

FORM

27

Rev 6/99

State of Colorado Oil and Gas Conservation Commission

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



#6582

FOR OGCC USE ONLY

RECEIVED
 10/3/2011

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.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

 Spill or Release Plug & Abandon Central Facility Closure Site/Facility Closure Other (describe): Drill cuttings

 OGCC Operator Number: 10091
 Name of Operator: Berry Petroleum Company
 Address: 1999 Broadway, Suite 3700
 City: Denver State: CO Zip: 80202

 Contact Name and Telephone:
Chris Freeman
 No: 303-999-4400
 Fax: 303-999-4402

 API Number: 05-045-12349 County: Garfield
 Facility Name: Chevron L04 696 Facility Number: 335597
 Well Name: Chevron 5-3D Well Number: Chevron 5-3D
 Location: (QtrQtr, Sec, Twp, Rng, Meridian): SW NW Sec. 4, T6S, R96W Latitude: _____ Longitude: _____

TECHNICAL CONDITIONS

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

Site Conditions: Is location within a sensitive area (according to Rule 901e)? Y No If yes, attach evaluation.

 Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): rangeland and natural gas development

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.): Parachute Creek - 800 ft
Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
Soils	<u>drill cuttings</u>	<u>laboratory testing</u>
Vegetation	_____	_____
Groundwater	_____	_____
Surface Water	_____	_____

REMEDIALTION WORKPLAN

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

Drill cuttings were excavated and tested for Table 910-1 parameters. Testing showed TPH above the standard.

Describe how source is to be removed:

Drill cuttings were excavated from the pit.

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.:

Drill cuttings were passively treated on site and retested. All parameters were below the Table 910-1 standards except for arsenic and SAR. Cuttings with SAR greater than 12 will be buried in the pit to a depth of at least three feet. Three background soil samples were collected in the vicinity of the pit to characterize natural soil arsenic levels. A Sundry Form 4 is attached that shows that the maximum background arsenic concentration is higher than that in the cuttings.

Submit Page 2 with Page 1

L-04

FORM
27
Rev 6/99

State of Colorado
Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801, Denver, Colorado 80203
(303)894-2100 Fax: (303)894-2109



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

REMEDIATION WORKPLAN (Cont.)

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

There are no impacts to groundwater.

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.

Drill cuttings will be placed in the reserve pit and compacted. All cuttings with SAR greater than 12 will be buried at least three feet below the reclaimed ground surface. The remainder of the pit will be backfilled using native rock and soil, regraded to conform to the surrounding ground surface, and reseeded using an approved seed mix. Noxious weeds will be controlled as necessary using approved methods.

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:

The laboratory report for the remediated drill cuttings and subsoil beneath the pit bottom are attached. A Sundry Form 4 is also attached that provides the results for three background soil samples for arsenic.

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

The remediated drill cuttings will be buried in the reserve pit as described above.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 9/30/10 Date Site Investigation Completed: 9/24/11 Date Remediation Plan Submitted: 10/3/11
Remediation Start Date: _____ Anticipated Completion Date: 11/30/11 Actual Completion Date: _____

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

Print Name: Chris P. Freeman Signed: [Signature]

Title: Regional Manager Environ., Health & Safety Date: 10/3/11

OGCC Approved: [Signature] Title: FOR Chris Canfield Date: 10/25/2011
EPS NW Region



12065 Lebanon Rd.
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Tax I.D. 62-0814289

Est. 1970

Bryan Burns
Berry Petroleum Company - Denver, CO
1999 Broadway, Suite 3700
Denver, CO 80202

Report Summary

Monday October 18, 2010

Report Number: L481966

Samples Received: 10/02/10

Client Project:

Description: Piceance Pit Reclamation

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:

Mark W. Beasley , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

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

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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.

REPORT OF ANALYSIS

Bryan Burns
Berry Petroleum Company - Denver, C
1999 Broadway, Suite 3700
Denver, CO 80202

October 18, 2010

Date Received : October 02, 2010
Description : Piceance Pit Reclamation
Sample ID : L-04 PIT
Collected By :
Collection Date : 09/30/10 09:51

ESC Sample # : L481966-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chloride	410	10.	mg/kg	9056	10/12/10	1
Sulfate	2800	250	mg/kg	9056	10/14/10	5
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	10/06/10	1
Chromium, Trivalent	22.	0.50	mg/kg	Calc.	10/05/10	1
ORP	32.		mV	2580	10/06/10	1
pH	8.5		su	9045D	10/05/10	1
Sodium Adsorption Ratio	16.			Calc.	10/05/10	1
Specific Conductance	2600		umhos/cm	9050AMod	10/06/10	1
Mercury	BDL	0.020	mg/kg	7471	10/06/10	1
Arsenic	13.	5.0	mg/kg	6010B	10/05/10	5
Barium	2000	0.25	mg/kg	6010B	10/05/10	1
Cadmium	0.96	0.25	mg/kg	6010B	10/05/10	1
Chromium	22.	0.50	mg/kg	6010B	10/05/10	1
Lead	15.	0.25	mg/kg	6010B	10/05/10	1
Nickel	21.	1.0	mg/kg	6010B	10/05/10	1
Selenium	7.6	1.0	mg/kg	6010B	10/05/10	1
Silver	BDL	0.50	mg/kg	6010B	10/05/10	1
Zinc	70.	1.5	mg/kg	6010B	10/05/10	1
Benzene	BDL	0.0025	mg/kg	8021/8015	10/03/10	5
Toluene	BDL	0.025	mg/kg	8021/8015	10/03/10	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	10/03/10	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	10/03/10	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	10/03/10	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	98.2		% Rec.	8021/8015	10/03/10	5
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021/8015	10/03/10	5
TPH (GC/FID) High Fraction	66.	4.0	mg/kg	3546/DRO	10/08/10	1
Surrogate recovery(%)						
o-Terphenyl	83.9		% Rec.	3546/DRO	10/08/10	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.033	mg/kg	8270C	10/09/10	1
Acenaphthene	BDL	0.033	mg/kg	8270C	10/09/10	1
Acenaphthylene	BDL	0.033	mg/kg	8270C	10/09/10	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L481966-01 (PH) - 8.5@19.1c



