

# Data Validation Package

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**April 2014**  
**Groundwater Sampling at the**  
**Bluewater, New Mexico, Disposal Site**

**September 2014**



U.S. DEPARTMENT OF  
**ENERGY**

Legacy  
Management

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NMSS*

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## **Attachment 1—Assessment of Anomalous Data**

Potential Outliers Report

## **Attachment 2—Data Presentation**

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# Sampling Event Summary

**Site:** Bluewater, New Mexico, Disposal Site

**Sampling Period:** April 29–30, 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 HMC-951.

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. The list included analytes for tritium, uranium isotopes, and the determination of hydrogen, oxygen, and sulfur stable isotope ratios.

## 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 milligrams per liter (mg/L).

Analytical results for the required constituents for the alluvium wells are provided in Table 1. The uranium concentration was 0.137 mg/L in well 21(M), and was 0.121 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. The extent of contamination in the alluvial aquifer is not known at this time. However, the uranium concentration in well 23(M), located about 1,600 feet downgradient of well 21(M), was 0.0262 mg/L.

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

| Location | Category     | Molybdenum (mg/L)<br>ACL=0.10 mg/L | Selenium (mg/L)<br>ACL=0.05 mg/L | Uranium (mg/L)<br>ACL=0.44 mg/L |
|----------|--------------|------------------------------------|----------------------------------|---------------------------------|
| 20(M)    | Upgradient   | 0.0021                             | ND                               | 0.0143                          |
| 21(M)    | Downgradient | 0.0010                             | 0.0121                           | 0.137                           |
| 22(M)    | Downgradient | 0.0010                             | ND                               | 0.393                           |
| 23(M)    | Downgradient | 0.0057                             | ND                               | 0.0262                          |
| E(M)     | Background   | 0.0006                             | ND                               | ND                              |
| F(M)     | POC          | 0.0010                             | ND                               | 0.0078                          |
| T(M)     | POC          | Not Sampled                        | Not Sampled                      | Not Sampled                     |
| X(M)     | POE          | 0.0007                             | 0.0079                           | 0.121                           |
| Y2(M)    | PCBs         | 0.0016                             | ND                               | 0.0051                          |

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.

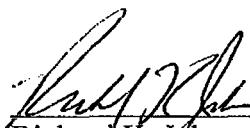
Offsite private well HMC-951, located near the site entrance and used only for monitoring purposes, was sampled by DOE for the second time during this event. A blockage near the bottom of the well casing prevented installation of a low-flow sampling pump in the open hole portion of the well. Consequently, a sample was collected using a submersible pump inside the well casing at a depth of 180 feet 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. April 2014 Groundwater Monitoring Analytical Results for the Bedrock Wells

| Location       | Category     | Selenium (mg/L)<br>ACL=0.05 mg/L | Uranium (mg/L)<br>ACL=2.15 mg/L |
|----------------|--------------|----------------------------------|---------------------------------|
| 11(SG)         | Downgradient | ND                               | 0.0157                          |
| 13(SG)         | Downgradient | ND                               | 0.108                           |
| 14(SG)         | Upgradient   | ND                               | 0.0643                          |
| 15(SG)         | Downgradient | ND                               | 0.129                           |
| 16(SG)         | Downgradient | 0.0171                           | 1.29                            |
| 18(SG)         | Downgradient | ND                               | 0.134                           |
| HMC-951        | Offsite      | ND                               | 0.0317                          |
| I(SG) 265 feet | POE          | 0.0081                           | 0.288                           |
| L(SG)          | Background   | ND                               | 0.0031                          |
| OBS-3          | POC          | ND                               | 0.0077                          |
| S(SG)          | POC          | 0.0122                           | 0.456                           |

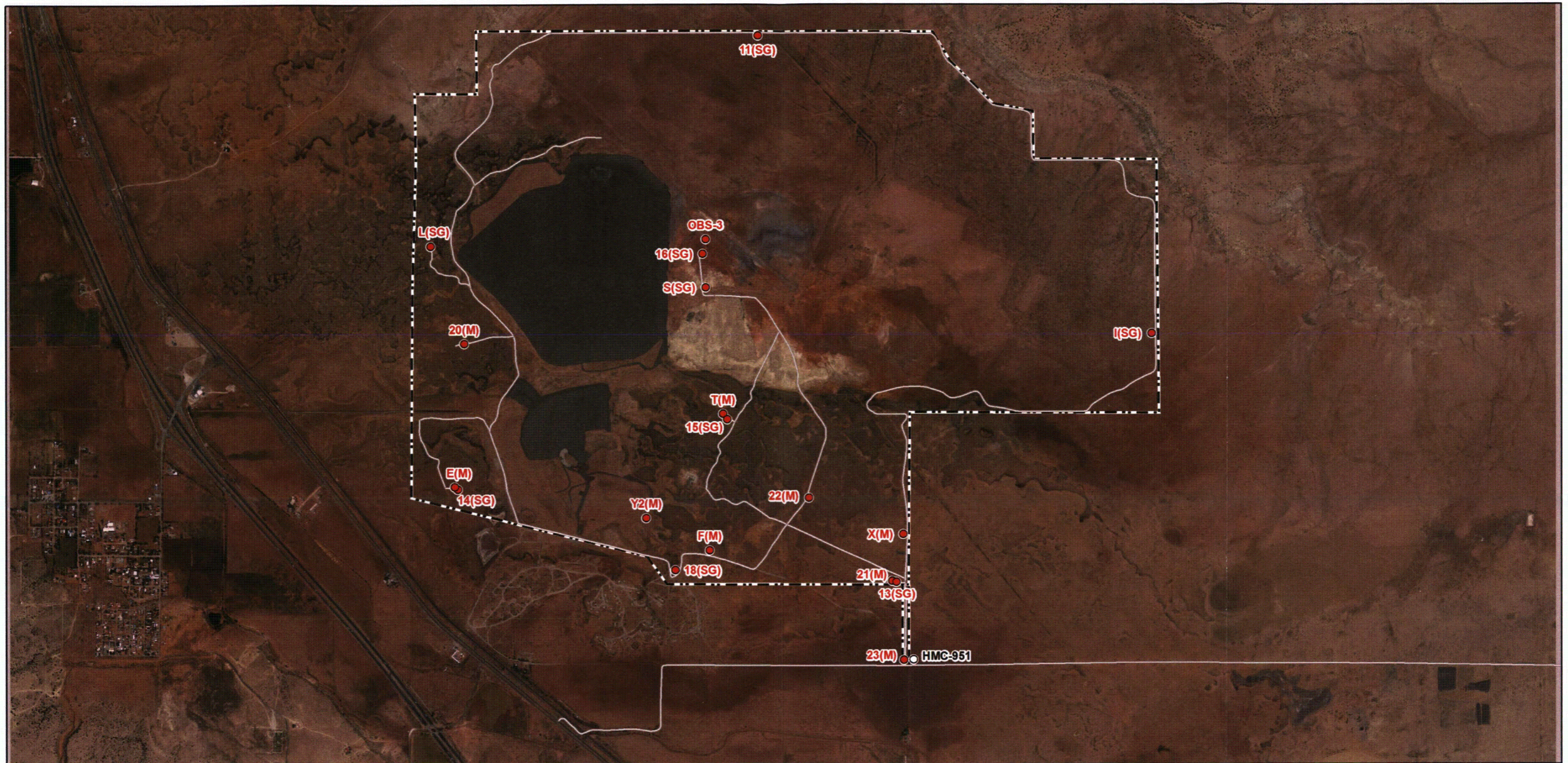
Key: ACL = alternate concentration limit; mg/L = milligrams per liter; ND = not detected; POC = point-of-compliance well; POE = point-of-exposure well

  
 Richard K. Johnson, Site Lead  
 The S.M. Stoller Corporation,  
 a wholly owned subsidiary of  
 Huntington Ingalls Industries

9/29/14  
 Date

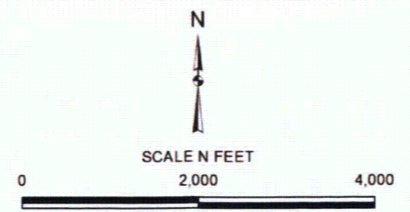
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**LEGEND**

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



|   |  |
|---|--|
| U.S. DEPARTMENT OF ENERGY<br>GRAND JUNCTION, COLORADO | Work Performed by<br><b>S.M. Stoller Corporation</b><br>Under DOE Contract<br>No. DE-AM51-07LM0050 |
|   | <b>Planned Sampling Map</b><br>Bluewater, NM, Disposal Site<br>May 2014                            |
| DATE PREPARED<br>April 8, 2014                        | FILENAME<br>S1169400   |

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Bluewater, New Mexico, Disposal Site, Sample Location Map



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# Data Assessment Summary

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### Water Sampling Field Activities Verification Checklist

|                                |                       |                                  |                   |
|--------------------------------|-----------------------|----------------------------------|-------------------|
| <b>Project</b>                 | Bluewater, New Mexico | <b>Date(s) of Water Sampling</b> | April 29–30, 2014 |
| <b>Date(s) of Verification</b> | August 19, 2014       | <b>Name of Verifier</b>          | Stephen Donovan   |

|  | Response<br>(Yes, No, NA) | Comments  |
|--|---------------------------|---|
| 1. Is the SAP the primary document directing field procedures?<br><br>List any Program Directives or other documents, SOPs, instructions.      | Yes                       | Program Directive BLU-2013-01.<br>Work Order letter dated April 17, 2014.       |
| 2. Were the sampling locations specified in the planning documents sampled?  | No                        | Location T(M) was dry.  |
| 3. Were calibrations conducted as specified in the above-named documents?  | Yes                       | Calibrations were performed on April 28, 2014.                                  |
| 4. Was an operational check of the field equipment conducted daily?<br><br>Did the operational checks meet criteria?                           | Yes                       |   |
| 5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified? | Yes                       |   |
| 6. Were wells categorized correctly?   | No                        | Wells HMC-951, OBS-3, and S(SG) were categorized incorrectly as low-flow wells. |
| 7. Were the following conditions met when purging a Category I well:<br><br>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<br>(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                       | A duplicate sample was collected at well HMC-951. |
| 10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with non-dedicated equipment? | NA                        | An equipment blank was not required.              |
| 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?   | Yes                       |   |
| 18. Was the presence or absence of ice in the cooler documented at every sample location?                              | Yes                       |   |
| 19. Were water levels measured at the locations specified in the planning documents?                                   | Yes                       |   |

## Laboratory Performance Assessment

### General Information

Report Number (RIN): 14046116  
Sample Event: April 29–30, 2013  
Site(s): Bluewater, New Mexico  
Laboratory: GEL Laboratories, Charleston, South Carolina  
Work Order No.: 347913  
Analysis: Metals, Organics, Wet Chemistry, and Radiochemistry  
Validator: Stephen Donivan  
Review Date: August 18, 2014

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-004      | 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, 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             |
| Total Dissolved Solids                 | WCH-A-033      | SM 2540C              | SM 2540C              |
| Tritium, Enrichment Method             | LMR-17         | HASL-300              | HASL-300              |
| Uranium Isotopes                       | ASP-A-024      | HASL-300, U-02-RC Mod | HASL-300, U-02-RC Mod |

### 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                                     |
|---------------|----------|------------------|------|--|
| 347913001     | 11(SG)   | Chloride         | J    | Analyzed outside of holding time           |
| 347913001     | 11(SG)   | Molybdenum       | U    | Less than 5 times the method blank         |
| 347913001     | 11(SG)   | Sulfate          | J    | Analyzed outside of holding time           |
| 347913001     | 11(SG)   | Tritium          | J    | Less than the Determination Limit          |
| 347913002     | 13(SG)   | Sulfate          | J    | Analyzed outside of holding time           |
| 347913002     | 13(SG)   | Field Alkalinity | R    | Cation/Anion Balance                       |
| 347913004     | 15(SG)   | Tritium          | J    | Less than the Determination Limit          |
| 347913004     | 15(SG)   | Sulfate          | J    | Analyzed outside of holding time           |
| 347913005     | 16(SG)   | Chloride         | J    | Analyzed outside of holding time           |
| 347913005     | 16(SG)   | Tritium          | J    | Less than the Determination Limit          |
| 347913005     | 16(SG)   | Sulfate          | J    | Analyzed outside of holding time           |
| 347913007     | 20(M)    | Sulfate          | J    | Analyzed outside of holding time           |
| 347913007     | 20(M)    | Uranium-235      | J    | Less than the Determination Limit          |
| 347913008     | 21(M)    | Molybdenum       | U    | Less than 5 times the method blank         |
| 347913008     | 21(M)    | Sulfate          | J    | Analyzed outside of holding time           |
| 347913009     | 22(M)    | Molybdenum       | U    | Less than 5 times the method blank         |
| 347913010     | 23(M)    | Tritium          | J    | Less than the Determination Limit          |
| 347913012     | E(M)     | Molybdenum       | U    | Less than 5 times the method blank         |
| 347913012     | E(M)     | Tritium          | U    | Less than the Decision Level Concentration |
| 347913013     | F(M)     | Molybdenum       | U    | Less than 5 times the method blank         |
| 347913013     | F(M)     | Tritium          | U    | Less than the Decision Level Concentration |
| 347913013     | F(M)     | Uranium-235      | J    | Less than the Determination Limit          |
| 347913014     | HMC-951  | Tritium          | U    | Less than the Decision Level Concentration |
| 347913015     | I(SG)    | Tritium          | U    | Less than the Decision Level Concentration |
| 347913016     | L(SG)    | Chloride         | J    | Analyzed outside of holding time           |
| 347913016     | L(SG)    | Molybdenum       | U    | Less than 5 times the method blank         |
| 347913016     | L(SG)    | Sulfate          | J    | Analyzed outside of holding time           |
| 347913017     | OBS-3    | Chloride         | J    | Analyzed outside of holding time           |
| 347913017     | OBS-3    | Tritium          | U    | Less than the Decision Level Concentration |
| 347913017     | OBS-3    | Sulfate          | J    | Analyzed outside of holding time           |
| 347913018     | S(SG)    | Chloride         | J    | Analyzed outside of holding time           |
| 347913018     | S(SG)    | Tritium          | U    | Less than the Decision Level Concentration |
| 347913018     | S(SG)    | Sulfate          | J    | Analyzed outside of holding time           |
| 347913019     | X(M)     | Chloride         | J    | Analyzed outside of holding time           |
| 347913019     | X(M)     | Molybdenum       | U    | Less than 5 times the method blank         |
| 347913019     | X(M)     | Tritium          | U    | Less than the Decision Level Concentration |
| 347913019     | X(M)     | Sulfate          | J    | Analyzed outside of holding time           |
| 347913020     | Y2(M)    | Tritium          | U    | Less than the Decision Level Concentration |

Sample Shipping/Receiving

GEL Laboratories in Charleston, South Carolina, received 20 water samples on May 2, 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.

#### Preservation and Holding Times

The sample shipment was received intact with the temperature inside the iced cooler 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. For 10 of the samples, the chloride and sulfate were analyzed within holding time. However, the samples had to be diluted and reanalyzed and the reanalysis was one day past the holding time. The associated sample chloride and sulfate results are qualified with a “J” flag as estimated values.

#### Detection and Quantitation Limits

The method detection limit (MDL) was reported for all metal, organic, and wet chemical 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.

For radiochemical analytes (those measured by radiometric counting) the MDL and PQL are not applicable, and these results are evaluated using the minimum detectable concentration (MDC), Decision Level Concentration (DLC), and Determination Limit (DL). The MDC is a measure of radiochemical method performance and was calculated and reported as specified in *Quality Systems for Analytical Services*. The DLC 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, and is estimated as 3 times the one-sigma total propagated uncertainty. Results that are greater than the MDC, but less than the DLC are qualified with a “U” flag (not detected). The DL for radiochemical results is the lowest concentration that can be reliably measured, and is defined as 3 times the MDC. Results not previously “U” qualified that are less than the DL are qualified with a “J” flag as estimated values.

The reported MDLs for all metal, organic, and wet chemical analytes; and MDCs for radiochemical analytes demonstrate compliance with contractual requirements. The samples were diluted prior to analysis of arsenic and selenium to reduce interferences, resulting in elevated detection limits.

#### Laboratory Instrument Calibration

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

*Methods EPA 310.1/SM 2320B, SM 2540C*

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

*Method EPA 300.0*

Calibrations for chloride and sulfate were performed using seven calibration standards on April 14, 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 353.2*

Calibrations for nitrate + nitrite as N were performed using six calibration standards on December 9 and 17, 2013. 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 SW-846 6010B*

Calibrations for calcium, magnesium, potassium, and sodium were performed on June 26, 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.

*Method SW-846 6020A*

Calibrations were performed for arsenic, molybdenum, selenium, and uranium on July 30–31 and August 1, 2014, using two calibration standards. 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.

