

Data Validation Package

November 2014
Groundwater Sampling at the
Bluewater, New Mexico, Disposal Site

February 2015

This page intentionally left blank

Contents

Sampling Event Summary	1
Bluewater, New Mexico, Disposal Site, Sample Location Map.....	5
Data Assessment Summary.....	7
Water Sampling Field Activities Verification Checklist	9
Laboratory Performance Assessment	11
Sampling Quality Control Assessment.....	25
Certification	28

Attachment 1—Assessment of Anomalous Data

Potential Outliers Report

Attachment 2—Data Presentation

Groundwater Quality Data
Static Water Level Data
Time-Concentration Graphs

Attachment 3—Sampling and Analysis Work Order

Attachment 4—Trip Report

This page intentionally left blank

Sampling Event Summary

Site: Bluewater, New Mexico, Disposal Site

Sampling Period: November 18–20, 2014

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). Sampling and analyses were conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PRO/S04351, continually updated). A duplicate sample was collected from location 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 (San Andres aquifer) and are identified by the suffix (SG). Wells HMC-951 and OBS-3 are also completed in the San Andres aquifer.

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 characterize the site aquifers and to support a regional groundwater investigation being conducted by the New Mexico Environment Department.

Alluvium Monitoring Wells

Alluvium wells 21(M) and 22(M) were installed downgradient of point-of-compliance (POC) well T(M) in summer 2011; well 21(M) is located near the site boundary where alluvial groundwater leaves the site. These wells were installed in response to the exceedance of the alternate concentration limit (ACL) for uranium in well T(M) during previous sampling events.

Alluvium wells 20(M) and 23(M) were installed in summer 2012 to further characterize the alluvial aquifer. Well 20(M) is located near the west site boundary where alluvial groundwater enters the site. Well 23(M) is downgradient of well 21(M) and is located near the site entrance. This well was dry at the time of construction and for the first sampling event, but since then has had sufficient water to sample. Well T(M) was also scheduled for sampling but continues to be dry; the most recent sample was collected in May 2012 and had a uranium concentration of 0.55 milligram per liter (mg/L).

Analytical results for the required constituents for the alluvium wells are provided in Table 1. The uranium concentration was 0.129 mg/L in well 21(M), and was 0.122 mg/L in point-of-exposure (POE) well X(M); these results exceed the Uranium Mill Tailings Radiation Control Act (UMTRCA) maximum concentration limit (MCL) of 0.044 mg/L (40 CFR 192, Table 1) and the New Mexico drinking water standard of 0.03 mg/L. Therefore, alluvial groundwater with elevated uranium is leaving the site; this occurrence is being evaluated by DOE in consultation

with the U.S. Nuclear Regulatory Commission. PCBs have never been detected in any of the wells at the site and were not detected in any samples during this event.

Table 1. November 2014 Groundwater Monitoring Analytical Results for the Alluvium Wells

Location	Category	Molybdenum (mg/L) ACL=0.10 mg/L	Selenium (mg/L) ACL=0.05 mg/L	Uranium (mg/L) ACL=0.44 mg/L
20(M)	Upgradient	0.00192	0.00442	0.0129
21(M)	Downgradient	0.00119	0.0109	0.129
22(M)	Downgradient	0.00106	0.00391	0.388
23(M)	Downgradient	0.0064	0.00199	0.025
E(M)	Background	ND	ND	0.000067
F(M)	POC	0.000974	ND	0.00757
T(M)	POC	Not Sampled	Not Sampled	Not Sampled
X(M)	POE	ND	0.00745	0.122
Y2(M)	PCBs	0.00168	ND	0.00494

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

Bedrock Monitoring Wells

Bedrock wells 11(SG), 13(SG), 14(SG), 15(SG), 16(SG), and 18(SG) were installed in summer 2012 to gain a better understanding of the hydrogeological characteristics of the San Andres aquifer at the site, and because a nearby offsite private well (HMC-951) completed in the same aquifer indicated elevated uranium concentrations. There were no bedrock wells in the south portion of the site prior to this well construction project. Wells 11(SG) and 14(SG) are considered to be crossgradient of the disposal cells, and all of the other new wells are downgradient of the cells. Well 16(SG) was installed between POC wells OBS-3 and S(SG) because of the poor condition of those wells (their well screens are highly corroded). The results from wells OBS-3 and S(SG) are not considered representative of the aquifer but continue to be sampled in accordance with the LTSP.

Bedrock wells I(SG) and L(SG) were completed with open-hole construction through the entire thickness of the San Andres Limestone and Glorieta Sandstone formations. All of the new San Andres aquifer wells onsite, except well 16(SG), are screened in the upper 50 feet of the San Andres Limestone as are most San Andres aquifer wells in the region because this is the most productive zone of the aquifer (well 16(SG) is screened in the Glorieta Sandstone because the San Andres Limestone is dry at that location). In response to questions by New Mexico Environment Department about the possibility of stratification of contamination within the aquifer, downhole conductivity was measured in wells I(SG) and L(SG) in spring 2013. No change in conductivity with depth was observed in background well L(SG). However, two zones of different conductivities were noted in POE well I(SG). During this sampling event, a low-flow sample was collected from well I(SG) at a depth of 265 feet in the zone of highest conductivity.

Offsite private well HMC-951, located near the site entrance and used only for monitoring purposes, was sampled by DOE for the third time during this event. A blockage near the bottom of the well casing prevented installation of a low-flow sampling pump in the open hole portion of the well. Consequently, a sample was collected using a submersible pump inside the well casing after three columns of water were purged from the well.

Analytical results for the required constituents in bedrock wells are provided in Table 2. The selenium and uranium concentrations did not exceed ACLs in the POC wells. However, the uranium concentrations in downgradient wells 13(SG) and 18(SG), located along the site boundary, continue to exceed the UMTRCA MCL and the New Mexico drinking water standard. The uranium concentration at the sampled depth in POE well I(SG) also exceeded these standards. The uranium concentration in HMC-951 exceeded the New Mexico drinking water standard. Therefore, San Andres aquifer groundwater with elevated uranium is leaving the site; this occurrence is being evaluated by DOE in consultation with the U.S. Nuclear Regulatory Commission.

Table 2. November 2014 Groundwater Monitoring Analytical Results for the Bedrock Wells

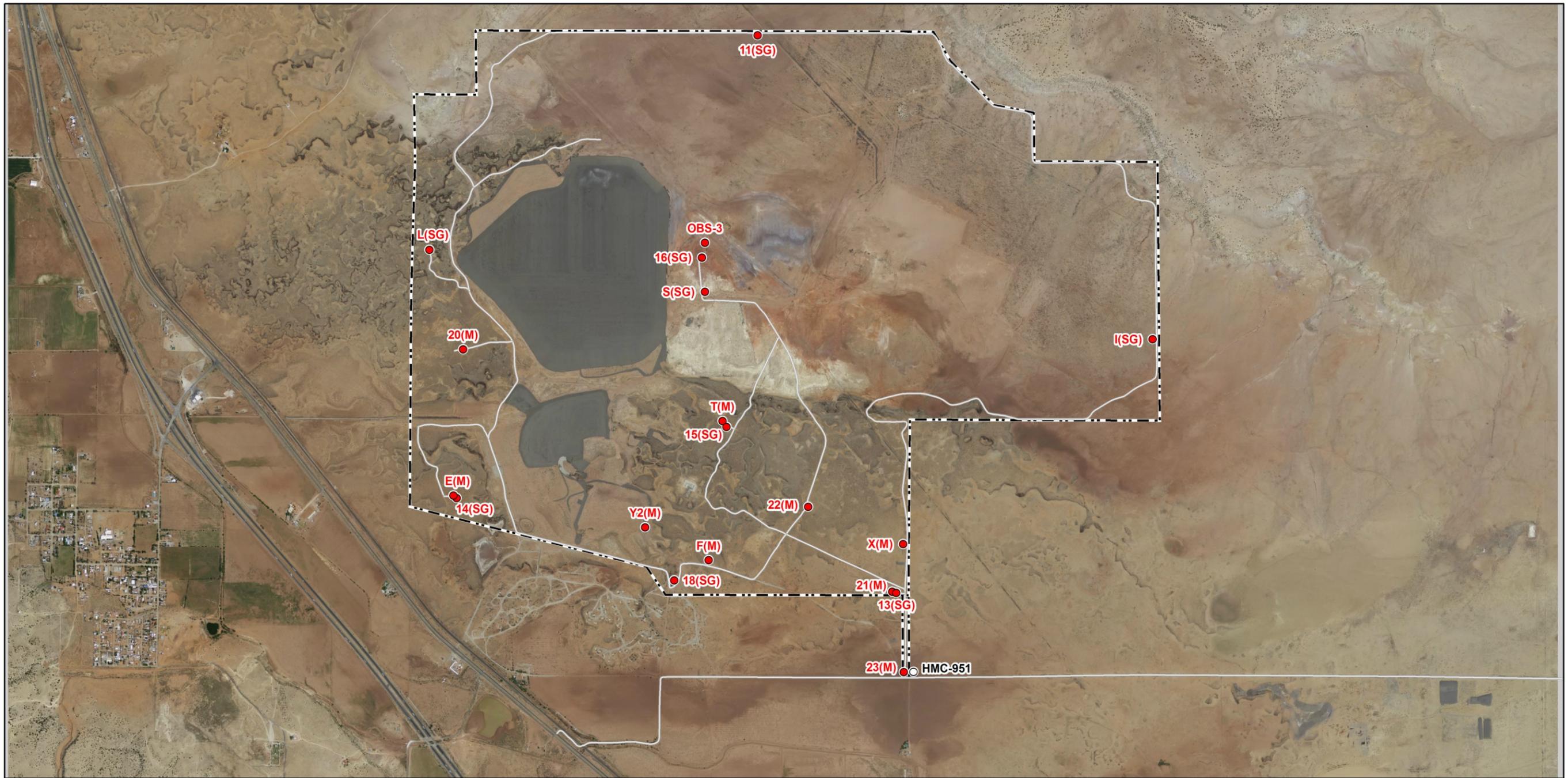
Location	Category	Selenium (mg/L) ACL=0.05 mg/L	Uranium (mg/L) ACL=2.15 mg/L
11(SG)	Downgradient	ND	0.0127
13(SG)	Downgradient	0.00621	0.102
14(SG)	Upgradient	ND	0.0593
15(SG)	Downgradient	ND	0.102
16(SG)	Downgradient	0.017	1.29
18(SG)	Downgradient	0.00532	0.195
HMC-951	Offsite	0.00592	0.0332
I(SG) 265 feet	POE	0.0081	0.306
L(SG)	Background	ND	0.003
OBS-3	POC	ND	0.00363
S(SG)	POC	0.0116	0.552

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

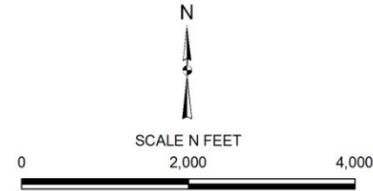

 Richard K. Johnson, Site Lead
 Stoller Newport News Nuclear, Inc., a wholly owned
 subsidiary of Huntington Ingalls Industries, Inc.

2/5/15
 Date

This page intentionally left blank



- LEGEND**
- DOE WELL TO BE SAMPLED
 - PRIVATE WELL TO BE SAMPLED
 - - - SITE BOUNDARY



U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AM01-07LM00060
Planned Sampling Map Bluewater, NM, Disposal Site November 2014	
DATE PREPARED: October 2, 2014	FILENAME: S1223700

M:\LTS\111\0001\16\001\S12237\S1223700-11x17.mxd smithw 10/02/2014 12:36:44 PM

Bluewater, New Mexico, Disposal Site, Sample Location Map

This page intentionally left blank

Data Assessment Summary

This page intentionally left blank

Water Sampling Field Activities Verification Checklist

Project	Bluewater, New Mexico	Date(s) of Water Sampling	November 18–20, 2014
Date(s) of Verification	January 19, 2015	Name of Verifier	Gretchen Baer

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures? List any Program Directives or other documents, SOPs, instructions.	Yes	Program Directive BLU-2014-01. Work Order letter dated October 9, 2014.
2. Were the sampling locations specified in the planning documents sampled?	No	Location T(M) was dry and not sampled.
3. Were calibrations conducted as specified in the above-named documents?	No	DO: Sensor was calibrated with incorrect barometric pressures. All DO results are qualified. pH: at 184.3, a span was above range (165-180). DO, Conductivity, ORP: calibration constants were not recorded.
4. Was an operational check of the field equipment conducted daily? Did the operational checks meet criteria?	Yes No	2 ORP checks failed low. Associated ORP results are qualified.
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	Filtered ferrous iron measurements were also taken.
6. Were wells categorized correctly?	No	A bailed well and the 3 high-flow wells were mis-categorized as Category IV wells.
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 meet criteria prior to sampling?	Yes	
Was the flow rate less than 500 mL/min?	Yes	

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well: 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	One duplicate was collected at Y2(M).
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with non-dedicated equipment?	NA	All equipment was dedicated.
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were the true identities of the QC samples documented?	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?	Yes	
17. Was all pertinent information documented on the field data sheets?	No	The volumes purged were not recorded at the high flow locations HMC-951, OBS-3, and S(SG). The stability measurements at HMC-951 were collected at incorrect intervals. Results are qualified. Stability measurements for S(SG) were not taken. Results are qualified. Filtration was not indicated at 3 locations that were filtered.
18. Was the presence or absence of ice in the cooler documented at every sample location?	No	The presence of ice was inadvertently not documented at 2 locations.
19. Were water levels measured at the locations specified in the planning documents?	No	The WL was inadvertently not recorded for location OBS-3.