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October 18, 2010

Date Received : October 02, 2010
Description : Piceance Pit Reclamation

Sample ID : L-04 PIT

Collected By :
Collection Date : 09/30/10 09:51

ESC Sample # : L481966-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(a)anthracene	BDL	0.033	mg/kg	8270C	10/09/10	1
Benzo(a)pyrene	BDL	0.033	mg/kg	8270C	10/09/10	1
Benzo(b)fluoranthene	BDL	0.033	mg/kg	8270C	10/09/10	1
Benzo(g,h,i)perylene	BDL	0.033	mg/kg	8270C	10/09/10	1
Benzo(k)fluoranthene	BDL	0.033	mg/kg	8270C	10/09/10	1
Chrysene	BDL	0.033	mg/kg	8270C	10/09/10	1
Dibenz(a,h)anthracene	BDL	0.033	mg/kg	8270C	10/09/10	1
Fluoranthene	BDL	0.033	mg/kg	8270C	10/09/10	1
Fluorene	0.037	0.033	mg/kg	8270C	10/09/10	1
Indeno(1,2,3-cd)pyrene	BDL	0.033	mg/kg	8270C	10/09/10	1
Naphthalene	BDL	0.033	mg/kg	8270C	10/09/10	1
Phenanthrene	0.057	0.033	mg/kg	8270C	10/09/10	1
Pyrene	BDL	0.033	mg/kg	8270C	10/09/10	1
Surrogate Recovery						
Nitrobenzene-d5	103.		% Rec.	8270C	10/09/10	1
2-Fluorobiphenyl	84.2		% Rec.	8270C	10/09/10	1
p-Terphenyl-d14	92.1		% Rec.	8270C	10/09/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 10/14/10 13:08 Revised: 10/18/10 13:07

L481966-01 (PH) - 8.5@19.1c



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REPORT OF ANALYSIS

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Denver, CO 80202

October 18, 2010

Date Received : October 02, 2010
Description : Piceance Pit Reclamation
Sample ID : L-04 PIT
Collected By :
Collection Date : 09/30/10 09:51

ESC Sample # : L481966-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
SPLP Extraction	-			1312	10/03/10	1
Boron	BDL	0.20	mg/l	6010B	10/04/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 10/14/10 13:08 Revised: 10/18/10 13:07

REPORT OF ANALYSIS

Bryan Burns
Berry Petroleum Company - Denver, C
1999 Broadway, Suite 3700
Denver, CO 80202

October 18, 2010

Date Received : October 02, 2010
Description : Piceance Pit Reclamation
Sample ID : L-04 PILE
Collected By :
Collection Date : 09/30/10 10:24

ESC Sample # : L481966-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chloride	370	10.	mg/kg	9056	10/12/10	1
Sulfate	1500	250	mg/kg	9056	10/14/10	5
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	10/06/10	1
Chromium, Trivalent	23.	0.50	mg/kg	Calc.	10/05/10	1
ORP	19.		mV	2580	10/06/10	1
pH	8.9		su	9045D	10/05/10	1
Sodium Adsorption Ratio	19.			Calc.	10/05/10	1
Specific Conductance	2300		umhos/cm	9050AMod	10/06/10	1
Mercury	BDL	0.020	mg/kg	7471	10/06/10	1
Arsenic	10.	5.0	mg/kg	6010B	10/05/10	5
Barium	4000	0.25	mg/kg	6010B	10/05/10	1
Cadmium	0.90	0.25	mg/kg	6010B	10/05/10	1
Chromium	23.	0.50	mg/kg	6010B	10/05/10	1
Lead	15.	0.25	mg/kg	6010B	10/05/10	1
Nickel	20.	1.0	mg/kg	6010B	10/05/10	1
Selenium	8.7	1.0	mg/kg	6010B	10/05/10	1
Silver	BDL	0.50	mg/kg	6010B	10/05/10	1
Zinc	68.	1.5	mg/kg	6010B	10/05/10	1
Benzene	BDL	0.0025	mg/kg	8021/8015	10/03/10	5
Toluene	BDL	0.025	mg/kg	8021/8015	10/03/10	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	10/03/10	5
Total Xylene	0.0090	0.0075	mg/kg	8021/8015	10/03/10	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	10/03/10	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	97.3		% Rec.	8021/8015	10/03/10	5
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021/8015	10/03/10	5
TPH (GC/FID) High Fraction	200	4.0	mg/kg	3546/DRO	10/08/10	1
Surrogate recovery(%)						
o-Terphenyl	88.1		% Rec.	3546/DRO	10/08/10	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.033	mg/kg	8270C	10/09/10	1
Acenaphthene	BDL	0.033	mg/kg	8270C	10/09/10	1
Acenaphthylene	BDL	0.033	mg/kg	8270C	10/09/10	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L481966-03 (PH) - 8.9@19.4c