*Alpha Spectrometry*

Alpha spectrometry calibrations and instrument backgrounds were performed within a month prior to sample analysis. Calibration standards were counted to obtain a minimum of 10,000 counts per peak. Daily instrument checks met the acceptance criteria. The tracer recoveries met the acceptance criteria of 30 to 110 percent for all samples. The full width at half maximum (FWHM) was reviewed to evaluate the spectral resolution. All internal standard FWHM values were below 100 kiloelectron volts (keV), demonstrating acceptable resolution. All internal standard peaks were within 50 keV of the expected position. The regions of interest (ROIs) for analyte peaks were reviewed. No manual integrations were performed and all ROIs were satisfactory. All results were blank-corrected using data from a blank population.

### *Tritium*

The tritium quench calibration curve was generated on July 24, 2013, for quench numbers ranging from 592 to 761. Sample quench values were within the calibration range for all samples. Daily calibration checks were performed on June 28, 29, and July 27, 2014, with acceptable results.

### 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. (The molybdenum detects in some method blanks were bracketed by calibration blanks with detected molybdenum; no sample results require qualification.)

### *Radiochemistry*

The radiochemistry method blank results were less than the DLC.

### 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. The spike recoveries met the acceptance criteria for all analytes evaluated. (The spike recoveries for chloride, nitrate, and sulfate exceeded the laboratory's acceptance criteria, but were within the  $\pm 25$  percent validation requirement.)

### Laboratory Replicate Analysis

Laboratory replicate analyses are used to determine laboratory precision for each sample matrix. The relative percent difference (RPD) for non-radiochemical replicate 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. For radiochemical measurements, the relative error ratio (the ratio of the absolute difference between the sample and duplicate results and the sum of the 1-sigma uncertainties) is used to evaluate duplicate results and should be less than 3. 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.

### Completeness

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

### Chromatography Peak Integration

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

### 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. Table 5 shows the total anion and cation results in groundwater samples from this event and the charge balance, which is an RPD calculation. Typically, a charge balance difference of 10 percent is considered acceptable.

The charge balance value for most locations was less than ten percent, with the following exceptions. At location 13(SG), the field and laboratory alkalinity results are not in agreement. The charge balance using the field result is 22.8 percent and the charge balance using the laboratory result is 0.5 percent. The field result is judged to be erroneous and is qualified with an "R" flag as rejected.

At location 16(SG) the charge balance was above 10 percent. The chloride and sulfate results were greater than the historical maximum values, biasing the calculated charge balance. These data were qualified previously because of the missed holding time. Further review of these data did not indicate any additional errors in the laboratory data and the data were not further qualified.

### Electronic Data Deliverable (EDD) File

The EDD file arrived on August 4, 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.



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

| Location | Cations (meq/L) | Anions (meq/L) | Charge Balance (%) |
|----------|-----------------|----------------|--------------------|
| 11(SG)   | 29.82           | 33.13          | 5.26               |
| 13(SG)   | 18.02           | 18.21          | 0.5                |
| 14(SG)   | 22.49           | 23.36          | 1.7                |
| 15(SG)   | 19.80           | 22.43          | 6.22               |
| 16(SG)   | 46.52           | 66.24          | 17.49              |
| 18(SG)   | 19.23           | 19.47          | 0.6                |
| 20(M)    | 14.18           | 16.10          | 6.32               |
| 21(M)    | 20.38           | 21.36          | 2.36               |
| 22(M)    | 13.86           | 14.09          | 0.86               |
| 23(M)    | 10.81           | 11.30          | 2.2                |
| E(M)     | 17.13           | 18.00          | 2.5                |
| F(M)     | 6.03            | 6.09           | 0.5                |
| HMC-951  | 14.56           | 16.17          | 5.2                |
| I(SG)    | 34.58           | 36.64          | 2.9                |
| L(SG)    | 29.01           | 29.93          | 1.56               |
| OBS-3    | 36.43           | 39.67          | 4.26               |
| S(SG)    | 44.68           | 50.57          | 6.19               |
| X(M)     | 19.55           | 21.89          | 5.66               |
| Y2(M)    | 6.70            | 6.99           | 2.1                |

meq/L = milliequivalents per liter

# SAMPLE MANAGEMENT SYSTEM

## General Data Validation Report

RIN: 14046116 Lab Code: GEN Validator: Stephen Donovan Validation Date: 08/15/2014  
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

There are 16 holding time failures.

Detection Limits

There are 40 detection limit failures.

Field/Trip Blanks

Field Duplicates

There was 1 duplicate evaluated.

**SAMPLE MANAGEMENT SYSTEM**

RIN: 14046116      Lab Code: GEN

**Non-Compliance Report: Holding Times**

Project: Bluewater

Validation Date: 08/15/2014

| Ticket  | Location | Lab Sample ID | Method Code | Holding Times             |                         |                        | Criteria                  |                         |                        | Reported Dates  |                  |               |
|---------|----------|---------------|-------------|---------------------------|-------------------------|------------------------|---------------------------|-------------------------|------------------------|-----------------|------------------|---------------|
|         |          |               |             | Collection to Preparation | Preparation to Analysis | Collection to Analysis | Collection to Preparation | Preparation to Analysis | Collection to Analysis | Collection Date | Preparation Date | Analysis Date |
| MFZ 208 | OBS-3    | 347913017     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 208 | OBS-3    | 347913017     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 208 | L(SG)    | 347913016     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 208 | L(SG)    | 347913016     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 209 | S(SG)    | 347913018     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 209 | S(SG)    | 347913018     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 210 | Z1(M)    | 347913008     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 212 | 11(SG)   | 347913001     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 212 | 11(SG)   | 347913001     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 213 | 13(SG)   | 347913002     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 215 | 15(SG)   | 347913004     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 216 | 16(SG)   | 347913005     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 216 | 16(SG)   | 347913005     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 218 | 20(M)    | 347913007     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 218 | 20(M)    | 347913007     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 220 | X(M)     | 347913019     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |
| MFZ 220 | X(M)     | 347913019     | MIS-A-045   |                           | 29                      |                        |                           |                         | 28                     | 04/29/2014      | 05/28/2014       | 05/28/2014    |

**SAMPLE MANAGEMENT SYSTEM**  
**Metals Data Validation Worksheet**

RIN: 14046116      Lab Code: GEN      Date Due: 07/31/2014  
 Matrix: Water      Site Code: BLU01      Date Completed: 08/04/2014

| Analyte    | Method Type | Date Analyzed | CALIBRATION |        |     |     | Method Blank | LCS %R | MS %R | MSD %R | Dup. RPD | ICSAB %R | Serial Dil. %R | CRI %R |
|------------|-------------|---------------|-------------|--------|-----|-----|--------------|--------|-------|--------|----------|----------|----------------|--------|
|            |             |               | Int.        | R^2    | CCV | CCB |              |        |       |        |          |          |                |        |
| Arsenic    | ICP/MS      | 08/01/2014    |             |        | OK  | OK  | OK           | 97.3   | 102.0 |        |          | 100.0    |                | 92.0   |
| Calcium    | ICP/ES      | 06/26/2014    | 0.0000      | 1.0000 | OK  | OK  | OK           | 100.0  |       |        | 4.0      | 94.0     | 1.2            | 93.0   |
| Magnesium  | ICP/ES      | 06/26/2014    | 0.0000      | 1.0000 | OK  | OK  | OK           | 105.0  | 120.0 |        | 4.0      | 94.0     | 0.2            | 104.0  |
| Molybdenum | ICP/MS      | 07/30/2014    |             |        | OK  | OK  | OK           | 104.0  | 109.0 |        | 9.0      | 101.0    |                | 97.0   |
| Potassium  | ICP/ES      | 06/26/2014    | 0.0000      | 1.0000 | OK  | OK  | OK           | 107.0  | 118.0 |        | 3.0      | 101.0    | 7.1            | 98.0   |
| Selenium   | ICP/MS      | 08/01/2014    |             |        | OK  | OK  | OK           | 103.0  | 101.0 |        |          | 96.0     |                | 103.0  |
| Sodium     | ICP/ES      | 06/26/2014    | 0.0000      | 1.0000 | OK  | OK  | OK           | 104.0  |       |        | 2.0      | 98.0     | 1.7            | 98.0   |
| Uranium    | ICP/MS      | 07/30/2014    |             |        | OK  | OK  | OK           | 103.0  | 101.0 |        | 3.0      | 103.0    | 1.5            | 111.0  |

**SAMPLE MANAGEMENT SYSTEM**  
**Radiochemistry Data Validation Worksheet**

RIN: 14046116      Lab Code: GEN      Date Due: 07/31/2014  
 Matrix: Water      Site Code: BLU01      Date Completed: 08/04/2014

| Sample      | Analyte         | Date Analyzed | Result | Flag | Tracer %R | LCS %R | MS %R | Duplicate RER |
|-------------|-----------------|---------------|--------|------|-----------|--------|-------|---------------|
| 11(SG)      | Tritium         | 06/28/2014    |        |      | 71        |        |       |               |
| 13(SG)      | Tritium         | 06/28/2014    |        |      | 71        |        |       |               |
| 14(SG)      | Tritium         | 06/28/2014    |        |      | 71        |        |       |               |
| 15(SG)      | Tritium         | 06/28/2014    |        |      | 71        |        |       |               |
| 16(SG)      | Tritium         | 06/28/2014    |        |      | 71        |        |       |               |
| 18(SG)      | Tritium         | 06/28/2014    |        |      | 71        |        |       |               |
| 20(M)       | Tritium         | 06/28/2014    |        |      | 71        |        |       |               |
| 21(M)       | Tritium         | 06/29/2014    |        |      | 71        |        |       |               |
| 22(M)       | Tritium         | 06/29/2014    |        |      | 71        |        |       |               |
| 23(M)       | Tritium         | 06/29/2014    |        |      | 71        |        |       |               |
| 2484        | Tritium         | 06/29/2014    |        |      | 71        |        |       |               |
| Blank_Spike | Tritium         | 06/29/2014    |        |      | 71        | 92.2   |       |               |
| Blank       | Tritium         | 06/29/2014    | 1.3    | U    | 71        |        |       |               |
| E(M)        | Tritium         | 07/27/2014    |        |      | 68        |        |       |               |
| F(M)        | Tritium         | 07/27/2014    |        |      | 68        |        |       |               |
| HMC-951     | Tritium         | 07/28/2014    |        |      | 68        |        |       |               |
| I(SG)       | Tritium         | 07/28/2014    |        |      | 68        |        |       |               |
| L(SG)       | Tritium         | 07/28/2014    |        |      | 68        |        |       |               |
| OBS-3       | Tritium         | 07/28/2014    |        |      | 68        |        |       |               |
| S(SG)       | Tritium         | 07/28/2014    |        |      | 68        |        |       |               |
| X(M)        | Tritium         | 07/28/2014    |        |      | 68        |        |       |               |
| Y2(M)       | Tritium         | 07/28/2014    |        |      | 68        |        |       |               |
| Blank_Spike | Tritium         | 07/29/2014    |        |      | 68        | 105    |       |               |
| Blank       | Tritium         | 07/29/2014    | -1.1   | U    | 68        |        |       |               |
| 11(SG)      | Uranium-233+234 | 07/08/2014    |        |      | 91        |        |       |               |
| 13(SG)      | Uranium-233+234 | 07/08/2014    |        |      | 92        |        |       |               |
| 14(SG)      | Uranium-233+234 | 07/08/2014    |        |      | 79        |        |       |               |
| 15(SG)      | Uranium-233+234 | 07/08/2014    |        |      | 75        |        |       |               |
| 16(SG)      | Uranium-233+234 | 07/08/2014    |        |      | 44        |        |       |               |
| 18(SG)      | Uranium-233+234 | 07/08/2014    |        |      | 85        |        |       |               |
| 20(M)       | Uranium-233+234 | 07/08/2014    |        |      | 98        |        |       |               |
| 21(M)       | Uranium-233+234 | 07/08/2014    |        |      | 76        |        |       |               |

**SAMPLE MANAGEMENT SYSTEM**  
**Radiochemistry Data Validation Worksheet**

RIN: 14046116                      Lab Code: GEN                      Date Due: 07/31/2014  
 Matrix: Water                      Site Code: BLU01                      Date Completed: 08/04/2014

| Sample      | Analyte         | Date Analyzed | Result | Flag | Tracer %R | LCS %R | MS %R | Duplicate RER |
|-------------|-----------------|---------------|--------|------|-----------|--------|-------|---------------|
| 22(M)       | Uranium-233+234 | 07/08/2014    |        |      | 89        |        |       |               |
| 23(M)       | Uranium-233+234 | 07/08/2014    |        |      | 86        |        |       |               |
| 2484        | Uranium-233+234 | 07/08/2014    |        |      | 75        |        |       |               |
| F(M)        | Uranium-233+234 | 07/08/2014    |        |      | 86        |        |       |               |
| HMC-951     | Uranium-233+234 | 07/08/2014    |        |      | 90        |        |       |               |
| I(SG)       | Uranium-233+234 | 07/08/2014    |        |      | 91        |        |       |               |
| L(SG)       | Uranium-233+234 | 07/08/2014    |        |      | 86        |        |       |               |
| OBS-3       | Uranium-233+234 | 07/08/2014    |        |      | 87        |        |       |               |
| S(SG)       | Uranium-233+234 | 07/08/2014    |        |      | 78        |        |       |               |
| X(M)        | Uranium-233+234 | 07/08/2014    |        |      | 79        |        |       |               |
| Y2(M)       | Uranium-233+234 | 07/08/2014    |        |      | 74        |        |       |               |
| 11          | Uranium-233+234 | 07/08/2014    |        |      | 84        |        |       | 0.13          |
| 11          | Uranium-233+234 | 07/08/2014    |        |      | 78        |        |       |               |
| Blank       | Uranium-233+234 | 07/08/2014    | -0.087 | U    | 60        |        |       |               |
| E(M)        | Uranium-233+234 | 07/12/2014    |        |      | 79        |        |       |               |
| Blank       | Uranium-235     | 07/08/2014    | 0.071  | U    |           |        |       |               |
| 11          | Uranium-235/236 | 07/08/2014    |        |      |           |        |       | 0.4           |
| 11          | Uranium-235/236 | 07/08/2014    |        |      |           |        |       |               |
| 11          | Uranium-238     | 07/08/2014    |        |      |           |        |       | 0.39          |
| Blank_Spike | Uranium-238     | 07/08/2014    |        |      |           | 99     |       |               |
| 11          | Uranium-238     | 07/08/2014    |        |      |           |        | 98.5  |               |
| Blank       | Uranium-238     | 07/08/2014    | -0.115 | U    |           |        |       |               |

**SAMPLE MANAGEMENT SYSTEM**  
**Wet Chemistry Data Validation Worksheet**

RIN: 14046116      Lab Code: GEN      Date Due: 07/31/2014  
 Matrix: Water      Site Code: BLU01      Date Completed: 08/04/2014

| Analyte                        | Date Analyzed | CALIBRATION |        |     |     | Method<br>Blank | LCS<br>%R | MS<br>%R | MSD<br>%R | DUP<br>RPD | Serial Dil.<br>%R |
|--------------------------------|---------------|-------------|--------|-----|-----|-----------------|-----------|----------|-----------|------------|-------------------|
|                                |               | Int.        | R^2    | CCV | CCB |                 |           |          |           |            |                   |
| ALKALINITY, Total as CaCO3     | 05/10/2014    |             |        |     |     | OK              | 95.60     | 85.5     |           |            |                   |
| ALKALINITY, Total as CaCO3     | 05/13/2014    |             |        |     |     | OK              | 95.60     | 95.6     |           |            |                   |
| Bicarbonate alkalinity (CaCO3) | 05/10/2014    |             |        |     |     |                 |           |          | 1.00      |            |                   |
| Bicarbonate alkalinity (CaCO3) | 05/13/2014    |             |        |     |     |                 |           |          | 1.00      |            |                   |
| Carbonate alkalinity (CaCO3)   | 05/10/2014    |             |        |     |     |                 |           |          |           |            |                   |
| Carbonate alkalinity (CaCO3)   | 05/13/2014    |             |        |     |     |                 |           |          |           |            |                   |
| Chloride                       | 05/27/2014    | 0.000       | 0.9998 | OK  | OK  | OK              | 101.00    |          |           |            |                   |
| Chloride                       | 05/28/2014    |             |        |     |     |                 |           | 114.0    | 0         |            |                   |
| Chloride                       | 05/28/2014    |             |        |     |     |                 |           |          | 0         |            |                   |
| NO2+NO3 as N                   | 05/08/2014    | 0.000       | 1.0000 | OK  | OK  | OK              | 110.00    | 89.3     | 4.00      |            |                   |
| NO2+NO3 as N                   | 05/08/2014    |             |        |     |     |                 |           | 111.0    |           |            |                   |
| Sulfate                        | 05/27/2014    | 0.000       | 0.9998 | OK  | OK  | OK              | 103.00    |          |           |            |                   |
| Sulfate                        | 05/28/2014    |             |        |     |     |                 |           | 124.0    | 0         |            |                   |
| Sulfate                        | 05/28/2014    |             |        |     |     |                 |           |          | 1.00      |            |                   |
| Total Dissolved Solids         | 05/05/2014    |             |        |     |     | OK              | 103.00    |          | 1.00      |            |                   |
| Total Dissolved Solids         | 05/06/2014    |             |        |     |     | OK              | 97.60     |          | 0         |            |                   |

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## General Information

Requisition No. (RIN): 14046117  
Sample Event: April 29-30, 2014  
Site(s): Bluewater, New Mexico  
Laboratory: Reston Stable Isotope Laboratory, Reston, Virginia  
Analysis: Stable Isotopes  
Validator: Stephen Donovan  
Review Date: June 19, 2014

This validation was performed according to the *Environmental Procedures Catalog* (LMS/POL/S04325), "Standard Practice for Validation of Environmental Data." The procedure was applied at Level 1, Data Deliverables Examination. 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 6.