Laboratory Performance Assessment

General Information

Report Number (RIN): 14116606
 Sample Event: November 18–20, 2014
 Site(s): Bluewater, New Mexico
 Laboratory: GEL Laboratories, Charleston, South Carolina
 Work Order No.: 361856
 Analysis: Metals, Organics, and Wet Chemistry
 Validator: Gretchen Baer
 Review Date: January 19, 2015

This validation was performed according to the *Environmental Procedures Catalog*, (LMS/POL/S04325, continually updated) “Standard Practice for Validation of Environmental 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/ SM 2320B	EPA 310.1/ SM 2320B
Alkalinity, Carbonate	WCH-A-003	EPA 310.1/ SM 2320B	EPA 310.1/ SM 2320B
Arsenic, Molybdenum, Selenium, Uranium	LMM-02	SW-846 3005A	SW-846 6020
Calcium, Magnesium, Potassium, Silica, Sodium	LMM-01	SW-846 3005A	SW-846 6010B
Chloride, Sulfate	MIS-A-045	EPA 300.0	EPA 300.0
Nitrate + Nitrite as N	WCH-A-022	EPA 353.2	EPA 353.2
Polychlorinated Biphenyls (PCBs)	PEP-A-006	SW-846 3535A	SW-846 8082
Total Dissolved Solids (TDS)	WCH-A-033	SM 2540C	SM 2540C

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
361856-001	11(SG)	Molybdenum	U	Less than 5 times the method blank
361856-011	Y2(M) Duplicate	Alkalinity, Bicarbonate	R	Reanalysis result inconsistent with original
361856-011	Y2(M) Duplicate	Sodium	J	Field duplicate RPD > 20%
361856-012	E(M)	Molybdenum	U	Less than 5 times the method blank
361856-016	L(SG)	Molybdenum	U	Less than 5 times the method blank

Table 4 (continued). Data Qualifier Summary

Sample Number	Location	Analyte(s)	Flag	Reason
361856-017	OBS-3	Molybdenum	U	Less than 5 times the method blank
361856-019	X(M)	Molybdenum	U	Less than 5 times the method blank
361856-020	Y2(M)	Sodium	J	Field duplicate RPD > 20%

Sample Shipping/Receiving

GEL Laboratories in Charleston, South Carolina, received 20 water samples on November 22, 2014, accompanied by a Chain of Custody form. The air bill numbers were listed 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. An incorrect bottle set was listed for location 2554, which is a field duplicate. The correct bottle set was collected; the error was limited to the Chain of Custody. Three bottles for PCBs were listed on the COC form for sample E(M) but one bottle was received. The laboratory noted the errors and all analyses proceeded as requested. The sample date was written incorrectly on the Chain of Custody for sample Y2(M). The error was corrected upon entry into the environmental database.

Preservation and Holding Times

The sample shipment was received intact with the temperature inside the iced coolers at 2 °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. The arsenic and selenium laboratory MDLs are greater than the MDLs specified in the applicable line item codes but were accepted for this RIN. 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.

Method EPA 300.0

Calibrations for chloride and sulfate were performed using seven calibration standards on September 23, November 26, and December 10, 2014. 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. All calibration checks met the acceptance criteria.

Method EPA 310.1/ SM 2320B

There are no initial or continuing calibration requirements associated with the alkalinity method.

Method EPA 353.2

Calibrations for nitrate + nitrite as N were performed using six calibration standards on November 25, 2014. 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. All calibration check results were within the acceptance criteria.

Method SM 2540C

There are no initial or continuing calibration requirements associated with the total dissolved solids method.

Method SW-846 6010B

Calibrations for calcium, magnesium, potassium, silica, and sodium were performed on December 8 and 9, 2014, 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. Initial and continuing calibration verification checks were made at the required frequency. 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, with the following exceptions. Some potassium check results were below the acceptance range and one result was below 30 percent. All affected results were greater than 5 times the PQL, so no qualification is necessary.

Method SW-846 6020A

Calibrations were performed for arsenic, molybdenum, selenium, and uranium on December 15, 2014, 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. All calibration checks associated with reported results 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 8082

The initial calibrations for PCBs were performed using five calibration standards on November 26, 2014. Calibration curves were established using the calibration factor (CF) approach. The relative standard deviations for the CFs were less than 20 percent. Initial and continuing calibration verification checks were made at the required frequency. All checks met the acceptance criteria with these exceptions: an Aroclor-1260 peak (column 1) was slightly above the range; however, the average concentration of the five quantified peaks met the acceptance criteria and no reported results were associated with these checks. PCBs were not detected in any field sample.

Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis.

Metals and Wet Chemistry

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. For potassium, some blanks were negative and the absolute values were greater than the MDL but less than 5 times the MDL. All associated results were greater than 5 times the MDL, so no results are qualified.

Organics

The method blank results were below the MDL for all target compounds.

Inductively Coupled Plasma Interference Check Sample Analysis

Interference check samples 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. MS/MSD data are not evaluated when the spike was performed on a sample that required dilution. The spike recoveries met the acceptance criteria for all analytes evaluated. (A spike recovery of nitrate + nitrite as N exceeded the laboratory’s acceptance criteria, but was within the ± 25 percent requirement.)

Laboratory Replicate Analysis

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

PCB Surrogate Recoveries

Laboratory performance for individual samples is established by monitoring the recovery of surrogate spikes. The PCB surrogate recoveries were within the acceptance ranges for all samples.

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 PCB and ion chromatography data. All peak integrations were satisfactory.

Anion/Cation Balance

The anion/cation balance is used to determine if major ion concentrations have been quantified correctly. The total anions should balance with (be equal to) the total cations when expressed in milliequivalents per liter (meq/L). Table 5 shows the total anion and cation results in groundwater samples from this event (using the field measurements of alkalinity) and the charge balance, which is a relative percent difference calculation. Typically, a charge balance difference of ≤ 10 percent is considered acceptable.

Table 5. Comparison of Major Anions and Cations in Groundwater Samples

Location	Cations (meq/L)	Anions (meq/L)	Charge Balance (%)
11(SG)	28.12	29.82	2.93
13(SG)	16.05	17.99	5.70
14(SG)	21.25	22.42	2.66
15(SG)	20.04	21.09	2.55
16(SG)	44.07	45.36	1.44
18(SG)	19.03	19.32	0.77
20(M)	14.33	15.40	3.62

Table 5 (continued). Comparison of Major Anions and Cations in Groundwater Samples

Location	Cations (meq/L)	Anions (meq/L)	Charge Balance (%)
21(M)	19.98	20.49	1.26
22(M)	13.21	14.70	5.35
23(M)	9.93	10.94	4.85
E(M)	15.81	17.08	3.85
F(M)	5.56	6.27	5.98
HMC-951	13.80	15.02	4.24
I(SG)	32.67	34.16	2.23
L(SG)	28.46	29.69	2.13
OBS-3	33.71	37.25	4.99
S(SG)	42.86	48.05	5.71
X(M)	18.65	21.32	6.68
Y2(M)	6.16	6.63	3.66

The charge balance value for all locations was less than 10 percent.

Electronic Data Deliverable (EDD) File

The EDD file arrived on December 20, 2014. 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. An incorrect sample date for location Y2(M) was provided to the laboratory on the Chain of Custody. The sample date was corrected upon entry into the environmental database.

SAMPLE MANAGEMENT SYSTEM

EDD Non-Conformance Report

Report Date: 1/16/2015

EDD File:

EDD Errors: 1

[Delete Current Row](#)

Record	Table	Error Type	Field	Error Description
151	Sample	Entry Error	Date Sampled	Incorrect date sampled.

SAMPLE MANAGEMENT SYSTEM

General Data Validation Report

RIN: 14116606 Lab Code: GEN Validator: Gretchen Baer Validation Date: 1/16/2015
Project: Bluewater Analysis Type: Metals General Chem Rad Organics
of Samples: 20 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
- Detection Limits
- Field/Trip Blanks
- Field Duplicates

All analyses were completed within the applicable holding times.

There are 40 detection limit failures.

There was 1 duplicate evaluated.

SAMPLE MANAGEMENT SYSTEM

Non-Compliance Report: Detection Limits

RIN: 14116606 Lab Code: GEN

Project: Bluewater

Validation Date: 1/16/2015

Ticket	Location	Lab Sample ID	Method Code	Lab Method	Analyte Name	Result	Qualifier	Reported Detection Limit	Required Detection Limit	Units
MMR 914 11(SG)		361856001	LMM-02	EPA 3005/6020	Selenium	1.50	U	1.5	0.1	µg/L
MMR 914 11(SG)		361856001	LMM-02	EPA 3005/6020	Arsenic	4.44	B	1.7	0.1	µg/L
MMR 915 13(SG)		361856002	LMM-02	EPA 3005/6020	Arsenic	3.88	B	1.7	0.1	µg/L
MMR 915 13(SG)		361856002	LMM-02	EPA 3005/6020	Selenium	6.21	U	1.5	0.1	µg/L
MMR 916 14(SG)		361856003	LMM-02	EPA 3005/6020	Selenium	1.50	U	1.5	0.1	µg/L
MMR 916 14(SG)		361856003	LMM-02	EPA 3005/6020	Arsenic	7.39	U	1.7	0.1	µg/L
MMR 917 15(SG)		361856004	LMM-02	EPA 3005/6020	Arsenic	6.26	U	1.7	0.1	µg/L
MMR 917 15(SG)		361856004	LMM-02	EPA 3005/6020	Selenium	1.50	U	1.5	0.1	µg/L
MMR 918 16(SG)		361856005	LMM-02	EPA 3005/6020	Arsenic	1.70	U	1.7	0.1	µg/L
MMR 918 16(SG)		361856005	LMM-02	EPA 3005/6020	Selenium	17	U	1.5	0.1	µg/L
MMR 919 18(SG)		361856006	LMM-02	EPA 3005/6020	Selenium	5.32	U	1.5	0.1	µg/L
MMR 919 18(SG)		361856006	LMM-02	EPA 3005/6020	Arsenic	2.03	B	1.7	0.1	µg/L
MMR 920 20(M)		361856007	LMM-02	EPA 3005/6020	Selenium	4.42	B	1.5	0.1	µg/L
MMR 920 20(M)		361856007	LMM-02	EPA 3005/6020	Arsenic	9.69	U	1.7	0.1	µg/L
MMR 911 21(M)		361856008	LMM-02	EPA 3005/6020	Arsenic	3.07	B	1.7	0.1	µg/L
MMR 911 21(M)		361856008	LMM-02	EPA 3005/6020	Selenium	10.9	U	1.5	0.1	µg/L
MMR 912 22(M)		361856009	LMM-02	EPA 3005/6020	Selenium	3.91	B	1.5	0.1	µg/L
MMR 912 22(M)		361856009	LMM-02	EPA 3005/6020	Arsenic	3.24	B	1.7	0.1	µg/L
MMR 922 23(M)		361856010	LMM-02	EPA 3005/6020	Selenium	1.99	B	1.5	0.1	µg/L
MMR 922 23(M)		361856010	LMM-02	EPA 3005/6020	Arsenic	1.70	U	1.7	0.1	µg/L
MMR 923 2554		361856011	LMM-02	EPA 3005/6020	Selenium	1.50	U	1.5	0.1	µg/L
MMR 923 2554		361856011	LMM-02	EPA 3005/6020	Arsenic	1.70	U	1.7	0.1	µg/L
MMR 903 E(M)		361856012	LMM-02	EPA 3005/6020	Selenium	1.50	U	1.5	0.1	µg/L

SAMPLE MANAGEMENT SYSTEM

Non-Compliance Report: Detection Limits

RIN: 14116606 Lab Code: GEN

Project: Bluewater

Validation Date: 1/16/2015

Ticket	Location	Lab Sample ID	Method Code	Lab Method	Analyte Name	Result	Qualifier	Reported Detection Limit	Required Detection Limit	Units
MMR 903 E(M)		361856012	LMM-02	EPA 3005/6020	Arsenic	1.70	U	1.7	0.1	µg/L
MMR 905 F(M)		361856013	LMM-02	EPA 3005/6020	Selenium	1.50	U	1.5	0.1	µg/L
MMR 905 F(M)		361856013	LMM-02	EPA 3005/6020	Arsenic	1.70	U	1.7	0.1	µg/L
MMR 921 HMC-951		361856014	LMM-02	EPA 3005/6020	Selenium	5.92		1.5	0.1	µg/L
MMR 921 HMC-951		361856014	LMM-02	EPA 3005/6020	Arsenic	2.24	B	1.7	0.1	µg/L
MMR 924 I(SG)		361856015	LMM-02	EPA 3005/6020	Selenium	8.1		1.5	0.1	µg/L
MMR 924 I(SG)		361856015	LMM-02	EPA 3005/6020	Arsenic	1.70	U	1.7	0.1	µg/L
MMR 908 L(SG)		361856016	LMM-02	EPA 3005/6020	Arsenic	1.70	U	1.7	0.1	µg/L
MMR 908 L(SG)		361856016	LMM-02	EPA 3005/6020	Selenium	1.50	U	1.5	0.1	µg/L
MMR 906 OBS-3		361856017	LMM-02	EPA 3005/6020	Selenium	1.50	U	1.5	0.1	µg/L
MMR 906 OBS-3		361856017	LMM-02	EPA 3005/6020	Arsenic	1.70	U	1.7	0.1	µg/L
MMR 909 S(SG)		361856018	LMM-02	EPA 3005/6020	Selenium	11.6		1.5	0.1	µg/L
MMR 909 S(SG)		361856018	LMM-02	EPA 3005/6020	Arsenic	1.70	U	1.7	0.1	µg/L
MMR 913 X(M)		361856019	LMM-02	EPA 3005/6020	Selenium	7.45		1.5	0.1	µg/L
MMR 913 X(M)		361856019	LMM-02	EPA 3005/6020	Arsenic	1.70	U	1.7	0.1	µg/L
MMR 904 Y2(M)		361856020	LMM-02	EPA 3005/6020	Selenium	1.50	U	1.5	0.1	µg/L
MMR 904 Y2(M)		361856020	LMM-02	EPA 3005/6020	Arsenic	1.70	U	1.7	0.1	µg/L

SAMPLE MANAGEMENT SYSTEM Organics Data Validation Summary

RIN: 14116606

Project: Bluewater

Lab Code: GEN

Validation Date: 1/19/2015

LCS Recovery: All LCS recoveries were within the laboratory acceptance limits.

Method Blank(s): All method blanks results were below the method detection limit.

MS/MSD Recovery: All MS/MSD recoveries were within the laboratory acceptance limits.

Surrogate Recovery: All surrogate recoveries were within the laboratory acceptance limits.