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1999 Broadway, Suite 3700
Denver, CO 80202

October 18, 2010

Date Received : October 02, 2010
Description : Piceance Pit Reclamation

Sample ID : L-04 PILE

Collected By :
Collection Date : 09/30/10 10:24

ESC Sample # : L481966-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(a)anthracene	BDL	0.033	mg/kg	8270C	10/09/10	1
Benzo(a)pyrene	BDL	0.033	mg/kg	8270C	10/09/10	1
Benzo(b)fluoranthene	BDL	0.033	mg/kg	8270C	10/09/10	1
Benzo(g,h,i)perylene	BDL	0.033	mg/kg	8270C	10/09/10	1
Benzo(k)fluoranthene	BDL	0.033	mg/kg	8270C	10/09/10	1
Chrysene	BDL	0.033	mg/kg	8270C	10/09/10	1
Dibenz(a,h)anthracene	BDL	0.033	mg/kg	8270C	10/09/10	1
Fluoranthene	BDL	0.033	mg/kg	8270C	10/09/10	1
Fluorene	0.093	0.033	mg/kg	8270C	10/09/10	1
Indeno(1,2,3-cd)pyrene	BDL	0.033	mg/kg	8270C	10/09/10	1
Naphthalene	0.064	0.033	mg/kg	8270C	10/09/10	1
Phenanthrene	0.092	0.033	mg/kg	8270C	10/09/10	1
Pyrene	BDL	0.033	mg/kg	8270C	10/09/10	1
Surrogate Recovery						
Nitrobenzene-d5	109.		% Rec.	8270C	10/09/10	1
2-Fluorobiphenyl	99.1		% Rec.	8270C	10/09/10	1
p-Terphenyl-d14	96.3		% Rec.	8270C	10/09/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 10/14/10 13:08 Revised: 10/18/10 13:07
L481966-03 (PH) - 8.9@19.4c



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REPORT OF ANALYSIS

Bryan Burns
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1999 Broadway, Suite 3700
Denver, CO 80202

October 18, 2010

Date Received : October 02, 2010
Description : Piceance Pit Reclamation
Sample ID : L-04 PILE
Collected By :
Collection Date : 09/30/10 10:24

ESC Sample # : L481966-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
SPLP Extraction	-			1312	10/03/10	1
Boron	0.25	0.20	mg/l	6010B	10/04/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 10/14/10 13:08 Revised: 10/18/10 13:07

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L481966-07	WG502173	SAMP	Nitrobenzene-d5	R1419849	J7
	WG502173	SAMP	2-Fluorobiphenyl	R1419849	J7
	WG502173	SAMP	p-Terphenyl-d14	R1419849	J7
	WG502175	SAMP	o-Terphenyl	R1421209	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out

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
10/18/10 at 13:07:46

TSR Signing Reports: 134
R5 - Desired TAT

Sample: L481966-01 Account: BERPETDCO Received: 10/02/10 07:00 Due Date: 10/08/10 00:00 RPT Date: 10/14/10 13:08
Sample: L481966-02 Account: BERPETDCO Received: 10/02/10 07:00 Due Date: 10/08/10 00:00 RPT Date: 10/14/10 13:08
Rotate for BICP
Sample: L481966-03 Account: BERPETDCO Received: 10/02/10 07:00 Due Date: 10/08/10 00:00 RPT Date: 10/14/10 13:08
Sample: L481966-04 Account: BERPETDCO Received: 10/02/10 07:00 Due Date: 10/08/10 00:00 RPT Date: 10/14/10 13:08
Rotate for BICP
Sample: L481966-05 Account: BERPETDCO Received: 10/02/10 07:00 Due Date: 10/08/10 00:00 RPT Date: 10/14/10 13:08
Sample: L481966-06 Account: BERPETDCO Received: 10/02/10 07:00 Due Date: 10/08/10 00:00 RPT Date: 10/14/10 13:08
Rotate for BICP
Sample: L481966-07 Account: BERPETDCO Received: 10/02/10 07:00 Due Date: 10/08/10 00:00 RPT Date: 10/14/10 13:08
Sample: L481966-08 Account: BERPETDCO Received: 10/02/10 07:00 Due Date: 10/08/10 00:00 RPT Date: 10/14/10 13:08
Rotate for BICP