Table 6. Analytes and Methods

| Analyte                              | Line Item Code | Prep Method | Analytical Method |
|--------------------------------------|----------------|-------------|-------------------|
| H-2/H-1 and O-18/O-16 Isotope Ratios | LMW-08         | NA          | Mass Spectrometry |
| S-34/S-32 Isotope Ratio              | LMW-09         | NA          | Mass Spectrometry |

## Data Qualifier Summary

None of the analytical results required qualification.

## Sample Shipping/Receiving

The Reston Stable Isotope Laboratory in Reston, Virginia received 20 water samples on May 2, 2014, submitted for the determination of stable hydrogen, oxygen, and sulfur isotope ratios. The analytical report was checked to confirm that all of the samples scheduled were received and analyzed.

## Preservation and Holding Times

The sample shipment was received intact with the sample in the correct container type preserved correctly for the requested analyses. The sample was analyzed within the applicable holding time.

## Laboratory Analysis

Oxygen and hydrogen isotopic results are reported in parts per thousand (per mill) relative to VSMOW (Vienna Standard Mean Ocean Water) and normalized on scales such that the oxygen and hydrogen isotopic values of SLAP (Standard Light Antarctic Precipitation) are -55.5 per mill and -428 per mill, respectively. The 2-sigma uncertainties of oxygen and hydrogen isotopic results are 0.2 per mill and 2 per mill, respectively, unless otherwise indicated.

For sulfur isotope ratio measurements, dissolved sulfate is converted to BaSO<sub>4</sub>, which is analyzed by conversion to sulfur dioxide with an elemental analyzer and subsequent analysis with a continuous flow isotope ratio mass spectrometer. Samples are analyzed simultaneously with BaSO<sub>4</sub> isotopic reference materials. No correction for oxygen isotopic composition was made to reported data.

Sulfur isotope ratios are reported in per mill relative to Vienna Canyon Diablo Troilite (VCDT), defined by assigning a value of -0.3 per mill exactly to IAEA-S-1 silver sulfide (previously known as NZ-1).

### Completeness

The electronic data deliverable was the only deliverable received for this RIN.

### Electronic Data Deliverable File

The EDD files arrived on June 11, 2014.

## 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:

- Wells I(SG), 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 with no field parameter stability requirements.
- Wells 23(M) and E(M) were classified as Category II or III. The sample results were qualified with a “Q” flag, indicating the data are qualitative because of the sampling technique.

### 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. A duplicate sample was collected from location HMC-951. The RPD for duplicate results that are greater than 5 times the PQL should be less than 20 percent. The RPD is not used to evaluate results that are less than 5 times the PQL. For these results, the range should be no greater than the PQL. For radiochemical measurements, the relative error ratio (the ratio of the absolute difference between the sample and duplicate results and the sum of the 1-sigma uncertainties) is used to evaluate duplicate results and should be less than 3. The duplicate results met the criteria, demonstrating acceptable overall precision.

**SAMPLE MANAGEMENT SYSTEM**  
**Validation Report: Field Duplicates**

Page 1 of 1

RIN: 14046116    Lab Code: GEN    Project: Bluewater    Validation Date: 08/15/2014

Duplicate: 2484

Sample: HMC-951

| Analyte                        | Sample |      |       |          | Duplicate |      |       |          | RPD   | RER | Units |
|--------------------------------|--------|------|-------|----------|-----------|------|-------|----------|-------|-----|-------|
|                                | Result | Flag | Error | Dilution | Result    | Flag | Error | Dilution |       |     |       |
| Arsenic                        | 8.50   | U    |       | 5.00     | 8.50      | U    |       | 5.00     |       |     | ug/L  |
| Bicarbonate alkalinity (CaCO3) | 272    |      |       | 1.00     | 274       |      |       | 1.00     | 0.73  |     | mg/L  |
| Calcium                        | 146000 |      |       | 1.00     | 147000    |      |       | 1.00     | 0.68  |     | ug/L  |
| Carbonate alkalinity (CaCO3)   | 0.725  | U    |       | 1.00     | 0.725     | U    |       | 1.00     |       |     | mg/L  |
| Chloride                       | 60.9   |      |       | 20.00    | 60.3      |      |       | 20.00    | 0.99  |     | mg/L  |
| Magnesium                      | 43800  |      |       | 1.00     | 44200     |      |       | 1.00     | 0.91  |     | ug/L  |
| Molybdenum                     | 1.19   |      |       | 1.00     | 1.36      |      |       | 1.00     | 13.33 |     | ug/L  |
| NO2+NO3 as N                   | 4.82   |      |       | 10.00    | 5.03      |      |       | 10.00    | 4.26  |     | mg/L  |
| Potassium                      | 4850   |      |       | 1.00     | 5020      |      |       | 1.00     | 3.44  |     | ug/L  |
| Selenium                       | 7.50   | U    |       | 5.00     | 7.50      | U    |       | 5.00     |       |     | ug/L  |
| Sodium                         | 81600  |      |       | 1.00     | 82300     |      |       | 1.00     | 0.85  |     | ug/L  |
| Sulfate                        | 378    |      |       | 20.00    | 377       |      |       | 20.00    | 0.26  |     | mg/L  |
| Total Dissolved Solids         | 901    |      |       | 1.00     | 909       |      |       | 1.00     | 0.88  |     | mg/L  |
| Tritium                        | 6.36   |      | 4.51  | 1.00     | 8.59      |      | 2.50  | 1.00     |       | 0.8 | pCi/L |
| Uranium                        | 31.7   |      |       | 1.00     | 30.6      |      |       | 1.00     | 3.53  |     | ug/L  |
| Uranium-233+234                | 12.7   |      | 1.80  | 1.00     | 12.3      |      | 1.79  | 1.00     | 3.20  | 0.3 | pCi/L |
| Uranium-235/236                | 0.460  |      | 0.211 | 1.00     | 0.585     |      | 0.252 | 1.00     |       | 0.7 | pCi/L |
| Uranium-238                    | 11.0   |      | 1.58  | 1.00     | 10.3      |      | 1.54  | 1.00     | 6.57  | 0.6 | pCi/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 Donivan 9-24-2014  
Stephen Donivan Date

Data Validation Lead: Stephen Donivan 9-24-2014  
Stephen Donivan Date

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**Attachment 1**  
**Assessment of Anomalous Data**

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## Potential Outliers Report

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## Potential Outliers Report

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

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

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

1. Identify extreme values that may be potential outliers by generating the Outliers Report using the Sample Management System from data in the 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 if the data are normally distributed using the Shapiro-Wilk Test.
2. Apply the appropriate statistical test. Dixon's Extreme Value test is used to test for statistical outliers when the sample size is less than or equal to 25. This test considers both extreme values that are much smaller than the rest of the data (case 1) and extreme values that are much larger than the rest of the data (case 2). This test is valid only if the data without the suspected outlier are normally distributed. Rosner's Test is a parametric test that is used to detect outliers for sample sizes of 25 or more. This test also assumes that the data without the suspected outliers are normally distributed.
3. Scientifically review statistical outliers and decide on their disposition. The review should include an evaluation of any notable trends in the data that may indicate the outliers represent true extreme values.

There were no potential outliers identified, and the data for this event are acceptable as qualified.

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Data Validation Outliers Report - No Field Parameters  
 Comparison: All historical Data Beginning 01/01/2004

Laboratory: GEL Laboratories

RIN: 14046116

Report Date: 08/19/2014

| 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      | 04/29/2014  | Chloride  | 207     | H          | FJ   | 193                |     | F    | 177                |     | F    | 5                     | 0              | No                  |
| BLU01     | 11(SG)        | N001      | 04/29/2014  | Sodium  | 357     |            | F    | 326                |     | F    | 235                |     | F    | 5                     | 0              | No                  |
| BLU01     | 11(SG)        | N001      | 04/29/2014  | Sulfate   | 815     | H          | FJ   | 744                |     | F    | 369                |     | F    | 5                     | 0              | No                  |
| BLU01     | 15(SG)        | N001      | 04/29/2014  | Calcium   | 105     |            | F    | 102                |     | F    | 78.9               |     | F    | 5                     | 0              | No                  |
| BLU01     | 15(SG)        | N001      | 04/29/2014  | Magnesium                                       | 38.2    |            | F    | 35.3               |     | F    | 27.9               |     | F    | 5                     | 0              | No                  |
| BLU01     | 15(SG)        | N001      | 04/29/2014  | Sulfate   | 456     | H          | FJ   | 436                |     | F    | 265                |     | F    | 5                     | 0              | No                  |
| BLU01     | 21(M)         | N001      | 04/29/2014  | Nitrate + Nitrite as Nitrogen                   | 12.1    |            | F    | 12.0               |     | F    | 7.90               |     | F    | 9                     | 0              | No                  |
| BLU01     | 21(M)         | N001      | 04/29/2014  | Selenium  | 0.0121  | B          | F    | 0.0120             |     | F    | 0.00900            |     | F    | 9                     | 0              | No                  |
| BLU01     | 21(M)         | N001      | 04/29/2014  | Sulfate   | 521     | H          | FJ   | 520                |     | F    | 467                |     | F    | 9                     | 0              | No                  |
| BLU01     | 22(M)         | N001      | 04/29/2014  | Arsenic   | 0.00850 | U          | F    | 0.00380            |     | F    | 0.00251            | B   | F    | 7                     | 0              | No                  |
| BLU01     | 22(M)         | N001      | 04/29/2014  | Chloride  | 31.2    |            | F    | 44.0               |     | F    | 31.8               |     | F    | 7                     | 0              | No                  |
| BLU01     | 22(M)         | N001      | 04/29/2014  | Total Dissolved Solids                          | 873     |            | F    | 1100               |     | F    | 896                |     | F    | 7                     | 0              | No                  |
| BLU01     | 22(M)         | N001      | 04/29/2014  | Uranium   | 0.393   |            | F    | 0.388              |     | F    | 0.310              |     | F    | 7                     | 0              | No                  |
| BLU01     | E(M)          | 0001      | 04/30/2014  | Alkalinity, Bicarbonate (as CaCO <sub>3</sub> ) | 27.7    |            | FQ   | 16.2               |     | FQ   | 0.725              | U   | FQ   | 5                     | 1              | No                  |
| BLU01     | E(M)          | 0001      | 04/30/2014  | Arsenic   | 0.00850 | U          | FQ   | 0.00170            | U   | FQ   | 0.000046           | B   | FQ   | 9                     | 6              | NA                  |
| BLU01     | E(M)          | 0001      | 04/30/2014  | Chloride  | 30.0    |            | FQ   | 42.0               |     | FQ   | 31.2               |     | FQ   | 9                     | 0              | No                  |
| BLU01     | F(M)          | N001      | 04/30/2014  | Alkalinity, Bicarbonate (as CaCO <sub>3</sub> ) | 163     |            | F    | 180                |     | F    | 164                |     | F    | 6                     | 0              | No                  |

**Data Validation Outliers Report - No Field Parameters**

**Comparison: All historical Data Beginning 01/01/2004**

Laboratory: GEL Laboratories

RIN: 14046116

Report Date: 08/19/2014

| 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     | I(SG)         | N001      | 04/30/2014  | Nitrate + Nitrite as Nitrogen                   | 1.71    |            |      | 1.53               |     | F    | 0.01000            | U   | F    | 15                    | 9              | NA                  |
| BLU01     | L(SG)         | N001      | 04/29/2014  | Alkalinity, Bicarbonate (as CaCO <sub>3</sub> ) | 591     |            | F    | 573                |     | F    | 15.7               |     | F    | 8                     | 0              | NA                  |
| BLU01     | L(SG)         | N001      | 04/29/2014  | Sulfate   | 653     | H          | FJ   | 630                |     | F    | 1.70               |     | F    | 12                    | 0              | NA                  |
| BLU01     | OBS-3         | 0001      | 04/29/2014  | Arsenic   | 0.00850 | U          |      | 0.00219            | B   | FQ   | 0.000061           | B   | F    | 10                    | 6              | NA                  |
| BLU01     | S(SG)         | N001      | 04/29/2014  | Arsenic   | 0.00850 | U          |      | 0.00170            | U   | FQ   | 0.000087           | B   | F    | 10                    | 7              | NA                  |
| BLU01     | S(SG)         | N001      | 04/29/2014  | Calcium   | 276     |            |      | 897                |     | F    | 283                |     |      | 10                    | 0              | NA                  |
| BLU01     | S(SG)         | N001      | 04/29/2014  | Sulfate   | 1290    | H          | J    | 1260               |     | FQ   | 295                |     | F    | 10                    | 0              | NA                  |
| BLU01     | Y2(M)         | N001      | 04/30/2014  | Arsenic   | 0.00850 | U          | F    | 0.00364            | B   | F    | 0.00120            |     | F    | 12                    | 6              | NA                  |
| BLU01     | Y2(M)         | N001      | 04/30/2014  | Calcium   | 55.0    |            | F    | 77.0               |     | F    | 56.5               |     | F    | 12                    | 0              | NA                  |
| BLU01     | Y2(M)         | N001      | 04/30/2014  | Nitrate + Nitrite as Nitrogen                   | 1.81    |            | F    | 1.66               |     | F    | 0.494              |     | F    | 14                    | 0              | No                  |
| BLU01     | Y2(M)         | N001      | 04/30/2014  | Selenium  | 0.00750 | U          | F    | 0.00217            | B   | F    | 0.00064            |     | F    | 12                    | 3              | No                  |
| BLU01     | Y2(M)         | N001      | 04/30/2014  | Sodium  | 57.7    |            | F    | 56.5               |     | F    | 14.0               |     | F    | 12                    | 0              | NA                  |

**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.

**Attachment 2**  
**Data Presentation**

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## **Groundwater Quality Data**

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

REPORT DATE: 08/19/2014

Location: 11(SG) WELL

| Parameter  | Units        | Sample     |      | Depth Range<br>(Ft BLS) | Result   | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|--------------|------------|------|-------------------------|----------|------------|------|----|--------------------|-------------|
|  |              | Date       | ID   |                         |          | Lab        | Data | QA |                    |             |
| Alkalinity, Bicarbonate<br>(as CaCO <sub>3</sub> ) | mg/L         | 04/29/2014 | N001 | 265 - 295               | 468      |            | F    | #  | 0.725              |             |
| Alkalinity, Carbonate<br>(as CaCO <sub>3</sub> )   | mg/L         | 04/29/2014 | N001 | 265 - 295               | 0.725    | U          | F    | #  | 0.725              |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )          | mg/L         | 04/29/2014 | N001 | 265 - 295               | 516      |            | F    | #  |                    |             |
| Arsenic  | mg/L         | 04/29/2014 | N001 | 265 - 295               | 0.0085   | U          | F    | #  | 0.0085             |             |
| Calcium  | mg/L         | 04/29/2014 | N001 | 265 - 295               | 176      |            | F    | #  | 0.05               |             |
| Chloride   | mg/L         | 04/29/2014 | N001 | 265 - 295               | 207      | H          | FJ   | #  | 3.35               |             |
| Dissolved Oxygen                                   | mg/L         | 04/29/2014 | N001 | 265 - 295               | 1.04     |            | F    | #  |                    |             |
| Magnesium  | mg/L         | 04/29/2014 | N001 | 265 - 295               | 63.7     |            | F    | #  | 0.11               |             |
| Molybdenum   | mg/L         | 04/29/2014 | N001 | 265 - 295               | 0.000744 |            | UF   | #  | 0.000165           |             |
| Nitrate + Nitrite as Nitrogen                      | mg/L         | 04/29/2014 | N001 | 265 - 295               | 0.017    | U          | F    | #  | 0.017              |             |
| Oxidation Reduction<br>Potential                   | mV           | 04/29/2014 | N001 | 265 - 295               | -160     |            | F    | #  |                    |             |
| pH   | s.u.         | 04/29/2014 | N001 | 265 - 295               | 7.04     |            | F    | #  |                    |             |
| Potassium  | mg/L         | 04/29/2014 | N001 | 265 - 295               | 10.6     |            | F    | #  | 0.05               |             |
| Selenium   | mg/L         | 04/29/2014 | N001 | 265 - 295               | 0.0075   | U          | F    | #  | 0.0075             |             |
| Sodium   | mg/L         | 04/29/2014 | N001 | 265 - 295               | 357      |            | F    | #  | 0.1                |             |
| Specific Conductance                               | umhos<br>/cm | 04/29/2014 | N001 | 265 - 295               | 2620     |            | F    | #  |                    |             |
| Stable isotope ratio<br>H2/H1 in Water             | ‰            | 04/29/2014 | 0001 | 265 - 295               | -80.01   |            | F    | #  |                    |             |
| Stable isotope ratio<br>O18/O16 in Water           | ‰            | 04/29/2014 | 0001 | 265 - 295               | -10.22   |            | F    | #  |                    |             |