SAMPLE MANAGEMENT SYSTEM
Metals Data Validation Worksheet

RIN: 14116606 Lab Code: GEN Date Due: 12/20/2014
 Matrix: Water Site Code: BLU01 Date Completed: 12/19/2014

Analyte	Method Type	Date Analyzed	CALIBRATION			Method	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
			Int.	R ²	CCV								
Calcium	ICP/ES	12/15/2014	0.0000	1.0000	OK	OK	103.0			1.0	97.0	0.6	103.0
Magnesium	ICP/ES	12/15/2014	0.0000	1.0000	OK	OK	104.0			2.0	96.0	2.6	101.3
Potassium	ICP/ES	12/15/2014	0.0000	0.9993	OK	OK	105.0	102.0		1.0	113.0	4.6	8.9
Silica	ICP/ES	12/15/2014	0.0000	0.9997	OK	OK	100.0	106.0		3.0	104.0	3.3	84.3
Sodium	ICP/ES	12/15/2014	0.0000	1.0000	OK	OK	107.0			1.0	110.0	0.7	92.6
Arsenic	ICP/MS	12/08/2014	0.0000	1.0000	OK	OK	83.1	88.8			98.8		98.0
Molybdenum	ICP/MS	12/08/2014	0.0000	1.0000	OK	OK	103.0	112.0		13.0	109.0		105.0
Selenium	ICP/MS	12/09/2014	0.0000	1.0000	OK	OK	109.0	103.0			98.2		108.0
Uranium	ICP/MS	12/09/2014	0.0000	1.0000	OK	OK	104.0	106.0		0.0	107.0	0.5	98.0

SAMPLE MANAGEMENT SYSTEM
Wet Chemistry Data Validation Worksheet

RIN: 14116606 Lab Code: GEN Date Due: 12/20/2014
 Matrix: Water Site Code: BLU01 Date Completed: 12/19/2014

Analyte	Date Analyzed	CALIBRATION			Method	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R ²	CCV/CCB						
ALKALINITY, Total as CaCO3	12/02/2014				OK	105.00	111.0			
ALKALINITY, Total as CaCO3	12/02/2014				OK	105.00	96.0			
ALKALINITY, Total as CaCO3	12/02/2014				OK	104.00				
ALKALINITY, Total as CaCO3	12/03/2014				OK	103.00	103.0			
Bicarbonate alkalinity (CaCO3)	12/02/2014								0	
Bicarbonate alkalinity (CaCO3)	12/02/2014								0	
Bicarbonate alkalinity (CaCO3)	12/03/2014								6.00	
Carbonate alkalinity (CaCO3)	12/02/2014									
Carbonate alkalinity (CaCO3)	12/03/2014									
Chloride	09/23/2014	0.084	0.9992	OK	OK					
Chloride	11/26/2014	0.106	0.9992	OK	OK					
Chloride	12/08/2014				OK	99.10			0	
Chloride	12/08/2014				OK	103.00				
Chloride	12/09/2014								0	
Chloride	12/10/2014	0.035	0.9992	OK	OK					

SAMPLE MANAGEMENT SYSTEM
Wet Chemistry Data Validation Worksheet

RIN: 14116606 Lab Code: GEN Date Due: 12/20/2014
 Matrix: Water Site Code: BLU01 Date Completed: 12/19/2014

Analyte	Date Analyzed	CALIBRATION			Method	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R ²	CCV/CCB						
Chloride	12/10/2014								0	
NO2+NO3 as N	11/25/2014	0.000	0.9999	OK	OK	97.80	80.8			
NO2+NO3 as N	11/25/2014						92.9			
Sulfate	09/23/2014	0.080	0.9997	OK	OK					
Sulfate	11/26/2014	0.129	0.9992	OK	OK					
Sulfate	12/08/2014				OK	100.00			0	
Sulfate	12/08/2014				OK	104.00				
Sulfate	12/09/2014								0	
Sulfate	12/10/2014	0.023	0.9995	OK	OK					
Sulfate	12/12/2014								0	
Total Dissolved Solids	11/24/2014				OK	97.10			0	
Total Dissolved Solids	11/24/2014								6.00	

Sampling Quality Control Assessment

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

Sampling Protocol

Sample results for monitoring wells were qualified with an “F” flag in the database, indicating the wells were purged and sampled using the low-flow sampling method and Category I criteria, with the following exceptions:

- As per Program Directive BLU-2014-01, wells HMC-951, OBS-3, and S(SG) were not sampled using low-flow criteria. These wells were sampled using high-volume and high-flow submersible pumps.
- Wells 23(M) and E(M) were sampled as Category II or III. The sample results were qualified with a “Q” flag, indicating the data are qualitative because of the sampling technique.

The dissolved oxygen (DO) sensor was calibrated using sea-level corrected barometric pressures rather than true barometric pressures. All DO measurements collected during this event are qualified with a “J” flag (estimated). During the calibration verifications for oxidation/reduction potential (ORP) on November 19 and 20, 2014, the acceptance criterion was not met; all ORP measurements collected on November 19 and 20, 2014, are qualified with a “J” flag as estimated values. At locations HMC-951 and S(SG) the stability measurements were not collected according to the program directive; all associated results are qualified with a “J” flag as estimated values.

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. Duplicate samples were collected from location Y2(M) (field duplicate ID 2554). The relative percent difference (RPD) 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.

The duplicate results met the criteria with the exception of the bicarbonate alkalinity and the sodium RPDs, which were slightly above the criteria at 41 and 38 percent, respectively. There were no analytical errors identified during the review of the sodium data and the sodium results for this location are qualified with a “J” flag as estimated values. The anion/cation balance for Y2(M) using the laboratory provided alkalinity is 1.3 percent (acceptable) but the balance for the field duplicate, 2554, using the laboratory provided alkalinity (301 mg/L) is 16 percent.

Upon request, the laboratory reanalyzed a remaining portion of sample 2554 and alkalinity was reported as 186 mg/L in the reanalysis, which was reported under Work Order 365492. The anion/cation balance using this alkalinity result is 0.3 percent (acceptable). The laboratory did not provide a sufficient explanation for the discrepancies in the results; the original alkalinity result for 2554 is qualified with an “R” flag as rejected.

SAMPLE MANAGEMENT SYSTEM
Validation Report: Field Duplicates

Page 1 of 1

RIN: 14116606 Lab Code: GEN Project: Bluewater Validation Date: 1/16/2015

Duplicate: 2554

Sample: Y2(M)

Analyte	Sample				Duplicate				RPD	RER	Units
	Result	Flag	Error	Dilution	Result	Flag	Error	Dilution			
Aroclor 1016	0.0333	U		1.00	0.0383	U		1.00			ug/L
Aroclor 1221	0.0333	U		1.00	0.0383	U		1.00			ug/L
Aroclor 1232	0.0333	U		1.00	0.0383	U		1.00			ug/L
Aroclor 1242	0.0333	U		1.00	0.0383	U		1.00			ug/L
Aroclor 1248	0.0333	U		1.00	0.0383	U		1.00			ug/L
Aroclor 1254	0.0333	U		1.00	0.0383	U		1.00			ug/L
Aroclor 1260	0.0333	U		1.00	0.0383	U		1.00			ug/L
Arsenic	1.70	U		1.00	1.70	U		1.00			ug/L
Bicarbonate alkalinity (CaCO3)	199			1.00	301			1.00	40.80		mg/L
Calcium	59000			1.00	67800			1.00	13.88		ug/L
Carbonate alkalinity (CaCO3)	0.725	U		1.00	0.725	U		1.00			mg/L
Chloride	9.33			20.00	10.4			20.00	10.85		mg/L
Magnesium	15800			1.00	17200			1.00	8.48		ug/L
Molybdenum	1.68			1.00	1.6			1.00	4.88		ug/L
NO2+NO3 as N	1.41			5.00	1.57			5.00	10.74		mg/L
Potassium	2820			1.00	3050			1.00	7.84		ug/L
Selenium	1.50	U		1.00	1.50	U		1.00			ug/L
Silica	29200			1.00	34600			1.00	16.93		ug/L
Sodium	42500			1.00	28900			1.00	38.10		ug/L
Sulfate	95.5			20.00	98.5			20.00	3.09		mg/L
Total Dissolved Solids	429			1.00	427			1.00	0.47		mg/L
Uranium	4.94			1.00	4.55			1.00	8.22		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: Stephen Donovan 2-5-2015
Stephen Donovan Date

Data Validation Lead: Gr B 2-5-2015
Gretchen Baer Date

Attachment 1
Assessment of Anomalous Data

This page intentionally left blank

Potential Outliers Report

This page intentionally left blank

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 can result from transcription errors, data-coding errors, or measurement system problems. However, outliers can also represent true extreme values of a distribution and can 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.** Do this by generating the Outliers Report using the Sample Management System from data in the environmental database. The application compares the new data set (in standard environmental database units) with historical data and lists the new data that fall outside the historical data range. A determination is also made as to whether the data are normally distributed using the Shapiro-Wilk Test.
2. **Apply the appropriate statistical test.** Dixon's Test for extreme values 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.** The review should include an evaluation of any notable trends in the data that may indicate the outliers represent true extreme values.

Three results were identified as potentially anomalous. (See the Data Validation Outliers Report, below.) Chloride at 18(SG) and total dissolved solids at 20(M) were identified as potential outliers because there is low variability in the few historical data points at these locations. There were no errors identified with the data, and the results from this sampling event are acceptable as qualified. The bicarbonate alkalinity as CaCO_3 result for the field duplicate at location Y2(M) was higher than the historical range. This result has been qualified with an "R" flag (rejected) for suspected laboratory error.

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 Beginning 1/1/2004

Laboratory: GEL Laboratories

RIN: 14116606

Report Date: 1/26/2015

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current	Qualifiers		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
BLU01	11(SG)	N001	11/18/2014	Magnesium	59.8		F	69.3		F	60.8		F	6	0	No
BLU01	13(SG)	N001	11/20/2014	Chloride	92.6		F	90.2		F	81.9		F	5	0	No
BLU01	13(SG)	N001	11/20/2014	Sulfate	403		F	459	H	FJ	405		F	5	0	No
BLU01	13(SG)	N001	11/20/2014	Total Dissolved Solids	1030		F	1080		F	1060		F	5	0	No
BLU01	14(SG)	N001	11/18/2014	Potassium	5.11		F	5.08	E	JF	4.49		F	5	0	No
BLU01	15(SG)	N001	11/19/2014	Potassium	6.35		F	6.02	E	F	5.34		F	6	0	No
BLU01	16(SG)	N001	11/19/2014	Chloride	434		F	641	H	FJ	453		F	5	0	No
BLU01	16(SG)	N001	11/19/2014	Sulfate	1180		F	1910	H	FJ	1200		F	5	0	No
BLU01	16(SG)	N001	11/19/2014	Total Dissolved Solids	3000		F	3100		F	3010		F	5	0	No
BLU01	18(SG)	N001	11/19/2014	Chloride	111		F	101		F	96.1		F	5	0	Yes
BLU01	18(SG)	N001	11/19/2014	Total Dissolved Solids	1220		F	1210		F	1150		F	5	0	No
BLU01	20(M)	N001	11/18/2014	Arsenic	0.00969		F	0.00962		F	0.00850	U	F	5	2	No
BLU01	20(M)	N001	11/18/2014	Chloride	60.8		F	59.6		F	54.8		F	5	0	No
BLU01	20(M)	N001	11/18/2014	Sodium	94.3		F	92.8		F	82.9		F	5	0	No
BLU01	20(M)	N001	11/18/2014	Total Dissolved Solids	990		F	963		F	951		F	5	0	Yes
BLU01	20(M)	N001	11/18/2014	Uranium	0.0129		F	0.0197		F	0.0139		F	5	0	No
BLU01	21(M)	N001	11/20/2014	Alkalinity, Bicarbonate (As CaCO3)	265		F	263		F	164		F	6	0	NA
BLU01	21(M)	N001	11/20/2014	Nitrate + Nitrite as Nitrogen	12.7		F	12.1		F	7.90		F	10	0	No
BLU01	21(M)	N001	11/20/2014	Total Dissolved Solids	1270		F	1400		F	1280		F	10	0	No
BLU01	22(M)	N001	11/19/2014	Chloride	30.2		F	44.0		F	31.2		F	8	0	No

Data Validation Outliers Report - No Field Parameters

Comparison: All historical Data Beginning 1/1/2004

Laboratory: GEL Laboratories

RIN: 14116606

Report Date: 1/26/2015

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current	Qualifiers		Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
					Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect	
BLU01	22(M)	N001	11/19/2014	Sulfate	212		F	280		F	221		F	8	0	No
BLU01	22(M)	N001	11/19/2014	Total Dissolved Solids	871		F	1100		F	873		F	8	0	No
BLU01	F(M)	N001	11/19/2014	Chloride	13.3		F	13.0		F	11.0		F	12	0	No
BLU01	S(SG)	0001	11/19/2014	Calcium	260		J	897		F	276			11	0	NA
BLU01	S(SG)	0001	11/19/2014	Total Dissolved Solids	2920		J	5250		F	2950			11	0	NA
BLU01	Y2(M)	N002	11/19/2014	Alkalinity, Bicarbonate (As CaCO3)	301		RF	208		F	194		F	7	0	Yes
BLU01	Y2(M)	N001	11/19/2014	Magnesium	15.8		F	18.0		F	16.2		F	13	0	No
BLU01	Y2(M)	N001	11/19/2014	Total Dissolved Solids	429		F	420		F	350		F	13	0	No
BLU01	Y2(M)	N002	11/19/2014	Total Dissolved Solids	427		F	420		F	350		F	13	0	No
BLU01	Y2(M)	N002	11/19/2014	Uranium	0.00455		F	0.00557		F	0.00460		F	14	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.

NA: Data are not normally or lognormally distributed.

