	44.9	102.	66.2-134	7.00	20	WG729830
Zinc	mg/kg	177.	168.	97.0	82-118	5.00	20	WG729830
Benzene	mg/kg	0.0468	0.0488	94.0	70-130	4.14	20	WG729365
Ethylbenzene	mg/kg	0.0474	0.0496	95.0	70-130	4.57	20	WG729365
Toluene	mg/kg	0.0470	0.0494	94.0	70-130	4.98	20	WG729365
Total Xylene	mg/kg	0.144	0.151	96.0	70-130	4.95	20	WG729365
a,a,a-Trifluorotoluene (PID)				102.0	54-144			WG729365
TPH (GC/FID) Low Fraction	mg/kg	5.33	5.35	97.0	63.5-137	0.470	20	WG729365
a,a,a-Trifluorotoluene (FID)				98.30	59-128			WG729365
Specific Conductance	umhos/ 1000		1000	96.0	85-115	0.0	20	WG729913
1-Methylnaphthalene	mg/kg	0.0688	0.0734	86.0	48.9-127	6.53	20	WG730006
2-Chloronaphthalene	mg/kg	0.0671	0.0714	84.0	48.8-125	6.23	20	WG730006
2-Methylnaphthalene	mg/kg	0.0690	0.0737	86.0	45.7-131	6.57	20	WG730006
Acenaphthene	mg/kg	0.0683	0.0727	85.0	48.7-127	6.19	20	WG730006
Acenaphthylene	mg/kg	0.0670	0.0710	84.0	47.9-128	5.84	20	WG730006
Anthracene	mg/kg	0.0637	0.0682	80.0	51.3-136	6.78	20	WG730006
Benzo(a)anthracene	mg/kg	0.0644	0.0683	80.0	55-126	5.80	20	WG730006
Benzo(a)pyrene	mg/kg	0.0636	0.0679	79.0	51.9-127	6.55	20	WG730006
Benzo(b)fluoranthene	mg/kg	0.0682	0.0696	85.0	54-125	2.01	20	WG730006
Benzo(g,h,i)perylene	mg/kg	0.0644	0.0675	80.0	53.8-136	4.75	20	WG730006
Benzo(k)fluoranthene	mg/kg	0.0600	0.0675	75.0	53.9-132	11.8	20	WG730006
Chrysene	mg/kg	0.0646	0.0682	81.0	55.7-133	5.45	20	WG730006
Dibenz(a,h)anthracene	mg/kg	0.0640	0.0675	80.0	52.6-137	5.38	20	WG730006
Fluoranthene	mg/kg	0.0697	0.0739	87.0	54-132	5.81	20	WG730006
Fluorene	mg/kg	0.0675	0.0718	84.0	48.7-127	6.19	20	WG730006
Indeno(1,2,3-cd)pyrene	mg/kg	0.0652	0.0682	81.0	53.8-138	4.53	20	WG730006
Naphthalene	mg/kg	0.0656	0.0699	82.0	42-127	6.38	20	WG730006
Phenanthrene	mg/kg	0.0632	0.0675	79.0	49.6-126	6.44	20	WG730006
Pyrene	mg/kg	0.0640	0.0681	80.0	54-129	6.10	20	WG730006
2-Fluorobiphenyl				86.90	38.2-135			WG730006
Nitrobenzene-d5				101.0	28.4-151			WG730006
p-Terphenyl-d14				77.30	34.2-141			WG730006

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Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
TPH (GC/FID) High Fraction	mg/kg	46.4	49.6	77.0	50-150	6.75	20	WG729998
o-Terphenyl				71.50	50-150			WG729998

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Chromium, Hexavalent	mg/kg	19.0	0.0	20	95.0	75-125	L707553-04	WG729308
Mercury	mg/kg	0.501	0.00265	.5	100.	80-120	L707553-01	WG729622
Arsenic	mg/kg	47.6	1.78	50	92.0	75-125	L707553-06	WG729946
Barium	mg/kg	262.	134.	50	260.*	75-125	L707553-06	WG729946
Cadmium	mg/kg	44.7	-0.0243	50	89.0	75-125	L707553-06	WG729946
Chromium	mg/kg	51.1	6.08	50	90.0	75-125	L707553-06	WG729946
Copper	mg/kg	54.4	5.72	50	97.0	75-125	L707553-06	WG729946
Lead	mg/kg	48.3	4.49	50	88.0	75-125	L707553-06	WG729946
Nickel	mg/kg	47.9	3.76	50	88.0	75-125	L707553-06	WG729946
Selenium	mg/kg	46.0	0.0938	50	92.0	75-125	L707553-06	WG729946
Silver	mg/kg	48.1	0.156	50	96.0	75-125	L707553-06	WG729946
Zinc	mg/kg	69.6	23.3	50	93.0	75-125	L707553-06	WG729946

Arsenic	mg/kg	49.0	2.65	50	93.0	75-125	L707553-02	WG729830
Barium	mg/kg	192.	147.	50	89.0	75-125	L707553-02	WG729830
Cadmium	mg/kg	45.8	0.117	50	91.0	75-125	L707553-02	WG729830
Chromium	mg/kg	53.0	7.59	50	91.0	75-125	L707553-02	WG729830
Copper	mg/kg	54.0	5.29	50	97.0	75-125	L707553-02	WG729830
Lead	mg/kg	51.0	4.67	50	93.0	75-125	L707553-02	WG729830
Nickel	mg/kg	48.7	3.70	50	90.0	75-125	L707553-02	WG729830
Selenium	mg/kg	45.8	-0.466	50	92.0	75-125	L707553-02	WG729830
Silver	mg/kg	49.2	0.398	50	98.0	75-125	L707553-02	WG729830
Zinc	mg/kg	70.2	24.4	50	92.0	75-125	L707553-02	WG729830

Benzene	mg/kg	0.222	0.000774	.05	88.0	49.7-127	L707493-01	WG729365
Ethylbenzene	mg/kg	0.199	0.000391	.05	80.0	40.8-141	L707493-01	WG729365
Toluene	mg/kg	0.215	0.00188	.05	85.0	49.8-132	L707493-01	WG729365
Total Xylene	mg/kg	0.584	0.00161	.15	78.0	41.2-140	L707493-01	WG729365
a,a,a-Trifluorotoluene (PID)					101.0	54-144		WG729365
TPH (GC/FID) Low Fraction	mg/kg	21.7	0.105	5.5	79.0	28.5-138	L707493-01	WG729365
a,a,a-Trifluorotoluene (FID)					98.00	59-128		WG729365

1-Methylnaphthalene	mg/kg	0.196	0.259	.08	0.00*	41.8-133	L707528-03	WG730006
2-Chloronaphthalene	mg/kg	0.0700	0.	.08	87.5	42.4-129	L707528-03	WG730006
2-Methylnaphthalene	mg/kg	0.269	0.453	.08	0.00*	37.5-137	L707528-03	WG730006
Acenaphthene	mg/kg	0.0759	0.00690	.08	86.3	39.4-132	L707528-03	WG730006
Acenaphthylene	mg/kg	0.0726	0.	.08	90.7	41.3-132	L707528-03	WG730006
Anthracene	mg/kg	0.0660	0.	.08	82.5	36.7-144	L707528-03	WG730006
Benzo(a)anthracene	mg/kg	0.0672	0.	.08	84.1	28-144	L707528-03	WG730006
Benzo(a)pyrene	mg/kg	0.0654	0.	.08	81.8	23.8-147	L707528-03	WG730006
Benzo(b)fluoranthene	mg/kg	0.0643	0.	.08	80.4	18.2-147	L707528-03	WG730006
Benzo(g,h,i)perylene	mg/kg	0.0686	0.	.08	85.7	9.2-155	L707528-03	WG730006
Benzo(k)fluoranthene	mg/kg	0.0636	0.	.08	79.5	26.5-143	L707528-03	WG730006
Chrysene	mg/kg	0.0660	0.	.08	82.5	27.4-150	L707528-03	WG730006
Dibenz(a,h)anthracene	mg/kg	0.0693	0.	.08	86.6	13.8-150	L707528-03	WG730006

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Analyte	Units	MS Res	Matrix Spike			% Rec	Limit	Ref Samp	Batch
			Ref Res	TV					
Fluoranthene	mg/kg	0.0801	0.	.08	100.	23.2-158	L707528-03	WG730006	
Fluorene	mg/kg	0.0802	0.00955	.08	88.3	30.8-139	L707528-03	WG730006	
Indeno(1,2,3-cd)pyrene	mg/kg	0.0696	0.	.08	87.0	10.7-155	L707528-03	WG730006	
Naphthalene	mg/kg	0.109	0.0782	.08	39.1	34.9-133	L707528-03	WG730006	
Phenanthrene	mg/kg	0.0690	0.00863	.08	75.4	20.2-150	L707528-03	WG730006	
Pyrene	mg/kg	0.0652	0.	.08	81.5	22.6-151	L707528-03	WG730006	
2-Fluorobiphenyl					93.90	38.2-135		WG730006	
Nitrobenzene-d5					103.0	28.4-151		WG730006	
p-Terphenyl-d14					77.70	34.2-141		WG730006	
TPH (GC/FID) High Fraction	mg/kg	48.6	0.761	60	80.0	50-150	L707553-02	WG729998	
o-Terphenyl					76.80	50-150		WG729998	