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

REPORT DATE: 08/19/2014

Location: 11(SG) WELL

| Parameter                                    | Units | Sample     |      | Depth Range |     |      | Result | Qualifiers |    |   | Detection Limit | Uncertainty |
|--|-------|------------|------|-------------|-----|------|--------|------------|----|---|-----------------|-------------|
|  |       | Date       | ID   | (Ft BLS)    | Lab | Data |        | QA         |    |   |                 |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/29/2014 | 0001 | 265         | -   | 295  | 9.83   |            | F  | # |                 |             |
| Sulfate                                      | mg/L  | 04/29/2014 | N001 | 265         | -   | 295  | 815    | H          | FJ | # | 6.65            |             |
| Temperature                                  | C     | 04/29/2014 | N001 | 265         | -   | 295  | 15.5   |            | F  | # |                 |             |
| Total Dissolved Solids                       | mg/L  | 04/29/2014 | N001 | 265         | -   | 295  | 1860   |            | F  | # | 3.4             |             |
| Tritium                                      | pCi/L | 04/29/2014 | N001 | 265         | -   | 295  | 3.71   |            | FJ | # | 2.45            | 1.72        |
| Turbidity                                    | NTU   | 04/29/2014 | N001 | 265         | -   | 295  | 2.12   |            | F  | # |                 |             |
| Uranium                                      | mg/L  | 04/29/2014 | N001 | 265         | -   | 295  | 0.0157 |            | F  | # | 0.000067        |             |
| Uranium-234                                  | pCi/L | 04/29/2014 | N001 | 265         | -   | 295  | 8.2    |            | F  | # | 0.211           | 1.29        |
| Uranium-235                                  | pCi/L | 04/29/2014 | N001 | 265         | -   | 295  | 0.283  |            | F  | # | 0.0707          | 0.176       |
| Uranium-238                                  | pCi/L | 04/29/2014 | N001 | 265         | -   | 295  | 5.24   |            | F  | # | 0.211           | 0.91        |

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

REPORT DATE: 08/19/2014

Location: 13(SG) WELL

| Parameter  | Units        | Sample     |      | Depth Range<br>(Ft BLS) | Result  | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|--------------|------------|------|-------------------------|---------|------------|------|----|--------------------|-------------|
|  |              | Date       | ID   |                         |         | Lab        | Data | QA |                    |             |
| Alkalinity, Bicarbonate<br>(as CaCO <sub>3</sub> ) | mg/L         | 04/29/2014 | N001 | 270 - 300               | 287     |            | F    | #  | 0.725              |             |
| Alkalinity, Carbonate<br>(as CaCO <sub>3</sub> )   | mg/L         | 04/29/2014 | N001 | 270 - 300               | 0.725   | U          | F    | #  | 0.725              |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )          | mg/L         | 04/29/2014 | N001 | 270 - 300               | 810     |            | RF   | #  |                    |             |
| Arsenic  | mg/L         | 04/29/2014 | N001 | 270 - 300               | 0.0085  | U          | F    | #  | 0.0085             |             |
| Calcium  | mg/L         | 04/29/2014 | N001 | 270 - 300               | 172     |            | F    | #  | 0.05               |             |
| Chloride   | mg/L         | 04/29/2014 | N001 | 270 - 300               | 90.2    |            | F    | #  | 1.34               |             |
| Dissolved Oxygen                                   | mg/L         | 04/29/2014 | N001 | 270 - 300               | 2.94    |            | F    | #  |                    |             |
| Magnesium  | mg/L         | 04/29/2014 | N001 | 270 - 300               | 52.5    |            | F    | #  | 0.11               |             |
| Molybdenum   | mg/L         | 04/29/2014 | N001 | 270 - 300               | 0.00143 |            | F    | #  | 0.000165           |             |
| Nitrate + Nitrite as Nitrogen                      | mg/L         | 04/29/2014 | N001 | 270 - 300               | 5.2     |            | F    | #  | 0.17               |             |
| Oxidation Reduction<br>Potential                   | mV           | 04/29/2014 | N001 | 270 - 300               | 92      |            | F    | #  |                    |             |
| pH   | s.u.         | 04/29/2014 | N001 | 270 - 300               | 7.01    |            | F    | #  |                    |             |
| Potassium  | mg/L         | 04/29/2014 | N001 | 270 - 300               | 6.33    |            | F    | #  | 0.05               |             |
| Selenium   | mg/L         | 04/29/2014 | N001 | 270 - 300               | 0.0075  | U          | F    | #  | 0.0075             |             |
| Sodium   | mg/L         | 04/29/2014 | N001 | 270 - 300               | 114     |            | F    | #  | 0.1                |             |
| Specific Conductance                               | umhos<br>/cm | 04/29/2014 | N001 | 270 - 300               | 1470    |            | F    | #  |                    |             |
| Stable isotope ratio<br>H2/H1 in Water             | ‰            | 04/29/2014 | 0001 | 270 - 300               | -74.34  |            | F    | #  |                    |             |
| Stable isotope ratio<br>O18/O16 in Water           | ‰            | 04/29/2014 | 0001 | 270 - 300               | -9.26   |            | F    | #  |                    |             |

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

REPORT DATE: 08/19/2014

Location: 13(SG) WELL

| Parameter                                    | Units | Sample     |      | Depth Range<br>(Ft BLS) | Result | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|-------|------------|------|-------------------------|--------|------------|------|----|--------------------|-------------|
|  |       | Date       | ID   |                         |        | Lab        | Data | QA |                    |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/29/2014 | 0001 | 270 - 300               | 5.86   |            | F    | #  |                    |             |
| Sulfate                                      | mg/L  | 04/29/2014 | N001 | 270 - 300               | 459    | H          | FJ   | #  | 6.65               |             |
| Temperature                                  | C     | 04/29/2014 | N001 | 270 - 300               | 12.7   |            | F    | #  |                    |             |
| Total Dissolved Solids                       | mg/L  | 04/29/2014 | N001 | 270 - 300               | 1080   |            | F    | #  | 3.4                |             |
| Tritium                                      | pCi/L | 04/29/2014 | N001 | 270 - 300               | 8.44   |            | F    | #  | 2.6                | 2.52        |
| Turbidity                                    | NTU   | 04/29/2014 | N001 | 270 - 300               | 3.05   |            | F    | #  |                    |             |
| Uranium                                      | mg/L  | 04/29/2014 | N001 | 270 - 300               | 0.108  |            | F    | #  | 0.000067           |             |
| Uranium-234                                  | pCi/L | 04/29/2014 | N001 | 270 - 300               | 34.5   |            | F    | #  | 0.262              | 4.43        |
| Uranium-235                                  | pCi/L | 04/29/2014 | N001 | 270 - 300               | 1.61   |            | F    | #  | 0.175              | 0.399       |
| Uranium-238                                  | pCi/L | 04/29/2014 | N001 | 270 - 300               | 33.2   |            | F    | #  | 0.113              | 4.28        |

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

REPORT DATE: 08/19/2014

Location: 14(SG) WELL

| Parameter  | Units        | Sample     |      | Depth Range<br>(Ft BLS) | Result  | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|--------------|------------|------|-------------------------|---------|------------|------|----|--------------------|-------------|
|  |              | Date       | ID   |                         |         | Lab        | Data | QA |                    |             |
| Alkalinity, Bicarbonate<br>(as CaCO <sub>3</sub> ) | mg/L         | 04/30/2014 | N001 | 285 - 315               | 422     |            | F    | #  | 0.725              |             |
| Alkalinity, Carbonate<br>(as CaCO <sub>3</sub> )   | mg/L         | 04/30/2014 | N001 | 285 - 315               | 0.725   | U          | F    | #  | 0.725              |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )          | mg/L         | 04/30/2014 | N002 | 285 - 315               | 444     |            | F    | #  |                    |             |
| Arsenic  | mg/L         | 04/30/2014 | N001 | 285 - 315               | 0.0085  | U          | F    | #  | 0.0085             |             |
| Calcium  | mg/L         | 04/30/2014 | N001 | 285 - 315               | 134     |            | F    | #  | 0.05               |             |
| Chloride   | mg/L         | 04/30/2014 | N001 | 285 - 315               | 160     |            | F    | #  | 1.34               |             |
| Dissolved Oxygen                                   | mg/L         | 04/30/2014 | N002 | 285 - 315               | 0.61    |            | F    | #  |                    |             |
| Magnesium  | mg/L         | 04/30/2014 | N001 | 285 - 315               | 55.2    |            | F    | #  | 0.11               |             |
| Molybdenum   | mg/L         | 04/30/2014 | N001 | 285 - 315               | 0.00256 |            | F    | #  | 0.000165           |             |
| Nitrate + Nitrite as Nitrogen                      | mg/L         | 04/30/2014 | N001 | 285 - 315               | 0.017   | U          | F    | #  | 0.017              |             |
| Oxidation Reduction<br>Potential                   | mV           | 04/30/2014 | N002 | 285 - 315               | -30     |            | F    | #  |                    |             |
| pH   | s.u.         | 04/30/2014 | N002 | 285 - 315               | 7.11    |            | F    | #  |                    |             |
| Potassium  | mg/L         | 04/30/2014 | N001 | 285 - 315               | 5       |            | F    | #  | 0.05               |             |
| Selenium   | mg/L         | 04/30/2014 | N001 | 285 - 315               | 0.0075  | U          | F    | #  | 0.0075             |             |
| Sodium   | mg/L         | 04/30/2014 | N001 | 285 - 315               | 256     |            | F    | #  | 0.1                |             |
| Specific Conductance                               | umhos<br>/cm | 04/30/2014 | N002 | 285 - 315               | 1940    |            | F    | #  |                    |             |
| Stable isotope ratio<br>H2/H1 in Water             | ‰            | 04/30/2014 | 0001 | 285 - 315               | -79.51  |            | F    | #  |                    |             |
| Stable isotope ratio<br>O18/O16 in Water           | ‰            | 04/30/2014 | 0001 | 285 - 315               | -10.25  |            | F    | #  |                    |             |

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

REPORT DATE: 08/19/2014

Location: 14(SG) WELL

| Parameter                                    | Units | Sample     |      | Depth Range<br>(Ft BLS) | Result | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|-------|------------|------|-------------------------|--------|------------|------|----|--------------------|-------------|
|  |       | Date       | ID   |                         |        | Lab        | Data | QA |                    |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/30/2014 | 0001 | 285 - 315               | 6.62   |            | F    | #  |                    |             |
| Sulfate                                      | mg/L  | 04/30/2014 | N001 | 285 - 315               | 500    |            | F    | #  | 6.65               |             |
| Temperature                                  | C     | 04/30/2014 | N002 | 285 - 315               | 14.7   |            | F    | #  |                    |             |
| Total Dissolved Solids                       | mg/L  | 04/30/2014 | N001 | 285 - 315               | 1320   |            | F    | #  | 3.4                |             |
| Tritium                                      | pCi/L | 04/30/2014 | N001 | 285 - 315               | 2.43   | U          | F    | #  | 2.43               | 1.5         |
| Turbidity                                    | NTU   | 04/30/2014 | N002 | 285 - 315               | 1.63   |            | F    | #  |                    |             |
| Uranium                                      | mg/L  | 04/30/2014 | N001 | 285 - 315               | 0.0643 |            | F    | #  | 0.000067           |             |
| Uranium-234                                  | pCi/L | 04/30/2014 | N001 | 285 - 315               | 21.1   |            | F    | #  | 0.264              | 2.89        |
| Uranium-235                                  | pCi/L | 04/30/2014 | N001 | 285 - 315               | 1.2    |            | F    | #  | 0.0679             | 0.362       |
| Uranium-238                                  | pCi/L | 04/30/2014 | N001 | 285 - 315               | 18.3   |            | F    | #  | 0.055              | 2.54        |



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

REPORT DATE: 08/19/2014

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 <sub>3</sub> ) | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 342     |            | F  | # | 0.725           |             |
| Alkalinity, Carbonate (as CaCO <sub>3</sub> )   | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 0.725   | U          | F  | # | 0.725           |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )       | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 390     |            | F  | # |                 |             |
| Arsenic   | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 0.0085  | U          | F  | # | 0.0085          |             |
| Calcium   | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 105     |            | F  | # | 0.05            |             |
| Chloride  | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 182     |            | F  | # | 1.34            |             |
| Dissolved Oxygen                                | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 0.82    |            | F  | # |                 |             |
| Magnesium                                       | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 38.2    |            | F  | # | 0.11            |             |
| Molybdenum                                      | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 0.00794 |            | F  | # | 0.000165        |             |
| Nitrate + Nitrite as Nitrogen                   | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 0.017   | U          | F  | # | 0.017           |             |
| Oxidation Reduction Potential                   | mV       | 04/29/2014 | N001 | 341         | - 371 | 5       |            | F  | # |                 |             |
| pH  | s.u.     | 04/29/2014 | N001 | 341         | - 371 | 7.23    |            | F  | # |                 |             |
| Potassium                                       | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 6.02    |            | F  | # | 0.05            |             |
| Selenium  | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 0.0075  | U          | F  | # | 0.0075          |             |
| Sodium  | mg/L     | 04/29/2014 | N001 | 341         | - 371 | 259     |            | F  | # | 0.1             |             |
| Specific Conductance                            | umhos/cm | 04/29/2014 | N001 | 341         | - 371 | 1860    |            | F  | # |                 |             |
| Stable isotope ratio H2/H1 in Water             | ‰        | 04/29/2014 | 0001 | 341         | - 371 | -78.72  |            | F  | # |                 |             |
| Stable isotope ratio O18/O16 in Water           | ‰        | 04/29/2014 | 0001 | 341         | - 371 | -10.06  |            | F  | # |                 |             |

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

REPORT DATE: 08/19/2014

Location: 15(SG) WELL

| Parameter                                    | Units | Sample     |      | Depth Range |   |     | Result | Qualifiers |      |    | Detection Limit | Uncertainty |
|--|-------|------------|------|-------------|---|-----|--------|------------|------|----|-----------------|-------------|
|  |       | Date       | ID   | (Ft BLS)    |   |     |        | Lab        | Data | QA |                 |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/29/2014 | 0001 | 341         | - | 371 | 3.23   |            | F    | #  |                 |             |
| Sulfate                                      | mg/L  | 04/29/2014 | N001 | 341         | - | 371 | 456    | H          | FJ   | #  | 6.65            |             |
| Temperature                                  | C     | 04/29/2014 | N001 | 341         | - | 371 | 14.4   |            | F    | #  |                 |             |
| Total Dissolved Solids                       | mg/L  | 04/29/2014 | N001 | 341         | - | 371 | 1230   |            | F    | #  | 3.4             |             |
| Tritium                                      | pCi/L | 04/29/2014 | N001 | 341         | - | 371 | 5.61   |            | FJ   | #  | 2.5             | 1.96        |
| Turbidity                                    | NTU   | 04/29/2014 | N001 | 341         | - | 371 | 1.63   |            | F    | #  |                 |             |
| Uranium                                      | mg/L  | 04/29/2014 | N001 | 341         | - | 371 | 0.129  |            | F    | #  | 0.000067        |             |
| Uranium-234                                  | pCi/L | 04/29/2014 | N001 | 341         | - | 371 | 49.9   |            | F    | #  | 0.217           | 6.55        |
| Uranium-235                                  | pCi/L | 04/29/2014 | N001 | 341         | - | 371 | 1.92   |            | F    | #  | 0.0728          | 0.491       |
| Uranium-238                                  | pCi/L | 04/29/2014 | N001 | 341         | - | 371 | 45     |            | F    | #  | 0.242           | 5.93        |