This page intentionally left blank

Attachment 2

Data Presentation

This page intentionally left blank

Groundwater Quality Data

This page intentionally left blank

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 11(SG) WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/18/2014	N001	265	-	295	474		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/18/2014	N001	265	-	295	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/18/2014	N001	265	-	295	482		F	#		
Arsenic	mg/L	11/18/2014	N001	265	-	295	0.00444	B	F	#	0.0017	
Calcium	mg/L	11/18/2014	N001	265	-	295	174		F	#	0.05	
Chloride	mg/L	11/18/2014	N001	265	-	295	203		F	#	3.35	
Dissolved Oxygen	mg/L	11/18/2014	N001	265	-	295	0.91		JF	#		
Field Ferrous Iron	mg/L	11/18/2014	N001	265	-	295	2.41		F	#		
Magnesium	mg/L	11/18/2014	N001	265	-	295	59.8		F	#	0.11	
Molybdenum	mg/L	11/18/2014	N001	265	-	295	0.00091		UF	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2014	N001	265	-	295	0.017	U	F	#	0.017	
Oxidation Reduction Potential	mV	11/18/2014	N001	265	-	295	-111.2		F	#		
pH	s.u.	11/18/2014	N001	265	-	295	6.96		F	#		
Potassium	mg/L	11/18/2014	N001	265	-	295	11.4		F	#	0.05	
Selenium	mg/L	11/18/2014	N001	265	-	295	0.0015	U	F	#	0.0015	
Silica	mg/L	11/18/2014	N001	265	-	295	19		F	#	0.053	
Sodium	mg/L	11/18/2014	N001	265	-	295	327		F	#	0.1	
Specific Conductance	umhos /cm	11/18/2014	N001	265	-	295	2596		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 11(SG) WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Sulfate	mg/L	11/18/2014	N001	265	-	295	694		F	#	6.65	
Temperature	C	11/18/2014	N001	265	-	295	12.7		F	#		
Total Dissolved Solids	mg/L	11/18/2014	N001	265	-	295	1790		F	#	3.4	
Turbidity	NTU	11/18/2014	N001	265	-	295	1.09		F	#		
Uranium	mg/L	11/18/2014	N001	265	-	295	0.0127		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 13(SG) WELL

Parameter	Units	Sample		Depth Range		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft	BLS)		Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/20/2014	N001	270	- 300	289		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/20/2014	N001	270	- 300	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/20/2014	N001	270	- 300	331		F	#		
Arsenic	mg/L	11/20/2014	N001	270	- 300	0.00388	B	F	#	0.0017	
Calcium	mg/L	11/20/2014	N001	270	- 300	151		F	#	0.05	
Chloride	mg/L	11/20/2014	N001	270	- 300	92.6		F	#	1.34	
Dissolved Oxygen	mg/L	11/20/2014	N001	270	- 300	3.16		JF	#		
Field Ferrous Iron	mg/L	11/20/2014	N001	270	- 300	0.01		F	#		
Magnesium	mg/L	11/20/2014	N001	270	- 300	45.1		F	#	0.11	
Molybdenum	mg/L	11/20/2014	N001	270	- 300	0.00142		F	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2014	N001	270	- 300	5.18		F	#	0.17	
Oxidation Reduction Potential	mV	11/20/2014	N001	270	- 300	-20.1		JF	#		
pH	s.u.	11/20/2014	N001	270	- 300	7.07		F	#		
Potassium	mg/L	11/20/2014	N001	270	- 300	5.97		F	#	0.05	
Selenium	mg/L	11/20/2014	N001	270	- 300	0.00621		F	#	0.0015	
Silica	mg/L	11/20/2014	N001	270	- 300	16		F	#	0.053	
Sodium	mg/L	11/20/2014	N001	270	- 300	107		F	#	0.1	
Specific Conductance	umhos /cm	11/20/2014	N001	270	- 300	1503		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 13(SG) WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Sulfate	mg/L	11/20/2014	N001	270	-	300	403		F	#	6.65	
Temperature	C	11/20/2014	N001	270	-	300	13.56		F	#		
Total Dissolved Solids	mg/L	11/20/2014	N001	270	-	300	1030		F	#	3.4	
Turbidity	NTU	11/20/2014	N001	270	-	300	1.06		F	#		
Uranium	mg/L	11/20/2014	N001	270	-	300	0.102		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 14(SG) WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/18/2014	N001	285	-	315	428		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/18/2014	N001	285	-	315	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/18/2014	N001	285	-	315	420		F	#		
Arsenic	mg/L	11/18/2014	N001	285	-	315	0.00739		F	#	0.0017	
Calcium	mg/L	11/18/2014	N001	285	-	315	123		F	#	0.05	
Chloride	mg/L	11/18/2014	N001	285	-	315	158		F	#	1.34	
Dissolved Oxygen	mg/L	11/18/2014	N001	285	-	315	0.66		JF	#		
Field Ferrous Iron	mg/L	11/18/2014	N001	285	-	315	0.27		F	#		
Magnesium	mg/L	11/18/2014	N001	285	-	315	50.5		F	#	0.11	
Molybdenum	mg/L	11/18/2014	N001	285	-	315	0.00234		F	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2014	N001	285	-	315	0.017	U	F	#	0.017	
Oxidation Reduction Potential	mV	11/18/2014	N001	285	-	315	-59.5		F	#		
pH	s.u.	11/18/2014	N001	285	-	315	7.1		F	#		
Potassium	mg/L	11/18/2014	N001	285	-	315	5.11		F	#	0.05	
Selenium	mg/L	11/18/2014	N001	285	-	315	0.0015	U	F	#	0.0015	
Silica	mg/L	11/18/2014	N001	285	-	315	26.7		F	#	0.053	
Sodium	mg/L	11/18/2014	N001	285	-	315	249		F	#	0.1	
Specific Conductance	umhos/cm	11/18/2014	N001	285	-	315	2013		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 14(SG) WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Sulfate	mg/L	11/18/2014	N001	285 - 315	459		F	#	6.65	
Temperature	C	11/18/2014	N001	285 - 315	13.12		F	#		
Total Dissolved Solids	mg/L	11/18/2014	N001	285 - 315	1310		F	#	3.4	
Turbidity	NTU	11/18/2014	N001	285 - 315	1.1		F	#		
Uranium	mg/L	11/18/2014	N001	285 - 315	0.0593		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 15(SG) WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft	BLS)			Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/19/2014	N001	341	-	371	354		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/19/2014	N001	341	-	371	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/19/2014	N001	341	-	371	360		F	#		
Arsenic	mg/L	11/19/2014	N001	341	-	371	0.00626		F	#	0.0017	
Calcium	mg/L	11/19/2014	N001	341	-	371	102		F	#	0.05	
Chloride	mg/L	11/19/2014	N001	341	-	371	184		F	#	1.34	
Dissolved Oxygen	mg/L	11/19/2014	N001	341	-	371	1.28		JF	#		
Field Ferrous Iron	mg/L	11/19/2014	N001	341	-	371	0.09		F	#		
Magnesium	mg/L	11/19/2014	N001	341	-	371	36		F	#	0.11	
Molybdenum	mg/L	11/19/2014	N001	341	-	371	0.00674		F	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/19/2014	N001	341	-	371	0.017	U	F	#	0.017	
Oxidation Reduction Potential	mV	11/19/2014	N001	341	-	371	-88.5		JF	#		
pH	s.u.	11/19/2014	N001	341	-	371	7.25		F	#		
Potassium	mg/L	11/19/2014	N001	341	-	371	6.35		F	#	0.05	
Selenium	mg/L	11/19/2014	N001	341	-	371	0.0015	U	F	#	0.0015	
Silica	mg/L	11/19/2014	N001	341	-	371	19.7		F	#	0.053	
Sodium	mg/L	11/19/2014	N001	341	-	371	272		F	#	0.1	
Specific Conductance	umhos /cm	11/19/2014	N001	341	-	371	1923		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 15(SG) WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab	Data		QA				
Sulfate	mg/L	11/19/2014	N001	341	-	371	418	F	#	6.65		
Temperature	C	11/19/2014	N001	341	-	371	14.65	F	#			
Total Dissolved Solids	mg/L	11/19/2014	N001	341	-	371	1220	F	#	3.4		
Turbidity	NTU	11/19/2014	N001	341	-	371	1.94	F	#			
Uranium	mg/L	11/19/2014	N001	341	-	371	0.102	F	#	0.000067		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 16(SG) WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/19/2014	N001	195	-	225	411		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/19/2014	N001	195	-	225	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/19/2014	N001	195	-	225	412		F	#		
Arsenic	mg/L	11/19/2014	N001	195	-	225	0.0017	U	F	#	0.0017	
Calcium	mg/L	11/19/2014	N001	195	-	225	293		F	#	0.05	
Chloride	mg/L	11/19/2014	N001	195	-	225	434		F	#	6.7	
Dissolved Oxygen	mg/L	11/19/2014	N001	195	-	225	1.48		JF	#		
Field Ferrous Iron	mg/L	11/19/2014	N001	195	-	225	0		F	#		
Magnesium	mg/L	11/19/2014	N001	195	-	225	142		F	#	0.11	
Molybdenum	mg/L	11/19/2014	N001	195	-	225	0.00245		F	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/19/2014	N001	195	-	225	4.34		F	#	0.085	
Oxidation Reduction Potential	mV	11/19/2014	N001	195	-	225	33.7		JF	#		
pH	s.u.	11/19/2014	N001	195	-	225	6.73		F	#		
Potassium	mg/L	11/19/2014	N001	195	-	225	12.9		F	#	0.05	
Selenium	mg/L	11/19/2014	N001	195	-	225	0.017		F	#	0.0015	
Silica	mg/L	11/19/2014	N001	195	-	225	20.1		F	#	0.053	
Sodium	mg/L	11/19/2014	N001	195	-	225	401		F	#	0.1	
Specific Conductance	umhos /cm	11/19/2014	N001	195	-	225	3952		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 16(SG) WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Sulfate	mg/L	11/19/2014	N001	195 - 225	1180		F	#	13.3	
Temperature	C	11/19/2014	N001	195 - 225	15.6		F	#		
Total Dissolved Solids	mg/L	11/19/2014	N001	195 - 225	3000		F	#	3.4	
Turbidity	NTU	11/19/2014	N001	195 - 225	1.32		F	#		
Uranium	mg/L	11/19/2014	N001	195 - 225	1.29		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 18(SG) WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/19/2014	N001	260	-	290	329		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/19/2014	N001	260	-	290	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/19/2014	N001	260	-	290	319		F	#		
Arsenic	mg/L	11/19/2014	N001	260	-	290	0.00203	B	F	#	0.0017	
Calcium	mg/L	11/19/2014	N001	260	-	290	166		F	#	0.05	
Chloride	mg/L	11/19/2014	N001	260	-	290	111		F	#	1.34	
Dissolved Oxygen	mg/L	11/19/2014	N001	260	-	290	1.19		JF	#		
Field Ferrous Iron	mg/L	11/19/2014	N001	260	-	290	0.01		F	#		
Magnesium	mg/L	11/19/2014	N001	260	-	290	52.7		F	#	0.11	
Molybdenum	mg/L	11/19/2014	N001	260	-	290	0.00214		F	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/19/2014	N001	260	-	290	3.01		F	#	0.085	
Oxidation Reduction Potential	mV	11/19/2014	N001	260	-	290	53.1		JF	#		
pH	s.u.	11/19/2014	N001	260	-	290	6.99		F	#		
Potassium	mg/L	11/19/2014	N001	260	-	290	7.52		F	#	0.05	
Selenium	mg/L	11/19/2014	N001	260	-	290	0.00532		F	#	0.0015	
Silica	mg/L	11/19/2014	N001	260	-	290	17.7		F	#	0.053	
Sodium	mg/L	11/19/2014	N001	260	-	290	143		F	#	0.1	
Specific Conductance	umhos /cm	11/19/2014	N001	260	-	290	1723		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 18(SG) WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Sulfate	mg/L	11/19/2014	N001	260 - 290	461		F	#	6.65	
Temperature	C	11/19/2014	N001	260 - 290	14.04		F	#		
Total Dissolved Solids	mg/L	11/19/2014	N001	260 - 290	1220		F	#	3.4	
Turbidity	NTU	11/19/2014	N001	260 - 290	1.02		F	#		
Uranium	mg/L	11/19/2014	N001	260 - 290	0.195		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 20(M) WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (A as CaCO ₃)	mg/L	11/18/2014	N001	110	-	125	240		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/18/2014	N001	110	-	125	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/18/2014	N001	110	-	125	280		F	#		
Arsenic	mg/L	11/18/2014	N001	110	-	125	0.00969		F	#	0.0017	
Calcium	mg/L	11/18/2014	N001	110	-	125	144		F	#	0.05	
Chloride	mg/L	11/18/2014	N001	110	-	125	60.8		F	#	1.34	
Dissolved Oxygen	mg/L	11/18/2014	N001	110	-	125	6.47		JF	#		
Field Ferrous Iron	mg/L	11/18/2014	N001	110	-	125	0		F	#		
Magnesium	mg/L	11/18/2014	N001	110	-	125	35.6		F	#	0.11	
Molybdenum	mg/L	11/18/2014	N001	110	-	125	0.00192		F	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2014	N001	110	-	125	3.35		F	#	0.085	
Oxidation Reduction Potential	mV	11/18/2014	N001	110	-	125	26.4		F	#		
pH	s.u.	11/18/2014	N001	110	-	125	7.29		F	#		
Potassium	mg/L	11/18/2014	N001	110	-	125	4.32		F	#	0.05	
Selenium	mg/L	11/18/2014	N001	110	-	125	0.00442	B	F	#	0.0015	
Silica	mg/L	11/18/2014	N001	110	-	125	25.6		F	#	0.053	
Sodium	mg/L	11/18/2014	N001	110	-	125	94.3		F	#	0.1	
Specific Conductance	umhos /cm	11/18/2014	N001	110	-	125	1332		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 20(M) WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Sulfate	mg/L	11/18/2014	N001	110	-	125	377	F	#	6.65		
Temperature	C	11/18/2014	N001	110	-	125	13.92	F	#			
Total Dissolved Solids	mg/L	11/18/2014	N001	110	-	125	990	F	#	3.4		
Turbidity	NTU	11/18/2014	N001	110	-	125	1.05	F	#			
Uranium	mg/L	11/18/2014	N001	110	-	125	0.0129	F	#	0.000067		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 21(M) WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/20/2014	N001	139.6	-	149.6	265		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/20/2014	N001	139.6	-	149.6	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/20/2014	N001	139.6	-	149.6	262		F	#		
Arsenic	mg/L	11/20/2014	N001	139.6	-	149.6	0.00307	B	F	#	0.0017	
Calcium	mg/L	11/20/2014	N001	139.6	-	149.6	148		F	#	0.05	
Chloride	mg/L	11/20/2014	N001	139.6	-	149.6	152		F	#	1.34	
Dissolved Oxygen	mg/L	11/20/2014	N001	139.6	-	149.6	5.06		JF	#		
Field Ferrous Iron	mg/L	11/20/2014	N001	139.6	-	149.6	0		F	#		
Magnesium	mg/L	11/20/2014	N001	139.6	-	149.6	38.7		F	#	0.11	
Molybdenum	mg/L	11/20/2014	N001	139.6	-	149.6	0.00119		F	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2014	N001	139.6	-	149.6	12.7		F	#	0.17	
Oxidation Reduction Potential	mV	11/20/2014	N001	139.6	-	149.6	56		JF	#		
pH	s.u.	11/20/2014	N001	139.6	-	149.6	7.34		F	#		
Potassium	mg/L	11/20/2014	N001	139.6	-	149.6	5.87		F	#	0.05	
Selenium	mg/L	11/20/2014	N001	139.6	-	149.6	0.0109		F	#	0.0015	
Silica	mg/L	11/20/2014	N001	139.6	-	149.6	24.8		F	#	0.053	
Sodium	mg/L	11/20/2014	N001	139.6	-	149.6	213		F	#	0.1	
Specific Conductance	umhos/cm	11/20/2014	N001	139.6	-	149.6	1833		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 21(M) WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Sulfate	mg/L	11/20/2014	N001	139.6 - 149.6	483		F	#	6.65	
Temperature	C	11/20/2014	N001	139.6 - 149.6	14.3		F	#		
Total Dissolved Solids	mg/L	11/20/2014	N001	139.6 - 149.6	1270		F	#	3.4	
Turbidity	NTU	11/20/2014	N001	139.6 - 149.6	1.36		F	#		
Uranium	mg/L	11/20/2014	N001	139.6 - 149.6	0.129		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 22(M) WELL