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Chromium, Hexavalent	mg/kg	19.0	19.0	95.0	75-125	0.0	20	L707553-04	WG729308
Mercury	mg/kg	0.532	0.501	106.	80-120	6.00	20	L707553-01	WG729622
Arsenic	mg/kg	47.1	47.6	90.6	75-125	1.00	20	L707553-06	WG729946
Barium	mg/kg	169.	262.	71.0*	75-125	43.0*	20	L707553-06	WG729946
Cadmium	mg/kg	42.8	44.7	85.5	75-125	4.00	20	L707553-06	WG729946
Chromium	mg/kg	51.4	51.1	90.6	75-125	1.00	20	L707553-06	WG729946
Copper	mg/kg	52.1	54.4	92.7	75-125	4.00	20	L707553-06	WG729946
Lead	mg/kg	48.2	48.3	87.5	75-125	0.0	20	L707553-06	WG729946
Nickel	mg/kg	47.5	47.9	87.6	75-125	1.00	20	L707553-06	WG729946
Selenium	mg/kg	44.8	46.0	89.5	75-125	3.00	20	L707553-06	WG729946
Silver	mg/kg	46.2	48.1	92.2	75-125	4.00	20	L707553-06	WG729946
Zinc	mg/kg	67.3	69.6	88.0	75-125	3.00	20	L707553-06	WG729946
Arsenic	mg/kg	49.5	49.0	93.7	75-125	1.00	20	L707553-02	WG729830
Barium	mg/kg	210.	192.	125.	75-125	9.00	20	L707553-02	WG729830
Cadmium	mg/kg	45.6	45.8	91.0	75-125	0.0	20	L707553-02	WG729830
Chromium	mg/kg	53.2	53.0	91.1	75-125	0.0	20	L707553-02	WG729830
Copper	mg/kg	54.2	54.0	97.8	75-125	0.0	20	L707553-02	WG729830
Lead	mg/kg	51.8	51.0	94.2	75-125	1.00	20	L707553-02	WG729830
Nickel	mg/kg	48.9	48.7	90.4	75-125	0.0	20	L707553-02	WG729830
Selenium	mg/kg	45.6	45.8	92.0	75-125	0.0	20	L707553-02	WG729830
Silver	mg/kg	49.3	49.2	97.8	75-125	0.0	20	L707553-02	WG729830
Zinc	mg/kg	71.2	70.2	93.7	75-125	2.00	20	L707553-02	WG729830
Benzene	mg/kg	0.237	0.222	94.3	49.7-127	6.48	23.5	L707493-01	WG729365
Ethylbenzene	mg/kg	0.214	0.199	85.5	40.8-141	7.18	23.8	L707493-01	WG729365
Toluene	mg/kg	0.226	0.215	89.8	49.8-132	4.99	23.5	L707493-01	WG729365
Total Xylene	mg/kg	0.632	0.584	84.0	41.2-140	7.83	23.7	L707493-01	WG729365
a,a,a-Trifluorotoluene(PID)				100.0	54-144				WG729365
TPH (GC/FID) Low Fraction	mg/kg	21.8	21.7	78.7	28.5-138	0.190	23.6	L707493-01	WG729365
a,a,a-Trifluorotoluene(FID)				98.10	59-128				WG729365
1-Methylnaphthalene	mg/kg	0.188	0.196	0*	41.8-133	4.20	20.9	L707528-03	WG730006
2-Chloronaphthalene	mg/kg	0.0666	0.0700	83.3	42.4-129	4.95	20	L707528-03	WG730006
2-Methylnaphthalene	mg/kg	0.270	0.269	0*	37.5-137	0.330	20.4	L707528-03	WG730006

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Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Acenaphthene	mg/kg	0.0726	0.0759	82.1	39.4-132	4.50	20	L707528-03	WG730006
Acenaphthylene	mg/kg	0.0690	0.0726	86.3	41.3-132	5.03	20	L707528-03	WG730006
Anthracene	mg/kg	0.0632	0.0660	78.9	36.7-144	4.38	20.7	L707528-03	WG730006
Benzo(a)anthracene	mg/kg	0.0638	0.0672	79.8	28-144	5.25	24.7	L707528-03	WG730006
Benzo(a)pyrene	mg/kg	0.0618	0.0654	77.2	23.8-147	5.76	25.3	L707528-03	WG730006
Benzo(b)fluoranthene	mg/kg	0.0590	0.0643	73.7	18.2-147	8.63	29.5	L707528-03	WG730006
Benzo(g,h,i)perylene	mg/kg	0.0640	0.0686	80.0	9.2-155	6.92	29.2	L707528-03	WG730006
Benzo(k)fluoranthene	mg/kg	0.0625	0.0636	78.2	26.5-143	1.68	26.1	L707528-03	WG730006
Chrysene	mg/kg	0.0635	0.0660	79.3	27.4-150	3.93	25.7	L707528-03	WG730006
Dibenz(a,h)anthracene	mg/kg	0.0647	0.0693	80.9	13.8-150	6.77	25.8	L707528-03	WG730006
Fluoranthene	mg/kg	0.0744	0.0801	93.0	23.2-158	7.34	26	L707528-03	WG730006
Fluorene	mg/kg	0.0761	0.0802	83.2	30.8-139	5.28	20	L707528-03	WG730006
Indeno(1,2,3-cd)pyrene	mg/kg	0.0654	0.0696	81.7	10.7-155	6.29	26.9	L707528-03	WG730006
Naphthalene	mg/kg	0.106	0.109	35.1	34.9-133	2.97	20.4	L707528-03	WG730006
Phenanthrene	mg/kg	0.0662	0.0690	71.9	20.2-150	4.14	24.6	L707528-03	WG730006
Pyrene	mg/kg	0.0620	0.0652	77.4	22.6-151	5.11	25.1	L707528-03	WG730006
2-Fluorobiphenyl				87.80	38.2-135				WG730006
Nitrobenzene-d5				151.0	28.4-151				WG730006
p-Terphenyl-d14				71.60	34.2-141				WG730006
TPH (GC/FID) High Fraction	mg/kg	48.9	48.6	80.3	50-150	0.750	20	L707553-02	WG729998
o-Terphenyl				75.70	50-150				WG729998

Post Spike

Serial Dilution

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Serial Dilution

Batch number / Run number / Sample number cross reference

WG729308: R2952105: L707553-01 02 03 04 05 06
WG729385: R2952793: L707553-01 02 03 04 05 06
WG729622: R2954488: L707553-01 02 03 04 05 06
WG729907: R2955286: L707553-01 02 03 04 05 06
WG729946: R2955383: L707553-04 05 06
WG729830: R2955411: L707553-01 02 03
WG729365: R2955806: L707553-01 02 03 04 05 06
WG729833: R2956066: L707553-01 03 04 05
WG729913: R2956390: L707553-01 02 03 04 05 06
WG730006: R2956404: L707553-01 02 03 04 05 06
WG729998: R2957147: L707553-01 02 03 04 05 06
WG730306: R2957610: L707553-02 06

* * Calculations are performed prior to rounding of reported values.

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Olsson Associates- Grand Junction, CO
Robert Stockton
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

Quality Assurance Report
Level II

L707553

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July 08, 2014

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.



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Robert Stockton
Olsson Associates- Grand Junction, CO
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

Report Summary

Friday July 18, 2014

Report Number: L708790

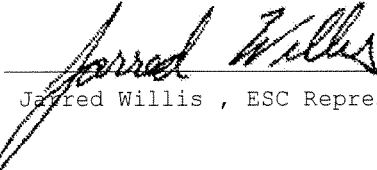
Samples Received: 07/08/14

Client Project:

Description: Axia Bulldog 20-12H-892 PH Closure

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:


Jarred Willis, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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REPORT OF ANALYSIS

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS1
Collected By : J. Surina
Collection Date : 07/07/14 10:40

ESC Sample # : L708790-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/10/14	1
Chromium, Trivalent	6.3	2.0	mg/kg	Calc.	07/14/14	1
pH	8.4		su	9045D	07/12/14	1
Sodium Adsorption Ratio	2.1			Calc.	07/18/14	1
Specific Conductance	580		umhos/cm	9050AMod	07/15/14	1
Mercury	0.023	0.020	mg/kg	7471	07/10/14	1
Arsenic	BDL	2.0	mg/kg	6010B	07/14/14	1
Barium	130	0.50	mg/kg	6010B	07/14/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/14/14	1
Chromium	6.3	1.0	mg/kg	6010B	07/14/14	1
Copper	4.2	2.0	mg/kg	6010B	07/14/14	1
Lead	3.7	0.50	mg/kg	6010B	07/14/14	1
Nickel	3.8	2.0	mg/kg	6010B	07/14/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/14/14	1
Silver	BDL	1.0	mg/kg	6010B	07/14/14	1
Zinc	22.	3.0	mg/kg	6010B	07/14/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/10/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/10/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/10/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/10/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/10/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene (FID)	98.9		% Rec.	8021/8015	07/10/14	5
a,a,a-Trifluorotoluene (PID)	104.		% Rec.	8021/8015	07/10/14	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	07/13/14	1
Surrogate recovery(%)						
o-Terphenyl	73.9		% Rec.	3546/DRO	07/13/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)
L708790-01 (PH) - 8.4@20.9c



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Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS1
Collected By : J. Surina
Collection Date : 07/07/14 10:40

ESC Sample # : L708790-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
Naphthalene	0.054	0.020	mg/kg	8270C-SIM	07/15/14	1
Phenanthrene	0.016	0.0060	mg/kg	8270C-SIM	07/15/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/15/14	1
1-Methylnaphthalene	0.060	0.020	mg/kg	8270C-SIM	07/15/14	1
2-Methylnaphthalene	0.10	0.020	mg/kg	8270C-SIM	07/15/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/15/14	1
Surrogate Recovery						
p-Terphenyl-d14	65.6		% Rec.	8270C-SIM	07/15/14	1
Nitrobenzene-d5	79.2		% Rec.	8270C-SIM	07/15/14	1
2-Fluorobiphenyl	69.9		% Rec.	8270C-SIM	07/15/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

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L708790-01 (PH) - 8.4@20.9c



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July 18, 2014

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760 Horizon Drive, Ste 102
Grand Junction, CO 81506

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS2
Collected By : J. Surina
Collection Date : 07/07/14 10:45

ESC Sample # : L708790-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/10/14	1
Chromium, Trivalent	6.1	2.0	mg/kg	Calc.	07/14/14	1
pH	8.6		su	9045D	07/12/14	1
Sodium Adsorption Ratio	3.4			Calc.	07/18/14	1
Specific Conductance	520		umhos/cm	9050AMod	07/15/14	1
Mercury	BDL	0.020	mg/kg	7471	07/10/14	1
Arsenic	BDL	2.0	mg/kg	6010B	07/14/14	1
Barium	170	0.50	mg/kg	6010B	07/14/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/14/14	1
Chromium	6.1	1.0	mg/kg	6010B	07/14/14	1
Copper	5.7	2.0	mg/kg	6010B	07/14/14	1
Lead	4.7	0.50	mg/kg	6010B	07/14/14	1
Nickel	4.1	2.0	mg/kg	6010B	07/14/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/14/14	1
Silver	BDL	1.0	mg/kg	6010B	07/14/14	1
Zinc	25.	3.0	mg/kg	6010B	07/14/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/10/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/10/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/10/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/10/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/10/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene (FID)	98.7		% Rec.	8021/8015	07/10/14	5
a,a,a-Trifluorotoluene (PID)	103.		% Rec.	8021/8015	07/10/14	5
TPH (GC/FID) High Fraction	31.	4.0	mg/kg	3546/DRO	07/13/14	1
Surrogate recovery(%)						
o-Terphenyl	67.7		% Rec.	3546/DRO	07/13/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

L708790-02 (PH) - 8.6@20.7c



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Olsson Associates- Grand Junction,
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Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS2
Collected By : J. Surina
Collection Date : 07/07/14 10:45

ESC Sample # : L708790-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
Surrogate Recovery						
p-Terphenyl-d14	66.1		% Rec.	8270C-SIM	07/14/14	1
Nitrobenzene-d5	84.5		% Rec.	8270C-SIM	07/14/14	1
2-Fluorobiphenyl	73.2		% Rec.	8270C-SIM	07/14/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L708790-02 (PH) - 8.6@20.7c



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July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS3
Collected By : J. Surina
Collection Date : 07/07/14 10:50