YOUR LAB OF CHOICE

Berry Petroleum Company - Denver, CO
Bryan Burns
1999 Broadway, Suite 3700

Denver, CO 80202

Quality Assurance Report
Level II

L481966

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October 18, 2010

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Arsenic	< 1	mg/kg			WG501325	10/04/10 18:12
Barium	< .25	mg/kg			WG501325	10/04/10 18:12
Cadmium	< .25	mg/kg			WG501325	10/04/10 18:12
Chromium	< .5	mg/kg			WG501325	10/04/10 18:12
Lead	< .25	mg/kg			WG501325	10/04/10 18:12
Nickel	< 1	mg/kg			WG501325	10/04/10 18:12
Selenium	< 1	mg/kg			WG501325	10/04/10 18:12
Silver	< .5	mg/kg			WG501325	10/04/10 18:12
Zinc	< 1.5	mg/kg			WG501325	10/04/10 18:12
Boron	< .2	mg/l			WG501489	10/04/10 22:42
pH	5.00	su			WG501333	10/05/10 11:09
Chromium, Hexavalent	< 2	mg/kg			WG501657	10/06/10 08:48
Benzene	< .0005	mg/kg			WG501342	10/03/10 15:56
Ethylbenzene	< .0005	mg/kg			WG501342	10/03/10 15:56
Toluene	< .005	mg/kg			WG501342	10/03/10 15:56
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG501342	10/03/10 15:56
Total Xylene	< .0015	mg/kg			WG501342	10/03/10 15:56
a,a,a-Trifluorotoluene(FID)		% Rec.	98.81	59-128	WG501342	10/03/10 15:56
a,a,a-Trifluorotoluene(PID)		% Rec.	103.8	54-144	WG501342	10/03/10 15:56
Specific Conductance	3.00	umhos/cm			WG501738	10/06/10 15:00
Mercury	< .02	mg/kg			WG501803	10/06/10 19:08
Acenaphthene	< .033	mg/kg			WG502173	10/09/10 07:51
Acenaphthylene	< .033	mg/kg			WG502173	10/09/10 07:51
Anthracene	< .033	mg/kg			WG502173	10/09/10 07:51
Benzo(a)anthracene	< .033	mg/kg			WG502173	10/09/10 07:51
Benzo(a)pyrene	< .033	mg/kg			WG502173	10/09/10 07:51
Benzo(b)fluoranthene	< .033	mg/kg			WG502173	10/09/10 07:51
Benzo(g,h,i)perylene	< .033	mg/kg			WG502173	10/09/10 07:51
Benzo(k)fluoranthene	< .033	mg/kg			WG502173	10/09/10 07:51
Chrysene	< .033	mg/kg			WG502173	10/09/10 07:51
Dibenz(a,h)anthracene	< .033	mg/kg			WG502173	10/09/10 07:51
Fluoranthene	< .033	mg/kg			WG502173	10/09/10 07:51
Fluorene	< .033	mg/kg			WG502173	10/09/10 07:51
Indeno(1,2,3-cd)pyrene	< .033	mg/kg			WG502173	10/09/10 07:51
Naphthalene	< .033	mg/kg			WG502173	10/09/10 07:51
Phenanthrene	< .033	mg/kg			WG502173	10/09/10 07:51
Pyrene	< .033	mg/kg			WG502173	10/09/10 07:51
2-Fluorobiphenyl		% Rec.	60.37	37-123	WG502173	10/09/10 07:51
Nitrobenzene-d5		% Rec.	53.65	19-129	WG502173	10/09/10 07:51
p-Terphenyl-d14		% Rec.	88.79	34-149	WG502173	10/09/10 07:51
TPH (GC/FID) High Fraction	< 4	ppm			WG502175	10/08/10 11:52
o-Terphenyl		% Rec.	75.25	50-150	WG502175	10/08/10 11:52

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Est. 1970

October 18, 2010

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Arsenic	< 1	mg/kg			WG501628	10/11/10 14:41
Barium	< .25	mg/kg			WG501628	10/11/10 14:41
Cadmium	< .25	mg/kg			WG501628	10/11/10 14:41
Chromium	< .5	mg/kg			WG501628	10/11/10 14:41
Lead	< .25	mg/kg			WG501628	10/11/10 14:41
Nickel	< 1	mg/kg			WG501628	10/11/10 14:41
Selenium	< 1	mg/kg			WG501628	10/11/10 14:41
Silver	< .5	mg/kg			WG501628	10/11/10 14:41
Zinc	< 1.5	mg/kg			WG501628	10/11/10 14:41
Chloride	< 10	mg/kg			WG502849	10/12/10 12:06
Sulfate	< 50	mg/kg			WG502849	10/12/10 12:06
Sulfate	< 50	mg/kg			WG502996	10/13/10 20:40