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

REPORT DATE: 08/19/2014

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 <sub>3</sub> ) | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 387     |            | F  | # | 0.725           |             |
| Alkalinity, Carbonate (as CaCO <sub>3</sub> )   | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 0.725   | U          | F  | # | 0.725           |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )       | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 402     |            | F  | # |                 |             |
| Arsenic   | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 0.0085  | U          | F  | # | 0.0085          |             |
| Calcium   | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 314     |            | F  | # | 0.05            |             |
| Chloride  | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 641     | H          | FJ | # | 6.7             |             |
| Dissolved Oxygen                                | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 0.98    |            | F  | # |                 |             |
| Magnesium                                       | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 158     |            | F  | # | 0.11            |             |
| Molybdenum                                      | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 0.00252 |            | F  | # | 0.000165        |             |
| Nitrate + Nitrite as Nitrogen                   | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 4.89    |            | F  | # | 0.17            |             |
| Oxidation Reduction Potential                   | mV       | 04/29/2014 | N001 | 195         | - 225 | 10      |            | F  | # |                 |             |
| pH  | s.u.     | 04/29/2014 | N001 | 195         | - 225 | 6.76    |            | F  | # |                 |             |
| Potassium                                       | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 12.9    |            | F  | # | 0.05            |             |
| Selenium  | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 0.0171  | B          | F  | # | 0.0075          |             |
| Sodium  | mg/L     | 04/29/2014 | N001 | 195         | - 225 | 403     |            | F  | # | 0.1             |             |
| Specific Conductance                            | umhos/cm | 04/29/2014 | N001 | 195         | - 225 | 3840    |            | F  | # |                 |             |
| Stable isotope ratio H2/H1 in Water             | ‰        | 04/29/2014 | 0001 | 195         | - 225 | -73.25  |            | F  | # |                 |             |
| Stable isotope ratio O18/O16 in Water           | ‰        | 04/29/2014 | 0001 | 195         | - 225 | -9.08   |            | F  | # |                 |             |

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

REPORT DATE: 08/19/2014

Location: 16(SG) WELL

| Parameter                                    | Units | Sample     |      | Depth Range<br>(Ft BLS) | Result | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|-------|------------|------|-------------------------|--------|------------|------|----|--------------------|-------------|
|  |       | Date       | ID   |                         |        | Lab        | Data | QA |                    |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/29/2014 | 0001 | 195 - 225               | 0.3    |            | F    | #  |                    |             |
| Sulfate                                      | mg/L  | 04/29/2014 | N001 | 195 - 225               | 1910   | H          | FJ   | #  | 13.3               |             |
| Temperature                                  | C     | 04/29/2014 | N001 | 195 - 225               | 14.1   |            | F    | #  |                    |             |
| Total Dissolved Solids                       | mg/L  | 04/29/2014 | N001 | 195 - 225               | 3100   |            | F    | #  | 3.4                |             |
| Tritium                                      | pCi/L | 04/29/2014 | N001 | 195 - 225               | 6.56   |            | FJ   | #  | 2.36               | 2.06        |
| Turbidity                                    | NTU   | 04/29/2014 | N001 | 195 - 225               | 2.98   |            | F    | #  |                    |             |
| Uranium                                      | mg/L  | 04/29/2014 | N001 | 195 - 225               | 1.29   |            | F    | #  | 0.000067           |             |
| Uranium-234                                  | pCi/L | 04/29/2014 | N001 | 195 - 225               | 403    |            | F    | #  | 0.531              | 54.4        |
| Uranium-235                                  | pCi/L | 04/29/2014 | N001 | 195 - 225               | 19.9   |            | F    | #  | 0.296              | 3.18        |
| Uranium-238                                  | pCi/L | 04/29/2014 | N001 | 195 - 225               | 426    |            | F    | #  | 0.3                | 57.5        |

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

REPORT DATE: 08/19/2014

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 <sub>3</sub> ) | mg/L     | 04/30/2014 | N001 | 260         | - 290 | 324     |            | F  | # | 0.725           |             |
| Alkalinity, Carbonate (as CaCO <sub>3</sub> )   | mg/L     | 04/30/2014 | N001 | 260         | - 290 | 0.725   | U          | F  | # | 0.725           |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )       | mg/L     | 04/30/2014 | N002 | 260         | - 290 | 344     |            | F  | # |                 |             |
| Arsenic   | mg/L     | 04/30/2014 | N001 | 260         | - 290 | 0.0085  | U          | F  | # | 0.0085          |             |
| Calcium   | mg/L     | 04/30/2014 | N001 | 260         | - 290 | 168     |            | F  | # | 0.05            |             |
| Chloride  | mg/L     | 04/30/2014 | N001 | 260         | - 290 | 100     |            | F  | # | 1.34            |             |
| Dissolved Oxygen                                | mg/L     | 04/30/2014 | N002 | 260         | - 290 | 0.77    |            | F  | # |                 |             |
| Magnesium                                       | mg/L     | 04/30/2014 | N001 | 260         | - 290 | 50.9    |            | F  | # | 0.11            |             |
| Molybdenum                                      | mg/L     | 04/30/2014 | N001 | 260         | - 290 | 0.00383 |            | F  | # | 0.000165        |             |
| Nitrate + Nitrite as Nitrogen                   | mg/L     | 04/30/2014 | N001 | 260         | - 290 | 1.87    |            | F  | # | 0.085           |             |
| Oxidation Reduction Potential                   | mV       | 04/30/2014 | N002 | 260         | - 290 | 90      |            | F  | # |                 |             |
| pH  | s.u.     | 04/30/2014 | N002 | 260         | - 290 | 6.95    |            | F  | # |                 |             |
| Potassium                                       | mg/L     | 04/30/2014 | N001 | 260         | - 290 | 7.12    |            | F  | # | 0.05            |             |
| Selenium  | mg/L     | 04/30/2014 | N001 | 260         | - 290 | 0.0075  | U          | F  | # | 0.0075          |             |
| Sodium  | mg/L     | 04/30/2014 | N001 | 260         | - 290 | 149     |            | F  | # | 0.1             |             |
| Specific Conductance                            | umhos/cm | 04/30/2014 | N002 | 260         | - 290 | 1610    |            | F  | # |                 |             |
| Stable isotope ratio H2/H1 in Water             | ‰        | 04/30/2014 | 0001 | 260         | - 290 | -75.38  |            | F  | # |                 |             |
| Stable isotope ratio O18/O16 in Water           | ‰        | 04/30/2014 | 0001 | 260         | - 290 | -9.5    |            | F  | # |                 |             |

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

REPORT DATE: 08/19/2014

Location: 18(SG) WELL

| Parameter                                    | Units | Sample     |      | Depth Range<br>(Ft BLS) | Result | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|-------|------------|------|-------------------------|--------|------------|------|----|--------------------|-------------|
|  |       | Date       | ID   |                         |        | Lab        | Data | QA |                    |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/30/2014 | 0001 | 260 - 290               | 5.99   |            | F    | #  |                    |             |
| Sulfate                                      | mg/L  | 04/30/2014 | N001 | 260 - 290               | 463    |            | F    | #  | 6.65               |             |
| Temperature                                  | C     | 04/30/2014 | N002 | 260 - 290               | 14.7   |            | F    | #  |                    |             |
| Total Dissolved Solids                       | mg/L  | 04/30/2014 | N001 | 260 - 290               | 1150   |            | F    | #  | 3.4                |             |
| Tritium                                      | pCi/L | 04/30/2014 | N001 | 260 - 290               | 7.95   |            | F    | #  | 2.5                | 2.32        |
| Turbidity                                    | NTU   | 04/30/2014 | N002 | 260 - 290               | 5.84   |            | F    | #  |                    |             |
| Uranium                                      | mg/L  | 04/30/2014 | N001 | 260 - 290               | 0.134  |            | F    | #  | 0.00067            |             |
| Uranium-234                                  | pCi/L | 04/30/2014 | N001 | 260 - 290               | 41.3   |            | F    | #  | 0.247              | 5.29        |
| Uranium-235                                  | pCi/L | 04/30/2014 | N001 | 260 - 290               | 1.78   |            | F    | #  | 0.0568             | 0.424       |
| Uranium-238                                  | pCi/L | 04/30/2014 | N001 | 260 - 290               | 41.8   |            | F    | #  | 0.169              | 5.35        |

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

REPORT DATE: 08/19/2014

Location: 20(M) WELL

| Parameter                                       | Units    | Sample     |      | Depth Range |       | Result  | Qualifiers |    |   | Detection Limit | Uncertainty |
|---|----------|------------|------|-------------|-------|---------|------------|----|---|-----------------|-------------|
|   |          | Date       | ID   | (Ft BLS)    | Lab   |         | Data       | QA |   |                 |             |
| Alkalinity, Bicarbonate (as CaCO <sub>3</sub> ) | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 234     |            | F  | # | 0.725           |             |
| Alkalinity, Carbonate (as CaCO <sub>3</sub> )   | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 0.725   | U          | F  | # | 0.725           |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )       | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 280     |            | F  | # |                 |             |
| Arsenic   | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 0.0085  | U          | F  | # | 0.0085          |             |
| Calcium   | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 143     |            | F  | # | 0.05            |             |
| Chloride  | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 59.6    |            | F  | # | 1.34            |             |
| Dissolved Oxygen                                | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 7.4     |            | F  | # |                 |             |
| Magnesium                                       | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 36.7    |            | F  | # | 0.11            |             |
| Molybdenum                                      | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 0.00208 |            | F  | # | 0.000165        |             |
| Nitrate + Nitrite as Nitrogen                   | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 3.93    |            | F  | # | 0.17            |             |
| Oxidation Reduction Potential                   | mV       | 04/29/2014 | N001 | 110         | - 125 | 30      |            | F  | # |                 |             |
| pH  | s.u.     | 04/29/2014 | N001 | 110         | - 125 | 7.4     |            | F  | # |                 |             |
| Potassium                                       | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 4.17    |            | F  | # | 0.05            |             |
| Selenium  | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 0.0075  | U          | F  | # | 0.0075          |             |
| Sodium  | mg/L     | 04/29/2014 | N001 | 110         | - 125 | 90.2    |            | F  | # | 0.1             |             |
| Specific Conductance                            | umhos/cm | 04/29/2014 | N001 | 110         | - 125 | 1280    |            | F  | # |                 |             |
| Stable isotope ratio H2/H1 in Water             | ‰        | 04/29/2014 | 0001 | 110         | - 125 | -70.95  |            | F  | # |                 |             |
| Stable isotope ratio O18/O16 in Water           | ‰        | 04/29/2014 | 0001 | 110         | - 125 | -8.69   |            | F  | # |                 |             |

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

REPORT DATE: 08/19/2014

Location: 20(M) WELL

| Parameter                                 | Units | Sample     |      | Depth Range |   |     | Result | Qualifiers |      |    | Detection Limit | Uncertainty |
|---|-------|------------|------|-------------|---|-----|--------|------------|------|----|-----------------|-------------|
|   |       | Date       | ID   | (Ft BLS)    |   |     |        | Lab        | Data | QA |                 |             |
| Stable isotope ratio S-34/S-32 in Sulfate | ‰     | 04/29/2014 | 0001 | 110         | - | 125 | 3.78   |            | F    | #  |                 |             |
| Sulfate                                   | mg/L  | 04/29/2014 | N001 | 110         | - | 125 | 410    | H          | FJ   | #  | 6.65            |             |
| Temperature                               | C     | 04/29/2014 | N001 | 110         | - | 125 | 13.8   |            | F    | #  |                 |             |
| Total Dissolved Solids                    | mg/L  | 04/29/2014 | N001 | 110         | - | 125 | 956    |            | F    | #  | 3.4             |             |
| Tritium                                   | pCi/L | 04/29/2014 | N001 | 110         | - | 125 | 7.64   |            | F    | #  | 2.49            | 2.23        |
| Turbidity                                 | NTU   | 04/29/2014 | N001 | 110         | - | 125 | 1.88   |            | F    | #  |                 |             |
| Uranium                                   | mg/L  | 04/29/2014 | N001 | 110         | - | 125 | 0.0143 |            | F    | #  | 0.000067        |             |
| Uranium-234                               | pCi/L | 04/29/2014 | N001 | 110         | - | 125 | 6.95   |            | F    | #  | 0.203           | 1.07        |
| Uranium-235                               | pCi/L | 04/29/2014 | N001 | 110         | - | 125 | 0.318  |            | FJ   | #  | 0.207           | 0.187       |
| Uranium-238                               | pCi/L | 04/29/2014 | N001 | 110         | - | 125 | 4.13   |            | F    | #  | 0.116           | 0.707       |



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

REPORT DATE: 08/19/2014

Location: 21(M) WELL

| Parameter  | Units        | Sample     |      | Depth Range<br>(Ft BLS) | Result   | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|--------------|------------|------|-------------------------|----------|------------|------|----|--------------------|-------------|
|  |              | Date       | ID   |                         |          | Lab        | Data | QA |                    |             |
| Alkalinity, Bicarbonate<br>(as CaCO <sub>3</sub> ) | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 257      |            | F    | #  | 0.725              |             |
| Alkalinity, Carbonate<br>(as CaCO <sub>3</sub> )   | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 0.725    | U          | F    | #  | 0.725              |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )          | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 264      |            | F    | #  |                    |             |
| Arsenic  | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 0.0085   | U          | F    | #  | 0.0085             |             |
| Calcium  | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 152      |            | F    | #  | 0.05               |             |
| Chloride   | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 155      |            | F    | #  | 1.34               |             |
| Dissolved Oxygen                                   | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 4.77     |            | F    | #  |                    |             |
| Magnesium  | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 41.1     |            | F    | #  | 0.11               |             |
| Molybdenum   | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 0.000955 |            | UF   | #  | 0.000165           |             |
| Nitrate + Nitrite as Nitrogen                      | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 12.1     |            | F    | #  | 0.425              |             |
| Oxidation Reduction<br>Potential                   | mV           | 04/29/2014 | N001 | 139.6 - 149.6           | 117      |            | F    | #  |                    |             |
| pH   | s.u.         | 04/29/2014 | N001 | 139.6 - 149.6           | 7.29     |            | F    | #  |                    |             |
| Potassium  | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 5.71     |            | F    | #  | 0.05               |             |
| Selenium   | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 0.0121   | B          | F    | #  | 0.0075             |             |
| Sodium   | mg/L         | 04/29/2014 | N001 | 139.6 - 149.6           | 213      |            | F    | #  | 0.1                |             |
| Specific Conductance                               | umhos<br>/cm | 04/29/2014 | N001 | 139.6 - 149.6           | 1795     |            | F    | #  |                    |             |
| Stable isotope ratio<br>H2/H1 in Water             | ‰            | 04/29/2014 | 0001 | 139.6 - 149.6           | -71.67   |            | F    | #  |                    |             |
| Stable isotope ratio<br>O18/O16 in Water           | ‰            | 04/29/2014 | 0001 | 139.6 - 149.6           | -8.62    |            | F    | #  |                    |             |

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

REPORT DATE: 08/19/2014

Location: 21(M) WELL

| Parameter                                    | Units | Sample     |      | Depth Range |   |       | Result | Qualifiers |      |    | Detection Limit | Uncertainty |
|--|-------|------------|------|-------------|---|-------|--------|------------|------|----|-----------------|-------------|
|  |       | Date       | ID   | (Ft BLS)    |   |       |        | Lab        | Data | QA |                 |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/29/2014 | 0001 | 139.6       | - | 149.6 | 1.62   |            | F    | #  |                 |             |
| Sulfate                                      | mg/L  | 04/29/2014 | N001 | 139.6       | - | 149.6 | 521    | H          | FJ   | #  | 6.65            |             |
| Temperature                                  | C     | 04/29/2014 | N001 | 139.6       | - | 149.6 | 13.6   |            | F    | #  |                 |             |
| Total Dissolved Solids                       | mg/L  | 04/29/2014 | N001 | 139.6       | - | 149.6 | 1310   |            | F    | #  | 3.4             |             |
| Tritium                                      | pCi/L | 04/29/2014 | N001 | 139.6       | - | 149.6 | 8      |            | F    | #  | 2.42            | 2.36        |
| Turbidity                                    | NTU   | 04/29/2014 | N001 | 139.6       | - | 149.6 | 3.19   |            | F    | #  |                 |             |
| Uranium                                      | mg/L  | 04/29/2014 | N001 | 139.6       | - | 149.6 | 0.137  |            | F    | #  | 0.00067         |             |
| Uranium-234                                  | pCi/L | 04/29/2014 | N001 | 139.6       | - | 149.6 | 45.7   |            | F    | #  | 0.27            | 6           |
| Uranium-235                                  | pCi/L | 04/29/2014 | N001 | 139.6       | - | 149.6 | 2.09   |            | F    | #  | 0.256           | 0.52        |
| Uranium-238                                  | pCi/L | 04/29/2014 | N001 | 139.6       | - | 149.6 | 42.8   |            | F    | #  | 0.207           | 5.64        |