Parameter	Units	Sample		Depth Range (Ft BLS)		Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/19/2014	N001	136.83	- 146.83	319		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/19/2014	N001	136.83	- 146.83	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/19/2014	N001	136.83	- 146.83	351		F	#		
Arsenic	mg/L	11/19/2014	N001	136.83	- 146.83	0.00324	B	F	#	0.0017	
Calcium	mg/L	11/19/2014	N001	136.83	- 146.83	80.7		F	#	0.05	
Chloride	mg/L	11/19/2014	N001	136.83	- 146.83	30.2		F	#	1.34	
Dissolved Oxygen	mg/L	11/19/2014	N001	136.83	- 146.83	4.58		JF	#		
Field Ferrous Iron	mg/L	11/19/2014	N001	136.83	- 146.83	0.32		F	#		
Magnesium	mg/L	11/19/2014	N001	136.83	- 146.83	22.9		F	#	0.11	
Molybdenum	mg/L	11/19/2014	N001	136.83	- 146.83	0.00106		F	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/19/2014	N001	136.83	- 146.83	33.8		F	#	0.85	
Oxidation Reduction Potential	mV	11/19/2014	N001	136.83	- 146.83	89.6		JF	#		
pH	s.u.	11/19/2014	N001	136.83	- 146.83	7.31		F	#		
Potassium	mg/L	11/19/2014	N001	136.83	- 146.83	4.6		F	#	0.05	
Selenium	mg/L	11/19/2014	N001	136.83	- 146.83	0.00391	B	F	#	0.0015	
Silica	mg/L	11/19/2014	N001	136.83	- 146.83	30.3		F	#	0.053	
Sodium	mg/L	11/19/2014	N001	136.83	- 146.83	165		F	#	0.1	
Specific Conductance	umhos/cm	11/19/2014	N001	136.83	- 146.83	1278		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 22(M) WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Sulfate	mg/L	11/19/2014	N001	136.83 - 146.83	212		F	#	2.66	
Temperature	C	11/19/2014	N001	136.83 - 146.83	13.54		F	#		
Total Dissolved Solids	mg/L	11/19/2014	N001	136.83 - 146.83	871		F	#	3.4	
Turbidity	NTU	11/19/2014	N001	136.83 - 146.83	2.35		F	#		
Uranium	mg/L	11/19/2014	N001	136.83 - 146.83	0.388		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 23(M) WELL

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/20/2014	0001	89	-	109	161		FQ	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/20/2014	0001	89	-	109	0.725	U	FQ	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/20/2014	0001	89	-	109	167		FQ	#		
Arsenic	mg/L	11/20/2014	0001	89	-	109	0.0017	U	FQ	#	0.0017	
Calcium	mg/L	11/20/2014	0001	89	-	109	111		FQ	#	0.05	
Chloride	mg/L	11/20/2014	0001	89	-	109	88		FQ	#	1.34	
Dissolved Oxygen	mg/L	11/20/2014	N001	89	-	109	3.77		JFQ	#		
Field Ferrous Iron	mg/L	11/20/2014	N001	89	-	109	0.02		FQ	#		
Magnesium	mg/L	11/20/2014	0001	89	-	109	25.8		FQ	#	0.11	
Molybdenum	mg/L	11/20/2014	0001	89	-	109	0.0064		FQ	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2014	0001	89	-	109	1.16		FQ	#	0.017	
Oxidation Reduction Potential	mV	11/20/2014	N001	89	-	109	28.6		JFQ	#		
pH	s.u.	11/20/2014	N001	89	-	109	7.62		FQ	#		
Potassium	mg/L	11/20/2014	0001	89	-	109	4.08		FQ	#	0.05	
Selenium	mg/L	11/20/2014	0001	89	-	109	0.00199	B	FQ	#	0.0015	
Silica	mg/L	11/20/2014	0001	89	-	109	12.6		FQ	#	0.053	
Sodium	mg/L	11/20/2014	0001	89	-	109	49.8		FQ	#	0.1	
Specific Conductance	umhos/cm	11/20/2014	N001	89	-	109	1031		FQ	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: 23(M) WELL

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Sulfate	mg/L	11/20/2014	0001	89 - 109	242		FQ	#	2.66	
Temperature	C	11/20/2014	N001	89 - 109	14.48		FQ	#		
Total Dissolved Solids	mg/L	11/20/2014	0001	89 - 109	701		FQ	#	3.4	
Turbidity	NTU	11/20/2014	N001	89 - 109	11.7		FQ	#		
Uranium	mg/L	11/20/2014	0001	89 - 109	0.025		FQ	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: E(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/18/2014	N001	68.6	-	89.8	10.8		FQ	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/18/2014	N001	68.6	-	89.8	0.725	U	FQ	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/18/2014	N001	68.6	-	89.8	26		FQ	#		
Aroclor - 1016	ug/L	11/18/2014	N001	68.6	-	89.8	0.034	U	FQ	#	0.034	
Aroclor - 1221	ug/L	11/18/2014	N001	68.6	-	89.8	0.034	U	FQ	#	0.034	
Aroclor - 1232	ug/L	11/18/2014	N001	68.6	-	89.8	0.034	U	FQ	#	0.034	
Aroclor - 1242	ug/L	11/18/2014	N001	68.6	-	89.8	0.034	U	FQ	#	0.034	
Aroclor - 1248	ug/L	11/18/2014	N001	68.6	-	89.8	0.034	U	FQ	#	0.034	
Aroclor - 1254	ug/L	11/18/2014	N001	68.6	-	89.8	0.034	U	FQ	#	0.034	
Aroclor - 1260	ug/L	11/18/2014	N001	68.6	-	89.8	0.034	U	FQ	#	0.034	
Arsenic	mg/L	11/18/2014	N001	68.6	-	89.8	0.0017	U	FQ	#	0.0017	
Calcium	mg/L	11/18/2014	N001	68.6	-	89.8	188		FQ	#	0.05	
Chloride	mg/L	11/18/2014	N001	68.6	-	89.8	30.5		FQ	#	1.34	
Dissolved Oxygen	mg/L	11/18/2014	N001	68.6	-	89.8	1.28		JFQ	#		
Field Ferrous Iron	mg/L	11/18/2014	N001	68.6	-	89.8	0.19		FQ	#		
Magnesium	mg/L	11/18/2014	N001	68.6	-	89.8	47.5		FQ	#	0.11	
Molybdenum	mg/L	11/18/2014	N001	68.6	-	89.8	0.000483	B	UFQ	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2014	N001	68.6	-	89.8	0.017	U	FQ	#	0.017	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: E(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data		
Oxidation Reduction Potential	mV	11/18/2014	N001	68.6	-	89.8	-98.2		FQ	#	
pH	s.u.	11/18/2014	N001	68.6	-	89.8	7.89		FQ	#	
Potassium	mg/L	11/18/2014	N001	68.6	-	89.8	4.26		FQ	#	0.05
Selenium	mg/L	11/18/2014	N001	68.6	-	89.8	0.0015	U	FQ	#	0.0015
Silica	mg/L	11/18/2014	N001	68.6	-	89.8	1.16		FQ	#	0.053
Sodium	mg/L	11/18/2014	N001	68.6	-	89.8	55.6		FQ	#	0.1
Specific Conductance	umhos/cm	11/18/2014	N001	68.6	-	89.8	1443		FQ	#	
Sulfate	mg/L	11/18/2014	N001	68.6	-	89.8	754		FQ	#	6.65
Temperature	C	11/18/2014	N001	68.6	-	89.8	14.92		FQ	#	
Total Dissolved Solids	mg/L	11/18/2014	N001	68.6	-	89.8	1150		FQ	#	3.4
Turbidity	NTU	11/18/2014	N001	68.6	-	89.8	8.81		FQ	#	
Uranium	mg/L	11/18/2014	N001	68.6	-	89.8	0.000067	U	FQ	#	0.000067

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: F(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/19/2014	N001	94.2	-	114.87	166		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/19/2014	N001	94.2	-	114.87	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/19/2014	N001	94.2	-	114.87	182		F	#		
Aroclor - 1016	ug/L	11/19/2014	N001	94.2	-	114.87	0.0358	U	F	#	0.0358	
Aroclor - 1221	ug/L	11/19/2014	N001	94.2	-	114.87	0.0358	U	F	#	0.0358	
Aroclor - 1232	ug/L	11/19/2014	N001	94.2	-	114.87	0.0358	U	F	#	0.0358	
Aroclor - 1242	ug/L	11/19/2014	N001	94.2	-	114.87	0.0358	U	F	#	0.0358	
Aroclor - 1248	ug/L	11/19/2014	N001	94.2	-	114.87	0.0358	U	F	#	0.0358	
Aroclor - 1254	ug/L	11/19/2014	N001	94.2	-	114.87	0.0358	U	F	#	0.0358	
Aroclor - 1260	ug/L	11/19/2014	N001	94.2	-	114.87	0.0358	U	F	#	0.0358	
Arsenic	mg/L	11/19/2014	N001	94.2	-	114.87	0.0017	U	F	#	0.0017	
Calcium	mg/L	11/19/2014	N001	94.2	-	114.87	63.5		F	#	0.05	
Chloride	mg/L	11/19/2014	N001	94.2	-	114.87	13.3		F	#	1.34	
Dissolved Oxygen	mg/L	11/19/2014	N001	94.2	-	114.87	3.32		JF	#		
Field Ferrous Iron	mg/L	11/19/2014	N001	94.2	-	114.87	0.01		F	#		
Magnesium	mg/L	11/19/2014	N001	94.2	-	114.87	17.3		F	#	0.11	
Molybdenum	mg/L	11/19/2014	N001	94.2	-	114.87	0.000974		F	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/19/2014	N001	94.2	-	114.87	0.649		F	#	0.017	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: F(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)	Lab	Data		QA			
Oxidation Reduction Potential	mV	11/19/2014	N001	94.2	-	114.87	52.6	JF	#		
pH	s.u.	11/19/2014	N001	94.2	-	114.87	7.79	F	#		
Potassium	mg/L	11/19/2014	N001	94.2	-	114.87	2.85	F	#	0.05	
Selenium	mg/L	11/19/2014	N001	94.2	-	114.87	0.0015	U	F	#	0.0015
Silica	mg/L	11/19/2014	N001	94.2	-	114.87	29.4	F	#	0.053	
Sodium	mg/L	11/19/2014	N001	94.2	-	114.87	20.6	F	#	0.1	
Specific Conductance	umhos /cm	11/19/2014	N001	94.2	-	114.87	550	F	#		
Sulfate	mg/L	11/19/2014	N001	94.2	-	114.87	106	F	#	2.66	
Temperature	C	11/19/2014	N001	94.2	-	114.87	12.47	F	#		
Total Dissolved Solids	mg/L	11/19/2014	N001	94.2	-	114.87	353	F	#	3.4	
Turbidity	NTU	11/19/2014	N001	94.2	-	114.87	2.56	F	#		
Uranium	mg/L	11/19/2014	N001	94.2	-	114.87	0.00757	F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: HMC-951 WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/20/2014	0001	241	-	275	276		J	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/20/2014	0001	241	-	275	0.725	U	J	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/20/2014	0001	241	-	275	281		J	#		
Arsenic	mg/L	11/20/2014	0001	241	-	275	0.00224	B	J	#	0.0017	
Calcium	mg/L	11/20/2014	0001	241	-	275	136		J	#	0.05	
Chloride	mg/L	11/20/2014	0001	241	-	275	58.5		J	#	1.34	
Dissolved Oxygen	mg/L	11/20/2014	N001	241	-	275	4.39		J	#		
Field Ferrous Iron	mg/L	11/20/2014	N001	241	-	275	0		J	#		
Magnesium	mg/L	11/20/2014	0001	241	-	275	40.4		J	#	0.11	
Molybdenum	mg/L	11/20/2014	0001	241	-	275	0.0012		J	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2014	0001	241	-	275	4.79		J	#	0.085	
Oxidation Reduction Potential	mV	11/20/2014	N001	241	-	275	26.2		J	#		
pH	s.u.	11/20/2014	N001	241	-	275	7.12		J	#		
Potassium	mg/L	11/20/2014	0001	241	-	275	4.97		J	#	0.05	
Selenium	mg/L	11/20/2014	0001	241	-	275	0.00592		J	#	0.0015	
Silica	mg/L	11/20/2014	0001	241	-	275	15.8		J	#	0.053	
Sodium	mg/L	11/20/2014	0001	241	-	275	82		J	#	0.1	
Specific Conductance	umhos /cm	11/20/2014	N001	241	-	275	1300		J	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: HMC-951 WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Sulfate	mg/L	11/20/2014	0001	241	-	275	356	J	#	2.66		
Temperature	C	11/20/2014	N001	241	-	275	13.54	J	#			
Total Dissolved Solids	mg/L	11/20/2014	0001	241	-	275	896	J	#	3.4		
Turbidity	NTU	11/20/2014	N001	241	-	275	16.3	J	#			
Uranium	mg/L	11/20/2014	0001	241	-	275	0.0332	J	#	0.000067		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: I(SG) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/19/2014	N001	-	404		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/19/2014	N001	-	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/19/2014	N001	-	397		F	#		
Arsenic	mg/L	11/19/2014	N001	-	0.0017	U	F	#	0.0017	
Calcium	mg/L	11/19/2014	N001	-	240		F	#	0.05	
Chloride	mg/L	11/19/2014	N001	-	284		F	#	6.7	
Dissolved Oxygen	mg/L	11/19/2014	N001	-	0.87		JF	#		
Field Ferrous Iron	mg/L	11/19/2014	N001	-	0		F	#		
Magnesium	mg/L	11/19/2014	N001	-	89.9		F	#	0.11	
Molybdenum	mg/L	11/19/2014	N001	-	0.00112		F	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/19/2014	N001	-	1.34		F	#	0.085	
Oxidation Reduction Potential	mV	11/19/2014	N001	-	3.6		JF	#		
pH	s.u.	11/19/2014	N001	-	6.77		F	#		
Potassium	mg/L	11/19/2014	N001	-	13.2		F	#	0.05	
Selenium	mg/L	11/19/2014	N001	-	0.0081		F	#	0.0015	
Silica	mg/L	11/19/2014	N001	-	15.1		F	#	0.053	
Sodium	mg/L	11/19/2014	N001	-	298		F	#	0.1	
Specific Conductance	umhos/cm	11/19/2014	N001	-	2969		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: I(SG) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Sulfate	mg/L	11/19/2014	N001	-	870		F	#	13.3	
Temperature	C	11/19/2014	N001	-	14.16		F	#		
Total Dissolved Solids	mg/L	11/19/2014	N001	-	2170		F	#	3.4	
Turbidity	NTU	11/19/2014	N001	-	0.71		F	#		
Uranium	mg/L	11/19/2014	N001	-	0.306		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: L(SG) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID			Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/18/2014	N001	-	586		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/18/2014	N001	-	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/18/2014	N001	-	548		F	#		
Arsenic	mg/L	11/18/2014	N001	-	0.0017	U	F	#	0.0017	
Calcium	mg/L	11/18/2014	N001	-	135		F	#	0.05	
Chloride	mg/L	11/18/2014	N001	-	205		F	#	3.35	
Dissolved Oxygen	mg/L	11/18/2014	N001	-	0.72		JF	#		
Field Ferrous Iron	mg/L	11/18/2014	N001	-	0.34		F	#		
Magnesium	mg/L	11/18/2014	N001	-	70.1		F	#	0.11	
Molybdenum	mg/L	11/18/2014	N001	-	0.000432	B	UF	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/18/2014	N001	-	0.017	U	F	#	0.017	
Oxidation Reduction Potential	mV	11/18/2014	N001	-	-45.5		F	#		
pH	s.u.	11/18/2014	N001	-	6.82		F	#		
Potassium	mg/L	11/18/2014	N001	-	8.18		F	#	0.05	
Selenium	mg/L	11/18/2014	N001	-	0.0015	U	F	#	0.0015	
Silica	mg/L	11/18/2014	N001	-	10.8		F	#	0.053	
Sodium	mg/L	11/18/2014	N001	-	362		F	#	0.1	
Specific Conductance	umhos/cm	11/18/2014	N001	-	2613		F	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: L(SG) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range (Ft BLS)	Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID			Lab	Data QA		
Sulfate	mg/L	11/18/2014	N001	-	622	F	#	6.65	
Temperature	C	11/18/2014	N001	-	14.24	F	#		
Total Dissolved Solids	mg/L	11/18/2014	N001	-	1710	F	#	3.4	
Turbidity	NTU	11/18/2014	N001	-	2.09	F	#		
Uranium	mg/L	11/18/2014	N001	-	0.003	F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: OBS-3 WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/19/2014	0001	152.4	-	350	8.77			#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/19/2014	0001	152.4	-	350	0.725	U		#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/19/2014	0001	152.4	-	350	44			#		
Arsenic	mg/L	11/19/2014	0001	152.4	-	350	0.0017	U		#	0.0017	
Calcium	mg/L	11/19/2014	0001	152.4	-	350	124			#	0.05	
Chloride	mg/L	11/19/2014	0001	152.4	-	350	684			#	6.7	
Dissolved Oxygen	mg/L	11/19/2014	N001	152.4	-	350	2.34		J	#		
Field Ferrous Iron	mg/L	11/19/2014	N001	152.4	-	350	3.47			#		
Magnesium	mg/L	11/19/2014	0001	152.4	-	350	117			#	0.11	
Molybdenum	mg/L	11/19/2014	0001	152.4	-	350	0.000165	U		#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/19/2014	0001	152.4	-	350	0.0467	J		#	0.017	
Oxidation Reduction Potential	mV	11/19/2014	N001	152.4	-	350	-99.1		J	#		
pH	s.u.	11/19/2014	N001	152.4	-	350	6.76			#		
Potassium	mg/L	11/19/2014	0001	152.4	-	350	12.8			#	0.05	
Selenium	mg/L	11/19/2014	0001	152.4	-	350	0.0015	U		#	0.0015	
Silica	mg/L	11/19/2014	0001	152.4	-	350	0.479			#	0.053	
Sodium	mg/L	11/19/2014	0001	152.4	-	350	404			#	0.1	
Specific Conductance	umhos/cm	11/19/2014	N001	152.4	-	350	3493			#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: OBS-3 WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Sulfate	mg/L	11/19/2014	0001	152.4	-	350	820			#	13.3	
Temperature	C	11/19/2014	N001	152.4	-	350	18.33			#		
Total Dissolved Solids	mg/L	11/19/2014	0001	152.4	-	350	2260			#	3.4	
Turbidity	NTU	11/19/2014	N001	152.4	-	350	77.2			#		
Uranium	mg/L	11/19/2014	0001	152.4	-	350	0.00363			#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: S(SG) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/19/2014	0001	159	-	280	374		J	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/19/2014	0001	159	-	280	0.725	U	J	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/19/2014	N001	159	-	280	444		J	#		
Arsenic	mg/L	11/19/2014	0001	159	-	280	0.0017	U	J	#	0.0017	
Calcium	mg/L	11/19/2014	0001	159	-	280	260		J	#	0.05	
Chloride	mg/L	11/19/2014	0001	159	-	280	490		J	#	6.7	
Dissolved Oxygen	mg/L	11/19/2014	N001	159	-	280	3.78		J	#		
Field Ferrous Iron	mg/L	11/19/2014	N001	159	-	280	5.1		J	#		
Magnesium	mg/L	11/19/2014	0001	159	-	280	145		J	#	0.11	
Molybdenum	mg/L	11/19/2014	0001	159	-	280	0.00131		J	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/19/2014	0001	159	-	280	2.22		J	#	0.085	
Oxidation Reduction Potential	mV	11/19/2014	N001	159	-	280	-125.1		J	#		
pH	s.u.	11/19/2014	N001	159	-	280	6.98		J	#		
Potassium	mg/L	11/19/2014	0001	159	-	280	13.7		J	#	0.05	
Selenium	mg/L	11/19/2014	0001	159	-	280	0.0116		J	#	0.0015	
Silica	mg/L	11/19/2014	0001	159	-	280	17		J	#	0.053	
Sodium	mg/L	11/19/2014	0001	159	-	280	405		J	#	0.1	
Specific Conductance	umhos /cm	11/19/2014	N001	159	-	280	3915		J	#		