Analyte	Units	Result	Duplicate		Limit	Ref Samp	Batch
			Duplicate	RPD			
Arsenic	mg/kg	5.40	5.90	9.41	20	L481725-02	WG501325
Barium	mg/kg	270.	240.	10.3	20	L481725-02	WG501325
Cadmium	mg/kg	0.590	0.600	1.85	20	L481725-02	WG501325
Chromium	mg/kg	16.0	14.0	11.4	20	L481725-02	WG501325
Lead	mg/kg	18.0	22.0	17.3	20	L481725-02	WG501325
Nickel	mg/kg	9.30	9.00	3.06	20	L481725-02	WG501325
Selenium	mg/kg	7.70	7.00	10.0	20	L481725-02	WG501325
Silver	mg/kg	0	0	0	20	L481725-02	WG501325
Zinc	mg/kg	42.0	41.0	3.12	20	L481725-02	WG501325
Boron	mg/l	0.270	0	NA	20	L481725-09	WG501489
pH	su	8.80	8.50	3.47*	1	L481966-01	WG501333
pH	su	7.00	7.00	0	1	L481992-15	WG501333
Chromium, Hexavalent	mg/kg	0	0	0	20	L481966-07	WG501657
Specific Conductance	umhos/cm	260.	280.	5.81	20	L481953-01	WG501738
Specific Conductance	umhos/cm	270.	230.	15.3	20	L481992-19	WG501738
ORP	mV	25.0	31.0	21.4*	20	L481953-01	WG501741
Mercury	mg/kg	0.160	0.200	23.5*	20	L481955-01	WG501803
Arsenic	mg/kg	14.0	49.9	112.*	20	L481978-03	WG501628
Barium	mg/kg	41.0	45.0	9.79	20	L481978-03	WG501628
Cadmium	mg/kg	0	0.0318	NA	20	L481978-03	WG501628
Chromium	mg/kg	12.0	13.0	4.72	20	L481978-03	WG501628
Lead	mg/kg	7.20	8.10	11.6	20	L481978-03	WG501628
Nickel	mg/kg	19.0	23.6	20.6*	20	L481978-03	WG501628
Selenium	mg/kg	3.50	4.04	14.3	20	L481978-03	WG501628

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Analyte	Units	Result	Duplicate		RPD	Limit	Ref Samp	Batch
			Duplicate					
Silver	mg/kg	0	0		0	20	L481978-03	WG501628
Zinc	mg/kg	51.0	44.6		13.4	20	L481978-03	WG501628
Sulfate	mg/kg	0	37.1		NA	20	L481443-01	WG502996

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Arsenic	mg/kg	192	171.	89.1	78.6-120.8	WG501325
Barium	mg/kg	420	388.	92.4	78.8-121.4	WG501325
Cadmium	mg/kg	70.1	65.8	93.9	78.5-121.5	WG501325
Chromium	mg/kg	168	161.	95.8	80.4-120.2	WG501325
Lead	mg/kg	113	106.	93.8	77.3-122.1	WG501325
Nickel	mg/kg	74.1	71.8	96.9	78.8-121.2	WG501325
Selenium	mg/kg	176	172.	97.7	75.6-125.0	WG501325
Silver	mg/kg	115	100.	87.0	66-133.9	WG501325
Zinc	mg/kg	437	403.	92.2	78.5-121.7	WG501325
Boron	mg/l	1.13	1.19	105.	85-115	WG501489
pH	su	6.92	6.90	99.7	97.98-102.02	WG501333
Chromium, Hexavalent	mg/kg	100	88.1	88.1	50-143	WG501657
Benzene	mg/kg	.05	0.0475	95.0	76-113	WG501342
Ethylbenzene	mg/kg	.05	0.0503	101.	78-115	WG501342
Toluene	mg/kg	.05	0.0494	98.7	76-114	WG501342
Total Xylene	mg/kg	.15	0.153	102.	81-118	WG501342
a,a,a-Trifluorotoluene(PID)				101.9	54-144	WG501342
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.55	101.	67-135	WG501342
a,a,a-Trifluorotoluene(FID)				93.22	59-128	WG501342
Specific Conductance	umhos/cm	406	420.	103.	85-115	WG501738
ORP	mV	229	220.	96.1	95.6-104.37	WG501741
Mercury	mg/kg	8.77	7.97	90.9	71.6-127.7	WG501803
Acenaphthene	mg/kg	.167	0.142	85.2	44-117	WG502173
Acenaphthylene	mg/kg	.167	0.143	85.8	43-118	WG502173
Anthracene	mg/kg	.167	0.149	89.5	42-127	WG502173
Benzo(a)anthracene	mg/kg	.167	0.147	88.0	45-127	WG502173
Benzo(a)pyrene	mg/kg	.167	0.150	89.5	46-123	WG502173
Benzo(b)fluoranthene	mg/kg	.167	0.151	90.4	43-126	WG502173
Benzo(g,h,i)perylene	mg/kg	.167	0.145	87.0	43-128	WG502173
Benzo(k)fluoranthene	mg/kg	.167	0.146	87.6	40-126	WG502173
Chrysene	mg/kg	.167	0.144	86.1	44-129	WG502173
Dibenz(a,h)anthracene	mg/kg	.167	0.145	86.8	43-127	WG502173
Fluoranthene	mg/kg	.167	0.149	89.3	44-125	WG502173
Fluorene	mg/kg	.167	0.144	86.2	45-121	WG502173

