Data Validation Package

May 2012
Water Sampling at the
Bluewater, New Mexico, Disposal Site

July 2012

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Sampling Event Summary

Site: Bluewater, New Mexico, Disposal Site

Sampling Period: May 15, 2012

Groundwater samples were collected from monitoring wells at the Bluewater, New Mexico, Disposal Site to monitor groundwater contaminants as specified in the 1997 *Long-Term Surveillance Plan for the DOE Bluewater (UMTRCA Title II) Disposal Site Near Grants, New Mexico* (LTSP). Included in the sampling was a new location (SIMPSON), which is a private well near the site. Sampling and analysis were conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PLN/S04351, continually updated). One duplicate sample was collected from monitoring well Y2(M).

Alluvium wells are completed in the alluvial sediments in the former channel of the Rio San Jose, which was covered by basalt lava flows known as the El Malpais, and are identified by the suffix (M). Bedrock wells are completed in the San Andres Limestone/Glorieta Sandstone hydrologic unit and are identified by the suffix (SG).

The LTSP requires monitoring for molybdenum, selenium, uranium, and polychlorinated biphenyls (PCBs); PCB monitoring occurs only during November sampling events. This event included sampling for an expanded list of analytes to support a regional groundwater investigation being conducted by the New Mexico Environment Department.

Analytical results for the required constituents for the alluvium wells are provided in Table 1. Alluvium point-of-exposure (POE) well X(M) could not be sampled because it was dry. The U.S. Nuclear Regulatory Commission (NRC)-approved alternate concentration limit (ACL) for uranium continues to be exceeded in point-of-compliance (POC) well T(M). The current concentration of 0.55 milligram per liter (mg/L) is greater than the ACL of 0.44 mg/L. The uranium concentration in well T(M) had an upward trend since DOE began sampling in 1998 through 2010, and appears to have stabilized. The cause of the elevated uranium concentrations is being evaluated.

Table 1. May 2012 Groundwater Monitoring Analytical Results for the Alluvium Wells

Constituent	ACL	Alluvium Wells					
		E(M) (Bkgd)	F(M) (POC)	T(M) (POC)	Y2(M) (PCBs)	21(M) (Dwngrd)	22(M) (Dwngrd)
Molybdenum (mg/L)	0.10	0.00049	0.0010	0.023	0.0016	0.00087	0.00073
Selenium (mg/L)	0.05	ND	0.0011	0.0037	0.0010	0.0090	0.0068
Uranium (mg/L)	0.44	0.00012	0.0073	0.55	0.0048	0.13	0.31

Key: ACL = alternate concentration limit; Bkgd = background well; Dwngrd = downgradient well; mg/L = milligrams per liter; ND = not detected; POC = point-of-compliance well; PCB = polychlorinated biphenyls monitoring well

Alluvium wells 21(M) and 22(M) were installed downgradient of well T(M) in July 2011; well 21(M) is located near the site boundary where alluvial groundwater apparently leaves the site. The uranium concentration in well 21(M) was 0.13 mg/L, which exceeds the Uranium Mill Tailings Radiation Control Act (UMTRCA) maximum concentration limit (MCL) of 0.044 mg/L (40 CFR 192, Table 1). This occurrence is also being evaluated by DOE.

Analytical results for the required constituents for the bedrock wells are provided in Table 2. The selenium and uranium concentrations did not exceed NRC-approved ACLs in the POC wells, and no constituents exceeded their respective UMTRCA MCLs at the POE well. The slotted steel pipe in the POC wells is highly corroded, which may affect constituent concentrations. A new well has been completed between the two POC wells and will be sampled in November 2012.

Table 2. May 2012 Groundwater Monitoring Analytical Results for the Bedrock Wells

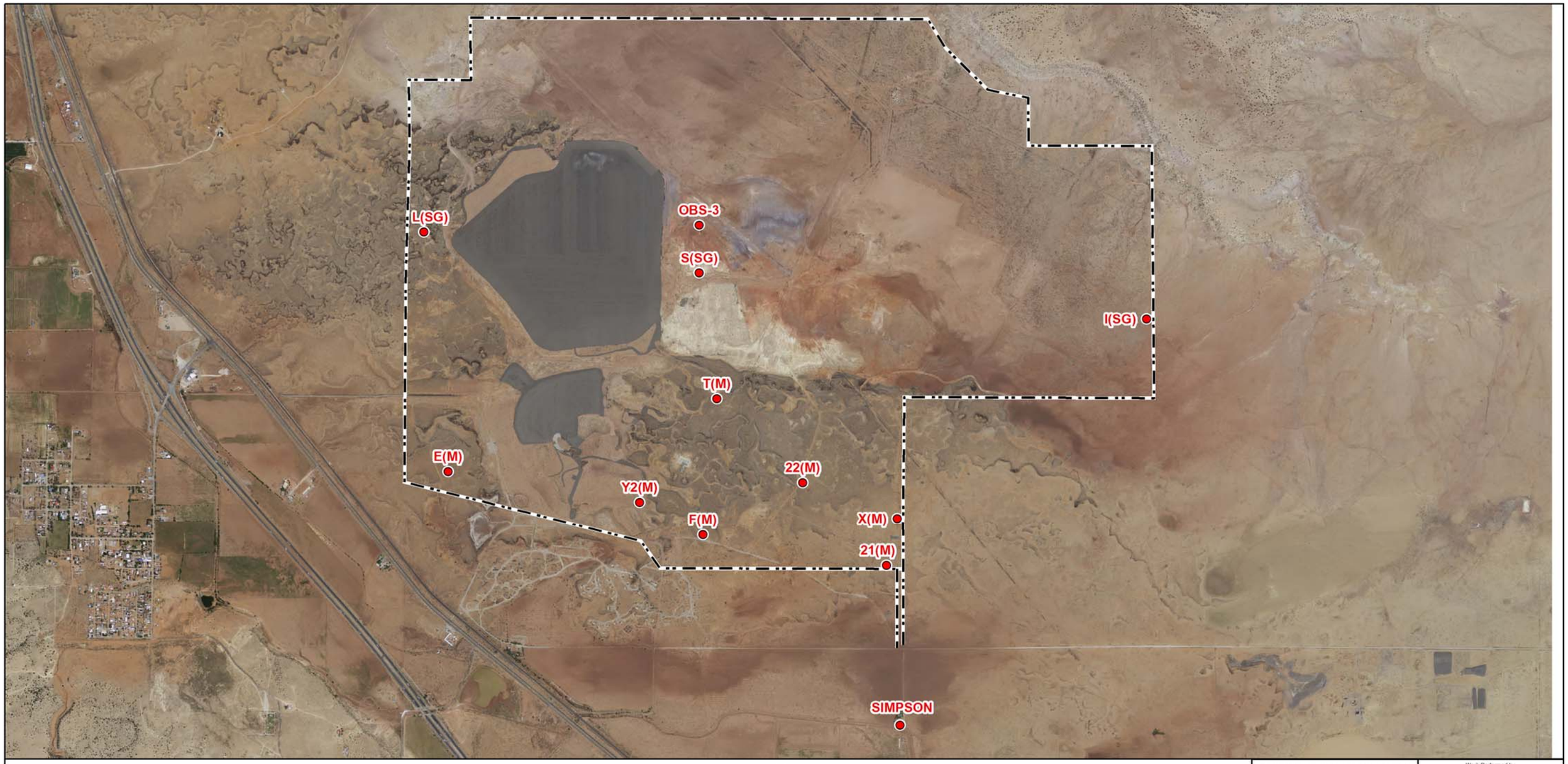
Constituent	ACL	Bedrock Wells			
		L(SG) (Bkgd)	OBS-3 (POC)	S(SG) (POC)	I(SG) (POE)
Selenium (mg/L)	0.05	ND	ND	0.013	ND
Uranium (mg/L)	2.15	0.0050	0.0076	0.44	0.0080

Key: ACL = alternate concentration limit; Bkgd = background well; mg/L = milligrams per liter; ND = not detected; POC = point-of-compliance well; POE = point-of-exposure well

The well record for the SIMPSON well indicates that it may be completed in the Chinle Formation. This formation overlies the San Andres Limestone, and the well completion zone may be recharged by alluvial groundwater. The uranium concentration for this sampling event was 0.0033 mg/L.

Richard K. Johnson
Site Lead, S.M. Stoller Corporation

7/24/12
Date



Sample Location Map, Bluewater, New Mexico, Disposal Site

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Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	Bluewater, NM	**Date(s) of Water Sampling**	May 15, 2012
Date(s) of Verification	July 2, 2012	**Name of Verifier**	Gretchen Baer

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures?	Yes	
List other documents, SOPs, instructions.		Work Order Letter dated April 16, 2012. Program Directive No. **BLU-2011-01.**
2. Were the sampling locations specified in the planning documents sampled?	Yes	With the exception of one dry location, X(M).
3. Was a pre-trip calibration conducted as specified in the above-named documents?	Yes	Pre-trip calibration performed on May 15, 2012.
4. Was an operational check of the field equipment conducted daily?	Yes	
Did the operational checks meet criteria?	Yes	With one exception: The post-trip calibration check for ORP was slightly below the +/- 10% range at -12%, which is acceptable for this measurement.
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	Monitoring wells E(M), S(SG), and OBS-3 did not meet turbidity requirements. Sample aliquots for all analytes were filtered for these wells.
6. Was the category of the well documented?	Yes	
7. Were the following conditions met when purging a Category I well:		
Was one pump/tubing volume purged prior to sampling?	Yes	
Did the water level stabilize prior to sampling?	Yes	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	Yes	
Was the flow rate less than 500 mL/min?	Yes	
If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	NA	

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well:		Monitoring wells L(SG), S(SG), and OBS-3 are purged and sampled according to the program directive. Three casing volumes are purged (or purged to dryness) then one set of parameters is recorded before collecting the sample. No stabilization was required.
Was the flow rate less than 500 mL/min?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	A duplicate sample was collected for location Y2(M).
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	NA	An equipment blank was not required.
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number?	Yes	Location ID 2074 was used for the duplicate sample.
Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDCS) report?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	No	The COC was not signed and dated upon sample relinquishment.
17. Are field data sheets signed and dated by both team members (hardcopies) or are dates present for the “Date Signed” fields (FDCS)?	Yes	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	No	Presence of ice was inadvertently not documented at location E(M).
20. Were water levels measured at the locations specified in the planning documents?	Yes	

Laboratory Performance Assessment

General Information

Report Number (RIN): 12044518
Sample Event: May 15, 2012
Site(s): Bluewater, New Mexico
Laboratory: ALS Laboratory Group, Fort Collins, Colorado
Work Order No.: 1205261
Analysis: Metals and Wet Chemistry
Validator: Gretchen Baer
Review Date: July 2, 2012

This validation was performed according to the *Environmental Procedures Catalog*, (LMS/PRO/S04325, continually updated) "Standard Practice for Validation of Laboratory Data." The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 3.