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

REPORT DATE: 08/19/2014

Location: 22(M) WELL

| Parameter  | Units        | Sample     |      | Depth Range<br>(Ft BLS) | Result   | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|--------------|------------|------|-------------------------|----------|------------|------|----|--------------------|-------------|
|  |              | Date       | ID   |                         |          | Lab        | Data | QA |                    |             |
| Alkalinity, Bicarbonate<br>(as CaCO <sub>3</sub> ) | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 312      |            | F    | #  | 0.725              |             |
| Alkalinity, Carbonate<br>(as CaCO <sub>3</sub> )   | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 0.725    | U          | F    | #  | 0.725              |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )          | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 298      |            | F    | #  |                    |             |
| Arsenic  | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 0.0085   | U          | F    | #  | 0.0085             |             |
| Calcium  | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 87       |            | F    | #  | 0.05               |             |
| Chloride   | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 31.2     |            | F    | #  | 1.34               |             |
| Dissolved Oxygen                                   | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 2.67     |            | F    | #  |                    |             |
| Magnesium  | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 24.9     |            | F    | #  | 0.11               |             |
| Molybdenum   | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 0.000959 |            | UF   | #  | 0.000165           |             |
| Nitrate + Nitrite as Nitrogen                      | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 36       |            | F    | #  | 0.85               |             |
| Oxidation Reduction<br>Potential                   | mV           | 04/29/2014 | N001 | 136.83 - 146.83         | -5       |            | F    | #  |                    |             |
| pH   | s.u.         | 04/29/2014 | N001 | 136.83 - 146.83         | 7.34     |            | F    | #  |                    |             |
| Potassium  | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 4.53     |            | F    | #  | 0.05               |             |
| Selenium   | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 0.0075   | U          | F    | #  | 0.0075             |             |
| Sodium   | mg/L         | 04/29/2014 | N001 | 136.83 - 146.83         | 169      |            | F    | #  | 0.1                |             |
| Specific Conductance                               | umhos<br>/cm | 04/29/2014 | N001 | 136.83 - 146.83         | 1265     |            | F    | #  |                    |             |
| Stable isotope ratio<br>H2/H1 in Water             | ‰            | 04/29/2014 | 0001 | 136.83 - 146.83         | -68.33   |            | F    | #  |                    |             |
| Stable isotope ratio<br>O18/O16 in Water           | ‰            | 04/29/2014 | 0001 | 136.83 - 146.83         | -8.27    |            | F    | #  |                    |             |

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

REPORT DATE: 08/19/2014

Location: 22(M) WELL

| Parameter                                    | Units | Sample     |      | Depth Range<br>(Ft BLS) | Result | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|-------|------------|------|-------------------------|--------|------------|------|----|--------------------|-------------|
|  |       | Date       | ID   |                         |        | Lab        | Data | QA |                    |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/29/2014 | 0001 | 136.83 - 146.83         | 8.93   |            | F    | #  |                    |             |
| Sulfate                                      | mg/L  | 04/29/2014 | N001 | 136.83 - 146.83         | 225    |            | F    | #  | 2.66               |             |
| Temperature                                  | C     | 04/29/2014 | N001 | 136.83 - 146.83         | 14.1   |            | F    | #  |                    |             |
| Total Dissolved Solids                       | mg/L  | 04/29/2014 | N001 | 136.83 - 146.83         | 873    |            | F    | #  | 3.4                |             |
| Tritium                                      | pCi/L | 04/29/2014 | N001 | 136.83 - 146.83         | 10.4   |            | F    | #  | 2.65               | 2.77        |
| Turbidity                                    | NTU   | 04/29/2014 | N001 | 136.83 - 146.83         | 8.01   |            | F    | #  |                    |             |
| Uranium                                      | mg/L  | 04/29/2014 | N001 | 136.83 - 146.83         | 0.393  |            | F    | #  | 0.00067            |             |
| Uranium-234                                  | pCi/L | 04/29/2014 | N001 | 136.83 - 146.83         | 117    |            | F    | #  | 0.215              | 14.8        |
| Uranium-235                                  | pCi/L | 04/29/2014 | N001 | 136.83 - 146.83         | 5.3    |            | F    | #  | 0.29               | 0.944       |
| Uranium-238                                  | pCi/L | 04/29/2014 | N001 | 136.83 - 146.83         | 115    |            | F    | #  | 0.193              | 14.5        |

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

REPORT DATE: 08/19/2014

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 <sub>3</sub> ) | mg/L     | 04/30/2014 | 0001 | 89 - 109    |     | 148     |            | FQ | # | 0.725           |             |
| Alkalinity, Carbonate (as CaCO <sub>3</sub> )   | mg/L     | 04/30/2014 | 0001 | 89 - 109    |     | 0.725   | U          | FQ | # | 0.725           |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )       | mg/L     | 04/30/2014 | 0002 | 89 - 109    |     | 144     |            | FQ | # |                 |             |
| Arsenic   | mg/L     | 04/30/2014 | 0001 | 89 - 109    |     | 0.0085  | U          | FQ | # | 0.0085          |             |
| Calcium   | mg/L     | 04/30/2014 | 0001 | 89 - 109    |     | 124     |            | FQ | # | 0.05            |             |
| Chloride  | mg/L     | 04/30/2014 | 0001 | 89 - 109    |     | 92      |            | FQ | # | 1.34            |             |
| Magnesium                                       | mg/L     | 04/30/2014 | 0001 | 89 - 109    |     | 28.8    |            | FQ | # | 0.11            |             |
| Molybdenum                                      | mg/L     | 04/30/2014 | 0001 | 89 - 109    |     | 0.00573 |            | FQ | # | 0.000165        |             |
| Nitrate + Nitrite as Nitrogen                   | mg/L     | 04/30/2014 | 0001 | 89 - 109    |     | 1.78    |            | FQ | # | 0.085           |             |
| Oxidation Reduction Potential                   | mV       | 04/30/2014 | N001 | 89 - 109    |     | 170     |            | FQ | # |                 |             |
| pH  | s.u.     | 04/30/2014 | N001 | 89 - 109    |     | 7.73    |            | FQ | # |                 |             |
| Potassium                                       | mg/L     | 04/30/2014 | 0001 | 89 - 109    |     | 4.41    |            | FQ | # | 0.05            |             |
| Selenium  | mg/L     | 04/30/2014 | 0001 | 89 - 109    |     | 0.0075  | U          | FQ | # | 0.0075          |             |
| Sodium  | mg/L     | 04/30/2014 | 0001 | 89 - 109    |     | 49.3    |            | FQ | # | 0.1             |             |
| Specific Conductance                            | umhos/cm | 04/30/2014 | N001 | 89 - 109    |     | 1030    |            | FQ | # |                 |             |
| Stable isotope ratio H2/H1 in Water             | ‰        | 04/30/2014 | 0002 | 89 - 109    |     | -79.11  |            | FQ | # |                 |             |
| Stable isotope ratio O18/O16 in Water           | ‰        | 04/30/2014 | 0002 | 89 - 109    |     | -10.25  |            | FQ | # |                 |             |
| Stable isotope ratio S-34/S-32 in Sulfate       | ‰        | 04/30/2014 | 0002 | 89 - 109    |     | 6.6     |            | FQ | # |                 |             |

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

REPORT DATE: 08/19/2014

Location: 23(M) WELL

| Parameter              | Units | Sample     |      | Depth Range<br>(Ft BLS) | Result | Qualifiers |         | Detection<br>Limit | Uncertainty |
|------------------------|-------|------------|------|-------------------------|--------|------------|---------|--------------------|-------------|
|                        |       | Date       | ID   |                         |        | Lab        | Data QA |                    |             |
| Sulfate                | mg/L  | 04/30/2014 | 0001 | 89 - 109                | 274    |            | FQ #    | 2.66               |             |
| Temperature            | C     | 04/30/2014 | N001 | 89 - 109                | 12.7   |            | FQ #    |                    |             |
| Total Dissolved Solids | mg/L  | 04/30/2014 | 0001 | 89 - 109                | 684    |            | FQ #    | 3.4                |             |
| Tritium                | pCi/L | 04/30/2014 | 0001 | 89 - 109                | 5.48   |            | FQJ #   | 2.42               | 1.93        |
| Turbidity              | NTU   | 04/30/2014 | N001 | 89 - 109                | 298    |            | FQ #    |                    |             |
| Uranium                | mg/L  | 04/30/2014 | 0001 | 89 - 109                | 0.0262 |            | FQ #    | 0.000067           |             |
| Uranium-234            | pCi/L | 04/30/2014 | 0001 | 89 - 109                | 11     |            | FQ #    | 0.166              | 1.56        |
| Uranium-235            | pCi/L | 04/30/2014 | 0001 | 89 - 109                | 0.446  |            | FQ #    | 0.142              | 0.2         |
| Uranium-238            | pCi/L | 04/30/2014 | 0001 | 89 - 109                | 7.71   |            | FQ #    | 0.144              | 1.15        |

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

REPORT DATE: 08/19/2014

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 <sub>3</sub> ) | mg/L     | 04/30/2014 | 0001 | 68.6        | - 89.8 | 27.7     |            | FQ  | # | 0.725           |             |
| Alkalinity, Carbonate (as CaCO <sub>3</sub> )   | mg/L     | 04/30/2014 | 0001 | 68.6        | - 89.8 | 0.725    | U          | FQ  | # | 0.725           |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )       | mg/L     | 04/30/2014 | 0002 | 68.6        | - 89.8 | 30       |            | FQ  | # |                 |             |
| Arsenic   | mg/L     | 04/30/2014 | 0001 | 68.6        | - 89.8 | 0.0085   | U          | FQ  | # | 0.0085          |             |
| Calcium   | mg/L     | 04/30/2014 | 0001 | 68.6        | - 89.8 | 203      |            | FQ  | # | 0.05            |             |
| Chloride  | mg/L     | 04/30/2014 | 0001 | 68.6        | - 89.8 | 30       |            | FQ  | # | 1.34            |             |
| Dissolved Oxygen                                | mg/L     | 04/30/2014 | N001 | 68.6        | - 89.8 | 1.18     |            | FQ  | # |                 |             |
| Magnesium                                       | mg/L     | 04/30/2014 | 0001 | 68.6        | - 89.8 | 54.3     |            | FQ  | # | 0.11            |             |
| Molybdenum                                      | mg/L     | 04/30/2014 | 0001 | 68.6        | - 89.8 | 0.000591 |            | UFQ | # | 0.000165        |             |
| Nitrate + Nitrite as Nitrogen                   | mg/L     | 04/30/2014 | 0001 | 68.6        | - 89.8 | 0.017    | U          | FQ  | # | 0.017           |             |
| Oxidation Reduction Potential                   | mV       | 04/30/2014 | N001 | 68.6        | - 89.8 | -60      |            | FQ  | # |                 |             |
| pH  | s.u.     | 04/30/2014 | N001 | 68.6        | - 89.8 | 7.45     |            | FQ  | # |                 |             |
| Potassium                                       | mg/L     | 04/30/2014 | 0001 | 68.6        | - 89.8 | 4.17     |            | FQ  | # | 0.05            |             |
| Selenium  | mg/L     | 04/30/2014 | 0001 | 68.6        | - 89.8 | 0.0075   | U          | FQ  | # | 0.0075          |             |
| Sodium  | mg/L     | 04/30/2014 | 0001 | 68.6        | - 89.8 | 55.7     |            | FQ  | # | 0.1             |             |
| Specific Conductance                            | umhos/cm | 04/30/2014 | N001 | 68.6        | - 89.8 | 1370     |            | FQ  | # |                 |             |
| Stable isotope ratio H2/H1 in Water             | ‰        | 04/30/2014 | 0002 | 68.6        | - 89.8 | -78.95   |            | FQ  | # |                 |             |
| Stable isotope ratio O18/O16 in Water           | ‰        | 04/30/2014 | 0002 | 68.6        | - 89.8 | -10.02   |            | FQ  | # |                 |             |

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

REPORT DATE: 08/19/2014

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 |                 |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/30/2014 | 0002 | 68.6        | - | 89.8 | 15.41    |            | FQ   | #  |                 |             |
| Sulfate                                      | mg/L  | 04/30/2014 | 0001 | 68.6        | - | 89.8 | 795      |            | FQ   | #  | 13.3            |             |
| Temperature                                  | C     | 04/30/2014 | N001 | 68.6        | - | 89.8 | 14.2     |            | FQ   | #  |                 |             |
| Total Dissolved Solids                       | mg/L  | 04/30/2014 | 0001 | 68.6        | - | 89.8 | 1150     |            | FQ   | #  | 3.4             |             |
| Tritium                                      | pCi/L | 04/30/2014 | 0001 | 68.6        | - | 89.8 | 5.76     |            | UFQ  | #  | 2.57            | 4.09        |
| Turbidity                                    | NTU   | 04/30/2014 | N001 | 68.6        | - | 89.8 | 39.8     |            | FQ   | #  |                 |             |
| Uranium                                      | mg/L  | 04/30/2014 | 0001 | 68.6        | - | 89.8 | 0.000067 | U          | FQ   | #  | 0.000067        |             |
| Uranium-234                                  | pCi/L | 04/30/2014 | 0001 | 68.6        | - | 89.8 | 0.237    | U          | FQ   | #  | 0.237           | 0.139       |
| Uranium-235                                  | pCi/L | 04/30/2014 | 0001 | 68.6        | - | 89.8 | 0.0793   | U          | FQ   | #  | 0.0793          | 0.0898      |
| Uranium-238                                  | pCi/L | 04/30/2014 | 0001 | 68.6        | - | 89.8 | 0.287    | U          | FQ   | #  | 0.287           | 0.119       |



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

REPORT DATE: 08/19/2014

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

| Parameter  | Units        | Sample     |      | Depth Range<br>(Ft BLS) | Result   | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|--------------|------------|------|-------------------------|----------|------------|------|----|--------------------|-------------|
|  |              | Date       | ID   |                         |          | Lab        | Data | QA |                    |             |
| Alkalinity, Bicarbonate<br>(as CaCO <sub>3</sub> ) | mg/L         | 04/30/2014 | N001 | 94.2 - 114.87           | 163      |            | F    | #  | 0.725              |             |
| Alkalinity, Carbonate<br>(as CaCO <sub>3</sub> )   | mg/L         | 04/30/2014 | N001 | 94.2 - 114.87           | 0.725    | U          | F    | #  | 0.725              |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )          | mg/L         | 04/30/2014 | N002 | 94.2 - 114.87           | 172      |            | F    | #  |                    |             |
| Arsenic  | mg/L         | 04/30/2014 | N001 | 94.2 - 114.87           | 0.0085   | U          | F    | #  | 0.0085             |             |
| Calcium  | mg/L         | 04/30/2014 | N001 | 94.2 - 114.87           | 69.8     |            | F    | #  | 0.05               |             |
| Chloride   | mg/L         | 04/30/2014 | N001 | 94.2 - 114.87           | 11.6     |            | F    | #  | 1.34               |             |
| Dissolved Oxygen                                   | mg/L         | 04/30/2014 | N002 | 94.2 - 114.87           | 2.59     |            | F    | #  |                    |             |
| Magnesium  | mg/L         | 04/30/2014 | N001 | 94.2 - 114.87           | 18.9     |            | F    | #  | 0.11               |             |
| Molybdenum   | mg/L         | 04/30/2014 | N001 | 94.2 - 114.87           | 0.000985 |            | UF   | #  | 0.000165           |             |
| Nitrate + Nitrite as Nitrogen                      | mg/L         | 04/30/2014 | N001 | 94.2 - 114.87           | 0.737    |            | F    | #  | 0.017              |             |
| Oxidation Reduction<br>Potential                   | mV           | 04/30/2014 | N002 | 94.2 - 114.87           | 35       |            | F    | #  |                    |             |
| pH   | s.u.         | 04/30/2014 | N002 | 94.2 - 114.87           | 7.73     |            | F    | #  |                    |             |
| Potassium  | mg/L         | 04/30/2014 | N001 | 94.2 - 114.87           | 3.27     |            | F    | #  | 0.05               |             |
| Selenium   | mg/L         | 04/30/2014 | N001 | 94.2 - 114.87           | 0.0075   | U          | F    | #  | 0.0075             |             |
| Sodium   | mg/L         | 04/30/2014 | N001 | 94.2 - 114.87           | 20.8     |            | F    | #  | 0.1                |             |
| Specific Conductance                               | umhos<br>/cm | 04/30/2014 | N002 | 94.2 - 114.87           | 535      |            | F    | #  |                    |             |
| Stable isotope ratio<br>H2/H1 in Water             | ‰            | 04/30/2014 | 0001 | 94.2 - 114.87           | -66.56   |            | F    | #  |                    |             |
| Stable isotope ratio<br>O18/O16 in Water           | ‰            | 04/30/2014 | 0001 | 94.2 - 114.87           | -8.55    |            | F    | #  |                    |             |

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

REPORT DATE: 08/19/2014

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

| Parameter                                    | Units | Sample     |      | Depth Range<br>(Ft BLS) | Result  | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|-------|------------|------|-------------------------|---------|------------|------|----|--------------------|-------------|
|  |       | Date       | ID   |                         |         | Lab        | Data | QA |                    |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/30/2014 | 0001 | 94.2 - 114.87           | 10.16   |            | F    | #  |                    |             |
| Sulfate                                      | mg/L  | 04/30/2014 | N001 | 94.2 - 114.87           | 109     |            | F    | #  | 2.66               |             |
| Temperature                                  | C     | 04/30/2014 | N002 | 94.2 - 114.87           | 15.1    |            | F    | #  |                    |             |
| Total Dissolved Solids                       | mg/L  | 04/30/2014 | N001 | 94.2 - 114.87           | 400     |            | F    | #  | 3.4                |             |
| Tritium                                      | pCi/L | 04/30/2014 | N001 | 94.2 - 114.87           | 11.7    |            | UF   | #  | 2.6                | 7.76        |
| Turbidity                                    | NTU   | 04/30/2014 | N002 | 94.2 - 114.87           | 3.4     |            | F    | #  |                    |             |
| Uranium                                      | mg/L  | 04/30/2014 | N001 | 94.2 - 114.87           | 0.00782 |            | F    | #  | 0.000067           |             |
| Uranium-234                                  | pCi/L | 04/30/2014 | N001 | 94.2 - 114.87           | 3.17    |            | F    | #  | 0.274              | 0.599       |
| Uranium-235                                  | pCi/L | 04/30/2014 | N001 | 94.2 - 114.87           | 0.325   |            | FJ   | #  | 0.183              | 0.184       |
| Uranium-238                                  | pCi/L | 04/30/2014 | N001 | 94.2 - 114.87           | 2.52    |            | F    | #  | 0.207              | 0.506       |