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Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Indeno(1,2,3-cd)pyrene	mg/kg	.167	0.152	90.8	43-127	WG502173
Naphthalene	mg/kg	.167	0.138	82.7	32-113	WG502173
Phenanthrene	mg/kg	.167	0.145	86.7	43-124	WG502173
Pyrene	mg/kg	.167	0.143	85.9	47-128	WG502173
2-Fluorobiphenyl				84.94	37-123	WG502173
Nitrobenzene-d5				89.71	19-129	WG502173
p-Terphenyl-d14				90.61	34-149	WG502173
TPH (GC/FID) High Fraction	ppm	60	44.6	74.4	50-150	WG502175
o-Terphenyl				96.93	50-150	WG502175
Arsenic	mg/kg	192	177.	92.2	78.6-120.8	WG501628
Barium	mg/kg	420	399.	95.0	78.8-121.4	WG501628
Cadmium	mg/kg	70.1	72.3	103.	78.5-121.5	WG501628
Chromium	mg/kg	168	170.	101.	80.4-120.2	WG501628
Lead	mg/kg	113	105.	92.9	77.3-122.1	WG501628
Nickel	mg/kg	74.1	81.0	109.	78.8-121.2	WG501628
Selenium	mg/kg	176	182.	103.	75.6-125.0	WG501628
Silver	mg/kg	115	102.	88.7	66-133.9	WG501628
Zinc	mg/kg	437	423.	96.8	78.5-121.7	WG501628
Chloride	mg/kg	200	196.	98.0	85-115	WG502849
Sulfate	mg/kg	200	198.	99.0	85-115	WG502849
Sulfate	mg/kg	200	212.	106.	85-115	WG502996

Analyte	Units	Laboratory Control Sample Duplicate		%Rec	Limit	RPD	Limit	Batch
		Result	Ref					
pH	su	6.90	6.90	100.	97.98-102.02	0	20	WG501333
Chromium, Hexavalent	mg/kg	89.0	88.1	89.0	50-143	1.02	20	WG501657
Benzene	mg/kg	0.0454	0.0475	91.0	76-113	4.53	20	WG501342
Ethylbenzene	mg/kg	0.0469	0.0503	94.0	78-115	6.86	20	WG501342
Toluene	mg/kg	0.0464	0.0494	93.0	76-114	6.13	20	WG501342
Total Xylene	mg/kg	0.142	0.153	95.0	81-118	7.29	20	WG501342
a,a,a-Trifluorotoluene(PID)				100.9	54-144			WG501342
TPH (GC/FID) Low Fraction	mg/kg	5.68	5.55	103.	67-135	2.35	20	WG501342
a,a,a-Trifluorotoluene(FID)				94.16	59-128			WG501342
Specific Conductance	umhos/	410.	420.	101.	85-115	2.41	20	WG501738
ORP	mV	220.	220.	96.0	95.6-104.37	0	20	WG501741
Acenaphthene	mg/kg	0.139	0.142	83.0	44-117	2.50	21	WG502173
Acenaphthylene	mg/kg	0.141	0.143	85.0	43-118	1.39	20	WG502173
Anthracene	mg/kg	0.146	0.149	88.0	42-127	2.03	21	WG502173
Benzo(a)anthracene	mg/kg	0.146	0.147	87.0	45-127	0.690	21	WG502173
Benzo(a)pyrene	mg/kg	0.151	0.150	91.0	46-123	1.28	20	WG502173

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Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Benzo(b)fluoranthene	mg/kg	0.152	0.151	91.0	43-126	0.444	27	WG502173
Benzo(g,h,i)perylene	mg/kg	0.150	0.145	90.0	43-128	3.15	20	WG502173
Benzo(k)fluoranthene	mg/kg	0.147	0.146	88.0	40-126	0.261	32	WG502173
Chrysene	mg/kg	0.145	0.144	87.0	44-129	0.899	22	WG502173
Dibenz(a,h)anthracene	mg/kg	0.143	0.145	86.0	43-127	1.17	20	WG502173
Fluoranthene	mg/kg	0.154	0.149	92.0	44-125	3.42	22	WG502173
Fluorene	mg/kg	0.149	0.144	89.0	45-121	3.56	20	WG502173
Indeno(1,2,3-cd)pyrene	mg/kg	0.144	0.152	86.0	43-127	5.33	21	WG502173
Naphthalene	mg/kg	0.122	0.138	73.0	32-113	12.1	26	WG502173
Phenanthrene	mg/kg	0.147	0.145	88.0	43-124	1.83	21	WG502173
Pyrene	mg/kg	0.138	0.143	83.0	47-128	3.86	20	WG502173
2-Fluorobiphenyl				82.13	37-123			WG502173
Nitrobenzene-d5				78.08	19-129			WG502173
p-Terphenyl-d14				89.97	34-149			WG502173
TPH (GC/FID) High Fraction	ppm	46.1	44.6	77.0	50-150	3.30	20	WG502175
o-Terphenyl				94.97	50-150			WG502175
Chloride	mg/kg	196.	196.	98.0	85-115	0	20	WG502849
Sulfate	mg/kg	198.	198.	99.0	85-115	0	20	WG502849
Sulfate	mg/kg	210.	212.	105.	85-115	0.948	20	WG502996