Table 3 Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Alkalinity, Bicarbonate	WCH-A-003	EPA 310.1	EPA 310.1
Alkalinity, Carbonate	WCH-A-004	EPA 310.1	EPA 310.1
Chloride	MIS-A-039	SW-846 9056	SW-846 9056
Calcium, Magnesium, Potassium, Sodium	LMM-01	SW-846 3005A	SW-846 6010B
Arsenic, Molybdenum, Selenium, Uranium	LMM-02	SW-846 3005A	SW-846 6020A
Nitrate + Nitrite as N	WCH-A-022	EPA 353.2	EPA 353.2
Sulfate	MIS-A-044	SW-846 9056	SW-846 9056
Total Dissolved Solids	WCH-A-033	EPA 160.1	EPA 160.1

Data Qualifier Summary

Analytical results were qualified as listed in Table 4. Refer to the sections below for an explanation of the data qualifiers applied.

Table 4. Data Qualifier Summary

Sample Number	Location	Analyte(s)	Flag	Reason
1205261-1	Y2(M) dup, 2074	Sodium	J	Serial dilution failure
1205261-4	E(M)	Selenium	U	Less than 5 times the calibration/method blank
1205261-6	I(SG)	Selenium	U	Less than 5 times the calibration/method blank
1205261-7	L(SG)	Selenium	U	Less than 5 times the calibration/method blank
1205261-8	OBS-3	Selenium	U	Less than 5 times the calibration/method blank
1205261-12	Y2(M)	Sodium	J	Serial dilution failure

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received 12 water samples on May 17, 2012, accompanied by a Chain of Custody form. Copies of the air bill numbers were included in the receiving documentation. The Chain of Custody form was checked to confirm that all of the samples were listed with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The Chain of Custody form was complete with no errors or omissions, with the following exceptions. The Chain of Custody was not signed as relinquished and the filtration status for sample OBS-3 was not described correctly.

Preservation and Holding Times

The sample shipment was received intact with the temperature inside the iced cooler at 0.1 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Detection and Quantitation Limits

The method detection limit (MDL) was reported for all analytes as required. The MDL, as defined in 40 CFR 136, is the minimum concentration of an analyte that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. The practical quantitation limit (PQL) for these analytes is the lowest concentration that can be reliably measured, and is defined as 5 times the MDL. Some alkalinity detection limits were 20 mg/L, which is above the Line Item Code required detection limit of 10 mg/L. High concentrations of alkalinity as bicarbonate present in most samples required analysis using reduced sample aliquot sizes. The MDLs were elevated accordingly. The reported MDLs for all analytes demonstrate compliance with contractual requirements.

Laboratory Instrument Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for all analytes. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear curve. Compliance requirements for continuing calibration checks are established to ensure that the instrument continues to be capable of producing acceptable qualitative and quantitative data. All laboratory instrument calibrations were performed correctly in accordance with the cited methods. All calibration and laboratory spike standards were prepared from independent sources.

Methods EPA 160.1, 310.1
There are no initial or continuing calibration requirements associated with the alkalinity or total dissolved solids methods.

Method EPA 353.2
Calibrations for nitrate + nitrite as N were performed using five calibration standards on May 18, 2012. The calibration curve correlation coefficient values were greater than 0.995 and

the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in seven verification checks. All calibration check results were within the acceptance criteria.

Method SW-846 6010B
Calibrations for calcium, magnesium, potassium, and sodium were performed on May 26, 2012, using three calibration standards. The correlation coefficient values were greater than 0.995. The absolute values of the intercepts were less than 3 times the MDL, with the exception of the intercepts for potassium and sodium. These intercepts were less than 3 times the reporting limits and all results were above the reporting limits. Initial and continuing calibration verification checks were made at the required frequency resulting in 6 verification checks. All calibration checks met the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the PQL and all results were within the acceptance range.

Method SW-846 6020A
Calibrations were performed for arsenic, molybdenum, selenium, and uranium on May 30 and June 1, 2012, using four calibration standards. The calibration curve correlation coefficient values were greater than 0.995. The absolute values of the calibration curve intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in 18 verification checks. All calibration checks met the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the PQL and all results were within the acceptance range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries associated with requested analytes were stable and within acceptable ranges.

Method SW-846 9056
Calibrations for chloride and sulfate were performed using seven calibration standards on April 12, 2012. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency resulting in five verification checks. All calibration checks met the acceptance criteria.

Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Methods without sample preparation do not require the analysis of a method blank. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis. All method blank and calibration blank results were below the PQL for all analytes. In cases where a blank concentration exceeds the MDL, the associated sample results are qualified with a "U" flag (not detected) when the sample result is greater than the MDL but less than 5 times the blank concentration.

Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Analysis

ICP interference check samples ICSA and ICSAB were analyzed at the required frequency to verify the instrumental interelement and background correction factors. All check sample results met the acceptance criteria.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) samples are used to measure method performance in the sample matrix. The MS/MSD data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike. The spike recoveries met the acceptance criteria for all analytes evaluated.

Laboratory Replicate Analysis

Laboratory replicate analyses are used to determine laboratory precision for each sample matrix. The relative percent difference for replicate results that are greater than 5 times the PQL should be less than 20 percent. For results that are less than 5 times the PQL, the range should be no greater than the PQL. The replicate results met these criteria, demonstrating acceptable laboratory precision.

Laboratory Control Sample

Laboratory control samples were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. All control sample results were acceptable.

Metals Serial Dilution

Serial dilutions were prepared and analyzed for the metals analyses to monitor chemical or physical interferences in the sample matrix. Serial dilution data are evaluated when the concentration of the undiluted sample is greater than 50 times the MDL. All evaluated serial dilution data were acceptable with one exception. A serial dilution for sodium did not meet the acceptance criteria. The associated sodium results are qualified with a "J" flag as an estimated value.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers.

Chromatography Peak Integration

The integration of analyte peaks was reviewed for all ion chromatography data. All peak integrations were satisfactory.

Electronic Data Deliverable (EDD) File

A revised EDD file arrived on July 9, 2012, that included corrections to some filtration status fields. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

SAMPLE MANAGEMENT SYSTEM

General Data Validation Report

RIN: 12044518 **Lab Code:** PAR **Validator:** Gretchen Baer **Validation Date:** 7/2/2012

Project: Bluewater **Analysis Type:** ☑ Metals ☑ General Chem ☐ Rad ☐ Organics

# of Samples: 12 **Matrix:** WATER **Requested Analysis Completed:** Yes

Chain of Custody

Present: OK **Signed:** OK **Dated:** OK

Sample

Integrity: OK **Preservation:** OK **Temperature:** OK

Select Quality Parameters

☑ Holding Times	All analyses were completed within the applicable holding times.
☑ Detection Limits	There are 20 detection limit failures.
☐ Field/Trip Blanks	
☑ Field Duplicates	There was 1 duplicate evaluated.

SAMPLE MANAGEMENT SYSTEM

RIN: 12044518 Lab Code: PAR

Non-Compliance Report: Detection Limits

Project: Bluewater

Validation Date: 7/2/2012

Ticket	Location	Lab Sample ID	Method Code	Lab Method	Analyte Name	Result	Qualifier	Reported Detection Limit	Required Detection Limit	Units
KFT 183	2074	1205261-1	WCH-A-003	EPA310.1	Bicarbonate	210		20	10	MG/L
KFT 183	2074	1205261-1	WCH-A-004	EPA310.1	Alkalinity, Carbonate (CO3) as C	20	U	20	10	MG/L
KFT 184	21(M)	1205261-2	WCH-A-003	EPA310.1	Bicarbonate	270		20	10	MG/L
KFT 184	21(M)	1205261-2	WCH-A-004	EPA310.1	Alkalinity, Carbonate (CO3) as C	20	U	20	10	MG/L
KFT 185	22(M)	1205261-3	WCH-A-003	EPA310.1	Bicarbonate	330		20	10	MG/L
KFT 185	22(M)	1205261-3	WCH-A-004	EPA310.1	Alkalinity, Carbonate (CO3) as C	20	U	20	10	MG/L
KFT 178	F(M)	1205261-5	WCH-A-003	EPA310.1	Bicarbonate	180		20	10	MG/L
KFT 178	F(M)	1205261-5	WCH-A-004	EPA310.1	Alkalinity, Carbonate (CO3) as C	20	U	20	10	MG/L
KFT 180	I(SG)	1205261-6	WCH-A-003	EPA310.1	Bicarbonate	200		20	10	MG/L
KFT 180	I(SG)	1205261-6	WCH-A-004	EPA310.1	Alkalinity, Carbonate (CO3) as C	20	U	20	10	MG/L
KFT 181	L(SG)	1205261-7	WCH-A-003	EPA310.1	Bicarbonate	540		20	10	MG/L
KFT 181	L(SG)	1205261-7	WCH-A-004	EPA310.1	Alkalinity, Carbonate (CO3) as C	20	U	20	10	MG/L
KFT 182	S(SG)	1205261-9	WCH-A-003	EPA310.1	Bicarbonate	390		20	10	MG/L
KFT 182	S(SG)	1205261-9	WCH-A-004	EPA310.1	Alkalinity, Carbonate (CO3) as C	20	U	20	10	MG/L
KGT 742	SIMPSON	1205261-10	WCH-A-003	EPA310.1	Bicarbonate	210		20	10	MG/L
KGT 742	SIMPSON	1205261-10	WCH-A-004	EPA310.1	Alkalinity, Carbonate (CO3) as C	20	U	20	10	MG/L
KFT 176	T(M)	1205261-11	WCH-A-003	EPA310.1	Bicarbonate	420		20	10	MG/L
KFT 176	T(M)	1205261-11	WCH-A-004	EPA310.1	Alkalinity, Carbonate (CO3) as C	20	U	20	10	MG/L
KFT 177	Y2(M)	1205261-12	WCH-A-003	EPA310.1	Bicarbonate	210		20	10	MG/L
KFT 177	Y2(M)	1205261-12	WCH-A-004	EPA310.1	Alkalinity, Carbonate (CO3) as C	20	U	20	10	MG/L