ESC Sample # : L708790-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/10/14	1
Chromium, Trivalent	6.9	2.0	mg/kg	Calc.	07/14/14	1
pH	8.7		su	9045D	07/12/14	1
Sodium Adsorption Ratio	1.4			Calc.	07/18/14	1
Specific Conductance	180		umhos/cm	9050AMod	07/15/14	1
Mercury	BDL	0.020	mg/kg	7471	07/10/14	1
Arsenic	BDL	2.0	mg/kg	6010B	07/14/14	1
Barium	190	0.50	mg/kg	6010B	07/14/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/14/14	1
Chromium	6.9	1.0	mg/kg	6010B	07/14/14	1
Copper	5.7	2.0	mg/kg	6010B	07/14/14	1
Lead	4.6	0.50	mg/kg	6010B	07/14/14	1
Nickel	4.3	2.0	mg/kg	6010B	07/14/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/14/14	1
Silver	BDL	1.0	mg/kg	6010B	07/14/14	1
Zinc	28.	3.0	mg/kg	6010B	07/14/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/10/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/10/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/10/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/10/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/10/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene (FID)	98.9		% Rec.	8021/8015	07/10/14	5
a,a,a-Trifluorotoluene (PID)	103.		% Rec.	8021/8015	07/10/14	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	07/13/14	1
Surrogate recovery(%)						
o-Terphenyl	75.3		% Rec.	3546/DRO	07/13/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

L708790-03 (PH) - 8.7@20.7c



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REPORT OF ANALYSIS

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760 Horizon Drive, Ste 102
Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure

ESC Sample # : L708790-03

Sample ID : SS3

Site ID :

Collected By : J. Surina
Collection Date : 07/07/14 10:50

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
Surrogate Recovery						
p-Terphenyl-d14	70.7		% Rec.	8270C-SIM	07/14/14	1
Nitrobenzene-d5	84.1		% Rec.	8270C-SIM	07/14/14	1
2-Fluorobiphenyl	74.6		% Rec.	8270C-SIM	07/14/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS4
Collected By : J. Surina
Collection Date : 07/07/14 10:55

ESC Sample # : L708790-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/10/14	1
Chromium, Trivalent	9.8	2.0	mg/kg	Calc.	07/16/14	1
pH	8.7		su	9045D	07/12/14	1
Sodium Adsorption Ratio	6.0			Calc.	07/18/14	1
Specific Conductance	700		umhos/cm	9050AMod	07/15/14	1
Mercury	0.025	0.020	mg/kg	7471	07/10/14	1
Arsenic	3.1	2.0	mg/kg	6010B	07/16/14	1
Barium	900	0.50	mg/kg	6010B	07/16/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/16/14	1
Chromium	9.8	1.0	mg/kg	6010B	07/16/14	1
Copper	9.1	2.0	mg/kg	6010B	07/16/14	1
Lead	8.4	0.50	mg/kg	6010B	07/16/14	1
Nickel	4.0	2.0	mg/kg	6010B	07/16/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/16/14	1
Silver	BDL	1.0	mg/kg	6010B	07/16/14	1
Zinc	35.	3.0	mg/kg	6010B	07/16/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/10/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/10/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/10/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/10/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/10/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene (FID)	98.9		% Rec.	8021/8015	07/10/14	5
a,a,a-Trifluorotoluene (PID)	103.		% Rec.	8021/8015	07/10/14	5
TPH (GC/FID) High Fraction	51.	4.0	mg/kg	3546/DRO	07/14/14	1
Surrogate recovery(%)						
o-Terphenyl	61.5		% Rec.	3546/DRO	07/14/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)
L708790-04 (PH) - 8.7@20.7c



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Est. 1970

REPORT OF ANALYSIS

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS4
Collected By : J. Surina
Collection Date : 07/07/14 10:55

ESC Sample # : L708790-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
Surrogate Recovery						
p-Terphenyl-d14	61.9		% Rec.	8270C-SIM	07/14/14	1
Nitrobenzene-d5	83.1		% Rec.	8270C-SIM	07/14/14	1
2-Fluorobiphenyl	70.8		% Rec.	8270C-SIM	07/14/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L708790-04 (PH) - 8.7@20.7c



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Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS5
Collected By : J. Surina
Collection Date : 07/07/14 11:00

ESC Sample # : L708790-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/10/14	1
Chromium, Trivalent	6.1	2.0	mg/kg	Calc.	07/16/14	1
pH	9.0		su	9045D	07/12/14	1
Sodium Adsorption Ratio	1.8			Calc.	07/18/14	1
Specific Conductance	150		umhos/cm	9050AMod	07/15/14	1
Mercury	BDL	0.020	mg/kg	7471	07/10/14	1
Arsenic	BDL	2.0	mg/kg	6010B	07/16/14	1
Barium	140	0.50	mg/kg	6010B	07/16/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/16/14	1
Chromium	6.1	1.0	mg/kg	6010B	07/16/14	1
Copper	4.5	2.0	mg/kg	6010B	07/16/14	1
Lead	4.5	0.50	mg/kg	6010B	07/16/14	1
Nickel	2.4	2.0	mg/kg	6010B	07/16/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/16/14	1
Silver	BDL	1.0	mg/kg	6010B	07/16/14	1
Zinc	22.	3.0	mg/kg	6010B	07/16/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/10/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/10/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/10/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/10/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/10/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene (FID)	98.8		% Rec.	8021/8015	07/10/14	5
a,a,a-Trifluorotoluene (PID)	103.		% Rec.	8021/8015	07/10/14	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	07/13/14	1
Surrogate recovery(%)						
o-Terphenyl	74.1		% Rec.	3546/DRO	07/13/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)
L708790-05 (PH) - 9.0@20.6c



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Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS5
Collected By : J. Surina
Collection Date : 07/07/14 11:00

ESC Sample # : L708790-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
Surrogate Recovery						
p-Terphenyl-d14	74.8		% Rec.	8270C-SIM	07/14/14	1
Nitrobenzene-d5	97.3		% Rec.	8270C-SIM	07/14/14	1
2-Fluorobiphenyl	82.5		% Rec.	8270C-SIM	07/14/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS6
Collected By : J. Surina
Collection Date : 07/07/14 11:05

ESC Sample # : L708790-06

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/10/14	1
Chromium, Trivalent	5.9	2.0	mg/kg	Calc.	07/16/14	1
pH	8.6		su	9045D	07/12/14	1
Sodium Adsorption Ratio	1.6			Calc.	07/18/14	1
Specific Conductance	370		umhos/cm	9050AMod	07/15/14	1
Mercury	BDL	0.020	mg/kg	7471	07/10/14	1
Arsenic	BDL	2.0	mg/kg	6010B	07/16/14	1
Barium	140	0.50	mg/kg	6010B	07/16/14	1
Cadmium	BDL	0.50	mg/kg	6010B	07/16/14	1
Chromium	5.9	1.0	mg/kg	6010B	07/16/14	1
Copper	5.4	2.0	mg/kg	6010B	07/16/14	1
Lead	4.6	0.50	mg/kg	6010B	07/16/14	1
Nickel	2.8	2.0	mg/kg	6010B	07/16/14	1
Selenium	BDL	2.0	mg/kg	6010B	07/16/14	1
Silver	BDL	1.0	mg/kg	6010B	07/16/14	1
Zinc	23.	3.0	mg/kg	6010B	07/16/14	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/10/14	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/10/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/10/14	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/10/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/10/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene (FID)	98.7		% Rec.	8021/8015	07/10/14	5
a,a,a-Trifluorotoluene (PID)	103.		% Rec.	8021/8015	07/10/14	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	07/13/14	1
Surrogate recovery(%)						
o-Terphenyl	79.7		% Rec.	3546/DRO	07/13/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L708790-06 (PH) - 8.6@20.7c



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REPORT OF ANALYSIS

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure

Sample ID : SS6

Collected By : J. Surina
Collection Date : 07/07/14 11:05

ESC Sample # : L708790-06

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/14/14	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	07/14/14	1
Surrogate Recovery						
p-Terphenyl-d14	73.7		% Rec.	8270C-SIM	07/14/14	1
Nitrobenzene-d5	93.3		% Rec.	8270C-SIM	07/14/14	1
2-Fluorobiphenyl	81.6		% Rec.	8270C-SIM	07/14/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

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Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS1
Collected By : J. Surina
Collection Date : 07/07/14 10:40

ESC Sample # : L708790-07

Site ID :

Project :

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	07/12/14 0735	CCS	1
Boron	BDL	9.0	mg/l		6010B	07/14/14 0309	WBD	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit(EQL)

Limit - Maximum Contaminant Level as established by the US EPA

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REPORT OF ANALYSIS

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS2
Collected By : J. Surina
Collection Date : 07/07/14 10:45

ESC Sample # : L708790-08

Site ID :

Project :

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	07/12/14 0735	CCS	1
Boron	BDL	9.0	mg/l		6010B	07/14/14 0313	WBD	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit(EQL)

Limit - Maximum Contaminant Level as established by the US EPA

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REPORT OF ANALYSIS

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760 Horizon Drive, Ste 102
Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS3
Collected By : J. Surina
Collection Date : 07/07/14 10:50

ESC Sample # : L708790-09

Site ID :

Project :

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	07/12/14 0735	CCS	1
Boron	BDL	9.0	mg/l		6010B	07/14/14 0317	WBD	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit (EQL)

Limit - Maximum Contaminant Level as established by the US EPA

Note:

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REPORT OF ANALYSIS

Robert Stockton
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760 Horizon Drive, Ste 102
Grand Junction, CO 81506

July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS4
Collected By : J. Surina
Collection Date : 07/07/14 10:55

ESC Sample # : L708790-10

Site ID :

Project :

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	07/12/14 0735	CCS	1
Boron	BDL	9.0	mg/l		6010B	07/14/14 0321	WBD	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit (EQL)

Limit - Maximum Contaminant Level as established by the US EPA

Note:

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July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS5
Collected By : J. Surina
Collection Date : 07/07/14 11:00

ESC Sample # : L708790-11

Site ID :

Project :

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	07/12/14 0735	CCS	1
Boron	BDL	9.0	mg/l		6010B	07/14/14 0325	WBD	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit (EQL)

Limit - Maximum Contaminant Level as established by the US EPA

Note:

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July 18, 2014

Date Received : July 08, 2014
Description : Axia Bulldog 20-12H-892 PH Closure
Sample ID : SS6
Collected By : J. Surina
Collection Date : 07/07/14 11:05

ESC Sample # : L708790-12

Site ID :

Project :

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	07/12/14 0735	CCS	1
Boron	BDL	9.0	mg/l		6010B	07/14/14 0329	WBD	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit (EQL)

Limit - Maximum Contaminant Level as established by the US EPA

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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L708790-01	WG730786	SAMP	Mercury	R2959447	P1
L708790-04	WG731274	SAMP	Barium	R2962607	01VJ3

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J3	The associated batch QC was outside the established quality control range for precision.
O1	(ESC) The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V	(ESC) - Additional QC Info: The sample concentration is too high to evaluate accurate spike recoveries.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
07/18/14 at 16:06:54

TSR Signing Reports: 288
R5 - Desired TAT

Log all PAHs as PAHSIM.