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: S(SG) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Sulfate	mg/L	11/19/2014	0001	159	-	280	1210	J	#		13.3	
Temperature	C	11/19/2014	N001	159	-	280	21.17	J	#			
Total Dissolved Solids	mg/L	11/19/2014	0001	159	-	280	2920	J	#		3.4	
Turbidity	NTU	11/19/2014	N001	159	-	280	29.1	J	#			
Uranium	mg/L	11/19/2014	0001	159	-	280	0.552	J	#		0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: X(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/20/2014	N001	123	-	132	208		F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/20/2014	N001	123	-	132	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/20/2014	N001	123	-	132	250		F	#		
Aroclor - 1016	ug/L	11/20/2014	N001	123	-	132	0.0336	U	F	#	0.0336	
Aroclor - 1221	ug/L	11/20/2014	N001	123	-	132	0.0336	U	F	#	0.0336	
Aroclor - 1232	ug/L	11/20/2014	N001	123	-	132	0.0336	U	F	#	0.0336	
Aroclor - 1242	ug/L	11/20/2014	N001	123	-	132	0.0336	U	F	#	0.0336	
Aroclor - 1248	ug/L	11/20/2014	N001	123	-	132	0.0336	U	F	#	0.0336	
Aroclor - 1254	ug/L	11/20/2014	N001	123	-	132	0.0336	U	F	#	0.0336	
Aroclor - 1260	ug/L	11/20/2014	N001	123	-	132	0.0336	U	F	#	0.0336	
Arsenic	mg/L	11/20/2014	N001	123	-	132	0.0017	U	F	#	0.0017	
Calcium	mg/L	11/20/2014	N001	123	-	132	144		F	#	0.05	
Chloride	mg/L	11/20/2014	N001	123	-	132	189		F	#	1.34	
Dissolved Oxygen	mg/L	11/20/2014	N001	123	-	132	3.87		JF	#		
Field Ferrous Iron	mg/L	11/20/2014	N001	123	-	132	0.02		F	#		
Magnesium	mg/L	11/20/2014	N001	123	-	132	41		F	#	0.11	
Molybdenum	mg/L	11/20/2014	N001	123	-	132	0.000769		UF	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2014	N001	123	-	132	10.2		F	#	0.17	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: X(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers		Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data		
Oxidation Reduction Potential	mV	11/20/2014	N001	123	-	132	68.1	JF	#		
pH	s.u.	11/20/2014	N001	123	-	132	7.72	F	#		
Potassium	mg/L	11/20/2014	N001	123	-	132	5.26	F	#	0.05	
Selenium	mg/L	11/20/2014	N001	123	-	132	0.00745	F	#	0.0015	
Silica	mg/L	11/20/2014	N001	123	-	132	24	F	#	0.053	
Sodium	mg/L	11/20/2014	N001	123	-	132	183	F	#	0.1	
Specific Conductance	umhos/cm	11/20/2014	N001	123	-	132	1826	F	#		
Sulfate	mg/L	11/20/2014	N001	123	-	132	493	F	#	6.65	
Temperature	C	11/20/2014	N001	123	-	132	12.41	F	#		
Total Dissolved Solids	mg/L	11/20/2014	N001	123	-	132	1320	F	#	3.4	
Turbidity	NTU	11/20/2014	N001	123	-	132	5.42	F	#		
Uranium	mg/L	11/20/2014	N001	123	-	132	0.122	F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: Y2(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/19/2014	N001	98	-	123	199		F	#	0.725	
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	11/19/2014	N002	98	-	123	301		RF	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/19/2014	N001	98	-	123	0.725	U	F	#	0.725	
Alkalinity, Carbonate (as CaCO ₃)	mg/L	11/19/2014	N002	98	-	123	0.725	U	F	#	0.725	
Alkalinity, Total (as CaCO ₃)	mg/L	11/19/2014	N001	98	-	123	214		F	#		
Aroclor - 1016	ug/L	11/19/2014	N001	98	-	123	0.0333	U	F	#	0.0333	
Aroclor - 1016	ug/L	11/19/2014	N002	98	-	123	0.0383	U	F	#	0.0383	
Aroclor - 1221	ug/L	11/19/2014	N001	98	-	123	0.0333	U	F	#	0.0333	
Aroclor - 1221	ug/L	11/19/2014	N002	98	-	123	0.0383	U	F	#	0.0383	
Aroclor - 1232	ug/L	11/19/2014	N001	98	-	123	0.0333	U	F	#	0.0333	
Aroclor - 1232	ug/L	11/19/2014	N002	98	-	123	0.0383	U	F	#	0.0383	
Aroclor - 1242	ug/L	11/19/2014	N001	98	-	123	0.0333	U	F	#	0.0333	
Aroclor - 1242	ug/L	11/19/2014	N002	98	-	123	0.0383	U	F	#	0.0383	
Aroclor - 1248	ug/L	11/19/2014	N001	98	-	123	0.0333	U	F	#	0.0333	
Aroclor - 1248	ug/L	11/19/2014	N002	98	-	123	0.0383	U	F	#	0.0383	
Aroclor - 1254	ug/L	11/19/2014	N001	98	-	123	0.0333	U	F	#	0.0333	
Aroclor - 1254	ug/L	11/19/2014	N002	98	-	123	0.0383	U	F	#	0.0383	
Aroclor - 1260	ug/L	11/19/2014	N001	98	-	123	0.0333	U	F	#	0.0333	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: Y2(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Aroclor - 1260	ug/L	11/19/2014	N002	98	-	123	0.0383	U	F	#	0.0383	
Arsenic	mg/L	11/19/2014	N001	98	-	123	0.0017	U	F	#	0.0017	
Arsenic	mg/L	11/19/2014	N002	98	-	123	0.0017	U	F	#	0.0017	
Calcium	mg/L	11/19/2014	N001	98	-	123	59		F	#	0.05	
Calcium	mg/L	11/19/2014	N002	98	-	123	67.8		F	#	0.05	
Chloride	mg/L	11/19/2014	N001	98	-	123	9.33		F	#	1.34	
Chloride	mg/L	11/19/2014	N002	98	-	123	10.4		F	#	1.34	
Dissolved Oxygen	mg/L	11/19/2014	N001	98	-	123	6.05		JF	#		
Field Ferrous Iron	mg/L	11/19/2014	N001	98	-	123	0		F	#		
Magnesium	mg/L	11/19/2014	N001	98	-	123	15.8		F	#	0.11	
Magnesium	mg/L	11/19/2014	N002	98	-	123	17.2		F	#	0.11	
Molybdenum	mg/L	11/19/2014	N001	98	-	123	0.00168		F	#	0.000165	
Molybdenum	mg/L	11/19/2014	N002	98	-	123	0.0016		F	#	0.000165	
Nitrate + Nitrite as Nitrogen	mg/L	11/19/2014	N001	98	-	123	1.41		F	#	0.085	
Nitrate + Nitrite as Nitrogen	mg/L	11/19/2014	N002	98	-	123	1.57		F	#	0.085	
Oxidation Reduction Potential	mV	11/19/2014	N001	98	-	123	43		JF	#		
pH	s.u.	11/19/2014	N001	98	-	123	7.65		F	#		
Potassium	mg/L	11/19/2014	N001	98	-	123	2.82		F	#	0.05	

Groundwater Quality Data by Location (USEE100) FOR SITE BLU01, Bluewater Disposal Site

REPORT DATE: 1/26/2015

Location: Y2(M) WELL State Plane coordinates established with GPS Mapping Grade, Local coordinates source AutoCAD drawing

Parameter	Units	Sample		Depth Range			Result	Qualifiers			Detection Limit	Uncertainty
		Date	ID	(Ft BLS)				Lab	Data	QA		
Potassium	mg/L	11/19/2014	N002	98	-	123	3.05		F	#	0.05	
Selenium	mg/L	11/19/2014	N001	98	-	123	0.0015	U	F	#	0.0015	
Selenium	mg/L	11/19/2014	N002	98	-	123	0.0015	U	F	#	0.0015	
Silica	mg/L	11/19/2014	N001	98	-	123	29.2		F	#	0.053	
Silica	mg/L	11/19/2014	N002	98	-	123	34.6		F	#	0.053	
Sodium	mg/L	11/19/2014	N001	98	-	123	42.5		JF	#	0.1	
Sodium	mg/L	11/19/2014	N002	98	-	123	28.9		JF	#	0.1	
Specific Conductance	umhos/cm	11/19/2014	N001	98	-	123	647		F	#		
Sulfate	mg/L	11/19/2014	N001	98	-	123	95.5		F	#	2.66	
Sulfate	mg/L	11/19/2014	N002	98	-	123	98.5		F	#	2.66	
Temperature	C	11/19/2014	N001	98	-	123	13.59		F	#		
Total Dissolved Solids	mg/L	11/19/2014	N001	98	-	123	429		F	#	3.4	
Total Dissolved Solids	mg/L	11/19/2014	N002	98	-	123	427		F	#	3.4	
Turbidity	NTU	11/19/2014	N001	98	-	123	3.32		F	#		
Uranium	mg/L	11/19/2014	N001	98	-	123	0.00494		F	#	0.000067	
Uranium	mg/L	11/19/2014	N002	98	-	123	0.00455		F	#	0.000067	

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.