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 12044518 **Lab Code:** PAR **Date Due:** 6/14/2012

Matrix: Water **Site Code:** BLU **Date Completed:** 6/14/2012

Analyte	Method Type	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
			Int.	R^2	ICV	CCV	ICB	CCB								
Calcium	ICP/ES	05/26/2012	0.0210	1.0000	OK	OK	OK	OK	OK	100.0	106.0	104.0	1.0	104.0	1.0	104.0
Magnesium	ICP/ES	05/26/2012	0.0070	1.0000	OK	OK	OK	OK	OK	98.0	98.0	97.0	1.0	103.0	0.0	101.0
Potassium	ICP/ES	05/26/2012	-1.4360	1.0000	OK	OK	OK	OK	OK	98.0	109.0	109.0	0.0			77.0
Sodium	ICP/ES	05/26/2012	-0.1150	1.0000	OK	OK	OK	OK	OK	97.0	105.0	103.0	1.0		11.0	83.0
Arsenic	ICP/MS	06/01/2012	-0.0300	1.0000	OK	OK	OK	OK	OK	96.0				101.0		110.0
Arsenic	ICP/MS	05/30/2012	-0.0050	1.0000	OK	OK	OK	OK	OK	101.0	103.0	104.0	1.0	101.0		112.0
Molybdenum	ICP/MS	05/30/2012	-0.0040	1.0000	OK	OK	OK	OK	OK	100.0	105.0	105.0	0.0	96.0		102.0
Selenium	ICP/MS	06/01/2012	-0.0410	1.0000	OK	OK	OK	OK	OK	106.0				100.0		108.0
Selenium	ICP/MS	05/30/2012	-0.0320	1.0000	OK	OK	OK	OK	OK	101.0	109.0	107.0	2.0	106.0		127.0
Uranium	ICP/MS	05/30/2012	0.0000	1.0000	OK	OK	OK	OK	OK	101.0	105.0	110.0	3.0	101.0	1.0	95.0

SAMPLE MANAGEMENT SYSTEM

Wet Chemistry Data Validation Worksheet

RIN: 12044518 **Lab Code:** PAR **Date Due:** 6/14/2012

Matrix: Water **Site Code:** BLU **Date Completed:** 6/14/2012

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	ICV	CCV	ICB	CCB						
Alkalinity, Carbonate (CO3) as	05/22/2012							OK					
ALKALINITY, Total as CaCO3	05/22/2012								100.00				
Bicarbonate	05/22/2012							OK				0	
CHLORIDE	04/12/2012	-0.089	1.0000	OK		OK							
CHLORIDE	05/17/2012				OK		OK	OK	90.00	97.0	98.0	1.00	
CHLORIDE	05/17/2012									95.0			
Nitrate+Nitrite as N	05/18/2012	0.000	0.9998	OK	OK	OK	OK	OK	91.00	95.0	89.0	1.00	
Nitrate+Nitrite as N	05/18/2012	0.000	0.9997	OK	OK	OK	OK						
SULFATE	04/12/2012	0.316	1.0000	OK		OK							
SULFATE	05/17/2012				OK		OK	OK	93.00	100.0	102.0	1.00	
SULFATE	05/17/2012									100.0			
TOTAL DISSOLVED SOLIDS	05/21/2012							OK	99.00			2.00	
TOTAL DISSOLVED SOLIDS	05/21/2012											1.00	

Sampling Quality Control Assessment

The following information summarizes and assesses quality control for this sampling event.

Sampling Protocol

Sample results for all monitoring wells met the Category I or II low-flow sampling criteria and were qualified with an "F" flag in the database, indicating the wells were purged and sampled using the low-flow sampling method. The groundwater sample results for the wells E(M), L(SG), OBS-3, and S(SG) were further qualified with a "Q" flag in the database, indicating the data are considered qualitative because these are Category II wells. The location SIMPSON is a domestic well (Category IV).

Equipment Blank Assessment

No equipment blanks were taken. All samples were collected using dedicated equipment that did not require equipment blanks.

Field Duplicate Analysis

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates, which measure only laboratory performance. The relative percent difference for duplicate results that are greater than 5 times the PQL should be less than 20 percent. For results that are less than 5 times the PQL, the range should be no greater than the PQL. A duplicate sample was collected from location Y2(M) (field duplicate ID 2074). The duplicate results met the criteria, demonstrating acceptable overall precision.

SAMPLE MANAGEMENT SYSTEM

Validation Report: Field Duplicates

RIN: 12044518 **Lab Code:** PAR **Project:** Bluewater **Validation Date:** 7/2/2012

Duplicate: 2074 **Sample:** Y2(M)

Analyte	Sample Result	Flag	Error	Dilution	Duplicate Result	Flag	Error	Dilution	RPD	RER	Units
Alkalinity, Carbonate (CO3) as CaCO3	20	U		1	20	U		1			MG/L
Arsenic	1.3			10	1.6			10	20.69		UG/L
Bicarbonate	210			1	210			1	0		MG/L
Calcium	62000			1	60000			1	3.28		UG/L
CHLORIDE	14			5	16			5	13.33		MG/L
Magnesium	17000			1	17000			1	0		UG/L
Molybdenum	1.6			10	1.5			10			UG/L
Nitrate+Nitrite as N	1.3			1	1.4			1	7.41		MG/L
Potassium	3100			1	3100			1	0		UG/L
Selenium	1			10	1.6			10			UG/L
Sodium	48000			1	51000	E		1	6.06		UG/L
SULFATE	92			5	95			5	3.21		MG/L
TOTAL DISSOLVED SOLIDS	410			1	410			1	0		MG/L
Uranium	4.8			10	4.6			10	4.26		UG/L

Certification

All laboratory analytical quality control criteria were met except as qualified in this report. The data qualifiers listed on the SEEPro database reports are defined on the last page of each report. All data in this package are considered validated and available for use.

Laboratory Coordinator: Steve Donivan — Date: 7-24-2012

Data Validation Lead: Gretchen Baer — Date: 7/24/12

Attachment 1
Assessment of Anomalous Data

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Potential Outliers Report

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Potential Outliers Report

Potential outliers are measurements that are extremely large or small relative to the rest of the data and, therefore, are suspected of misrepresenting the population from which they were collected. Potential outliers may result from transcription errors, data-coding errors, or measurement system problems. However, outliers may also represent true extreme values of a distribution and indicate more variability in the population than was expected.

Statistical outlier tests give probabilistic evidence that an extreme value does not "fit" with the distribution of the remainder of the data and is therefore a statistical outlier. These tests should only be used to identify data points that require further investigation. The tests alone cannot determine whether a statistical outlier should be discarded or corrected within a data set.

There are three steps involved in identifying extreme values or outliers:

1. Identify extreme values that may be potential outliers by generating the Outliers Report using the Sample Management System from data in the SEEPro database. The application compares the new data set with historical data and lists the new data that fall outside the historical data range. A determination is also made if the data are normally distributed using the Shapiro-Wilk Test.
2. Apply the appropriate statistical test. Dixon's Extreme Value test is used to test for statistical outliers when the sample size is less than or equal to 25. This test considers both extreme values that are much smaller than the rest of the data (case 1) and extreme values that are much larger than the rest of the data (case 2). This test is valid only if the data without the suspected outlier are normally distributed. Rosner's Test is a parametric test that is used to detect outliers for sample sizes of 25 or more. This test also assumes that the data without the suspected outliers are normally distributed.
3. Scientifically review statistical outliers and decide on their disposition.

No values from this sampling event were identified as potential outliers. Potential anomalies in the field parameters were also examined for patterns of repeated high or low bias, which suggest a systematic error due to instrument malfunction. No such patterns were found and all the results from this sampling event are acceptable as qualified.

Data Validation Outliers Report - No Field Parameters
Comparison: All Historical Data
Laboratory: ALS Laboratory Group
RIN: 12044518
Report Date: 7/10/2012

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current	Qualifiers		Historical Maximum	Qualifiers		Historical Minimum	Qualifiers		Number of Data Points		Statistical Outlier
					Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
BLU01	F(M)	N001	05/15/2012	Chloride	11		F	13		F	11.5		F	6	0	No
BLU01	F(M)	N001	05/15/2012	Sulfate	99		F	130		F	102		F	6	0	No
BLU01	I(SG)	N001	05/15/2012	Uranium	0.008		F	0.00636		F	0.0011		F	5	0	No
BLU01	OBS-3	0001	05/15/2012	Sodium	350		FQ	475		FQ	390			5	0	No
BLU01	S(SG)	0001	05/15/2012	Selenium	0.013		FQ	0.011			0.000029	U	FQ	9	6	No
BLU01	T(M)	N001	05/15/2012	Chloride	36		F	58		F	37.7		F	6	0	No
BLU01	T(M)	N001	05/15/2012	Nitrate + Nitrite as Nitrogen	47		F	66		F	48		F	8	0	No
BLU01	T(M)	N001	05/15/2012	Sulfate	220		F	290		F	241		F	6	0	No
BLU01	Y2(M)	N002	05/15/2012	Molybdenum	0.0015		F	0.003		F	0.00157		F	5	0	No
BLU01	Y2(M)	N001	05/15/2012	Sulfate	92		F	110		F	92.2		F	5	0	No
BLU01	Y2(M)	N002	05/15/2012	Uranium	0.0046		F	0.0053		F	0.0047		F	6	0	No

STATISTICAL TESTS:
The distribution of the data is tested for normality or lognormality using the Shapiro-Wilk Test
Outliers are identified using Dixon's Test when there are 25 or fewer data points.
Outliers are identified using Rosner's Test when there are 26 or more data points.
See Data Quality Assessment: Statistical Methods for Practitioners, EPA QC/G-9S, February 2006.