Sample: L708790-01 Account: OLSSONCO Received: 07/08/14 09:00 Due Date: 07/15/14 00:00 RPT Date: 07/18/14 16:05
Sample: L708790-02 Account: OLSSONCO Received: 07/08/14 09:00 Due Date: 07/15/14 00:00 RPT Date: 07/18/14 16:05
Sample: L708790-03 Account: OLSSONCO Received: 07/08/14 09:00 Due Date: 07/15/14 00:00 RPT Date: 07/18/14 16:05
Sample: L708790-04 Account: OLSSONCO Received: 07/08/14 09:00 Due Date: 07/15/14 00:00 RPT Date: 07/18/14 16:05
Sample: L708790-05 Account: OLSSONCO Received: 07/08/14 09:00 Due Date: 07/15/14 00:00 RPT Date: 07/18/14 16:05
Sample: L708790-06 Account: OLSSONCO Received: 07/08/14 09:00 Due Date: 07/15/14 00:00 RPT Date: 07/18/14 16:05
Sample: L708790-07 Account: OLSSONCO Received: 07/08/14 09:00 Due Date: 07/15/14 00:00 RPT Date: 07/18/14 16:05
Sample: L708790-08 Account: OLSSONCO Received: 07/08/14 09:00 Due Date: 07/15/14 00:00 RPT Date: 07/18/14 16:05
Sample: L708790-09 Account: OLSSONCO Received: 07/08/14 09:00 Due Date: 07/15/14 00:00 RPT Date: 07/18/14 16:05
Sample: L708790-10 Account: OLSSONCO Received: 07/08/14 09:00 Due Date: 07/15/14 00:00 RPT Date: 07/18/14 16:05
Sample: L708790-11 Account: OLSSONCO Received: 07/08/14 09:00 Due Date: 07/15/14 00:00 RPT Date: 07/18/14 16:05
Sample: L708790-12 Account: OLSSONCO Received: 07/08/14 09:00 Due Date: 07/15/14 00:00 RPT Date: 07/18/14 16:05



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Quality Assurance Report
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(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 18, 2014

Analyte	Result	Laboratory Blank Units	% Rec	Limit	Batch	Date Analyzed
Chromium, Hexavalent	< 2	mg/kg			WG730781	07/10/14 15:50
Mercury	< .02	mg/kg			WG730786	07/10/14 16:49
Boron	< 9	mg/l			WG731502	07/14/14 01:19
Arsenic	< 1	mg/kg			WG731242	07/14/14 01:24
Barium	< .25	mg/kg			WG731242	07/14/14 01:24
Cadmium	< .25	mg/kg			WG731242	07/14/14 01:24
Chromium	< .5	mg/kg			WG731242	07/14/14 01:24
Copper	< 1	mg/kg			WG731242	07/14/14 01:24
Lead	< .25	mg/kg			WG731242	07/14/14 01:24
Nickel	< 1	mg/kg			WG731242	07/14/14 01:24
Selenium	< 1	mg/kg			WG731242	07/14/14 01:24
Silver	< .5	mg/kg			WG731242	07/14/14 01:24
Zinc	< 1.5	mg/kg			WG731242	07/14/14 01:24
TPH (GC/FID) High Fraction	< 4	mg/kg			WG730914	07/13/14 12:05
o-Terphenyl		% Rec.	89.90	50-150	WG730914	07/13/14 12:05
Benzene	< .0005	mg/kg			WG730814	07/10/14 18:33
Ethylbenzene	< .0005	mg/kg			WG730814	07/10/14 18:33
Toluene	< .005	mg/kg			WG730814	07/10/14 18:33
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG730814	07/10/14 18:33
Total Xylene	< .0015	mg/kg			WG730814	07/10/14 18:33
a,a,a-Trifluorotoluene (FID)		% Rec.	99.60	59-128	WG730814	07/10/14 18:33
a,a,a-Trifluorotoluene (PID)		% Rec.	104.0	54-144	WG730814	07/10/14 18:33
1-Methylnaphthalene	< .02	mg/kg			WG730917	07/14/14 08:31
2-Chloronaphthalene	< .02	mg/kg			WG730917	07/14/14 08:31
2-Methylnaphthalene	< .02	mg/kg			WG730917	07/14/14 08:31
Acenaphthene	< .006	mg/kg			WG730917	07/14/14 08:31
Acenaphthylene	< .006	mg/kg			WG730917	07/14/14 08:31
Anthracene	< .006	mg/kg			WG730917	07/14/14 08:31
Benzo(a)anthracene	< .006	mg/kg			WG730917	07/14/14 08:31
Benzo(a)pyrene	< .006	mg/kg			WG730917	07/14/14 08:31
Benzo(b)fluoranthene	< .006	mg/kg			WG730917	07/14/14 08:31
Benzo(g,h,i)perylene	< .006	mg/kg			WG730917	07/14/14 08:31
Benzo(k)fluoranthene	< .006	mg/kg			WG730917	07/14/14 08:31
Chrysene	< .006	mg/kg			WG730917	07/14/14 08:31
Dibenz(a,h)anthracene	< .006	mg/kg			WG730917	07/14/14 08:31
Fluoranthene	< .006	mg/kg			WG730917	07/14/14 08:31
Fluorene	< .006	mg/kg			WG730917	07/14/14 08:31
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG730917	07/14/14 08:31
Naphthalene	< .02	mg/kg			WG730917	07/14/14 08:31
Phenanthrene	< .006	mg/kg			WG730917	07/14/14 08:31
Pyrene	< .006	mg/kg			WG730917	07/14/14 08:31
2-Fluorobiphenyl		% Rec.	86.20	38.2-135	WG730917	07/14/14 08:31
Nitrobenzene-d5		% Rec.	102.0	28.4-151	WG730917	07/14/14 08:31
p-Terphenyl-d14		% Rec.	73.30	34.2-141	WG730917	07/14/14 08:31
1-Methylnaphthalene	< .02	mg/kg			WG731621	07/15/14 01:18

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July 18, 2014

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
2-Chloronaphthalene	< .02	mg/kg			WG731621	07/15/14 01:18
2-Methylnaphthalene	< .02	mg/kg			WG731621	07/15/14 01:18
Acenaphthene	< .006	mg/kg			WG731621	07/15/14 01:18
Acenaphthylene	< .006	mg/kg			WG731621	07/15/14 01:18
Anthracene	< .006	mg/kg			WG731621	07/15/14 01:18
Benzo(a)anthracene	< .006	mg/kg			WG731621	07/15/14 01:18
Benzo(a)pyrene	< .006	mg/kg			WG731621	07/15/14 01:18
Benzo(b)fluoranthene	< .006	mg/kg			WG731621	07/15/14 01:18
Benzo(g,h,i)perylene	< .006	mg/kg			WG731621	07/15/14 01:18
Benzo(k)fluoranthene	< .006	mg/kg			WG731621	07/15/14 01:18
Chrysene	< .006	mg/kg			WG731621	07/15/14 01:18
Dibenz(a,h)anthracene	< .006	mg/kg			WG731621	07/15/14 01:18
Fluoranthene	< .006	mg/kg			WG731621	07/15/14 01:18
Fluorene	< .006	mg/kg			WG731621	07/15/14 01:18
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG731621	07/15/14 01:18
Naphthalene	< .02	mg/kg			WG731621	07/15/14 01:18
Phenanthrene	< .006	mg/kg			WG731621	07/15/14 01:18
Pyrene	< .006	mg/kg			WG731621	07/15/14 01:18
2-Fluorobiphenyl	% Rec.		88.00	38.2-135	WG731621	07/15/14 01:18
Nitrobenzene-d5	% Rec.		96.10	28.4-151	WG731621	07/15/14 01:18
p-Terphenyl-d14	% Rec.		75.90	34.2-141	WG731621	07/15/14 01:18
Specific Conductance	1.40	umhos/cm			WG731302	07/15/14 12:53
Arsenic	< 1	mg/kg			WG731274	07/16/14 00:54
Barium	< .25	mg/kg			WG731274	07/16/14 00:54
Cadmium	< .25	mg/kg			WG731274	07/16/14 00:54
Chromium	< .5	mg/kg			WG731274	07/16/14 00:54
Copper	< 1	mg/kg			WG731274	07/16/14 00:54
Lead	< .25	mg/kg			WG731274	07/16/14 00:54
Nickel	< 1	mg/kg			WG731274	07/16/14 00:54
Selenium	< 1	mg/kg			WG731274	07/16/14 00:54
Silver	< .5	mg/kg			WG731274	07/16/14 00:54
Zinc	< 1.5	mg/kg			WG731274	07/16/14 00:54

Analyte	Units	Result	Duplicate		Limit	Ref Samp	Batch
			Duplicate	RPD			
Chromium, Hexavalent	mg/kg	0.0	0.0	0.0	20	L708790-06	WG730781
Chromium, Hexavalent	mg/kg	0.0	0.0	0.0	20	L708754-05	WG730781
Mercury	mg/kg	0.0	0.0226	44.0*	20	L708790-01	WG730786
pH	su	7.70	7.70	0.260	1	L708760-21	WG731214
pH	su	6.00	6.00	0.333	1	L708933-02	WG731214
Specific Conductance	umhos/cm	320.	320.	0.0	20	L708760-27	WG731302
Specific Conductance	umhos/cm	370.	370.	0.0	20	L708790-06	WG731302

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Chromium, Hexavalent	mg/kg	125	123.	98.4	80-120	WG730781