Static Water Level Data

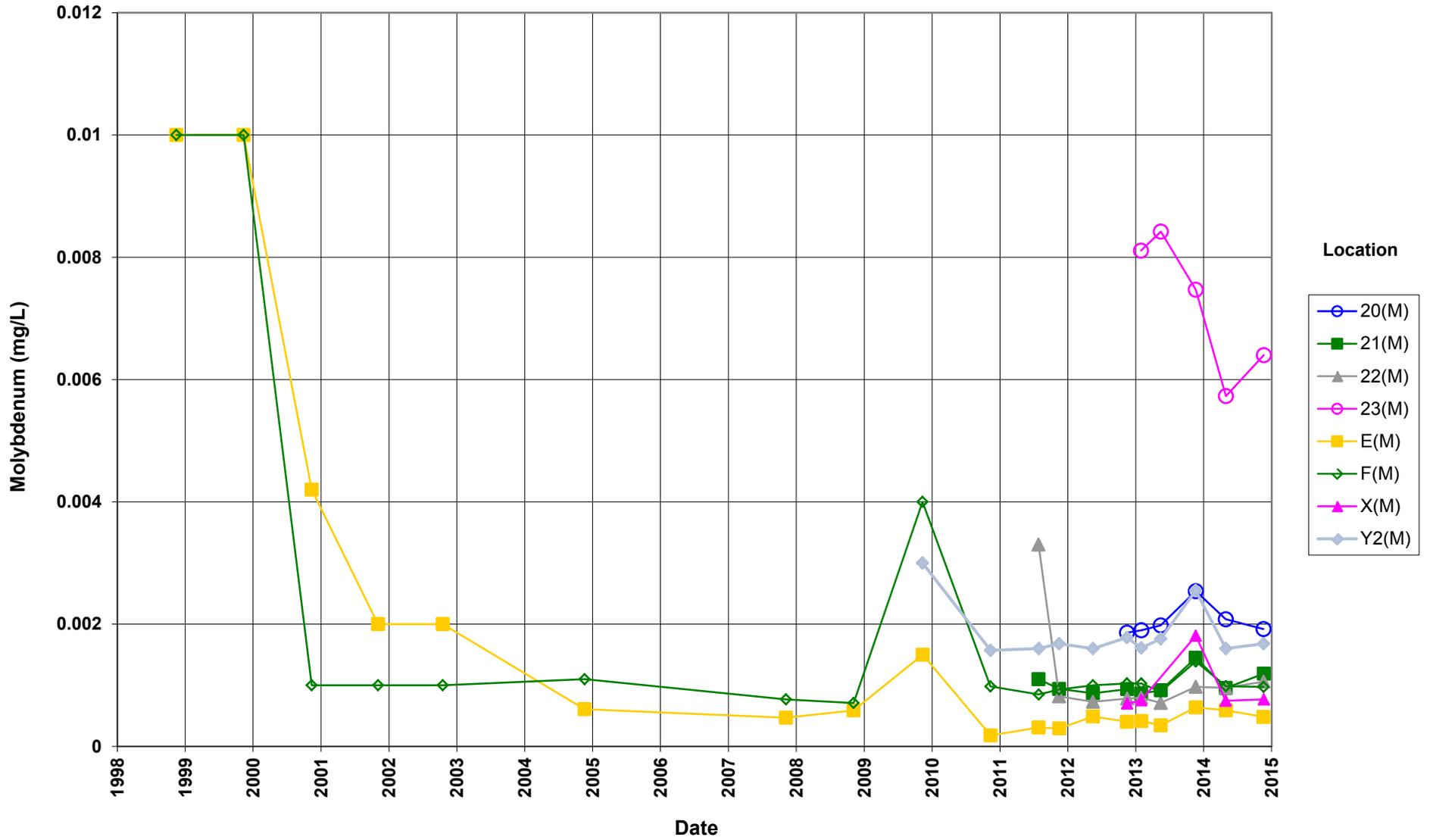
This page intentionally left blank

This page intentionally left blank

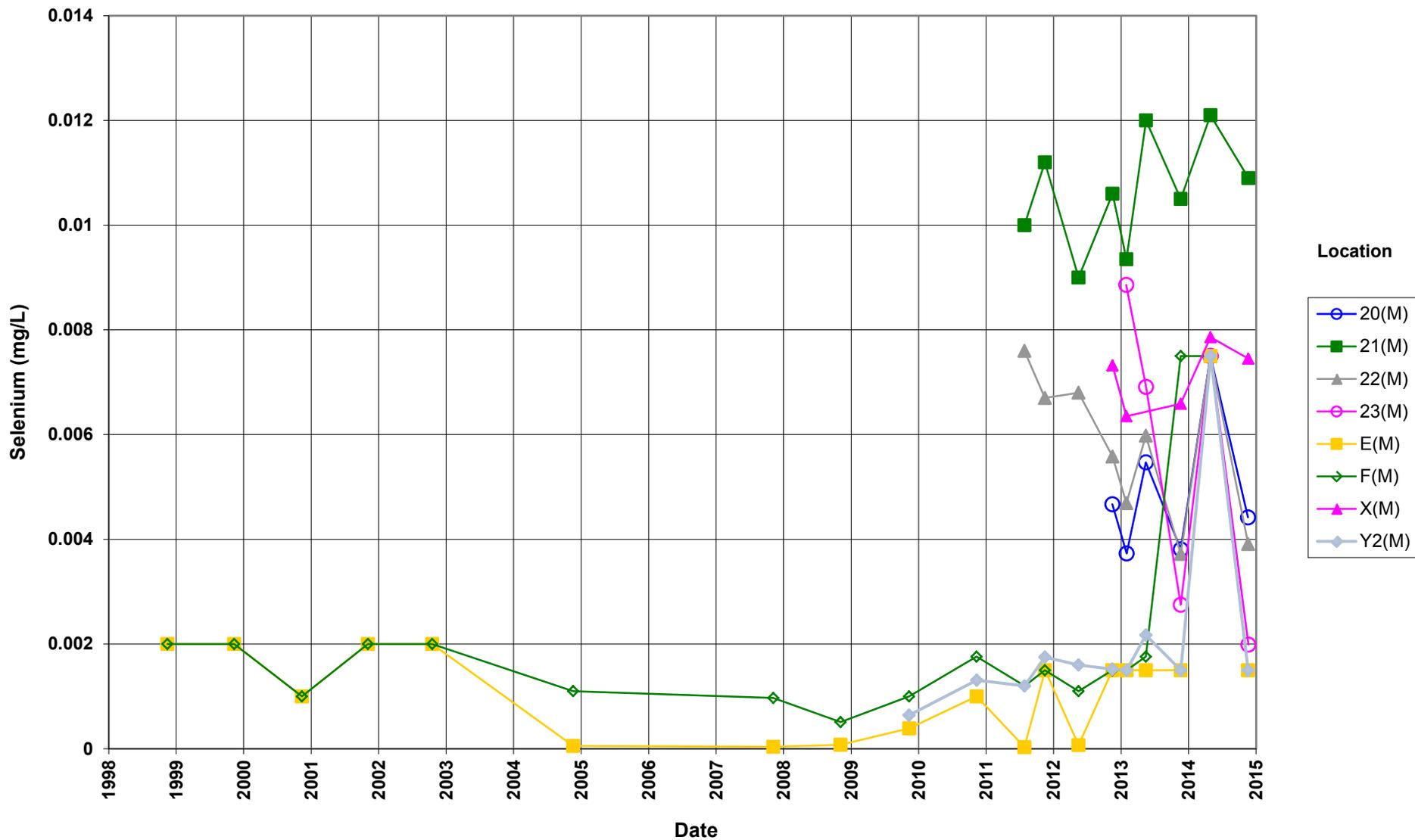
Time-Concentration Graphs

This page intentionally left blank

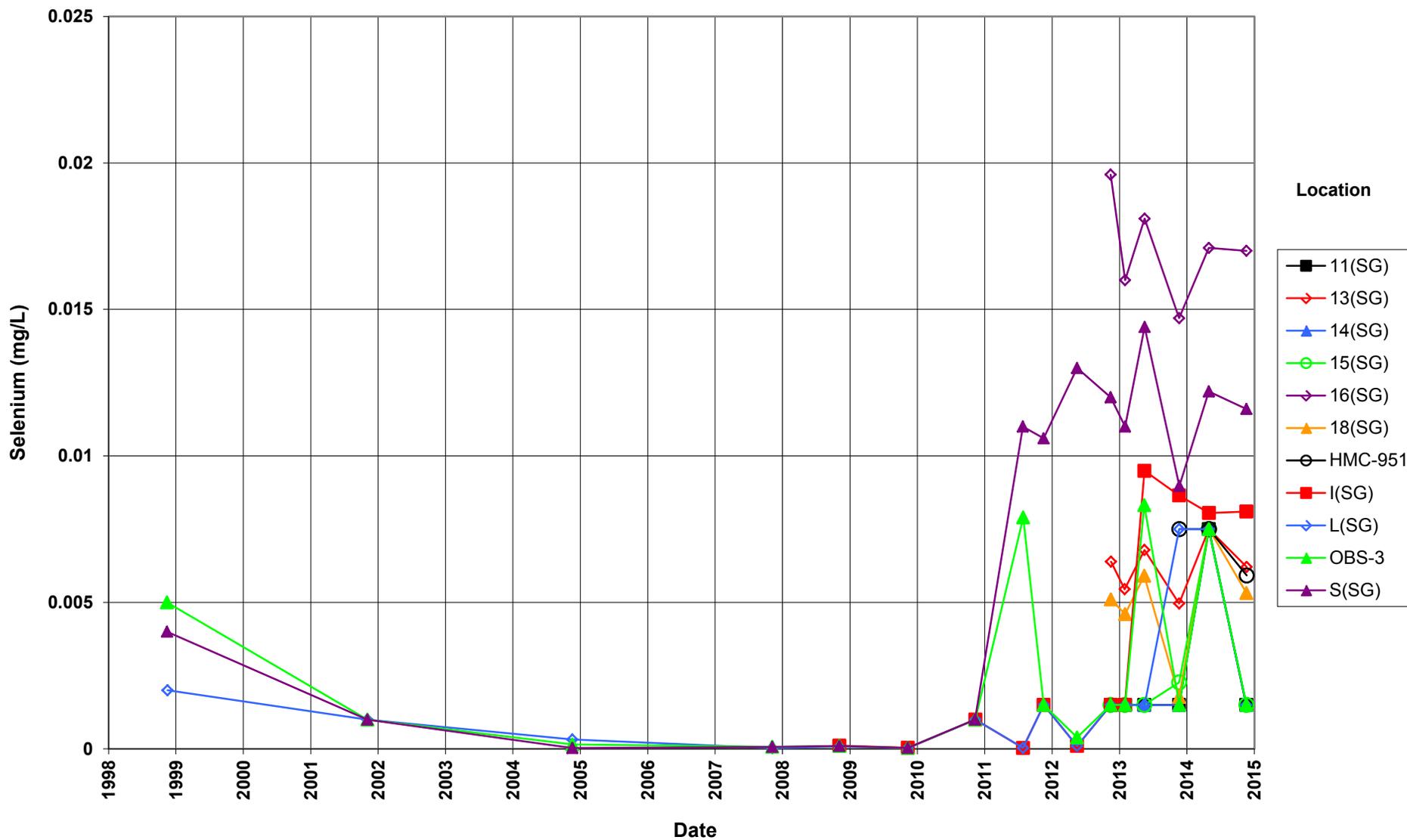
**Bluewater Disposal Site
Alluvium Wells
Molybdenum Concentration**
Alternate Concentration Limit (ACL) = 0.10 mg/L



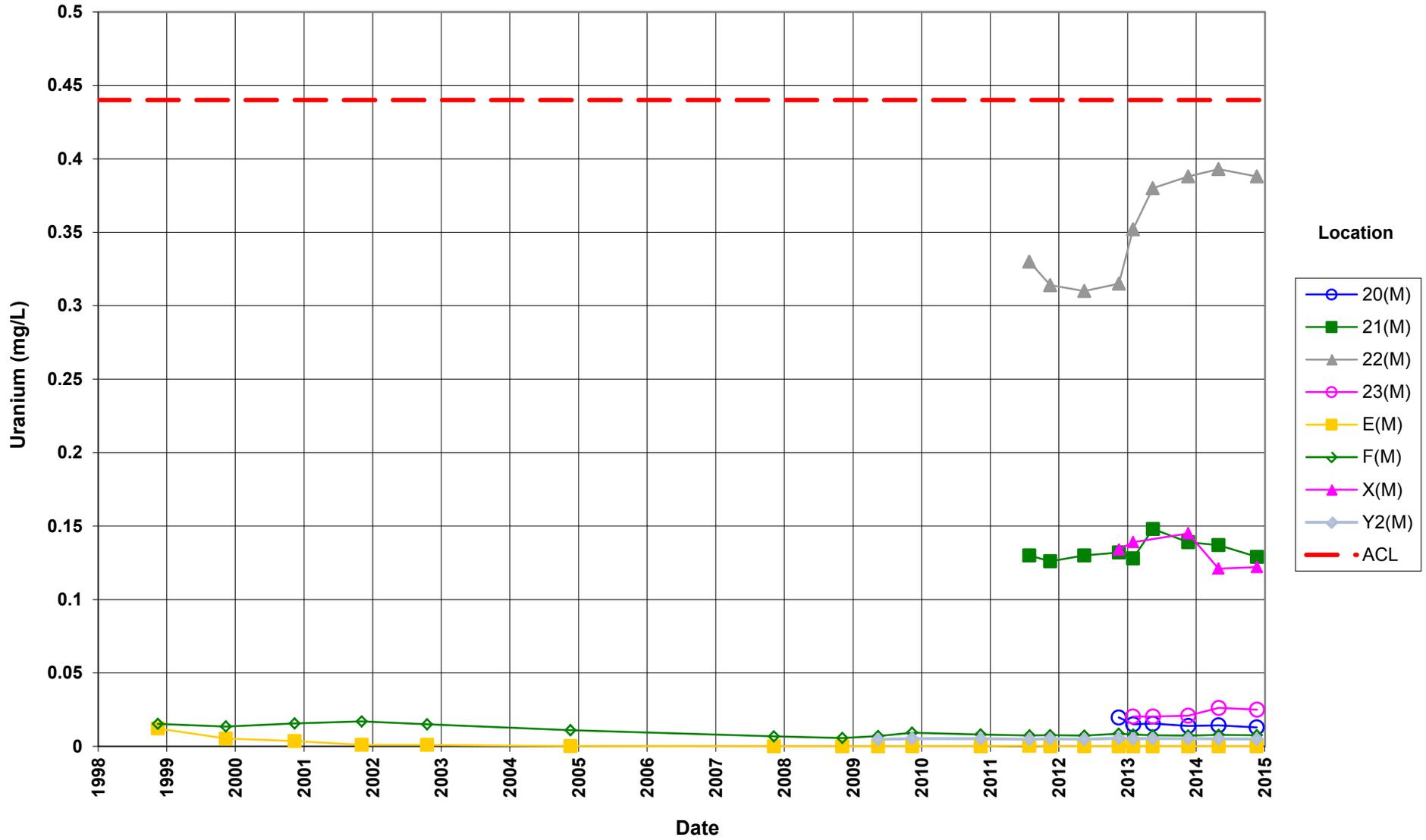
**Bluewater Disposal Site
Alluvium Wells
Selenium Concentration**
Alternate Concentration Limit (ACL) = 0.05 mg/L