Data Validation Outliers Report - Field Parameters Only
Comparison: All Historical Data
Laboratory: Field Measurements
RIN: 12044518
Report Date: 7/10/2012

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current			Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Qualifiers Lab	Qualifiers Data	Result	Qualifiers Lab	Qualifiers Data	Result	Qualifiers Lab	Qualifiers Data	N	N Below Detect	
BLU01	F(M)	N001	05/15/2012	Oxidation Reduction Potential	177.9		F	140.7		F	-117.1		F	11	0	No
BLU01	F(M)	N001	05/15/2012	Turbidity	1.35		F	15.4		F	2.89		F	11	0	No
BLU01	I(SG)	N001	05/15/2012	pH	7.87		F	9.37		F	8.02		F	5	0	No
BLU01	I(SG)	N001	05/15/2012	Specific Conductance	1435		F	1267		F	894		F	5	0	No
BLU01	I(SG)	N001	05/15/2012	Turbidity	5.26		F	9.92		F	7.21		F	5	0	No
BLU01	Y2(M)	N001	05/15/2012	Turbidity	0.85		F	7.98		F	0.9		F	10	0	No

STATISTICAL TESTS:
The distribution of the data is tested for normality or lognormality using the Shapiro-Wilk Test
Outliers are identified using Dixon's Test when there are 25 or fewer data points.
Outliers are identified using Rosner's Test when there are 26 or more data points.
See Data Quality Assessment: Statistical Methods for Practitioners, EPA QC/G-9S, February 2006.

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Attachment 2
Data Presentation

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Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site
REPORT DATE: 7/10/2012
Location: 21(M) WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	05/15/2012	N001	139.6	-	149.6	20	U	F	#	20	
Arsenic	mg/L	05/15/2012	N001	139.6	-	149.6	0.0028		F	#	0.00015	
Bicarbonate	mg/L	05/15/2012	N001	139.6	-	149.6	270		F	#	20	
Calcium	mg/L	05/15/2012	N001	139.6	-	149.6	170		F	#	0.012	
Chloride	mg/L	05/15/2012	N001	139.6	-	149.6	150		F	#	4	
Dissolved Oxygen	mg/L	05/15/2012	N001	139.6	-	149.6	4.24		F	#		
Magnesium	mg/L	05/15/2012	N001	139.6	-	149.6	41		F	#	0.013	
Molybdenum	mg/L	05/15/2012	N001	139.6	-	149.6	0.00087	B	F	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	05/15/2012	N001	139.6	-	149.6	7.9		F	#	0.05	
Oxidation Reduction Potential	mV	05/15/2012	N001	139.6	-	149.6	79.1		F	#		
pH	s.u.	05/15/2012	N001	139.6	-	149.6	7.28		F	#		
Potassium	mg/L	05/15/2012	N001	139.6	-	149.6	7.9		F	#	0.11	
Selenium	mg/L	05/15/2012	N001	139.6	-	149.6	0.009		F	#	0.00032	
Sodium	mg/L	05/15/2012	N001	139.6	-	149.6	180		F	#	0.066	
Specific Conductance	umhos /cm	05/15/2012	N001	139.6	-	149.6	1934		F	#		
Sulfate	mg/L	05/15/2012	N001	139.6	-	149.6	490		F	#	10	
Temperature	C	05/15/2012	N001	139.6	-	149.6	16.35		F	#		
Total Dissolved Solids	mg/L	05/15/2012	N001	139.6	-	149.6	1300		F	#	40	
Turbidity	NTU	05/15/2012	N001	139.6	-	149.6	2.05		F	#		
Uranium	mg/L	05/15/2012	N001	139.6	-	149.6	0.13		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site
REPORT DATE: 7/10/2012
Location: 22(M) WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	05/15/2012	N001	136.83	-	146.83	20	U	F	#	20	
Arsenic	mg/L	05/15/2012	N001	136.83	-	146.83	0.0038		F	#	0.00015	
Bicarbonate	mg/L	05/15/2012	N001	136.83	-	146.83	330		F	#	20	
Calcium	mg/L	05/15/2012	N001	136.83	-	146.83	100		F	#	0.012	
Chloride	mg/L	05/15/2012	N001	136.83	-	146.83	36		F	#	4	
Dissolved Oxygen	mg/L	05/15/2012	N001	136.83	-	146.83	0.67		F	#		
Magnesium	mg/L	05/15/2012	N001	136.83	-	146.83	27		F	#	0.013	
Molybdenum	mg/L	05/15/2012	N001	136.83	-	146.83	0.00073	B	F	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	05/15/2012	N001	136.83	-	146.83	29		F	#	0.2	
Oxidation Reduction Potential	mV	05/15/2012	N001	136.83	-	146.83	90.9		F	#		
pH	s.u.	05/15/2012	N001	136.83	-	146.83	7.29		F	#		
Potassium	mg/L	05/15/2012	N001	136.83	-	146.83	6.2		F	#	0.11	
Selenium	mg/L	05/15/2012	N001	136.83	-	146.83	0.0068		F	#	0.00032	
Sodium	mg/L	05/15/2012	N001	136.83	-	146.83	150		F	#	0.066	
Specific Conductance	umhos /cm	05/15/2012	N001	136.83	-	146.83	1426		F	#		
Sulfate	mg/L	05/15/2012	N001	136.83	-	146.83	240		F	#	10	
Temperature	C	05/15/2012	N001	136.83	-	146.83	15.84		F	#		
Total Dissolved Solids	mg/L	05/15/2012	N001	136.83	-	146.83	940		F	#	40	
Turbidity	NTU	05/15/2012	N001	136.83	-	146.83	1.51		F	#		
Uranium	mg/L	05/15/2012	N001	136.83	-	146.83	0.31		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site
REPORT DATE: 7/10/2012
Location: E(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	05/15/2012	0001	68.6	-	89.8	5	U	FQ	#	5	
Arsenic	mg/L	05/15/2012	0001	68.6	-	89.8	0.00007	B	FQ	#	0.000015	
Bicarbonate	mg/L	05/15/2012	0001	68.6	-	89.8	8.9		FQ	#	5	
Calcium	mg/L	05/15/2012	0001	68.6	-	89.8	240		FQ	#	0.012	
Chloride	mg/L	05/15/2012	0001	68.6	-	89.8	32		FQ	#	4	
Dissolved Oxygen	mg/L	05/15/2012	N001	68.6	-	89.8	0.64		FQ	#		
Magnesium	mg/L	05/15/2012	0001	68.6	-	89.8	56		FQ	#	0.013	
Molybdenum	mg/L	05/15/2012	0001	68.6	-	89.8	0.00049	B	FQ	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	05/15/2012	0001	68.6	-	89.8	0.01	U	FQ	#	0.01	
Oxidation Reduction Potential	mV	05/15/2012	N001	68.6	-	89.8	-26.6		FQ	#		
pH	s.u.	05/15/2012	N001	68.6	-	89.8	7.62		FQ	#		
Potassium	mg/L	05/15/2012	0001	68.6	-	89.8	4.9		FQ	#	0.11	
Selenium	mg/L	05/15/2012	0001	68.6	-	89.8	0.000069	B	UFQ	#	0.000032	
Sodium	mg/L	05/15/2012	0001	68.6	-	89.8	55		FQ	#	0.0066	
Specific Conductance	umhos /cm	05/15/2012	N001	68.6	-	89.8	1552		FQ	#		
Sulfate	mg/L	05/15/2012	0001	68.6	-	89.8	780		FQ	#	10	
Temperature	C	05/15/2012	N001	68.6	-	89.8	15.35		FQ	#		
Total Dissolved Solids	mg/L	05/15/2012	0001	68.6	-	89.8	1200		FQ	#	40	
Turbidity	NTU	05/15/2012	N001	68.6	-	89.8	15.9		FQ	#		
Uranium	mg/L	05/15/2012	0001	68.6	-	89.8	0.00012		FQ	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site
REPORT DATE: 7/10/2012
Location: F(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	05/15/2012	N001	94.2	-	114.87	20	U	F	#	20	
Arsenic	mg/L	05/15/2012	N001	94.2	-	114.87	0.0012		F	#	0.000015	
Bicarbonate	mg/L	05/15/2012	N001	94.2	-	114.87	180		F	#	20	
Calcium	mg/L	05/15/2012	N001	94.2	-	114.87	74		F	#	0.012	
Chloride	mg/L	05/15/2012	N001	94.2	-	114.87	11		F	#	1	
Dissolved Oxygen	mg/L	05/15/2012	N001	94.2	-	114.87	3.05		F	#		
Magnesium	mg/L	05/15/2012	N001	94.2	-	114.87	19		F	#	0.013	
Molybdenum	mg/L	05/15/2012	N001	94.2	-	114.87	0.001		F	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	05/15/2012	N001	94.2	-	114.87	0.7		F	#	0.01	
Oxidation Reduction Potential	mV	05/15/2012	N001	94.2	-	114.87	177.9		F	#		
pH	s.u.	05/15/2012	N001	94.2	-	114.87	7.71		F	#		
Potassium	mg/L	05/15/2012	N001	94.2	-	114.87	2.9		F	#	0.11	
Selenium	mg/L	05/15/2012	N001	94.2	-	114.87	0.0011		F	#	0.000032	
Sodium	mg/L	05/15/2012	N001	94.2	-	114.87	19		F	#	0.0066	
Specific Conductance	umhos /cm	05/15/2012	N001	94.2	-	114.87	569		F	#		
Sulfate	mg/L	05/15/2012	N001	94.2	-	114.87	99		F	#	2.5	
Temperature	C	05/15/2012	N001	94.2	-	114.87	14.81		F	#		
Total Dissolved Solids	mg/L	05/15/2012	N001	94.2	-	114.87	370		F	#	20	
Turbidity	NTU	05/15/2012	N001	94.2	-	114.87	1.35		F	#		
Uranium	mg/L	05/15/2012	N001	94.2	-	114.87	0.0073		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site
REPORT DATE: 7/10/2012
Location: I(SG) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	05/15/2012	N001	0	-	0	20	U	F	#	20	
Arsenic	mg/L	05/15/2012	N001	0	-	0	0.00058		F	#	0.000015	
Bicarbonate	mg/L	05/15/2012	N001	0	-	0	200		F	#	20	
Calcium	mg/L	05/15/2012	N001	0	-	0	39		F	#	0.012	
Chloride	mg/L	05/15/2012	N001	0	-	0	170		F	#	4	
Dissolved Oxygen	mg/L	05/15/2012	N001	0	-	0	0.38		F	#		
Magnesium	mg/L	05/15/2012	N001	0	-	0	28		F	#	0.013	
Molybdenum	mg/L	05/15/2012	N001	0	-	0	0.00078	B	F	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	05/15/2012	N001	0	-	0	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	05/15/2012	N001	0	-	0	-221.8		F	#		
pH	s.u.	05/15/2012	N001	0	-	0	7.87		F	#		
Potassium	mg/L	05/15/2012	N001	0	-	0	9.7		F	#	0.11	
Selenium	mg/L	05/15/2012	N001	0	-	0	0.0001		UF	#	0.000032	
Sodium	mg/L	05/15/2012	N001	0	-	0	180		F	#	0.066	
Specific Conductance	umhos /cm	05/15/2012	N001	0	-	0	1435		F	#		
Sulfate	mg/L	05/15/2012	N001	0	-	0	230		F	#	10	
Temperature	C	05/15/2012	N001	0	-	0	17.68		F	#		
Total Dissolved Solids	mg/L	05/15/2012	N001	0	-	0	850		F	#	40	
Turbidity	NTU	05/15/2012	N001	0	-	0	5.26		F	#		
Uranium	mg/L	05/15/2012	N001	0	-	0	0.008		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site
REPORT DATE: 7/10/2012
Location: L(SG) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	05/15/2012	N001	0	-	0	20	U	FQ	#	20	
Arsenic	mg/L	05/15/2012	N001	0	-	0	0.00024		FQ	#	0.000015	
Bicarbonate	mg/L	05/15/2012	N001	0	-	0	540		FQ	#	20	
Calcium	mg/L	05/15/2012	N001	0	-	0	160		FQ	#	0.012	
Chloride	mg/L	05/15/2012	N001	0	-	0	180		FQ	#	10	
Dissolved Oxygen	mg/L	05/15/2012	N001	0	-	0	3.42		FQ	#		
Magnesium	mg/L	05/15/2012	N001	0	-	0	72		FQ	#	0.013	
Molybdenum	mg/L	05/15/2012	N001	0	-	0	0.00041	B	FQ	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	05/15/2012	N001	0	-	0	0.025		FQ	#	0.01	
Oxidation Reduction Potential	mV	05/15/2012	N001	0	-	0	-61.9		FQ	#		
pH	s.u.	05/15/2012	N001	0	-	0	6.9		FQ	#		
Potassium	mg/L	05/15/2012	N001	0	-	0	14		FQ	#	0.11	
Selenium	mg/L	05/15/2012	N001	0	-	0	0.000095	B	UFQ	#	0.000032	
Sodium	mg/L	05/15/2012	N001	0	-	0	260		FQ	#	0.33	
Specific Conductance	umhos /cm	05/15/2012	N001	0	-	0	2547		FQ	#		
Sulfate	mg/L	05/15/2012	N001	0	-	0	560		FQ	#	25	
Temperature	C	05/15/2012	N001	0	-	0	18.76		FQ	#		
Total Dissolved Solids	mg/L	05/15/2012	N001	0	-	0	1700		FQ	#	80	
Turbidity	NTU	05/15/2012	N001	0	-	0	2.32		FQ	#		
Uranium	mg/L	05/15/2012	N001	0	-	0	0.005		FQ	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site
REPORT DATE: 7/10/2012
Location: OBS-3 WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	05/15/2012	0001	152.4	-	350	5	U	FQ	#	5	
Arsenic	mg/L	05/15/2012	0001	152.4	-	350	0.000077	B	FQ	#	0.000015	
Bicarbonate	mg/L	05/15/2012	0001	152.4	-	350	34		FQ	#	5	
Calcium	mg/L	05/15/2012	0001	152.4	-	350	110		FQ	#	0.012	
Chloride	mg/L	05/15/2012	0001	152.4	-	350	650		FQ	#	10	
Dissolved Oxygen	mg/L	05/15/2012	N001	152.4	-	350	1.24		FQ	#		
Magnesium	mg/L	05/15/2012	0001	152.4	-	350	140		FQ	#	0.013	
Molybdenum	mg/L	05/15/2012	0001	152.4	-	350	0.00032	U	FQ	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	05/15/2012	0001	152.4	-	350	0.044		FQ	#	0.01	
Oxidation Reduction Potential	mV	05/15/2012	N001	152.4	-	350	-133.3		FQ	#		
pH	s.u.	05/15/2012	N001	152.4	-	350	7.08		FQ	#		
Potassium	mg/L	05/15/2012	0001	152.4	-	350	20		FQ	#	0.11	
Selenium	mg/L	05/15/2012	0001	152.4	-	350	0.00039		UFQ	#	0.000032	
Sodium	mg/L	05/15/2012	0001	152.4	-	350	350		FQ	#	0.33	
Specific Conductance	umhos /cm	05/15/2012	N001	152.4	-	350	3533		FQ	#		
Sulfate	mg/L	05/15/2012	0001	152.4	-	350	790		FQ	#	25	
Temperature	C	05/15/2012	N001	152.4	-	350	19.54		FQ	#		
Total Dissolved Solids	mg/L	05/15/2012	0001	152.4	-	350	2500		FQ	#	80	
Turbidity	NTU	05/15/2012	N001	152.4	-	350	82.8		FQ	#		
Uranium	mg/L	05/15/2012	0001	152.4	-	350	0.0076		FQ	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site
REPORT DATE: 7/10/2012
Location: S(SG) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	05/15/2012	0001	159	-	280	20	U	FQ	#	20	
Arsenic	mg/L	05/15/2012	0001	159	-	280	0.00023		FQ	#	0.000015	
Bicarbonate	mg/L	05/15/2012	0001	159	-	280	390		FQ	#	20	
Calcium	mg/L	05/15/2012	0001	159	-	280	340		FQ	#	0.012	
Chloride	mg/L	05/15/2012	0001	159	-	280	520		FQ	#	10	
Dissolved Oxygen	mg/L	05/15/2012	N001	159	-	280	2.69		FQ	#		
Magnesium	mg/L	05/15/2012	0001	159	-	280	170		FQ	#	0.013	
Molybdenum	mg/L	05/15/2012	0001	159	-	280	0.001		FQ	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	05/15/2012	0001	159	-	280	3		FQ	#	0.05	
Oxidation Reduction Potential	mV	05/15/2012	N001	159	-	280	-138.2		FQ	#		
pH	s.u.	05/15/2012	N001	159	-	280	7.03		FQ	#		
Potassium	mg/L	05/15/2012	0001	159	-	280	21		FQ	#	0.11	
Selenium	mg/L	05/15/2012	0001	159	-	280	0.013		FQ	#	0.000032	
Sodium	mg/L	05/15/2012	0001	159	-	280	360		FQ	#	0.33	
Specific Conductance	umhos /cm	05/15/2012	N001	159	-	280	4265		FQ	#		
Sulfate	mg/L	05/15/2012	0001	159	-	280	1200		FQ	#	25	
Temperature	C	05/15/2012	N001	159	-	280	17.82		FQ	#		
Total Dissolved Solids	mg/L	05/15/2012	0001	159	-	280	3200		FQ	#	80	
Uranium	mg/L	05/15/2012	0001	159	-	280	0.44		FQ	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site
REPORT DATE: 7/10/2012
Location: SIMPSON WELL GPS of coordinates during sampling conducted 5/15/2012 by SM Stoller Corporation