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

REPORT DATE: 08/19/2014

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 <sub>3</sub> ) | mg/L  | 04/30/2014 | 0001 | 241         | - 275 | 272     |            |    | # | 0.725           |             |
| Alkalinity, Bicarbonate (as CaCO <sub>3</sub> ) | mg/L  | 04/30/2014 | 0002 | 241         | - 275 | 274     |            |    | # | 0.725           |             |
| Alkalinity, Carbonate (as CaCO <sub>3</sub> )   | mg/L  | 04/30/2014 | 0001 | 241         | - 275 | 0.725   | U          |    | # | 0.725           |             |
| Alkalinity, Carbonate (as CaCO <sub>3</sub> )   | mg/L  | 04/30/2014 | 0002 | 241         | - 275 | 0.725   | U          |    | # | 0.725           |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )       | mg/L  | 04/30/2014 | 0003 | 241         | - 275 | 312     |            |    | # |                 |             |
| Arsenic   | mg/L  | 04/30/2014 | 0001 | 241         | - 275 | 0.0085  | U          |    | # | 0.0085          |             |
| Arsenic   | mg/L  | 04/30/2014 | 0002 | 241         | - 275 | 0.0085  | U          |    | # | 0.0085          |             |
| Calcium   | mg/L  | 04/30/2014 | 0001 | 241         | - 275 | 146     |            |    | # | 0.05            |             |
| Calcium   | mg/L  | 04/30/2014 | 0002 | 241         | - 275 | 147     |            |    | # | 0.05            |             |
| Chloride  | mg/L  | 04/30/2014 | 0001 | 241         | - 275 | 60.9    |            |    | # | 1.34            |             |
| Chloride  | mg/L  | 04/30/2014 | 0002 | 241         | - 275 | 60.3    |            |    | # | 1.34            |             |
| Dissolved Oxygen                                | mg/L  | 04/30/2014 | N001 | 241         | - 275 | 4.27    |            |    | # |                 |             |
| Magnesium                                       | mg/L  | 04/30/2014 | 0001 | 241         | - 275 | 43.8    |            |    | # | 0.11            |             |
| Magnesium                                       | mg/L  | 04/30/2014 | 0002 | 241         | - 275 | 44.2    |            |    | # | 0.11            |             |
| Molybdenum                                      | mg/L  | 04/30/2014 | 0001 | 241         | - 275 | 0.00119 |            |    | # | 0.000165        |             |
| Molybdenum                                      | mg/L  | 04/30/2014 | 0002 | 241         | - 275 | 0.00136 |            |    | # | 0.000165        |             |
| Nitrate + Nitrite as Nitrogen                   | mg/L  | 04/30/2014 | 0001 | 241         | - 275 | 4.82    |            |    | # | 0.17            |             |
| Nitrate + Nitrite as Nitrogen                   | mg/L  | 04/30/2014 | 0002 | 241         | - 275 | 5.03    |            |    | # | 0.17            |             |

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

REPORT DATE: 08/19/2014

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 |                 |             |
| Oxidation Reduction Potential             | mV       | 04/30/2014 | N001 | 241         | - | 275 | 90     |            |      | #  |                 |             |
| pH  | s.u.     | 04/30/2014 | N001 | 241         | - | 275 | 7.09   |            |      | #  |                 |             |
| Potassium                                 | mg/L     | 04/30/2014 | 0001 | 241         | - | 275 | 4.85   |            |      | #  | 0.05            |             |
| Potassium                                 | mg/L     | 04/30/2014 | 0002 | 241         | - | 275 | 5.02   |            |      | #  | 0.05            |             |
| Selenium                                  | mg/L     | 04/30/2014 | 0001 | 241         | - | 275 | 0.0075 | U          |      | #  | 0.0075          |             |
| Selenium                                  | mg/L     | 04/30/2014 | 0002 | 241         | - | 275 | 0.0075 | U          |      | #  | 0.0075          |             |
| Sodium                                    | mg/L     | 04/30/2014 | 0001 | 241         | - | 275 | 81.6   |            |      | #  | 0.1             |             |
| Sodium                                    | mg/L     | 04/30/2014 | 0002 | 241         | - | 275 | 82.3   |            |      | #  | 0.1             |             |
| Specific Conductance                      | umhos/cm | 04/30/2014 | N001 | 241         | - | 275 | 1265   |            |      | #  |                 |             |
| Stable isotope ratio H2/H1 in Water       | ‰        | 04/30/2014 | 0003 | 241         | - | 275 | -74.05 |            |      | #  |                 |             |
| Stable isotope ratio H2/H1 in Water       | ‰        | 04/30/2014 | 0004 | 241         | - | 275 | -74.39 |            |      | #  |                 |             |
| Stable isotope ratio O18/O16 in Water     | ‰        | 04/30/2014 | 0003 | 241         | - | 275 | -9.22  |            |      | #  |                 |             |
| Stable isotope ratio O18/O16 in Water     | ‰        | 04/30/2014 | 0004 | 241         | - | 275 | -9.28  |            |      | #  |                 |             |
| Stable isotope ratio S-34/S-32 in Sulfate | ‰nd      | 04/30/2014 | 0003 | 241         | - | 275 | 7.34   |            |      | #  |                 |             |
| Stable isotope ratio S-34/S-32 in Sulfate | ‰        | 04/30/2014 | 0004 | 241         | - | 275 | 7.26   |            |      | #  |                 |             |
| Sulfate                                   | mg/L     | 04/30/2014 | 0001 | 241         | - | 275 | 378    |            |      | #  | 2.66            |             |
| Sulfate                                   | mg/L     | 04/30/2014 | 0002 | 241         | - | 275 | 377    |            |      | #  | 2.66            |             |
| Temperature                               | C        | 04/30/2014 | N001 | 241         | - | 275 | 13.8   |            |      | #  |                 |             |

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

REPORT DATE: 08/19/2014

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 |                 |             |
| Total Dissolved Solids | mg/L  | 04/30/2014 | 0001 | 241         | - | 275 | 901    |            |      | #  | 3.4             |             |
| Total Dissolved Solids | mg/L  | 04/30/2014 | 0002 | 241         | - | 275 | 909    |            |      | #  | 3.4             |             |
| Tritium                | pCi/L | 04/30/2014 | 0001 | 241         | - | 275 | 6.36   |            | U    | #  | 2.69            | 4.51        |
| Tritium                | pCi/L | 04/30/2014 | 0002 | 241         | - | 275 | 8.59   |            |      | #  | 2.68            | 2.5         |
| Turbidity              | NTU   | 04/30/2014 | N001 | 241         | - | 275 | 16.8   |            |      | #  |                 |             |
| Uranium                | mg/L  | 04/30/2014 | 0001 | 241         | - | 275 | 0.0317 |            |      | #  | 0.000067        |             |
| Uranium                | mg/L  | 04/30/2014 | 0002 | 241         | - | 275 | 0.0306 |            |      | #  | 0.000067        |             |
| Uranium-234            | pCi/L | 04/30/2014 | 0001 | 241         | - | 275 | 12.7   |            |      | #  | 0.179           | 1.8         |
| Uranium-234            | pCi/L | 04/30/2014 | 0002 | 241         | - | 275 | 12.3   |            |      | #  | 0.139           | 1.79        |
| Uranium-235            | pCi/L | 04/30/2014 | 0001 | 241         | - | 275 | 0.46   |            |      | #  | 0.153           | 0.211       |
| Uranium-235            | pCi/L | 04/30/2014 | 0002 | 241         | - | 275 | 0.585  |            |      | #  | 0.172           | 0.252       |
| Uranium-238            | pCi/L | 04/30/2014 | 0001 | 241         | - | 275 | 11     |            |      | #  | 0.124           | 1.58        |
| Uranium-238            | pCi/L | 04/30/2014 | 0002 | 241         | - | 275 | 10.3   |            |      | #  | 0.175           | 1.54        |

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

REPORT DATE: 08/19/2014

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

| Parameter  | Units        | Sample     |      | Depth Range<br>(Ft BLS) | Result  | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|--------------|------------|------|-------------------------|---------|------------|------|----|--------------------|-------------|
|  |              | Date       | ID   |                         |         | Lab        | Data | QA |                    |             |
| Alkalinity, Bicarbonate<br>(as CaCO <sub>3</sub> ) | mg/L         | 04/30/2014 | N001 | -                       | 370     |            |      | #  | 0.725              |             |
| Alkalinity, Carbonate<br>(as CaCO <sub>3</sub> )   | mg/L         | 04/30/2014 | N001 | -                       | 0.725   | U          |      | #  | 0.725              |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )          | mg/L         | 04/30/2014 | N002 | -                       | 426     |            |      | #  |                    |             |
| Arsenic  | mg/L         | 04/30/2014 | N001 | -                       | 0.0085  | U          |      | #  | 0.0085             |             |
| Calcium  | mg/L         | 04/30/2014 | N001 | -                       | 263     |            |      | #  | 0.05               |             |
| Chloride   | mg/L         | 04/30/2014 | N001 | -                       | 305     |            |      | #  | 6.7                |             |
| Dissolved Oxygen                                   | mg/L         | 04/30/2014 | N002 | -                       | 0.86    |            |      | #  |                    |             |
| Magnesium  | mg/L         | 04/30/2014 | N001 | -                       | 99.8    |            |      | #  | 0.11               |             |
| Molybdenum   | mg/L         | 04/30/2014 | N001 | -                       | 0.00103 |            |      | #  | 0.000165           |             |
| Nitrate + Nitrite as Nitrogen                      | mg/L         | 04/30/2014 | N001 | -                       | 1.71    |            |      | #  | 0.085              |             |
| Oxidation Reduction<br>Potential                   | mV           | 04/30/2014 | N002 | -                       | 30      |            |      | #  |                    |             |
| pH   | s.u.         | 04/30/2014 | N002 | -                       | 6.75    |            |      | #  |                    |             |
| Potassium  | mg/L         | 04/30/2014 | N001 | -                       | 13      |            |      | #  | 0.05               |             |
| Selenium   | mg/L         | 04/30/2014 | N001 | -                       | 0.00805 | B          |      | #  | 0.0075             |             |
| Sodium   | mg/L         | 04/30/2014 | N001 | -                       | 297     |            |      | #  | 0.1                |             |
| Specific Conductance                               | umhos<br>/cm | 04/30/2014 | N002 | -                       | 2870    |            |      | #  |                    |             |
| Stable isotope ratio<br>H2/H1 in Water             | ‰            | 04/30/2014 | 0001 | -                       | -77.71  |            |      | #  |                    |             |
| Stable isotope ratio<br>O18/O16 in Water           | ‰            | 04/30/2014 | 0001 | -                       | -9.81   |            |      | #  |                    |             |

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

REPORT DATE: 08/19/2014

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

| Parameter                                    | Units | Sample     |      | Depth Range<br>(Ft BLS) | Result | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|-------|------------|------|-------------------------|--------|------------|------|----|--------------------|-------------|
|  |       | Date       | ID   |                         |        | Lab        | Data | QA |                    |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/30/2014 | 0001 | -                       | 3.83   |            |      | #  |                    |             |
| Sulfate                                      | mg/L  | 04/30/2014 | N001 | -                       | 932    |            |      | #  | 13.3               |             |
| Temperature                                  | C     | 04/30/2014 | N002 | -                       | 15.5   |            |      | #  |                    |             |
| Total Dissolved Solids                       | mg/L  | 04/30/2014 | N001 | -                       | 2210   |            |      | #  | 3.4                |             |
| Tritium                                      | pCi/L | 04/30/2014 | N001 | -                       | 7.84   |            | U    | #  | 2.67               | 5.37        |
| Turbidity                                    | NTU   | 04/30/2014 | N002 | -                       | 1.14   |            |      | #  |                    |             |
| Uranium                                      | mg/L  | 04/30/2014 | N001 | -                       | 0.288  |            |      | #  | 0.000067           |             |
| Uranium-234                                  | pCi/L | 04/30/2014 | N001 | -                       | 104    |            |      | #  | 0.192              | 13          |
| Uranium-235                                  | pCi/L | 04/30/2014 | N001 | -                       | 5.55   |            |      | #  | 0.185              | 0.939       |
| Uranium-238                                  | pCi/L | 04/30/2014 | N001 | -                       | 101    |            |      | #  | 0.15               | 12.6        |

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

REPORT DATE: 08/19/2014

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

| Parameter  | Units        | Sample     |      | Depth Range<br>(Ft BLS) | Result   | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|--------------|------------|------|-------------------------|----------|------------|------|----|--------------------|-------------|
|  |              | Date       | ID   |                         |          | Lab        | Data | QA |                    |             |
| Alkalinity, Bicarbonate<br>(as CaCO <sub>3</sub> ) | mg/L         | 04/29/2014 | N001 | -                       | 591      |            | F    | #  | 0.725              |             |
| Alkalinity, Carbonate<br>(as CaCO <sub>3</sub> )   | mg/L         | 04/29/2014 | N001 | -                       | 0.725    | U          | F    | #  | 0.725              |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )          | mg/L         | 04/29/2014 | N001 | -                       | 516      |            | F    | #  |                    |             |
| Arsenic  | mg/L         | 04/29/2014 | N001 | -                       | 0.0085   | U          | F    | #  | 0.0085             |             |
| Calcium  | mg/L         | 04/29/2014 | N001 | -                       | 141      |            | F    | #  | 0.05               |             |
| Chloride   | mg/L         | 04/29/2014 | N001 | -                       | 213      | H          | FJ   | #  | 3.35               |             |
| Dissolved Oxygen                                   | mg/L         | 04/29/2014 | N001 | -                       | 1.01     |            | F    | #  |                    |             |
| Magnesium  | mg/L         | 04/29/2014 | N001 | -                       | 77.4     |            | F    | #  | 0.11               |             |
| Molybdenum   | mg/L         | 04/29/2014 | N001 | -                       | 0.000394 | B          | UF   | #  | 0.000165           |             |
| Nitrate + Nitrite as Nitrogen                      | mg/L         | 04/29/2014 | N001 | -                       | 0.017    | U          | F    | #  | 0.017              |             |
| Oxidation Reduction<br>Potential                   | mV           | 04/29/2014 | N001 | -                       | -50      |            | F    | #  |                    |             |
| pH   | s.u.         | 04/29/2014 | N001 | -                       | 6.87     |            | F    | #  |                    |             |
| Potassium  | mg/L         | 04/29/2014 | N001 | -                       | 8.05     |            | F    | #  | 0.05               |             |
| Selenium   | mg/L         | 04/29/2014 | N001 | -                       | 0.0075   | U          | F    | #  | 0.0075             |             |
| Sodium   | mg/L         | 04/29/2014 | N001 | -                       | 354      |            | F    | #  | 0.1                |             |
| Specific Conductance                               | umhos<br>/cm | 04/29/2014 | N001 | -                       | 2505     |            | F    | #  |                    |             |
| Stable isotope ratio<br>H2/H1 in Water             | ‰            | 04/29/2014 | 0001 | -                       | -84.61   |            | F    | #  |                    |             |
| Stable isotope ratio<br>O18/O16 in Water           | ‰            | 04/29/2014 | 0001 | -                       | -11.06   |            | F    | #  |                    |             |



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

REPORT DATE: 08/19/2014

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

| Parameter                                    | Units | Sample     |      | Depth Range<br>(Ft BLS) | Result  | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|-------|------------|------|-------------------------|---------|------------|------|----|--------------------|-------------|
|  |       | Date       | ID   |                         |         | Lab        | Data | QA |                    |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/29/2014 | 0001 | -                       | 9.53    |            | F    | #  |                    |             |
| Sulfate                                      | mg/L  | 04/29/2014 | N001 | -                       | 653     | H          | FJ   | #  | 6.65               |             |
| Temperature                                  | C     | 04/29/2014 | N001 | -                       | 14.5    |            | F    | #  |                    |             |
| Total Dissolved Solids                       | mg/L  | 04/29/2014 | N001 | -                       | 1770    |            | F    | #  | 3.4                |             |
| Tritium                                      | pCi/L | 04/29/2014 | N001 | -                       | 2.61    | U          | F    | #  | 2.61               | 1.82        |
| Turbidity                                    | NTU   | 04/29/2014 | N001 | -                       | 2.7     |            | F    | #  |                    |             |
| Uranium                                      | mg/L  | 04/29/2014 | N001 | -                       | 0.00308 |            | F    | #  | 0.000067           |             |
| Uranium-234                                  | pCi/L | 04/29/2014 | N001 | -                       | 1.57    |            | F    | #  | 0.232              | 0.424       |
| Uranium-235                                  | pCi/L | 04/29/2014 | N001 | -                       | 0.0778  | U          | F    | #  | 0.0778             | 0.102       |
| Uranium-238                                  | pCi/L | 04/29/2014 | N001 | -                       | 1.09    |            | F    | #  | 0.063              | 0.332       |