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Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Mercury	mg/kg	12.4	10.6	85.0	71.6-128	WG730786
Boron	mg/l	9	9.19	102.	80-120	WG731502
Arsenic	mg/kg	237	244.	103.	83.1-117	WG731242
Barium	mg/kg	252	259.	103.	84.1-116	WG731242
Cadmium	mg/kg	191	188.	98.0	83.2-117	WG731242
Chromium	mg/kg	128	130.	102.	81.3-118	WG731242
Copper	mg/kg	123	123.	100.	83.7-116	WG731242
Lead	mg/kg	103	102.	99.0	83.1-117	WG731242
Nickel	mg/kg	118	115.	97.0	82-118	WG731242
Selenium	mg/kg	110	114.	103.	78.7-122	WG731242
Silver	mg/kg	47.3	46.7	99.0	66.2-134	WG731242
Zinc	mg/kg	183	186.	102.	82-118	WG731242
pH	su	6.33	6.30	99.5	98.3-101.7	WG731214
TPH (GC/FID) High Fraction	mg/kg	60	49.4	82.3	50-150	WG730914
o-Terphenyl				81.90	50-150	WG730914
Benzene	mg/kg	.05	0.0486	97.1	70-130	WG730814
Ethylbenzene	mg/kg	.05	0.0489	97.7	70-130	WG730814
Toluene	mg/kg	.05	0.0487	97.3	70-130	WG730814
Total Xylene	mg/kg	.15	0.148	99.0	70-130	WG730814
a,a,a-Trifluorotoluene (FID)				100.0	59-128	WG730814
a,a,a-Trifluorotoluene (PID)				104.0	54-144	WG730814
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.27	95.9	63.5-137	WG730814
a,a,a-Trifluorotoluene (FID)				99.50	59-128	WG730814
a,a,a-Trifluorotoluene (PID)				112.0	54-144	WG730814
1-Methylnaphthalene	mg/kg	.08	0.0657	82.1	48.9-127	WG730917
2-Chloronaphthalene	mg/kg	.08	0.0640	80.0	48.8-125	WG730917
2-Methylnaphthalene	mg/kg	.08	0.0657	82.1	45.7-131	WG730917
Acenaphthene	mg/kg	.08	0.0661	82.7	48.7-127	WG730917
Acenaphthylene	mg/kg	.08	0.0633	79.1	47.9-128	WG730917
Anthracene	mg/kg	.08	0.0685	85.6	51.3-136	WG730917
Benzo(a)anthracene	mg/kg	.08	0.0640	80.0	55-126	WG730917
Benzo(a)pyrene	mg/kg	.08	0.0644	80.5	51.9-127	WG730917
Benzo(b)fluoranthene	mg/kg	.08	0.0600	75.0	54-125	WG730917
Benzo(g,h,i)perylene	mg/kg	.08	0.0616	77.0	53.8-136	WG730917
Benzo(k)fluoranthene	mg/kg	.08	0.0672	84.0	53.9-132	WG730917
Chrysene	mg/kg	.08	0.0662	82.8	55.7-133	WG730917
Dibenz(a,h)anthracene	mg/kg	.08	0.0631	78.8	52.6-137	WG730917
Fluoranthene	mg/kg	.08	0.0739	92.4	54-132	WG730917
Fluorene	mg/kg	.08	0.0655	81.9	48.7-127	WG730917
Indeno(1,2,3-cd)pyrene	mg/kg	.08	0.0634	79.3	53.8-138	WG730917
Naphthalene	mg/kg	.08	0.0616	77.1	42-127	WG730917
Phenanthrene	mg/kg	.08	0.0616	77.0	49.6-126	WG730917
Pyrene	mg/kg	.08	0.0567	70.8	54-129	WG730917
2-Fluorobiphenyl				88.10	38.2-135	WG730917
Nitrobenzene-d5				109.0	28.4-151	WG730917
p-Terphenyl-d14				75.50	34.2-141	WG730917

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Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
1-Methylnaphthalene	mg/kg	.08	0.0656	81.9	48.9-127	WG731621
2-Chloronaphthalene	mg/kg	.08	0.0644	80.5	48.8-125	WG731621
2-Methylnaphthalene	mg/kg	.08	0.0658	82.2	45.7-131	WG731621
Acenaphthene	mg/kg	.08	0.0658	82.2	48.7-127	WG731621
Acenaphthylene	mg/kg	.08	0.0623	77.8	47.9-128	WG731621
Anthracene	mg/kg	.08	0.0675	84.3	51.3-136	WG731621
Benzo(a)anthracene	mg/kg	.08	0.0625	78.1	55-126	WG731621
Benzo(a)pyrene	mg/kg	.08	0.0640	80.0	51.9-127	WG731621
Benzo(b)fluoranthene	mg/kg	.08	0.0650	81.2	54-125	WG731621
Benzo(g,h,i)perylene	mg/kg	.08	0.0616	76.9	53.8-136	WG731621
Benzo(k)fluoranthene	mg/kg	.08	0.0613	76.6	53.9-132	WG731621
Chrysene	mg/kg	.08	0.0655	81.9	55.7-133	WG731621
Dibenz(a,h)anthracene	mg/kg	.08	0.0643	80.4	52.6-137	WG731621
Fluoranthene	mg/kg	.08	0.0745	93.1	54-132	WG731621
Fluorene	mg/kg	.08	0.0657	82.1	48.7-127	WG731621
Indeno(1,2,3-cd)pyrene	mg/kg	.08	0.0639	79.9	53.8-138	WG731621
Naphthalene	mg/kg	.08	0.0610	76.2	42-127	WG731621
Phenanthrene	mg/kg	.08	0.0621	77.6	49.6-126	WG731621
Pyrene	mg/kg	.08	0.0563	70.4	54-129	WG731621
2-Fluorobiphenyl				87.60	38.2-135	WG731621
Nitrobenzene-d5				98.00	28.4-151	WG731621
p-Terphenyl-d14				75.50	34.2-141	WG731621
Specific Conductance	umhos/cm	1040	1000	96.2	85-115	WG731302
Arsenic	mg/kg	237	257.	108.	83.1-117	WG731274
Barium	mg/kg	252	275.	109.	84.1-116	WG731274
Cadmium	mg/kg	191	198.	104.	83.2-117	WG731274
Chromium	mg/kg	128	137.	107.	81.3-118	WG731274
Copper	mg/kg	123	134.	109.	83.7-116	WG731274
Lead	mg/kg	103	107.	104.	83.1-117	WG731274
Nickel	mg/kg	118	122.	103.	82-118	WG731274
Selenium	mg/kg	110	120.	109.	78.7-122	WG731274
Silver	mg/kg	47.3	50.0	106.	66.2-134	WG731274
Zinc	mg/kg	183	195.	107.	82-118	WG731274

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Chromium, Hexavalent	mg/kg	123.	123.	98.0	80-120	0.0	20	WG730781
Boron	mg/l	8.94	9.19	99.0	80-120	3.00	20	WG731502
Arsenic	mg/kg	243.	244.	102.	83.1-117	0.0	20	WG731242
Barium	mg/kg	261.	259.	104.	84.1-116	1.00	20	WG731242
Cadmium	mg/kg	186.	188.	97.0	83.2-117	1.00	20	WG731242
Chromium	mg/kg	129.	130.	101.	81.3-118	1.00	20	WG731242
Copper	mg/kg	122.	123.	99.0	83.7-116	1.00	20	WG731242
Lead	mg/kg	102.	102.	98.0	83.1-117	0.0	20	WG731242
Nickel	mg/kg	115.	115.	97.0	82-118	0.0	20	WG731242
Selenium	mg/kg	112.	114.	101.	78.7-122	2.00	20	WG731242
Silver	mg/kg	46.2	46.7	98.0	66.2-134	1.00	20	WG731242
Zinc	mg/kg	184.	186.	100.	82-118	1.00	20	WG731242

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Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
pH	su	6.30	6.30	100.	98.3-101.7	0.0	20	WG731214
TPH (GC/FID) High Fraction	mg/kg	46.7	49.4	78.0	50-150	5.49	20	WG730914
o-Terphenyl				78.40	50-150			WG730914
Benzene	mg/kg	0.0480	0.0486	96.0	70-130	1.19	20	WG730814
Ethylbenzene	mg/kg	0.0481	0.0489	96.0	70-130	1.60	20	WG730814
Toluene	mg/kg	0.0477	0.0487	95.0	70-130	1.92	20	WG730814
Total Xylene	mg/kg	0.146	0.148	97.0	70-130	1.73	20	WG730814
a,a,a-Trifluorotoluene (FID)				99.90	59-128			WG730814
a,a,a-Trifluorotoluene (PID)				104.0	54-144			WG730814
TPH (GC/FID) Low Fraction	mg/kg	4.89	5.27	89.0	63.5-137	7.52	20	WG730814
a,a,a-Trifluorotoluene (FID)				100.0	59-128			WG730814
a,a,a-Trifluorotoluene (PID)				112.0	54-144			WG730814
1-Methylnaphthalene	mg/kg	0.0657	0.0657	82.0	48.9-127	0.0500	20	WG730917
2-Chloronaphthalene	mg/kg	0.0635	0.0640	79.0	48.8-125	0.740	20	WG730917
2-Methylnaphthalene	mg/kg	0.0654	0.0657	82.0	45.7-131	0.470	20	WG730917
Acenaphthene	mg/kg	0.0660	0.0661	82.0	48.7-127	0.290	20	WG730917
Acenaphthylene	mg/kg	0.0632	0.0633	79.0	47.9-128	0.110	20	WG730917
Anthracene	mg/kg	0.0677	0.0685	85.0	51.3-136	1.15	20	WG730917
Benzo(a)anthracene	mg/kg	0.0640	0.0640	80.0	55-126	0.0600	20	WG730917
Benzo(a)pyrene	mg/kg	0.0649	0.0644	81.0	51.9-127	0.740	20	WG730917
Benzo(b)fluoranthene	mg/kg	0.0620	0.0600	78.0	54-125	3.33	20	WG730917
Benzo(g,h,i)perylene	mg/kg	0.0612	0.0616	76.0	53.8-136	0.620	20	WG730917
Benzo(k)fluoranthene	mg/kg	0.0643	0.0672	80.0	53.9-132	4.45	20	WG730917
Chrysene	mg/kg	0.0660	0.0662	82.0	55.7-133	0.290	20	WG730917
Dibenz(a,h)anthracene	mg/kg	0.0629	0.0631	79.0	52.6-137	0.290	20	WG730917
Fluoranthene	mg/kg	0.0723	0.0739	90.0	54-132	2.21	20	WG730917
Fluorene	mg/kg	0.0659	0.0655	82.0	48.7-127	0.620	20	WG730917
Indeno(1,2,3-cd)pyrene	mg/kg	0.0630	0.0634	79.0	53.8-138	0.730	20	WG730917
Naphthalene	mg/kg	0.0603	0.0616	75.0	42-127	2.29	20	WG730917
Phenanthrene	mg/kg	0.0604	0.0616	75.0	49.6-126	2.06	20	WG730917
Pyrene	mg/kg	0.0570	0.0567	71.0	54-129	0.510	20	WG730917
2-Fluorobiphenyl				87.30	38.2-135			WG730917
Nitrobenzene-d5				107.0	28.4-151			WG730917
p-Terphenyl-d14				75.70	34.2-141			WG730917
1-Methylnaphthalene	mg/kg	0.0695	0.0656	87.0	48.9-127	5.77	20	WG731621
2-Chloronaphthalene	mg/kg	0.0687	0.0644	86.0	48.8-125	6.38	20	WG731621
2-Methylnaphthalene	mg/kg	0.0696	0.0658	87.0	45.7-131	5.60	20	WG731621
Acenaphthene	mg/kg	0.0703	0.0658	88.0	48.7-127	6.61	20	WG731621
Acenaphthylene	mg/kg	0.0657	0.0623	82.0	47.9-128	5.30	20	WG731621
Anthracene	mg/kg	0.0710	0.0675	89.0	51.3-136	5.16	20	WG731621
Benzo(a)anthracene	mg/kg	0.0664	0.0625	83.0	55-126	6.10	20	WG731621
Benzo(a)pyrene	mg/kg	0.0677	0.0640	85.0	51.9-127	5.67	20	WG731621
Benzo(b)fluoranthene	mg/kg	0.0657	0.0650	82.0	54-125	1.11	20	WG731621
Benzo(g,h,i)perylene	mg/kg	0.0648	0.0616	81.0	53.8-136	5.16	20	WG731621
Benzo(k)fluoranthene	mg/kg	0.0682	0.0613	85.0	53.9-132	10.7	20	WG731621
Chrysene	mg/kg	0.0694	0.0655	87.0	55.7-133	5.72	20	WG731621
Dibenz(a,h)anthracene	mg/kg	0.0691	0.0643	86.0	52.6-137	7.15	20	WG731621
Fluoranthene	mg/kg	0.0773	0.0745	97.0	54-132	3.76	20	WG731621
Fluorene	mg/kg	0.0704	0.0657	88.0	48.7-127	6.86	20	WG731621
Indeno(1,2,3-cd)pyrene	mg/kg	0.0678	0.0639	85.0	53.8-138	5.91	20	WG731621
Naphthalene	mg/kg	0.0637	0.0610	80.0	42-127	4.29	20	WG731621