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	05/15/2012	N001	0	-	0	20	U		#	20	
Arsenic	mg/L	05/15/2012	N001	0	-	0	0.00065			#	0.000015	
Bicarbonate	mg/L	05/15/2012	N001	0	-	0	210			#	20	
Calcium	mg/L	05/15/2012	N001	0	-	0	260			#	0.012	
Chloride	mg/L	05/15/2012	N001	0	-	0	120			#	4	
Dissolved Oxygen	mg/L	05/15/2012	N001	0	-	0	7.91			#		
Magnesium	mg/L	05/15/2012	N001	0	-	0	47			#	0.013	
Molybdenum	mg/L	05/15/2012	N001	0	-	0	0.0006	B		#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	05/15/2012	N001	0	-	0	7.9			#	0.05	
Oxidation Reduction Potential	mV	05/15/2012	N001	0	-	0	117.5			#		
pH	s.u.	05/15/2012	N001	0	-	0	7.4			#		
Potassium	mg/L	05/15/2012	N001	0	-	0	3.6			#	0.11	
Selenium	mg/L	05/15/2012	N001	0	-	0	0.042			#	0.00032	
Sodium	mg/L	05/15/2012	N001	0	-	0	110			#	0.0066	
Specific Conductance	umhos /cm	05/15/2012	N001	0	-	0	1842			#		
Sulfate	mg/L	05/15/2012	N001	0	-	0	570			#	10	
Temperature	C	05/15/2012	N001	0	-	0	16.65			#		
Total Dissolved Solids	mg/L	05/15/2012	N001	0	-	0	1400			#	40	
Turbidity	NTU	05/15/2012	N001	0	-	0	1.2			#		
Uranium	mg/L	05/15/2012	N001	0	-	0	0.0033			#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site
REPORT DATE: 7/10/2012
Location: T(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	05/15/2012	N001	128	-	133	20	U	F	#	20	
Arsenic	mg/L	05/15/2012	N001	128	-	133	0.003		F	#	0.00015	
Bicarbonate	mg/L	05/15/2012	N001	128	-	133	420		F	#	20	
Calcium	mg/L	05/15/2012	N001	128	-	133	120		F	#	0.012	
Chloride	mg/L	05/15/2012	N001	128	-	133	36		F	#	4	
Dissolved Oxygen	mg/L	05/15/2012	N001	128	-	133	1.21		F	#		
Magnesium	mg/L	05/15/2012	N001	128	-	133	30		F	#	0.013	
Molybdenum	mg/L	05/15/2012	N001	128	-	133	0.023		F	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	05/15/2012	N001	128	-	133	47		F	#	0.5	
Oxidation Reduction Potential	mV	05/15/2012	N001	128	-	133	63.3		F	#		
pH	s.u.	05/15/2012	N001	128	-	133	6.99		F	#		
Potassium	mg/L	05/15/2012	N001	128	-	133	5.5		F	#	0.11	
Selenium	mg/L	05/15/2012	N001	128	-	133	0.0037		F	#	0.00032	
Sodium	mg/L	05/15/2012	N001	128	-	133	180		F	#	0.066	
Specific Conductance	umhos /cm	05/15/2012	N001	128	-	133	1673		F	#		
Sulfate	mg/L	05/15/2012	N001	128	-	133	220		F	#	10	
Temperature	C	05/15/2012	N001	128	-	133	18.96		F	#		
Total Dissolved Solids	mg/L	05/15/2012	N001	128	-	133	1200		F	#	40	
Turbidity	NTU	05/15/2012	N001	128	-	133	1.96		F	#		
Uranium	mg/L	05/15/2012	N001	128	-	133	0.55		F	#	0.000029	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site
REPORT DATE: 7/10/2012
Location: Y2(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	05/15/2012	N001	98	-	123	20	U	F	#	20	
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	05/15/2012	N002	98	-	123	20	U	F	#	20	
Arsenic	mg/L	05/15/2012	N001	98	-	123	0.0013		F	#	0.00015	
Arsenic	mg/L	05/15/2012	N002	98	-	123	0.0016		F	#	0.00015	
Bicarbonate	mg/L	05/15/2012	N001	98	-	123	210		F	#	20	
Bicarbonate	mg/L	05/15/2012	N002	98	-	123	210		F	#	20	
Calcium	mg/L	05/15/2012	N001	98	-	123	62		F	#	0.012	
Calcium	mg/L	05/15/2012	N002	98	-	123	60		F	#	0.012	
Chloride	mg/L	05/15/2012	N001	98	-	123	14		F	#	1	
Chloride	mg/L	05/15/2012	N002	98	-	123	16		F	#	1	
Dissolved Oxygen	mg/L	05/15/2012	N001	98	-	123	5.61		F	#		
Magnesium	mg/L	05/15/2012	N001	98	-	123	17		F	#	0.013	
Magnesium	mg/L	05/15/2012	N002	98	-	123	17		F	#	0.013	
Molybdenum	mg/L	05/15/2012	N001	98	-	123	0.0016		F	#	0.00032	
Molybdenum	mg/L	05/15/2012	N002	98	-	123	0.0015		F	#	0.00032	
Nitrate + Nitrite as Nitrogen	mg/L	05/15/2012	N001	98	-	123	1.3		F	#	0.01	
Nitrate + Nitrite as Nitrogen	mg/L	05/15/2012	N002	98	-	123	1.4		F	#	0.01	
Oxidation Reduction Potential	mV	05/15/2012	N001	98	-	123	160.6		F	#		
pH	s.u.	05/15/2012	N001	98	-	123	7.57		F	#		
Potassium	mg/L	05/15/2012	N001	98	-	123	3.1		F	#	0.11	
Potassium	mg/L	05/15/2012	N002	98	-	123	3.1		F	#	0.11	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site
REPORT DATE: 7/10/2012
Location: Y2(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Selenium	mg/L	05/15/2012	N001	98	-	123	0.001		F	#	0.00032	
Selenium	mg/L	05/15/2012	N002	98	-	123	0.0016		F	#	0.00032	
Sodium	mg/L	05/15/2012	N001	98	-	123	48		JF	#	0.0066	
Sodium	mg/L	05/15/2012	N002	98	-	123	51	E	JF	#	0.0066	
Specific Conductance	umhos /cm	05/15/2012	N001	98	-	123	648		F	#		
Sulfate	mg/L	05/15/2012	N001	98	-	123	92		F	#	2.5	
Sulfate	mg/L	05/15/2012	N002	98	-	123	95		F	#	2.5	
Temperature	C	05/15/2012	N001	98	-	123	14.14		F	#		
Total Dissolved Solids	mg/L	05/15/2012	N001	98	-	123	410		F	#	20	
Total Dissolved Solids	mg/L	05/15/2012	N002	98	-	123	410		F	#	20	
Turbidity	NTU	05/15/2012	N001	98	-	123	0.85		F	#		
Uranium	mg/L	05/15/2012	N001	98	-	123	0.0048		F	#	0.000029	
Uranium	mg/L	05/15/2012	N002	98	-	123	0.0046		F	#	0.000029	