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Arsenic	mg/kg	48.4	5.90	50	85.0	75-125	L481725-02	WG501325
Barium	mg/kg	305.	240.	50	130.*	75-125	L481725-02	WG501325
Cadmium	mg/kg	43.6	0.600	50	86.0	75-125	L481725-02	WG501325
Chromium	mg/kg	60.7	14.0	50	93.4	75-125	L481725-02	WG501325
Lead	mg/kg	66.2	22.0	50	88.4	75-125	L481725-02	WG501325
Nickel	mg/kg	51.5	9.00	50	85.0	75-125	L481725-02	WG501325
Selenium	mg/kg	47.7	7.00	50	81.4	75-125	L481725-02	WG501325
Silver	mg/kg	44.0	0	50	88.0	75-125	L481725-02	WG501325
Zinc	mg/kg	87.5	41.0	50	93.0	75-125	L481725-02	WG501325
Boron	mg/l	1.36	0	1.13	120.	75-125	L481725-09	WG501489
Chromium,Hexavalent	mg/kg	12.5	0	20	62.5	50-150	L481966-01	WG501657
Benzene	mg/kg	0.200	0	.05	80.0	32-137	L481966-01	WG501342
Ethylbenzene	mg/kg	0.196	0	.05	78.5	10-150	L481966-01	WG501342
Toluene	mg/kg	0.207	0	.05	82.7	20-142	L481966-01	WG501342
Total Xylene	mg/kg	0.603	0	.15	80.4	16-141	L481966-01	WG501342
a,a,a-Trifluorotoluene(PID)					101.9	54-144		WG501342
TPH (GC/FID) Low Fraction	mg/kg	20.8	0	5.5	75.5	55-109	L481966-01	WG501342
a,a,a-Trifluorotoluene(FID)					92.31	59-128		WG501342
Mercury	mg/kg	0.381	0.200	.25	72.4	70-130	L481955-01	WG501803
Acenaphthene	mg/kg	0.147	0	.167	88.1	38-121	L481987-02	WG502173

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Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Acenaphthylene	mg/kg	0.151	0	.167	90.7	39-120	L481987-02	WG502173
Anthracene	mg/kg	0.153	0	.167	91.5	35-133	L481987-02	WG502173
Benzo(a)anthracene	mg/kg	0.166	0	.167	99.6	35-136	L481987-02	WG502173
Benzo(a)pyrene	mg/kg	0.151	0	.167	90.3	37-131	L481987-02	WG502173
Benzo(b)fluoranthene	mg/kg	0.168	0	.167	101.	29-145	L481987-02	WG502173
Benzo(g,h,i)perylene	mg/kg	0.161	0	.167	96.2	10-139	L481987-02	WG502173
Benzo(k)fluoranthene	mg/kg	0.141	0	.167	84.2	31-140	L481987-02	WG502173
Chrysene	mg/kg	0.152	0	.167	91.0	34-137	L481987-02	WG502173
Dibenz(a,h)anthracene	mg/kg	0.154	0	.167	92.5	21-132	L481987-02	WG502173
Fluoranthene	mg/kg	0.151	0	.167	90.6	34-132	L481987-02	WG502173
Fluorene	mg/kg	0.154	0	.167	92.0	38-126	L481987-02	WG502173
Indeno(1,2,3-cd)pyrene	mg/kg	0.158	0	.167	94.8	17-134	L481987-02	WG502173
Naphthalene	mg/kg	0.158	0	.167	94.9	24-122	L481987-02	WG502173
Phenanthrene	mg/kg	0.159	0	.167	95.0	38-128	L481987-02	WG502173
Pyrene	mg/kg	0.166	0	.167	99.1	35-141	L481987-02	WG502173
2-Fluorobiphenyl					92.66	37-123		WG502173
Nitrobenzene-d5					97.02	19-129		WG502173
p-Terphenyl-d14					108.7	34-149		WG502173
TPH (GC/FID) High Fraction	ppm	33.9	0.466	60	55.7	50-150	L482046-08	WG502175
o-Terphenyl					83.96	50-150		WG502175
Arsenic	mg/kg	64.7	49.9	50	29.6*	75-125	L481978-03	WG501628
Barium	mg/kg	86.5	45.0	50	83.0	75-125	L481978-03	WG501628
Cadmium	mg/kg	47.7	0.0318	50	95.3	75-125	L481978-03	WG501628
Chromium	mg/kg	61.1	13.0	50	96.2	75-125	L481978-03	WG501628
Lead	mg/kg	56.4	8.10	50	96.6	75-125	L481978-03	WG501628
Nickel	mg/kg	65.0	23.6	50	82.8	75-125	L481978-03	WG501628
Selenium	mg/kg	49.5	4.04	50	90.9	75-125	L481978-03	WG501628
Silver	mg/kg	44.1	0	50	88.2	75-125	L481978-03	WG501628
Zinc	mg/kg	95.6	44.6	50	102.	75-125	L481978-03	WG501628

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Arsenic	mg/kg	49.6	48.4	87.4	75-125	2.45	20	L481725-02	WG501325
Barium	mg/kg	311.	305.	142.*	75-125	1.95	20	L481725-02	WG501325
Cadmium	mg/kg	44.3	43.6	87.4	75-125	1.59	20	L481725-02	WG501325
Chromium	mg/kg	62.6	60.7	97.2	75-125	3.08	20	L481725-02	WG501325
Lead	mg/kg	67.8	66.2	91.6	75-125	2.39	20	L481725-02	WG501325
Nickel	mg/kg	53.3	51.5	88.6	75-125	3.44	20	L481725-02	WG501325
Selenium	mg/kg	51.2	47.7	88.4	75-125	7.08	20	L481725-02	WG501325
Silver	mg/kg	45.0	44.0	90.0	75-125	2.25	20	L481725-02	WG501325
Zinc	mg/kg	88.5	87.5	95.0	75-125	1.14	20	L481725-02	WG501325
Boron	mg/l	1.36	1.36	120.	75-125	0	20	L481725-09	WG501489
Chromium,Hexavalent	mg/kg	12.6	12.5	63.0	50-150	0.797	20	L481966-01	WG501657
Benzene	mg/kg	0.204	0.200	81.5	32-137	1.81	39	L481966-01	WG501342
Ethylbenzene	mg/kg	0.195	0.196	77.9	10-150	0.720	44	L481966-01	WG501342
Toluene	mg/kg	0.206	0.207	82.2	20-142	0.560	42	L481966-01	WG501342
Total Xylene	mg/kg	0.594	0.603	79.2	16-141	1.53	46	L481966-01	WG501342
a,a,a-Trifluorotoluene(PID)				101.3	54-144				WG501342