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Quality Assurance Report
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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 18, 2014

Analyte	Units	Result	Ref	Sample Duplicate %Rec	Limit	RPD	Limit	Batch
Phenanthrene	mg/kg	0.0646	0.0621	81.0	49.6-126	3.95	20	WG731621
Pyrene	mg/kg	0.0593	0.0563	74.0	54-129	5.15	20	WG731621
2-Fluorobiphenyl				91.10	38.2-135			WG731621
Nitrobenzene-d5				98.00	28.4-151			WG731621
p-Terphenyl-d14				77.50	34.2-141			WG731621
Specific Conductance	umhos/	1000	1000	96.0	85-115	0.0	20	WG731302
Arsenic	mg/kg	262.	257.	110.	83.1-117	2.00	20	WG731274
Barium	mg/kg	279.	275.	111.	84.1-116	1.00	20	WG731274
Cadmium	mg/kg	198.	198.	104.	83.2-117	0.0	20	WG731274
Chromium	mg/kg	140.	137.	109.	81.3-118	3.00	20	WG731274
Copper	mg/kg	135.	134.	110.	83.7-116	1.00	20	WG731274
Lead	mg/kg	109.	107.	106.	83.1-117	2.00	20	WG731274
Nickel	mg/kg	122.	122.	104.	82-118	0.0	20	WG731274
Selenium	mg/kg	120.	120.	109.	78.7-122	0.0	20	WG731274
Silver	mg/kg	51.8	50.0	110.	66.2-134	4.00	20	WG731274
Zinc	mg/kg	200.	195.	110.	82-118	3.00	20	WG731274

Analyte	Units	MS Res	Matrix Spike Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Chromium, Hexavalent	mg/kg	17.9	0.0	20	90.0	75-125	L708790-05	WG730781
Mercury	mg/kg	0.431	0.0226	.5	82.0	80-120	L708790-01	WG730786
Arsenic	mg/kg	51.4	0.987	50	100.	75-125	L708790-01	WG731242
Barium	mg/kg	184.	129.	50	110.	75-125	L708790-01	WG731242
Cadmium	mg/kg	48.6	-0.0483	50	97.0	75-125	L708790-01	WG731242
Chromium	mg/kg	54.9	6.29	50	97.0	75-125	L708790-01	WG731242
Copper	mg/kg	53.5	4.24	50	99.0	75-125	L708790-01	WG731242
Lead	mg/kg	52.2	3.71	50	97.0	75-125	L708790-01	WG731242
Nickel	mg/kg	50.6	3.80	50	94.0	75-125	L708790-01	WG731242
Selenium	mg/kg	49.8	-0.861	50	100.	75-125	L708790-01	WG731242
Silver	mg/kg	49.9	-0.373	50	100.	75-125	L708790-01	WG731242
Zinc	mg/kg	68.7	22.3	50	93.0	75-125	L708790-01	WG731242
TPH (GC/FID) High Fraction	mg/kg	43.3	0.790	60	71.0	50-150	L708790-01	WG730914
o-Terphenyl					70.00	50-150		WG730914
Benzene	mg/kg	0.238	0.000383	.05	95.0	49.7-127	L708790-01	WG730814
Ethylbenzene	mg/kg	0.240	0.000405	.05	96.0	40.8-141	L708790-01	WG730814
Toluene	mg/kg	0.242	0.000935	.05	96.0	49.8-132	L708790-01	WG730814
Total Xylene	mg/kg	0.717	0.00134	.15	95.0	41.2-140	L708790-01	WG730814
a,a,a-Trifluorotoluene (FID)					99.40	59-128		WG730814
a,a,a-Trifluorotoluene (PID)					103.0	54-144		WG730814
TPH (GC/FID) Low Fraction	mg/kg	23.2	0.111	5.5	84.0	28.5-138	L708790-01	WG730814
a,a,a-Trifluorotoluene (FID)					99.60	59-128		WG730814
a,a,a-Trifluorotoluene (PID)					110.0	54-144		WG730814
1-Methylnaphthalene	mg/kg	0.0636	0.	.08	79.5	41.8-133	L708778-05	WG730917
2-Chloronaphthalene	mg/kg	0.0615	0.	.08	76.9	42.4-129	L708778-05	WG730917

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Tax I.D. 62-0814289

Est. 1970

July 18, 2014

Analyte	Units	MS Res	Matrix Spike			% Rec	Limit	Ref Samp	Batch
			Ref Res	TV					
2-Methylnaphthalene	mg/kg	0.0633	0.	.08	79.1	37.5-137	L708778-05	WG730917	
Acenaphthene	mg/kg	0.0630	0.	.08	78.7	39.4-132	L708778-05	WG730917	
Acenaphthylene	mg/kg	0.0609	0.	.08	76.2	41.3-132	L708778-05	WG730917	
Anthracene	mg/kg	0.0620	0.	.08	77.5	36.7-144	L708778-05	WG730917	
Benzo(a)anthracene	mg/kg	0.0563	0.	.08	70.3	28-144	L708778-05	WG730917	
Benzo(a)pyrene	mg/kg	0.0571	0.	.08	71.4	23.8-147	L708778-05	WG730917	
Benzo(b)fluoranthene	mg/kg	0.0504	0.	.08	63.1	18.2-147	L708778-05	WG730917	
Benzo(g,h,i)perylene	mg/kg	0.0539	0.	.08	67.4	9.2-155	L708778-05	WG730917	
Benzo(k)fluoranthene	mg/kg	0.0577	0.	.08	72.1	26.5-143	L708778-05	WG730917	
Chrysene	mg/kg	0.0601	0.	.08	75.1	27.4-150	L708778-05	WG730917	
Dibenz(a,h)anthracene	mg/kg	0.0575	0.	.08	71.9	13.8-150	L708778-05	WG730917	
Fluoranthene	mg/kg	0.0634	0.	.08	79.2	23.2-158	L708778-05	WG730917	
Fluorene	mg/kg	0.0613	0.	.08	76.6	30.8-139	L708778-05	WG730917	
Indeno(1,2,3-cd)pyrene	mg/kg	0.0556	0.	.08	69.5	10.7-155	L708778-05	WG730917	
Naphthalene	mg/kg	0.0598	0.000884	.08	73.6	34.9-133	L708778-05	WG730917	
Phenanthrene	mg/kg	0.0553	0.	.08	69.1	20.2-150	L708778-05	WG730917	
Pyrene	mg/kg	0.0482	0.	.08	60.2	22.6-151	L708778-05	WG730917	
2-Fluorobiphenyl					84.30	38.2-135		WG730917	
Nitrobenzene-d5					100.0	28.4-151		WG730917	
p-Terphenyl-d14					71.50	34.2-141		WG730917	
1-Methylnaphthalene	mg/kg	0.0524	0.	.08	65.5	41.8-133	L709517-09	WG731621	
2-Chloronaphthalene	mg/kg	0.0498	0.	.08	62.2	42.4-129	L709517-09	WG731621	
2-Methylnaphthalene	mg/kg	0.0524	0.	.08	65.5	37.5-137	L709517-09	WG731621	
Acenaphthene	mg/kg	0.0494	0.	.08	61.7	39.4-132	L709517-09	WG731621	
Acenaphthylene	mg/kg	0.0493	0.	.08	61.6	41.3-132	L709517-09	WG731621	
Anthracene	mg/kg	0.0457	0.	.08	57.1	36.7-144	L709517-09	WG731621	
Benzo(a)anthracene	mg/kg	0.0327	0.	.08	40.9	28-144	L709517-09	WG731621	
Benzo(a)pyrene	mg/kg	0.0309	0.	.08	38.7	23.8-147	L709517-09	WG731621	
Benzo(b)fluoranthene	mg/kg	0.0288	0.	.08	36.0	18.2-147	L709517-09	WG731621	
Benzo(g,h,i)perylene	mg/kg	0.0278	0.	.08	34.7	9.2-155	L709517-09	WG731621	
Benzo(k)fluoranthene	mg/kg	0.0324	0.	.08	40.6	26.5-143	L709517-09	WG731621	
Chrysene	mg/kg	0.0346	0.	.08	43.3	27.4-150	L709517-09	WG731621	
Dibenz(a,h)anthracene	mg/kg	0.0304	0.	.08	38.0	13.8-150	L709517-09	WG731621	
Fluoranthene	mg/kg	0.0435	0.	.08	54.3	23.2-158	L709517-09	WG731621	
Fluorene	mg/kg	0.0470	0.	.08	58.7	30.8-139	L709517-09	WG731621	
Indeno(1,2,3-cd)pyrene	mg/kg	0.0295	0.	.08	36.9	10.7-155	L709517-09	WG731621	
Naphthalene	mg/kg	0.0478	0.	.08	59.7	34.9-133	L709517-09	WG731621	
Phenanthrene	mg/kg	0.0410	0.	.08	51.2	20.2-150	L709517-09	WG731621	
Pyrene	mg/kg	0.0323	0.	.08	40.4	22.6-151	L709517-09	WG731621	
2-Fluorobiphenyl					72.00	38.2-135		WG731621	
Nitrobenzene-d5					82.80	28.4-151		WG731621	
p-Terphenyl-d14					58.10	34.2-141		WG731621	
Arsenic	mg/kg	51.7	3.07	50	97.0	75-125	L708790-04	WG731274	
Barium	mg/kg	918.	897.	50	43.0*	75-125	L708790-04	WG731274	
Cadmium	mg/kg	46.4	0.125	50	92.0	75-125	L708790-04	WG731274	
Chromium	mg/kg	57.6	9.76	50	96.0	75-125	L708790-04	WG731274	
Copper	mg/kg	57.9	9.09	50	98.0	75-125	L708790-04	WG731274	
Lead	mg/kg	55.6	8.36	50	94.0	75-125	L708790-04	WG731274	
Nickel	mg/kg	50.5	4.05	50	93.0	75-125	L708790-04	WG731274	
Selenium	mg/kg	47.2	-0.688	50	94.0	75-125	L708790-04	WG731274	
Silver	mg/kg	48.6	-0.124	50	97.0	75-125	L708790-04	WG731274	
Zinc	mg/kg	86.2	35.0	50	100.	75-125	L708790-04	WG731274	