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:
- * Replicate analysis not within control limits.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- U Analytical result below detection limit.

W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
X,Y,Z Laboratory defined qualifier, see case narrative.

DATA QUALIFIERS:

F Low flow sampling method used.
G Possible grout contamination, pH > 9.
J Estimated value.
L Less than 3 bore volumes purged prior to sampling.
Q Qualitative result due to sampling technique.
R Unusable result.
U Parameter analyzed for but was not detected.
X Location is undefined.

QA QUALIFIER:

Validated according to quality assurance guidelines.

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Static Water Level Data

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STATIC WATER LEVELS (USEE700) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 7/4/2012

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
21(M)		6587.8	05/15/2012	16:30:15	127.93	6459.87	
22(M)		6600.33	05/15/2012	15:19:46	136.38	6463.95	
E(M)		6613.08	05/15/2012	09:38:12	81.53	6531.55	
F(M)		6600.31	05/15/2012	10:59:57	113.5	6486.81	
I(SG)		6616.17	05/15/2012	17:42:13	196.82	6419.35	
L(SG)		6602.6	05/15/2012	11:32:06	159.34	6443.26	
T(M)		6609.4	05/15/2012	13:56:25	134.08	6475.32	
X(M)			05/15/2012	07:39:00			D
Y2(M)		6605.4	05/15/2012	10:26:04	117.43	6487.97	