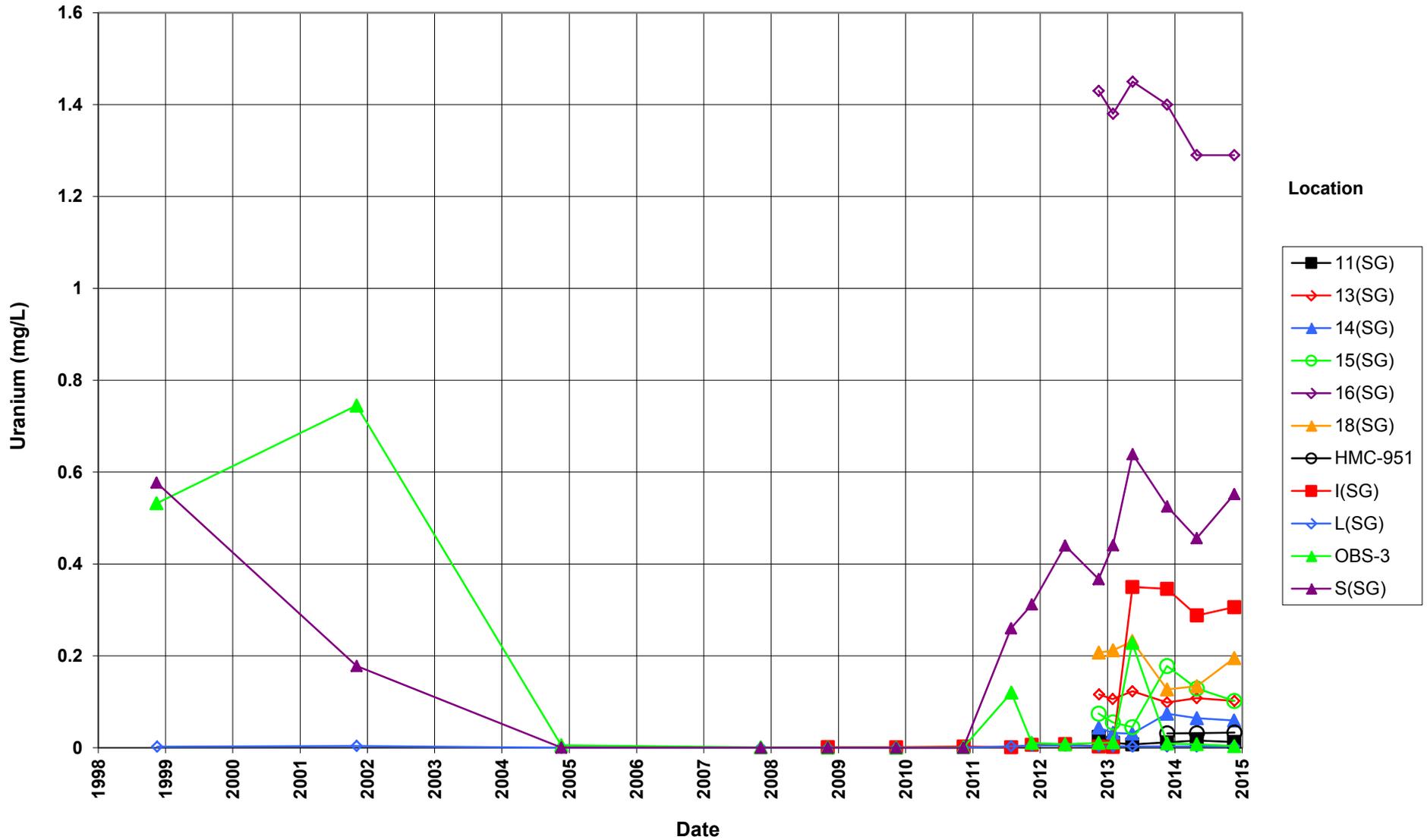
**Bluewater Disposal Site
Bedrock Wells
Selenium Concentration**
Alternate Concentration Limit (ACL) = 0.05 mg/L



**Bluewater Disposal Site
Alluvium Wells
Uranium Concentration**
Alternate Concentration Limit (ACL) = 0.44 mg/L



**Bluewater Disposal Site
Bedrock Wells
Uranium Concentration**
Alternate Concentration Limit (ACL) = 2.15 mg/L



This page intentionally left blank

Attachment 3
Sampling and Analysis Work Order

This page intentionally left blank



October 9, 2014

Task Assignment 103
Control Number 15-0017

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

SUBJECT: Contract No. DE-LM0000415, The S.M. Stoller Corporation, a wholly owned subsidiary of Huntington Ingalls Industries (Stoller)
Task Assignment 103 LTS&M - UMTRCA TI & TII, D&D, Others, and AS&T
November 2014 Environmental Sampling at the Bluewater, New Mexico, Disposal Site

REFERENCE: Task Assignment 103, 3-103-1-03-203-402, Bluewater, New Mexico, Disposal Site

Dear Ms. Barr:

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 routine environmental sampling currently scheduled to begin the week of November 17, 2014.

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

MONITORING WELLS

E(M) Al T(M) Al S(SG) Sg 11(SG) Sg 14(SG) Sg 16(SG) Sg 20(M) Al 22(M) Al
Y2(M) Al X(M) Al OBS-3 Sg 13(SG) Sg 15(SG) Sg 18(SG) Sg 21(M) Al 23(M) Al
F(M) Al L(SG) Sg I(SG) Sg

PRIVATE WELL

HMC-951 Sg

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

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.

A SUBSIDIARY OF HUNTINGTON INGALLS INDUSTRIES

2597 Legacy Way • Grand Junction, CO 81503-1789 • Telephone (970) 248-6000 • Fax (970) 248-6040

Deborah Barr
Control Number 15-0017
Page 2

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

Sincerely,



Richard K. Johnson
Site Lead

RKJ/lcg/bkb

Enclosures (3)

cc: (electronic)

Christina Pennal, DOE
Steve Donivan, Stoller
Lauren Goodknight, Stoller
Richard Johnson, Stoller
Diana Osborne, Stoller
EDD Delivery
re-grand.junction
File: BLU 400.02(A)

A SUBSIDIARY OF HUNTINGTON INGALLS INDUSTRIES

2597 Legacy Way • Grand Junction, CO 81503-1789 • Telephone (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				
L(SG)		X				
S(SG)		X				Casing purge method
OBS-3		X				Casing purge method
I(SG)		X				
11(SG)		X				
13(SG)		X				
14(SG)		X				
15(SG)		X				
16(SG)		X				
18(SG)		X				
20(M)		X				
21(M)		X				
22(M)		X				
23(M)		X				
Private Wells						
HMC-951		X				Casing purge method

Sampling conducted in May and November.

Constituent Sampling Breakdown

Site	Bluewater		Required Detection Limit (mg/L)	Analytical Method	Line Item Code
	Groundwater	Surface Water			
Analyte					
Approx. No. Samples/yr	21	0			
Field Measurements					
Alkalinity	X				
Iron (filtered, ferrous)	X				
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
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 (November 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	X		0.1	SW-846 6010	LMM-01
Sodium	X		1	SW-846 6010	LMM-01
Strontium					
Sulfate	X		0.5	SW-846 9056	MIS-A-044
Total Dissolved Solids	X		10	SM2540 C	WCH-A-033
Uranium	X		0.0001	SW-846 6020	LMM-02
Vanadium					
Zinc					
Total No. of Analytes	16	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

This page intentionally left blank



Memorandum

DATE: December 31, 2014
TO: Dick Johnson
FROM: Rob Rice
SUBJECT: REVISED Groundwater Sampling Trip Report

Site: Bluewater, NM, and Ambrosia Lake, NM, Disposal Sites

Dates of Event: November 17 – 21, 2014

Team Members: David Atkinson, Rob Rice

Number of Locations Sampled: Samples were collected at 19 of the 20 monitoring well locations identified on the sampling notification letter for Bluewater. Samples were collected for metals testing (Ca, K, Mg, Na, As, Mo, Se, U), as well as Cl, Sulfate, TDS, and Nitrates. PCB samples were collected, in 1-L glass bottles, at 4 of the locations as well, including 2 QC duplicates from 1 location. Field testing included DO and ferrous iron. A total of 19 groundwater samples and 3 QC duplicate samples were collected.

Samples were collected at 2 of the 3 monitoring well locations identified in the notification letter for Ambrosia. Samples were collected for metals testing (Ca, K, Mg, Na, As, Mo, Se, U), as well as Cl, Sulfate, TDS, and Nitrates. Field testing included DO. A total of 2 groundwater samples and 1 QC duplicate sample were collected.

Locations Not Sampled/Reason: Location T(M) at Bluewater was dry. Location 0409 at Ambrosia was dry.

Location Specific Information:

Ticket Number	Sample Date	Location	Comments
MMR 924	11/19/14	I(SG)	Sampled with high flow procedure, 3 casing volume purge and sample.
MMR 921	11/20/14	HMC-951	Sampled using high flow procedure, calculated 3 casing volume purge, and sample (filtered).
MMR 903	11/18/14	E(M)	Additional sample taken for PCB testing.
MMR 904	11/18/14	Y2(M)	Additional sample taken for PCB testing. PCB triplicate taken for QC.
MMR 905	11/19/14	F(M)	Additional sample taken for PCB testing.
MMR 913	11/20/14	X(M)	Additional sample taken for PCB testing.
MMR 906	11/19/14	OBS-3	Purged well dry. Samples collected after well recovered.

A SUBSIDIARY OF HUNTINGTON INGALLS INDUSTRIES

2597 Legacy Way • Grand Junction, CO 81503-1789 • Telephone (970) 248-6000 • Fax (970) 248-6040

Quality Control Sample Cross Reference: The following are the false identifications assigned to quality control samples. No equipment blank samples were collected because all equipment (pumps, tubing, fittings, filters, etc.) was either dedicated to a single well location or disposable.

False ID	Ticket Number	True ID	Sample Type	Associated Matrix
2554	MMR 923	Y2(M)	Duplicate	Groundwater
2073	MMR 930	0678	Duplicate	Groundwater

Report Identification Number (RIN) Assigned:

RIN	Associated Lab	Comments
14116606	GEL Laboratories	Field data sheets can be found in this RIN directory in \\crow\SMS. All field data collected with the Field Data Collection System are associated with this RIN.
14116607	GEL Laboratories	Field data sheets can be found in this RIN directory in \\crow\SMS. All field data collected with the Field Data Collection System are associated with this RIN.

Sample Shipment: Water Samples for RIN 14116606 and RIN 14116607 were shipped from Grand Junction via Fed-Ex to GEL Laboratories in Charleston, SC, on November 21, 2014.

Water Level Measurements: Water levels were measured at all sampled wells prior to sampling. Locations T(M) and 0409 had levels below the screened interval, and were listed as “dry” (no aquifer recharge). Location S(SG) could not be measured, tape would not pass beyond top of pump, which is above water level.

Well Inspection Summary: All sampled wells were in good condition.

Field Variance:

Location ID	Comments
23(M)	Turbidity not met, samples were filtered.
I(SG)	Total depth measured was 331', 75' deeper than previous report shows.
HMC-951	Turbidity not met, samples were filtered.
OBS-3	Turbidity not met, samples were filtered.
S(SG)	Turbidity not met, samples were filtered. Water level below top of pump.
0675	Field alkalinity kit depleted. Additional 125 mL sample collected to test alkalinity when replenished (tested 11/21/14).
0678	Field alkalinity kit depleted. Additional 125 mL sample collected to test alkalinity when replenished (tested 11/21/14).
HMC-951	Field alkalinity kit depleted. Additional 125 mL sample collected to test alkalinity when replenished (tested 11/21/14).
21(M)	Field alkalinity kit depleted. Additional 125 mL sample collected to test alkalinity when replenished (tested 11/21/14).

Equipment: All equipment functioned properly. All wells were sampled using the low-flow procedure. Wells were sampled with dedicated bladder pumps.

A SUBSIDIARY OF HUNTINGTON INGALLS INDUSTRIES

2597 Legacy Way • Grand Junction, CO 81503-1789 • Telephone (970) 248-6000 • Fax (970) 248-6040

Dick Johnson
December 2, 2014
Page 3

Sampling Method: Samples were collected according to the *Sampling and Analysis Plan for the U. S. Department of Energy Office of Legacy Management Sites* (LMS/PLN/S04351, continually updated).

Regulatory: N/A

Institutional Controls:

Fences, Gates, Locks: All gates were locked.

Signs: No issues identified.

Trespassing/Site Disturbances: No issues.

Site Issues:

Disposal Cell/Drainage Structure Integrity: N/A

Vegetation/Noxious Weed Concerns: None.

Maintenance Requirements: None observed.

Access Issues: None

Safety Issues: None

Corrective Action Taken: None.

(RR/lcg)

cc: (electronic)
Deborah Barr, DOE
Steve Donovan, Stoller
Dick Johnson, Stoller
EDD Delivery

A SUBSIDIARY OF HUNTINGTON INGALLS INDUSTRIES

2597 Legacy Way • Grand Junction, CO 81503-1789 • Telephone (970) 248-6000 • Fax (970) 248-6040

This page intentionally left blank