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Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
TPH (GC/FID) Low Fraction	mg/kg	18.5	20.8	67.2	55-109	11.6	20	L481966-01	WG501342
a,a,a-Trifluorotoluene(FID)				92.27	59-128				WG501342
Mercury	mg/kg	0.396	0.381	78.4	70-130	3.86	20	L481955-01	WG501803
Acenaphthene	mg/kg	0.165	0.147	98.9	38-121	11.6	23	L481987-02	WG502173
Acenaphthylene	mg/kg	0.170	0.151	102.	39-120	11.5	22	L481987-02	WG502173
Anthracene	mg/kg	0.189	0.153	113.	35-133	20.9	23	L481987-02	WG502173
Benzo(a)anthracene	mg/kg	0.182	0.166	109.	35-136	8.96	23	L481987-02	WG502173
Benzo(a)pyrene	mg/kg	0.172	0.151	103.	37-131	13.1	22	L481987-02	WG502173
Benzo(b)fluoranthene	mg/kg	0.204	0.168	122.	29-145	19.4	33	L481987-02	WG502173
Benzo(g,h,i)perylene	mg/kg	0.178	0.161	106.	10-139	10.0	26	L481987-02	WG502173
Benzo(k)fluoranthene	mg/kg	0.178	0.141	106.	31-140	23.4	34	L481987-02	WG502173
Chrysene	mg/kg	0.165	0.152	99.0	34-137	8.49	23	L481987-02	WG502173
Dibenz(a,h)anthracene	mg/kg	0.176	0.154	105.	21-132	13.0	25	L481987-02	WG502173
Fluoranthene	mg/kg	0.181	0.151	108.	34-132	17.8	24	L481987-02	WG502173
Fluorene	mg/kg	0.185	0.154	110.	38-126	18.3	23	L481987-02	WG502173
Indeno(1,2,3-cd)pyrene	mg/kg	0.175	0.158	105.	17-134	10.2	25	L481987-02	WG502173
Naphthalene	mg/kg	0.189	0.158	113.	24-122	17.3	29	L481987-02	WG502173
Phenanthrene	mg/kg	0.191	0.159	114.	38-128	18.5	25	L481987-02	WG502173
Pyrene	mg/kg	0.179	0.166	107.	35-141	7.53	25	L481987-02	WG502173
2-Fluorobiphenyl				107.4	37-123				WG502173
Nitrobenzene-d5				108.4	19-129				WG502173
p-Terphenyl-d14				114.4	34-149				WG502173
TPH (GC/FID) High Fraction	ppm	38.7	33.9	63.8	50-150	13.4	20	L482046-08	WG502175
o-Terphenyl				101.3	50-150				WG502175
Arsenic	mg/kg	60.1	64.7	20.4*	75-125	7.37	20	L481978-03	WG501628
Barium	mg/kg	84.4	86.5	78.8	75-125	2.46	20	L481978-03	WG501628
Cadmium	mg/kg	48.2	47.7	96.3	75-125	1.04	20	L481978-03	WG501628
Chromium	mg/kg	58.8	61.1	91.6	75-125	3.84	20	L481978-03	WG501628
Lead	mg/kg	54.6	56.4	93.0	75-125	3.24	20	L481978-03	WG501628
Nickel	mg/kg	62.6	65.0	78.0	75-125	3.76	20	L481978-03	WG501628
Selenium	mg/kg	47.1	49.5	86.1	75-125	4.97	20	L481978-03	WG501628
Silver	mg/kg	44.7	44.1	89.4	75-125	1.35	20	L481978-03	WG501628
Zinc	mg/kg	95.1	95.6	101.	75-125	0.524	20	L481978-03	WG501628
Chloride	mg/kg	552.	553.	104.	80-120	0.181	20	L482406-03	WG502849

Batch number /Run number / Sample number cross reference

WG501325: R1409608: L481966-01 03 05
WG501489: R1409948: L481966-02 04 06 08
WG501333: R1410789: L481966-01 03 05 07
WG501328: R1410990: L481966-02 04 06 08
WG501657: R1412068: L481966-01 03 05 07
WG501342: R1412288: L481966-01 03 05 07
WG501738: R1413691: L481966-01 03 05 07
WG501741: R1413728: L481966-01 03 05 07
WG501418: R1413768: L481966-01 03 05 07
WG501803: R1414288: L481966-01 03 05 07
WG502173: R1419849: L481966-01 03 05 07

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WG502175: R1421209: L481966-01 03 05 07
WG501628: R1422628: L481966-07
WG502849: R1424889: L481966-01 03 05 07
WG502996: R1426948: L481966-01 03

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