FLOW CODES: B BACKGROUND C CROSS GRADIENT D DOWN GRADIENT F OFF SITE
N UNKNOWN O ON SITE U UPGRADIENT

WATER LEVEL FLAGS: D Dry F Flowing B Below top of pump

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Time-Concentration Graphs

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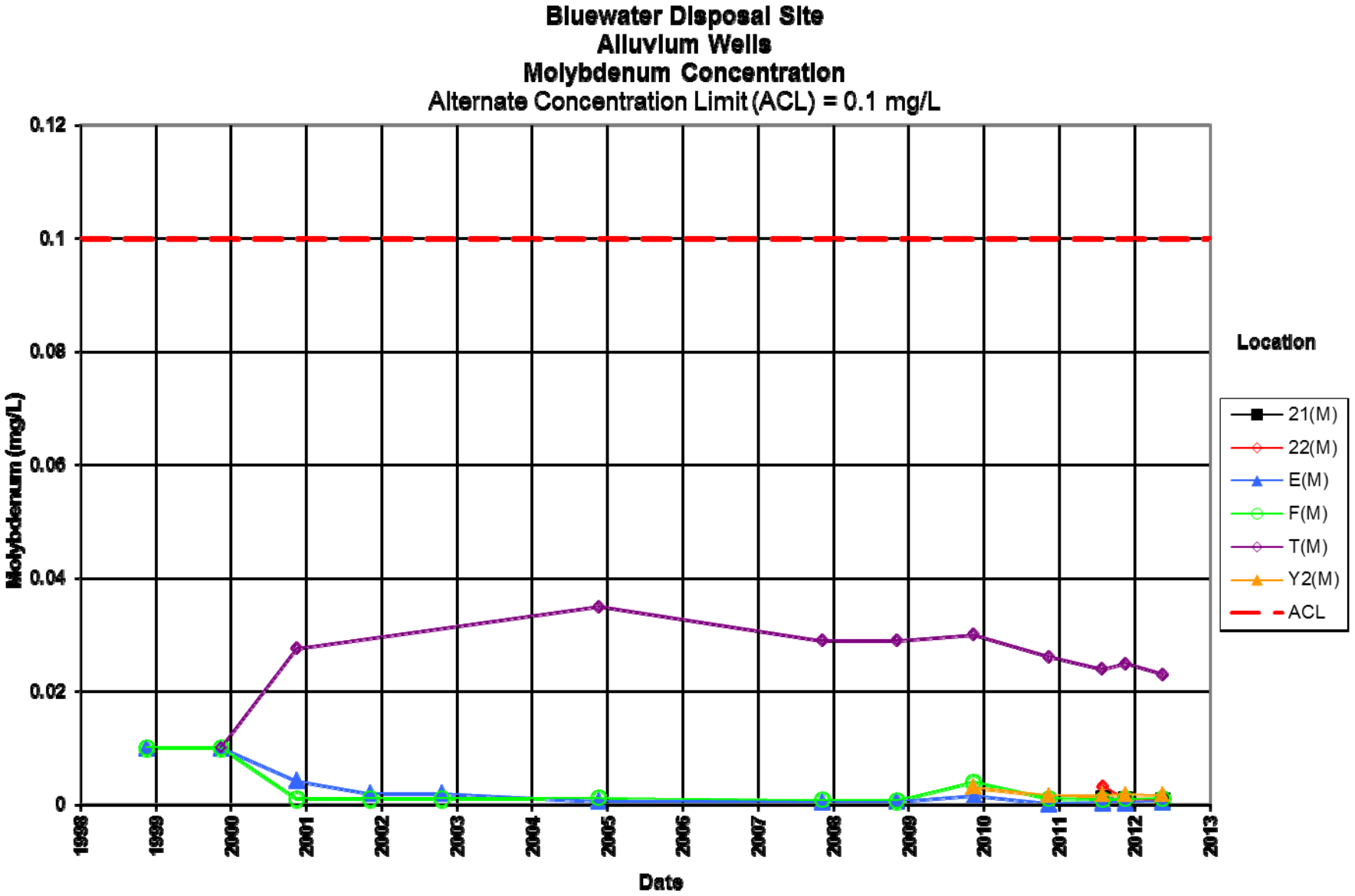
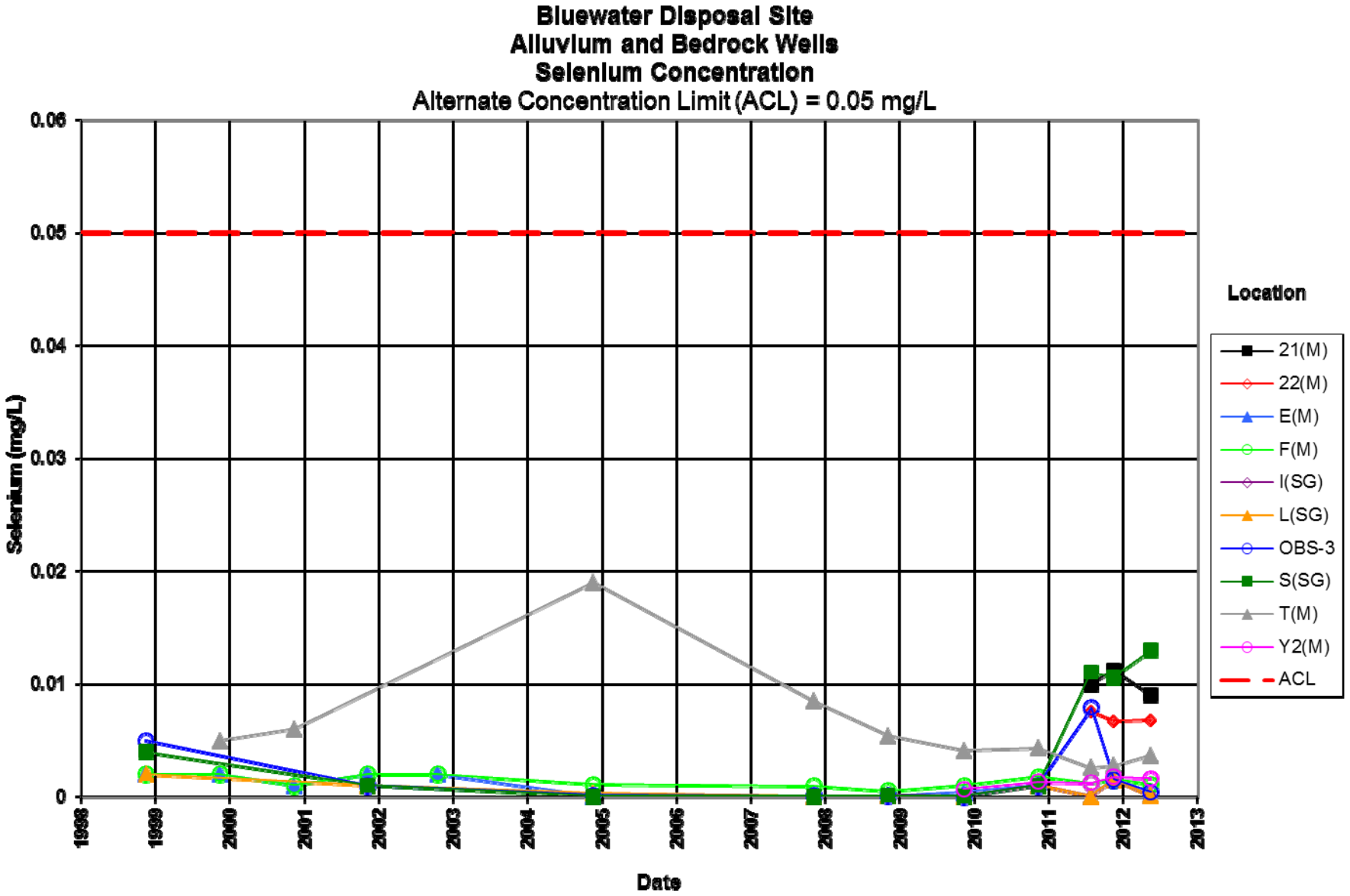
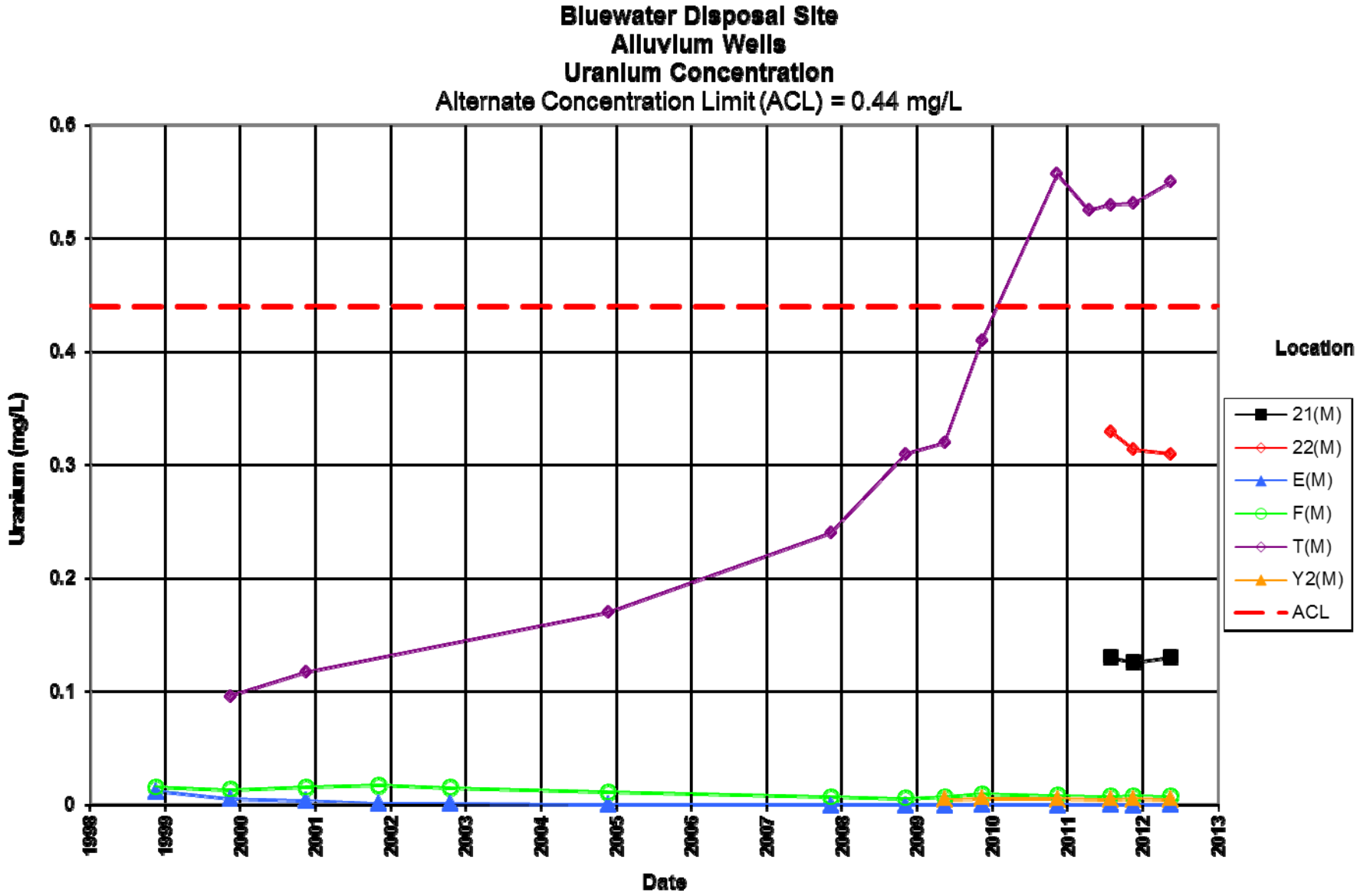
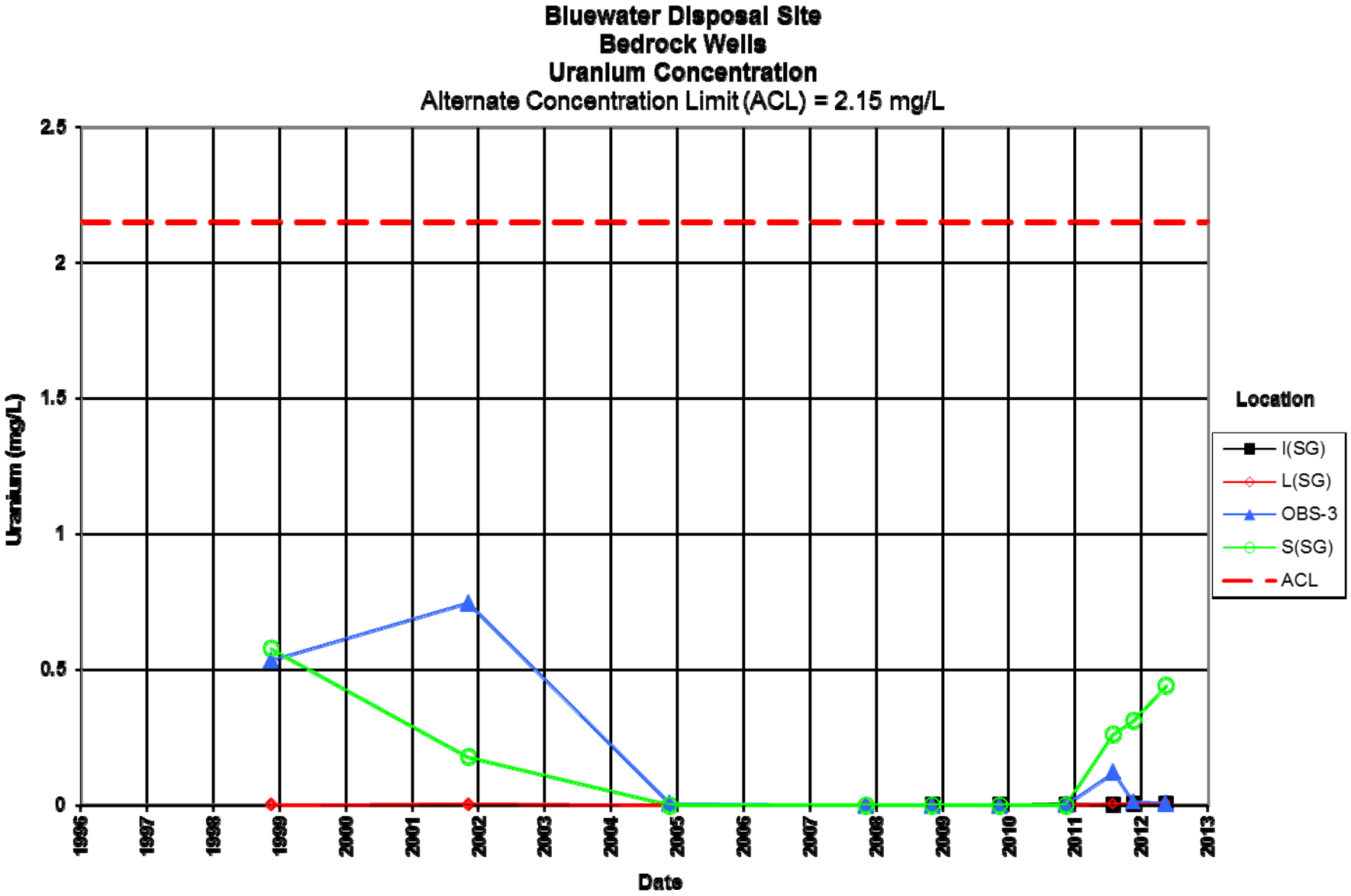