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Est. 1970

July 18, 2014

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Chromium, Hexavalent	mg/kg	17.9	17.9	89.5	75-125	0.0	20	L708790-05	WG730781
Mercury	mg/kg	0.487	0.431	93.0	80-120	12.0	20	L708790-01	WG730786
Arsenic	mg/kg	48.9	51.4	95.8	75-125	5.00	20	L708790-01	WG731242
Barium	mg/kg	171.	184.	84.8	75-125	7.00	20	L708790-01	WG731242
Cadmium	mg/kg	46.4	48.6	92.9	75-125	5.00	20	L708790-01	WG731242
Chromium	mg/kg	53.5	54.9	94.5	75-125	3.00	20	L708790-01	WG731242
Copper	mg/kg	52.2	53.5	96.0	75-125	2.00	20	L708790-01	WG731242
Lead	mg/kg	50.2	52.2	93.0	75-125	4.00	20	L708790-01	WG731242
Nickel	mg/kg	49.1	50.6	90.6	75-125	3.00	20	L708790-01	WG731242
Selenium	mg/kg	47.4	49.8	96.4	75-125	5.00	20	L708790-01	WG731242
Silver	mg/kg	48.0	49.9	96.7	75-125	4.00	20	L708790-01	WG731242
Zinc	mg/kg	69.3	68.7	94.0	75-125	1.00	20	L708790-01	WG731242
TPH (GC/FID) High Fraction	mg/kg	44.4	43.3	72.7	50-150	2.64	20	L708790-01	WG730914
o-Terphenyl				72.00	50-150				WG730914
Benzene	mg/kg	0.250	0.238	99.8	49.7-127	4.94	23.5	L708790-01	WG730814
Ethylbenzene	mg/kg	0.247	0.240	98.6	40.8-141	2.85	23.8	L708790-01	WG730814
Toluene	mg/kg	0.249	0.242	99.3	49.8-132	2.87	23.5	L708790-01	WG730814
Total Xylene	mg/kg	0.736	0.717	97.9	41.2-140	2.59	23.7	L708790-01	WG730814
a,a,a-Trifluorotoluene (FID)				99.00	59-128				WG730814
a,a,a-Trifluorotoluene (PID)				103.0	54-144				WG730814
TPH (GC/FID) Low Fraction	mg/kg	23.7	23.2	85.8	28.5-138	1.98	23.6	L708790-01	WG730814
a,a,a-Trifluorotoluene (FID)				100.0	59-128				WG730814
a,a,a-Trifluorotoluene (PID)				111.0	54-144				WG730814
1-Methylnaphthalene	mg/kg	0.0650	0.0636	81.2	41.8-133	2.12	20.9	L708778-05	WG730917
2-Chloronaphthalene	mg/kg	0.0626	0.0615	78.2	42.4-129	1.73	20	L708778-05	WG730917
2-Methylnaphthalene	mg/kg	0.0645	0.0633	80.6	37.5-137	1.86	20.4	L708778-05	WG730917
Acenaphthene	mg/kg	0.0643	0.0630	80.4	39.4-132	2.03	20	L708778-05	WG730917
Acenaphthylene	mg/kg	0.0624	0.0609	77.9	41.3-132	2.30	20	L708778-05	WG730917
Anthracene	mg/kg	0.0654	0.0620	81.8	36.7-144	5.33	20.7	L708778-05	WG730917
Benzo(a)anthracene	mg/kg	0.0583	0.0563	72.9	28-144	3.57	24.7	L708778-05	WG730917
Benzo(a)pyrene	mg/kg	0.0586	0.0571	73.2	23.8-147	2.55	25.3	L708778-05	WG730917
Benzo(b)fluoranthene	mg/kg	0.0536	0.0504	67.0	18.2-147	6.13	29.5	L708778-05	WG730917
Benzo(g,h,i)perylene	mg/kg	0.0565	0.0539	70.6	9.2-155	4.63	29.2	L708778-05	WG730917
Benzo(k)fluoranthene	mg/kg	0.0605	0.0577	75.7	26.5-143	4.79	26.1	L708778-05	WG730917
Chrysene	mg/kg	0.0622	0.0601	77.8	27.4-150	3.46	25.7	L708778-05	WG730917
Dibenz(a,h)anthracene	mg/kg	0.0600	0.0575	75.0	13.8-150	4.34	25.8	L708778-05	WG730917
Fluoranthene	mg/kg	0.0675	0.0634	84.3	23.2-158	6.29	26	L708778-05	WG730917
Fluorene	mg/kg	0.0635	0.0613	79.4	30.8-139	3.57	20	L708778-05	WG730917
Indeno(1,2,3-cd)pyrene	mg/kg	0.0583	0.0556	72.9	10.7-155	4.87	26.9	L708778-05	WG730917
Naphthalene	mg/kg	0.0591	0.0598	72.8	34.9-133	1.09	20.4	L708778-05	WG730917
Phenanthrene	mg/kg	0.0583	0.0553	72.9	20.2-150	5.30	24.6	L708778-05	WG730917
Pyrene	mg/kg	0.0511	0.0482	63.8	22.6-151	5.83	25.1	L708778-05	WG730917
2-Fluorobiphenyl				85.30	38.2-135				WG730917
Nitrobenzene-d5				100.0	28.4-151				WG730917
p-Terphenyl-d14				71.90	34.2-141				WG730917
1-Methylnaphthalene	mg/kg	0.0560	0.0524	70.0	41.8-133	6.69	20.9	L709517-09	WG731621
2-Chloronaphthalene	mg/kg	0.0531	0.0498	66.4	42.4-129	6.53	20	L709517-09	WG731621
2-Methylnaphthalene	mg/kg	0.0560	0.0524	69.9	37.5-137	6.55	20.4	L709517-09	WG731621

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Olsson Associates- Grand Junction, CO
Robert Stockton
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

Quality Assurance Report
Level II

L708790

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 18, 2014

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Acenaphthene	mg/kg	0.0528	0.0494	66.0	39.4-132	6.74	20	L709517-09	WG731621
Acenaphthylene	mg/kg	0.0521	0.0493	65.1	41.3-132	5.59	20	L709517-09	WG731621
Anthracene	mg/kg	0.0494	0.0457	61.7	36.7-144	7.83	20.7	L709517-09	WG731621
Benzo(a)anthracene	mg/kg	0.0387	0.0327	48.4	28-144	16.9	24.7	L709517-09	WG731621
Benzo(a)pyrene	mg/kg	0.0376	0.0309	47.0	23.8-147	19.5	25.3	L709517-09	WG731621
Benzo(b)fluoranthene	mg/kg	0.0337	0.0288	42.1	18.2-147	15.6	29.5	L709517-09	WG731621
Benzo(g,h,i)perylene	mg/kg	0.0347	0.0278	43.4	9.2-155	22.2	29.2	L709517-09	WG731621
Benzo(k)fluoranthene	mg/kg	0.0395	0.0324	49.4	26.5-143	19.7	26.1	L709517-09	WG731621
Chrysene	mg/kg	0.0417	0.0346	52.1	27.4-150	18.6	25.7	L709517-09	WG731621
Dibenz(a,h)anthracene	mg/kg	0.0385	0.0304	48.2	13.8-150	23.6	25.8	L709517-09	WG731621
Fluoranthene	mg/kg	0.0481	0.0435	60.1	23.2-158	10.2	26	L709517-09	WG731621
Fluorene	mg/kg	0.0507	0.0470	63.4	30.8-139	7.67	20	L709517-09	WG731621
Indeno(1,2,3-cd)pyrene	mg/kg	0.0369	0.0295	46.1	10.7-155	22.1	26.9	L709517-09	WG731621
Naphthalene	mg/kg	0.0504	0.0478	63.0	34.9-133	5.37	20.4	L709517-09	WG731621
Phenanthrene	mg/kg	0.0446	0.0410	55.8	20.2-150	8.49	24.6	L709517-09	WG731621
Pyrene	mg/kg	0.0365	0.0323	45.6	22.6-151	12.0	25.1	L709517-09	WG731621
2-Fluorobiphenyl				75.00	38.2-135				WG731621
Nitrobenzene-d5				86.00	28.4-151				WG731621
p-Terphenyl-d14				61.20	34.2-141				WG731621
Arsenic	mg/kg	54.1	51.7	102.	75-125	5.00	20	L708790-04	WG731274
Barium	mg/kg	1200	918.	611.*	75-125	27.0*	20	L708790-04	WG731274
Cadmium	mg/kg	48.6	46.4	96.9	75-125	5.00	20	L708790-04	WG731274
Chromium	mg/kg	59.2	57.6	98.9	75-125	3.00	20	L708790-04	WG731274
Copper	mg/kg	61.3	57.9	104.	75-125	6.00	20	L708790-04	WG731274
Lead	mg/kg	57.9	55.6	99.0	75-125	4.00	20	L708790-04	WG731274
Nickel	mg/kg	52.4	50.5	96.7	75-125	4.00	20	L708790-04	WG731274
Selenium	mg/kg	49.8	47.2	101.	75-125	5.00	20	L708790-04	WG731274
Silver	mg/kg	51.3	48.6	103.	75-125	5.00	20	L708790-04	WG731274
Zinc	mg/kg	87.7	86.2	105.	75-125	2.00	20	L708790-04	WG731274

Post Spike

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Olsson Associates- Grand Junction, CO
Robert Stockton
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

Quality Assurance Report
Level II

L708790

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 18, 2014

Serial Dilution

Batch number /Run number / Sample number cross reference

WG730781: R2959326: L708790-01 02 03 04 05 06
WG730786: R2959447: L708790-01 02 03 04 05 06
WG731502: R2960785: L708790-07 08 09 10 11 12
WG731242: R2960786: L708790-01 02 03
WG731214: R2960910: L708790-01 02 03 04 05 06
WG730914: R2960952 R2961926: L708790-01 02 03 04 05 06
WG731199: R2960954: L708790-07 08 09 10 11 12
WG730814: R2961368: L708790-01 02 03 04 05 06
WG730917: R2961688: L708790-02 03 04 05 06
WG731621: R2962028: L708790-01
WG731302: R2962154: L708790-01 02 03 04 05 06
WG731274: R2962607: L708790-04 05 06
WG731483: R2963345: L708790-01 02 03 04 05 06

* * Calculations are performed prior to rounding of reported values.

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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July 18, 2014

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.



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Robert Stockton
Olsson Associates- Grand Junction, CO
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

Report Summary

Tuesday July 22, 2014

Report Number: L710979

Samples Received: 07/18/14

Client Project:

Description: Axia Bulldog 20-12H-892 PH Closure

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Daphne Richards , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

July 22, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

Date Received : July 18, 2014
Description : Axia Bulldog 20-12 Pit Closure
Sample ID : 20-12 PAD BG 1
Collected By : J. Sutrina
Collection Date : 07/17/14 10:00

ESC Sample # : L710979-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	2.0	mg/kg	6010B	07/22/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/22/14 15:46 Printed: 07/22/14 15:47



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REPORT OF ANALYSIS

July 22, 2014

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

Date Received : July 18, 2014
Description : Axia Bulldog 20-12 Pit Closure
Sample ID : 20-12 PAD BG 2
Collected By : J. Sutrina
Collection Date : 07/17/14 10:30

ESC Sample # : L710979-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.1	2.0	mg/kg	6010B	07/22/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/22/14 15:46 Printed: 07/22/14 15:47



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REPORT OF ANALYSIS

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

July 22, 2014

Date Received : July 18, 2014
Description : Axia Bulldog 20-12 Pit Closure
Sample ID : 20-12 PAD BG 3
Collected By : J. Sutrina
Collection Date : 07/17/14 11:10

ESC Sample # : L710979-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.5	2.0	mg/kg	6010B	07/22/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 07/22/14 15:46 Printed: 07/22/14 15:47



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REPORT OF ANALYSIS

Robert Stockton
Olsson Associates- Grand Junction,
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

July 22, 2014

Date Received : July 18, 2014
Description : Axia Bulldog 20-12 Pit Closure
Sample ID : 20-12 PAD BG 4
Collected By : J. Sutrina
Collection Date : 07/17/14 15:05

ESC Sample # : L710979-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	2.0	mg/kg	6010B	07/22/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/22/14 15:46 Printed: 07/22/14 15:47

Summary of Remarks For Samples Printed
07/22/14 at 15:47:07

TSR Signing Reports: 288
R3 - Rush: Two Day

Log all PAHs as PAHSIM.