Bluewater Disposal Site
Alluvium Wells
Molybdenum Concentration
Alternate Concentration Limit (ACL) = 0.1 mg/L
Molybdenum (mg/L)
0.12
0.1
0.08
0.06
0.04
0.02
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Date
Location
21(M)
22(M)
E(M)
F(M)
T(M)
Y2(M)
ACL


Bluewater Disposal Site
Alluvium and Bedrock Wells
Selenium Concentration
Alternate Concentration Limit (ACL) = 0.05 mg/L
Selenium (mg/L)
0.06
0.05
0.04
0.03
0.02
0.01
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Date
Location
21(M)
22(M)
E(M)
F(M)
I(SG)
L(SG)
OBS-3
S(SG)
T(M)
Y2(M)
ACL


Bluewater Disposal Site
Alluvium Wells
Uranium Concentration
Alternate Concentration Limit (ACL) = 0.44 mg/L
Uranium (mg/L)
0.6
0.5
0.4
0.3
0.2
0.1
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Date
Location
21(M)
22(M)
E(M)
F(M)
T(M)
Y2(M)
ACL


Bluewater Disposal Site
Bedrock Wells
Uranium Concentration
Alternate Concentration Limit (ACL) = 2.15 mg/L
Uranium (mg/L)
2.5
2
1.5
1
0.5
0
1995
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Date
Location
I(SG)
L(SG)
OBS-3
S(SG)
ACL

Attachment 3
Sampling and Analysis Work Order

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Task Order LM00-501
Control Number 12-0555

April 16, 2012

U.S. Department of Energy
Office of Legacy Management
ATTN: Dr. April Gil
Site Manager
2597 Legacy Way
Grand Junction, CO 81503

SUBJECT: Contract No. DE-AM01-07LM00060, S.M. Stoller Corporation (Stoller)
May 2012 Environmental Sampling at the Bluewater, New Mexico, Site

REFERENCE: Task Order LM00-501-03-203-402, Bluewater, New Mexico, Disposal Site

Dear Dr. Gil:

The purpose of this letter is to inform you of the upcoming sampling event at Bluewater, New Mexico. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Bluewater site. Water quality data will be collected at this site as part of the environmental sampling currently scheduled to begin the week of May 14, 2012.

The following list shows the monitoring wells (with zone of completion) scheduled for sampling during this event.

Monitoring Wells*

E(M) Al	F(M) Al	T(M) Al	Y2(M) Al	X(M) Al	L(SG) Sg	S(SG) Sg
OBS-3 Sg	I(SG) Sg	21(M) Al	22(M) Al			

*NOTE: Al = alluvium; Sg = San Andres-Glorieta

Domestic Well
Simpson

All samples will be collected as directed in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*. Access agreements are being reviewed and are expected to be complete by the beginning of fieldwork.

The S.M. Stoller Corporation 2597 Legacy Way Grand Junction, CO 81503 (970) 248-6000 Fax (970) 248-6040

Please contact me at (970) 248-6022 if you have any questions.

Sincerely,

Richard K. Johnson
Site Lead

RKJ/lcg/lb

Enclosures (3)

cc: (electronic)
Karl Stoeckle, DOE
Steve Donivan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
Richard Johnson, Stoller
EDD Delivery
rc-grand.junction
File: BLU 410.02(A)

The S.M. Stoller Corporation 2597 Legacy Way Grand Junction, CO 81503 (970) 248-6000 Fax (970) 248-6040

Sampling Frequencies for Locations at Bluewater, New Mexico

Location ID	Quarterly	Semiannually	Annually	Triennially	Not Sampled	Notes
Monitoring Wells						
E(M)		X				PCBs in November only
Y2(M)		X				PCBs in November only
F(M)		X				PCBs in November only
T(M)		X				PCBs in November only
X(M)		X				Usually dry
L(SG)		X				
S(SG)		X				
OBS-3		X				
I(SG)		X				
21(M)		X				
22(M)		X				
Domestic Well						
Simpson		X				

Sampling conducted in May and November.

Constituent Sampling Breakdown

Site	Bluewater				
Analyte	Groundwater	Surface Water	Required Detection Limit (mg/L)	Analytical Method	Line Item Code
Approx. No. Samples/yr	10	0			
Field Measurements					
Alkalinity					
Dissolved Oxygen	X				
Redox Potential	X				
pH	X				
Specific Conductance	X				
Turbidity	X				
Temperature	X				
Laboratory Measurements					
Aluminum					
Ammonia as N (NH3-N)					
Arsenic	X		0.0001	SW-846 6020	LMM-02
Bicarbonate	X		10	SM2320 B	WCH-A-003
Calcium	X		5	SW-846 6010	LMM-01
Carbonate	X		10	SM2320 B	WCH-A-004
Chloride	X		0.5	SW-846 9056	WCH-A-039
Iron					
Lead					
Magnesium	X		5	SW-846 6010	LMM-01
Manganese					
Molybdenum	X		0.003	SW-846 6020	LMM-02
Nickel					
Nickel-63					
Nitrate + Nitrite as N (NO3+NO2)-N	X		0.05	EPA 353.1	WCH-A-022
PCBs	E(M), Y2(M), F(M), T(M), and X(M) only		0.0005	SW-846 8082	PEP-A-006
Potassium	X		1	SW-846 6010	LMM-01
Radium-226					
Radium-228					
Selenium	X		0.0001	SW-846 6020	LMM-02
Silica					
Sodium	X		1	SW-846 6010	LMM-01
Strontium					
Sulfate	X		0.5	SW-846 9056	MIS-A-044
Sulfide					
Total Dissolved Solids	X		10	SM2540 C	WCH-A-033
Total Organic Carbon					
Uranium	X		0.0001	SW-846 6020	LMM-02
Vanadium					
Zinc					
Total No. of Analytes	15	0			

Note: All analyte samples are considered unfiltered unless stated otherwise. All private well samples are to be unfiltered. The total number of analytes does not include field parameters.

Attachment 4
Trip Report

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Stoller
Grand Junction Office
established 1959

Memorandum

DATE: May 24, 2012

TO: Dick Johnson

FROM: Jeff Walters

SUBJECT: Sampling Trip Report

Site: Bluewater, NM.

Dates of Sampling Event: May 14-15, 2012

Team Members: Kyle Turley and Jeff Walters

Number of Locations Sampled: 10 monitoring wells and 1 domestic well were sampled for Ca, K, Mg, Na, As, Mo, Se, U, Cl, Alk-Carb, Alk-Bicarb, SO_4, TDS, (NO_3+NO_2)-N.

Locations Not Sampled/Reason: Monitoring well X(M) was dry.

Location Specific Information:

TICKET NUMBER	SAMPLE DATE	LOCATION	Description
KFT 175	5/15/2012	E(M)	Cat II-Turbidity was 15 NTUs so sample was filtered. Water looked very clear except for what appeared to be scale from the well casing.
KFT 177	5/15/2012	Y2(M)	Cat I
KFT 178	5/15/2012	F(M)	Cat I
KFT 176	5/15/2012	T(M)	Cat I
KFT 186	------	X(M)	Dry
KFT 181	5/15/2012	L(SG)	Listed as Cat II but is purged and sampled with a submersible electric pump by a program directive.
KFT 182	5/15/2012	S(SG)	Listed as Cat II but is purged and sampled with a submersible electric pump by a program directive. Sample was filtered.
KFT 179	5/15/2012	OBS-3	Listed as Cat II but is purged and sampled with a submersible electric pump by a program directive. Sample was filtered
KFT 180	5/15/2012	I(SG)	Cat I
KFT 184	5/15/2012	21(M)	Cat I
KFT 185	5/15/2012	22(M)	Cat I
KGT 742	5/15/2012	SIMPSON	Cat IV- Domestic well

Field Variance: None.

Quality Control Sample Cross Reference: The following is the false identification assigned to the quality control sample:

FALSE ID	TRUE ID	SAMPLE TYPE	ASSOCIATED MATRIX	TICKET NUMBER
2074	Y2(M)	Duplicate	Groundwater	KFT 183

RIN Number Assigned: All samples were assigned to RIN 12044518.

Sample Shipment: Samples were shipped overnight via FedEx to ALS Laboratory Group in Ft Collins, CO, from the FedEx office in Farmington, NM, on May 16, 2012.

Well Inspection Summary: Well inspections were conducted at all sampled wells. All wells were in good condition.

Equipment: Wells L(SG), S(SG), and OBS-3 are equipped with dedicated electric submersible pumps. All other wells are equipped with dedicated bladder pumps. The 300ft water level indicator worked intermittingly until probe was cleaned thoroughly. All other equipment and meters operated adequately.

Water Level Measurements: Water levels collected in all sampled wells are in the Field Data Collection System (FDCS) Water Sampling Logs.

Institutional Controls: All gates were appropriately closed and locked during the sampling event.

Fences, Gates, Locks: All were in good condition.
Signs: No missing or vandalized signs were observed.
Trespassing/Site Disturbances: None observed

Note: This sampling event was completed in one day. The Project Manager asked to have the sampling sequence and procedure recorded in this trip report for future reference.

- First, well X(M) was confirmed dry.
- Then, well L(SG) was set up to purge. The purge took about 3 hours. While L(SG) was purging, wells E(M), Y2(M), and F(M) were sampled. Then L(SG) was sampled.
- Next, Well OBS-3 was set up to purge. This well usually goes dry at about 85 gallons so it was purged until dry then we ate lunch while awaiting recovery. After lunch, we sampled OBS-3.
- After OBS-3, well S(SG) was set up to purge. The purge took about 2 hours. While S(SG) was purging, wells T(M), SIMPSON, and 22(M) were sampled. Then S(SG) was sampled.
- After packing all equipment needed for purging with the electric pumps, wells 21(M) and I(SG) were sampled respectively.

Site Issues:

Disposal Cell/Drainage Structure Integrity: N/A
Vegetation/Noxious Weed Concerns: N/A
Maintenance Requirements: N/A

Corrective Action Taken: N/A

(JW/lcg)

cc: (electronic)
April Gil, DOE
Steve Donivan, Stoller
Dick Johnson, Stoller
EDD Delivery