Sample: L710979-01 Account: OLSSONCO Received: 07/18/14 09:00 Due Date: 07/22/14 00:00 RPT Date: 07/22/14 15:46
Sample: L710979-02 Account: OLSSONCO Received: 07/18/14 09:00 Due Date: 07/22/14 00:00 RPT Date: 07/22/14 15:46
Sample: L710979-03 Account: OLSSONCO Received: 07/18/14 09:00 Due Date: 07/22/14 00:00 RPT Date: 07/22/14 15:46
Sample: L710979-04 Account: OLSSONCO Received: 07/18/14 09:00 Due Date: 07/22/14 00:00 RPT Date: 07/22/14 15:46



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Olsson Associates- Grand Junction, CO
Robert Stockton
760 Horizon Drive, Ste 102
Grand Junction, CO 81506

Quality Assurance Report
Level II

L710979

July 22, 2014

Laboratory Blank								
Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed		
Arsenic	< 1	mg/kg			WG732823	07/22/14 12:36		
Laboratory Control Sample								
Analyte	Units	Known Val	Result	% Rec	Limit	Batch		
Arsenic	mg/kg	237	245.	103.	83.1-117	WG732823		
Laboratory Control Sample Duplicate								
Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Arsenic	mg/kg	247.	245.	104.	83.1-117	1.00	20	WG732823
Matrix Spike								
Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Arsenic	mg/kg	48.4	1.16	50	94.0	75-125	L710979-04	WG732823
Matrix Spike Duplicate								
Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit Ref Samp	Batch
Arsenic	mg/kg	45.6	48.4	88.8	75-125	6.00	20 L710979-04	WG732823
Post Spike								
Serial Dilution								

Batch number /Run number / Sample number cross reference

WG732823: R2966995: L710979-01 02 03 04

- * * Calculations are performed prior to rounding of reported values.
- * Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Olsson Associates- Grand Junction, CO
Robert Stockton
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Quality Assurance Report
Level II

L710979

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July 22, 2014

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

Olsson Associates
760 Horizon Drive
Suite 102
Grand Junction, CO 81506

Billing Information:

Report to: Robert Stockton
Email to: rstockton@olssonassociates.com

Analysis/Container/Preservative

Chain of Custody
Page 1 of 1



12065 Lebanon Road
Mt. Juliet, TN 37122

Phone: (800) 767-5859
Phone: (615) 758-5858
Fax: (615) 758-5859

H042

CoCode (lab use only)
Template/Prelogin
Shipped Via:

Project Description: Axia Bldg 20-12 Pt 1
Culivate

City/State
Collected

Phone: 970-263-7800
FAX: 970-263-7456

Client Project #:

ESC Key:

Collected by: J. Schindler

Site/Facility ID#:

P.O.#:

Collected by (signature):

Rush? (Lab MUST Be Notified)

Date Results Needed:

Same Day.....200%
Next Day.....100%
Two Day.....50%
Three Day.....25%

Email? ☐ No ☒ Yes

FAX? ☐ No ☐ Yes

No.
of
Cntrs

Immediately Packed on Ice N Y X

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	TPH (GRO)	TPH (DRO)	BTEX	PAH (See List 1)	Electrical Conductivity	SAR, pH	Metals (See List 2)	Arsenic	Remarks/Contaminant	Sample # (lab only)
20-12 Pad BG1	Grab	SS	5'	7/17/14	1000	1							X		L710979-01
20-12 Pad BG2	Grab	SS	4'		1030	1							X		02
20-12 Pad BG3	Grab	SS	3.5'		1110	1							X		03
20-12 Pad BG4	Grab	SS	4'	7/17/14	1505	1							X		04
	Grab	SS													
	Grab	SS													

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks:

pH Temp

Flow Other

Relinquished by: (Signature)	Date: 7/17/14	Time: 1200	Received by: (Signature)	Samples returned via: <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> UPS <input type="checkbox"/> Courier	Condition: (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 32	Bottles Received: 4
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 7-18-14	Time: 0900
				CoC Seals Intact: Y N NA	pH Checked: NCF:

7706 2348 9400

Company Name/Address: Olsson Associates 760 Horizon Drive, Suite 102 Grand Junction, CO 81506				Billing Information: 				Analysis / Container / Preservative										Chain of Custody Page <u>1</u> of <u>4</u>			
Report to: rstockton@olssonassociates.com				Email To: rstockton@olssonassociates.com				<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> ESC <small>L.A.B S.C.I.E.N.C.E.S</small> <hr/> <small>YOUR LAB OF CHOICE</small> <small>12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859</small> </div> <div style="text-align: center;"> </div> </div>										L# <u>6707553</u> <div style="border: 1px solid black; padding: 2px; text-align: center; font-weight: bold;">H009</div>			
Project Description: Bulldog Pit Closure				City/State Collected: CO														Client Project # 014-1670		Lab Project #	
Phone: 970-263-7800 Fax:				Site/Facility ID # 20-12														P.O. # 014-1670			
Collected by (print): Robert Stockton				Collected by (signature): 														Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day200% <input type="checkbox"/> Next Day100% <input type="checkbox"/> Two Day50% <input type="checkbox"/> Three Day25%			
Immediately Packed on Ice N <input type="checkbox"/> Y <input checked="" type="checkbox"/>																					
Sample ID		Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX, GRO	DRO	SV8270PAHSIM	SAR, SPCON, pH	MRCRA8 + Cu, Ni, Zn	CR3, CR6SS	As							
20-12 S Wall: 3'		Grab	SS		6/24/14	1517	3	X	X	X	X	X	X			01					
20-12 Bott S:10-14'		Grab	SS		6/24/14	1620	3	X	X	X	X	X	X			02					
20-12 E. Wall: 4'		Grab	SS		6/24/14	1512	3	X	X	X	X	X	X			03					
20-12 Bot W:13.5-16'		Grab	SS		6/24/14	1545	3	X	X	X	X	X	X			04					
20-12 W Wall:4'		Grab	SS		6/24/15	1549	3	X	X	X	X	X	X			05					
20-12 BG:4'		Grab	SS		6/24/14	1524	3	X	X	X	X	X	X			06					
20-12 Cut Comp		Grab	SS		6/24/14	1628	3	X	X	X	X	X	X			07					
<div style="position: relative;"> </div>																					
* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____																					
Remarks: pH _____ Temp _____																					
Relinquished by: (Signature) 803693069052																					
Relinquished by: (Signature) 593976483168																					
Relinquished by: (Signature) Hold #																					
Relinquished by: (Signature) Condition: (lab use only) <u>AN</u>																					
Relinquished by: (Signature) COC Seal Intact: <u>Y</u> <u>N</u> <u>NA</u>																					
Relinquished by: (Signature) pH Checked: NCF:																					
Relinquished by: (Signature) NCF:																					

Diseon Associates
7600 Horizon Drive
Suite 102
Grand Junction, CO 81506

Billing Information:

Report to:

Robert Storken

Email to:

rstorken@diseonassociates.com

Project: Aixa Building 20-18H-892 PH

Description: Closure

Phone: 970-263-7800

FAX: 970-263-7456

Collected by: J. Storken

Collected by (signature):

[Signature]

Immediately Packed on Ice N

Client Project #:

ESC Key:

Site/Facility ID#:

P.O.#:

Rush? (Lab MUST Be Notified)

Same Day.....200%
Next Day.....100%
Two Day.....50%
Three Day.....25%

Date Results Needed:

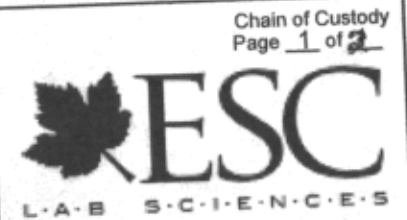
Email? ☐ No ☒ Yes

FAX? ☐ No ☐ Yes

No.
of
Cntrs

Analysis/Container/Preservative

TPH (GRO)	TPH (DRO)	BTEX	PAH (See List 1)	Electrical Conductivity	SAR	pH	Metals (See List 2)
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Chain of Custody
Page 1 of 2

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Phone: (615) 758-5858
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E110

CoCode (lab use only)

Template/Prelogin

Shipped Via:

Remarks/Contaminant

Sample # (lab only)

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	TPH (GRO)	TPH (DRO)	BTEX	PAH (See List 1)	Electrical Conductivity	SAR	pH	Metals (See List 2)	Remarks/Contaminant	Sample # (lab only)
SS1	Grab	GW Sol	—	7/7/14	1040	3	X	X	X	X	X	X	X	X	L708790	-1
SS2	Grab	GW Sol	—		1045	4	X	X	X	X	X	X	X	X		-2
SS3	Grab	GW Sol	—		1050	4	X	X	X	X	X	X	X	X		-3
SS4	Grab	GW Sol	—		1055	4	X	X	X	X	X	X	X	X		-4
SS5	Grab	GW Sol	—		1100	4	X	X	X	X	X	X	X	X		-5
SS6	Grab	SDil	—	7/7/14	1105	4	X	X	X	X	X	X	X	X		-00

pH _____ Temp _____

Flow _____ Other _____

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

Remarks: 7705 1995 7505

Relinquished by: (Signature)	Date: 7/7/14	Time: 1000	Received by: (Signature)	Samples returned via: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier	Condition: (lab use only) JWS
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.2	Bottles Received: 23
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 7/8/14	Time: 09:02
					CoC Seals Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA
					pH Checked: NCF:

L708/90

List 1

Acenaphthene
 Anthracene
 Benzo(A)anthracene
 Benzo(B)fluoranthene
 Benzo(K)fluoranthene
 Benzo(A)pyrene
 Chrysene
 Dibenzo(A,H)anthracene
 Fluoranthene
 Fluorene
 Indeno(1,2,3,CD)pyrene
 Naphthalene
 Pyrene

List 2

Arsenic
 Barium (LDNR True Tail)
 Barium (Horwooder Soluble)
 Cadmium
 Chromium III
 Chromium IV
 Copper
 Lead (Inorganic)
 Mercury
 Nickel (Soluble salts)
 Selenium
 Silver
 Zinc

PROJECT:

project no.:

drawn by:

date:

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