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

REPORT DATE: 08/19/2014

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

| Parameter  | Units        | Sample     |      | Depth Range<br>(Ft BLS) | Result   | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|--------------|------------|------|-------------------------|----------|------------|------|----|--------------------|-------------|
|  |              | Date       | ID   |                         |          | Lab        | Data | QA |                    |             |
| Alkalinity, Bicarbonate<br>(as CaCO <sub>3</sub> ) | mg/L         | 04/29/2014 | 0001 | 152.4 - 350             | 35.2     |            |      | #  | 0.725              |             |
| Alkalinity, Carbonate<br>(as CaCO <sub>3</sub> )   | mg/L         | 04/29/2014 | 0001 | 152.4 - 350             | 0.725    | U          |      | #  | 0.725              |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )          | mg/L         | 04/29/2014 | 0001 | 152.4 - 350             | 54       |            |      | #  |                    |             |
| Arsenic  | mg/L         | 04/29/2014 | 0001 | 152.4 - 350             | 0.0085   | U          |      | #  | 0.0085             |             |
| Calcium  | mg/L         | 04/29/2014 | 0001 | 152.4 - 350             | 126      |            |      | #  | 0.05               |             |
| Chloride   | mg/L         | 04/29/2014 | 0001 | 152.4 - 350             | 689      | H          | J    | #  | 6.7                |             |
| Dissolved Oxygen                                   | mg/L         | 04/29/2014 | N001 | 152.4 - 350             | 0.22     |            |      | #  |                    |             |
| Magnesium  | mg/L         | 04/29/2014 | 0001 | 152.4 - 350             | 136      |            |      | #  | 0.11               |             |
| Molybdenum   | mg/L         | 04/29/2014 | 0001 | 152.4 - 350             | 0.000165 | U          |      | #  | 0.000165           |             |
| Nitrate + Nitrite as Nitrogen                      | mg/L         | 04/29/2014 | 0001 | 152.4 - 350             | 0.017    | U          |      | #  | 0.017              |             |
| Oxidation Reduction<br>Potential                   | mV           | 04/29/2014 | N001 | 152.4 - 350             | -280     |            |      | #  |                    |             |
| pH   | s.u.         | 04/29/2014 | N001 | 152.4 - 350             | 7.55     |            |      | #  |                    |             |
| Potassium  | mg/L         | 04/29/2014 | 0001 | 152.4 - 350             | 13.3     |            |      | #  | 0.05               |             |
| Selenium   | mg/L         | 04/29/2014 | 0001 | 152.4 - 350             | 0.0075   | U          |      | #  | 0.0075             |             |
| Sodium   | mg/L         | 04/29/2014 | 0001 | 152.4 - 350             | 428      |            |      | #  | 0.1                |             |
| Specific Conductance                               | umhos<br>/cm | 04/29/2014 | N001 | 152.4 - 350             | 3280     |            |      | #  |                    |             |
| Stable isotope ratio<br>H2/H1 in Water             | ‰            | 04/29/2014 | 0002 | 152.4 - 350             | -73.92   |            |      | #  |                    |             |
| Stable isotope ratio<br>O18/O16 in Water           | ‰            | 04/29/2014 | 0002 | 152.4 - 350             | -9.25    |            |      | #  |                    |             |

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

REPORT DATE: 08/19/2014

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 |                 |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/29/2014 | 0002 | 152.4       | - | 350 | 8.61    |            |      | #  |                 |             |
| Sulfate                                      | mg/L  | 04/29/2014 | 0001 | 152.4       | - | 350 | 920     | H          | J    | #  | 13.3            |             |
| Temperature                                  | C     | 04/29/2014 | N001 | 152.4       | - | 350 | 15.6    |            |      | #  |                 |             |
| Total Dissolved Solids                       | mg/L  | 04/29/2014 | 0001 | 152.4       | - | 350 | 2360    |            |      | #  | 3.4             |             |
| Tritium                                      | pCi/L | 04/29/2014 | 0001 | 152.4       | - | 350 | 10.3    |            | U    | #  | 2.71            | 6.91        |
| Turbidity                                    | NTU   | 04/29/2014 | N001 | 152.4       | - | 350 | 34.2    |            |      | #  |                 |             |
| Uranium                                      | mg/L  | 04/29/2014 | 0001 | 152.4       | - | 350 | 0.00771 |            |      | #  | 0.000067        |             |
| Uranium-234                                  | pCi/L | 04/29/2014 | 0001 | 152.4       | - | 350 | 2.84    |            |      | #  | 0.321           | 0.609       |
| Uranium-235                                  | pCi/L | 04/29/2014 | 0001 | 152.4       | - | 350 | 0.235   | U          |      | #  | 0.235           | 0.168       |
| Uranium-238                                  | pCi/L | 04/29/2014 | 0001 | 152.4       | - | 350 | 2.72    |            |      | #  | 0.0596          | 0.572       |

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

REPORT DATE: 08/19/2014

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

| Parameter  | Units        | Sample     |      | Depth Range<br>(Ft BLS) | Result  | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|--------------|------------|------|-------------------------|---------|------------|------|----|--------------------|-------------|
|  |              | Date       | ID   |                         |         | Lab        | Data | QA |                    |             |
| Alkalinity, Bicarbonate<br>(as CaCO <sub>3</sub> ) | mg/L         | 04/29/2014 | N001 | 159 - 280               | 362     |            |      | #  | 0.725              |             |
| Alkalinity, Carbonate<br>(as CaCO <sub>3</sub> )   | mg/L         | 04/29/2014 | N001 | 159 - 280               | 0.725   | U          |      | #  | 0.725              |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )          | mg/L         | 04/29/2014 | N001 | 159 - 280               | 438     |            |      | #  |                    |             |
| Arsenic  | mg/L         | 04/29/2014 | N001 | 159 - 280               | 0.0085  | U          |      | #  | 0.0085             |             |
| Calcium  | mg/L         | 04/29/2014 | N001 | 159 - 280               | 276     |            |      | #  | 0.05               |             |
| Chloride   | mg/L         | 04/29/2014 | N001 | 159 - 280               | 523     | H          | J    | #  | 6.7                |             |
| Dissolved Oxygen                                   | mg/L         | 04/29/2014 | N001 | 159 - 280               | 1.7     |            |      | #  |                    |             |
| Magnesium  | mg/L         | 04/29/2014 | N001 | 159 - 280               | 158     |            |      | #  | 0.11               |             |
| Molybdenum   | mg/L         | 04/29/2014 | N001 | 159 - 280               | 0.00123 |            |      | #  | 0.000165           |             |
| Nitrate + Nitrite as Nitrogen                      | mg/L         | 04/29/2014 | N001 | 159 - 280               | 2.77    |            |      | #  | 0.17               |             |
| Oxidation Reduction<br>Potential                   | mV           | 04/29/2014 | N001 | 159 - 280               | -130    |            |      | #  |                    |             |
| pH   | s.u.         | 04/29/2014 | N001 | 159 - 280               | 6.97    |            |      | #  |                    |             |
| Potassium  | mg/L         | 04/29/2014 | N001 | 159 - 280               | 13.2    |            |      | #  | 0.05               |             |
| Selenium   | mg/L         | 04/29/2014 | N001 | 159 - 280               | 0.0122  | B          |      | #  | 0.0075             |             |
| Sodium   | mg/L         | 04/29/2014 | N001 | 159 - 280               | 404     |            |      | #  | 0.1                |             |
| Specific Conductance                               | umhos<br>/cm | 04/29/2014 | N001 | 159 - 280               | 3870    |            |      | #  |                    |             |
| Stable isotope ratio<br>H2/H1 in Water             | ‰            | 04/29/2014 | 0001 | 159 - 280               | -73.27  |            |      | #  |                    |             |
| Stable isotope ratio<br>O18/O16 in Water           | ‰            | 04/29/2014 | 0001 | 159 - 280               | -9.15   |            |      | #  |                    |             |

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

REPORT DATE: 08/19/2014

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

| Parameter                                    | Units | Sample     |      | Depth Range<br>(Ft BLS) | Result | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|-------|------------|------|-------------------------|--------|------------|------|----|--------------------|-------------|
|  |       | Date       | ID   |                         |        | Lab        | Data | QA |                    |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/29/2014 | 0001 | 159 - 280               | 1.28   |            |      | #  |                    |             |
| Sulfate                                      | mg/L  | 04/29/2014 | N001 | 159 - 280               | 1290   | H          | J    | #  | 13.3               |             |
| Temperature                                  | C     | 04/29/2014 | N001 | 159 - 280               | 15.5   |            |      | #  |                    |             |
| Total Dissolved Solids                       | mg/L  | 04/29/2014 | N001 | 159 - 280               | 2980   |            |      | #  | 3.4                |             |
| Tritium                                      | pCi/L | 04/29/2014 | N001 | 159 - 280               | 8.67   |            | U    | #  | 2.59               | 5.93        |
| Turbidity                                    | NTU   | 04/29/2014 | N001 | 159 - 280               | 4.67   |            |      | #  |                    |             |
| Uranium                                      | mg/L  | 04/29/2014 | N001 | 159 - 280               | 0.456  |            |      | #  | 0.000067           |             |
| Uranium-234                                  | pCi/L | 04/29/2014 | N001 | 159 - 280               | 154    |            |      | #  | 0.221              | 20          |
| Uranium-235                                  | pCi/L | 04/29/2014 | N001 | 159 - 280               | 7.67   |            |      | #  | 0.0855             | 1.34        |
| Uranium-238                                  | pCi/L | 04/29/2014 | N001 | 159 - 280               | 158    |            |      | #  | 0.0692             | 20.5        |

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

REPORT DATE: 08/19/2014

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

| Parameter  | Units        | Sample     |      | Depth Range<br>(Ft BLS) | Result   | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|--------------|------------|------|-------------------------|----------|------------|------|----|--------------------|-------------|
|  |              | Date       | ID   |                         |          | Lab        | Data | QA |                    |             |
| Alkalinity, Bicarbonate<br>(as CaCO <sub>3</sub> ) | mg/L         | 04/29/2014 | N001 | 123 - 132               | 204      |            | F    | #  | 0.725              |             |
| Alkalinity, Carbonate<br>(as CaCO <sub>3</sub> )   | mg/L         | 04/29/2014 | N001 | 123 - 132               | 0.725    | U          | F    | #  | 0.725              |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )          | mg/L         | 04/29/2014 | N001 | 123 - 132               | 230      |            | F    | #  |                    |             |
| Arsenic  | mg/L         | 04/29/2014 | N001 | 123 - 132               | 0.0085   | U          | F    | #  | 0.0085             |             |
| Calcium  | mg/L         | 04/29/2014 | N001 | 123 - 132               | 153      |            | F    | #  | 0.05               |             |
| Chloride   | mg/L         | 04/29/2014 | N001 | 123 - 132               | 196      | H          | FJ   | #  | 1.34               |             |
| Dissolved Oxygen                                   | mg/L         | 04/29/2014 | N001 | 123 - 132               | 3.87     |            | F    | #  |                    |             |
| Magnesium  | mg/L         | 04/29/2014 | N001 | 123 - 132               | 44.3     |            | F    | #  | 0.11               |             |
| Molybdenum   | mg/L         | 04/29/2014 | N001 | 123 - 132               | 0.000747 |            | UF   | #  | 0.000165           |             |
| Nitrate + Nitrite as Nitrogen                      | mg/L         | 04/29/2014 | N001 | 123 - 132               | 10.8     |            | F    | #  | 0.425              |             |
| Oxidation Reduction<br>Potential                   | mV           | 04/29/2014 | N001 | 123 - 132               | 30       |            | F    | #  |                    |             |
| pH   | s.u.         | 04/29/2014 | N001 | 123 - 132               | 7.57     |            | F    | #  |                    |             |
| Potassium  | mg/L         | 04/29/2014 | N001 | 123 - 132               | 5.23     |            | F    | #  | 0.05               |             |
| Selenium   | mg/L         | 04/29/2014 | N001 | 123 - 132               | 0.00786  | B          | F    | #  | 0.0075             |             |
| Sodium   | mg/L         | 04/29/2014 | N001 | 123 - 132               | 187      |            | F    | #  | 0.1                |             |
| Specific Conductance                               | umhos<br>/cm | 04/29/2014 | N001 | 123 - 132               | 1820     |            | F    | #  |                    |             |
| Stable isotope ratio<br>H2/H1 in Water             | ‰            | 04/29/2014 | 0001 | 123 - 132               | -74.11   |            | F    | #  |                    |             |
| Stable isotope ratio<br>O18/O16 in Water           | ‰            | 04/29/2014 | 0001 | 123 - 132               | -9.27    |            | F    | #  |                    |             |

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

REPORT DATE: 08/19/2014

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 |   |                 |             |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/29/2014 | 0001 | 123         | - 132 | 1.72   |            | F  | # |                 |             |
| Sulfate                                      | mg/L  | 04/29/2014 | N001 | 123         | - 132 | 528    | H          | FJ | # | 6.65            |             |
| Temperature                                  | C     | 04/29/2014 | N001 | 123         | - 132 | 14.3   |            | F  | # |                 |             |
| Total Dissolved Solids                       | mg/L  | 04/29/2014 | N001 | 123         | - 132 | 1310   |            | F  | # | 3.4             |             |
| Tritium                                      | pCi/L | 04/29/2014 | N001 | 123         | - 132 | 10     |            | UF | # | 2.65            | 6.74        |
| Turbidity                                    | NTU   | 04/29/2014 | N001 | 123         | - 132 | 8.68   |            | F  | # |                 |             |
| Uranium                                      | mg/L  | 04/29/2014 | N001 | 123         | - 132 | 0.121  |            | F  | # | 0.000067        |             |
| Uranium-234                                  | pCi/L | 04/29/2014 | N001 | 123         | - 132 | 44.1   |            | F  | # | 0.455           | 5.95        |
| Uranium-235                                  | pCi/L | 04/29/2014 | N001 | 123         | - 132 | 1.68   |            | F  | # | 0.488           | 0.537       |
| Uranium-238                                  | pCi/L | 04/29/2014 | N001 | 123         | - 132 | 40.1   |            | F  | # | 0.441           | 5.44        |

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

REPORT DATE: 08/19/2014

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

| Parameter  | Units        | Sample     |      | Depth Range<br>(Ft BLS) | Result | Qualifiers |      |    | Detection<br>Limit | Uncertainty |
|--|--------------|------------|------|-------------------------|--------|------------|------|----|--------------------|-------------|
|  |              | Date       | ID   |                         |        | Lab        | Data | QA |                    |             |
| Alkalinity, Bicarbonate<br>(as CaCO <sub>3</sub> ) | mg/L         | 04/30/2014 | N001 | 98 - 123                | 199    |            | F    | #  | 0.725              |             |
| Alkalinity, Carbonate<br>(as CaCO <sub>3</sub> )   | mg/L         | 04/30/2014 | N001 | 98 - 123                | 0.725  | U          | F    | #  | 0.725              |             |
| Alkalinity, Total (as CaCO <sub>3</sub> )          | mg/L         | 04/30/2014 | N002 | 98 - 123                | 212    |            | F    | #  |                    |             |
| Arsenic  | mg/L         | 04/30/2014 | N001 | 98 - 123                | 0.0085 | U          | F    | #  | 0.0085             |             |
| Calcium  | mg/L         | 04/30/2014 | N001 | 98 - 123                | 55     |            | F    | #  | 0.05               |             |
| Chloride   | mg/L         | 04/30/2014 | N001 | 98 - 123                | 16.4   |            | F    | #  | 1.34               |             |
| Dissolved Oxygen                                   | mg/L         | 04/30/2014 | N002 | 98 - 123                | 5.42   |            | F    | #  |                    |             |
| Magnesium  | mg/L         | 04/30/2014 | N001 | 98 - 123                | 16.6   |            | F    | #  | 0.11               |             |
| Molybdenum   | mg/L         | 04/30/2014 | N001 | 98 - 123                | 0.0016 |            | F    | #  | 0.000165           |             |
| Nitrate + Nitrite as Nitrogen                      | mg/L         | 04/30/2014 | N001 | 98 - 123                | 1.81   |            | F    | #  | 0.085              |             |
| Oxidation Reduction<br>Potential                   | mV           | 04/30/2014 | N002 | 98 - 123                | 55     |            | F    | #  |                    |             |
| pH   | s.u.         | 04/30/2014 | N002 | 98 - 123                | 7.63   |            | F    | #  |                    |             |
| Potassium  | mg/L         | 04/30/2014 | N001 | 98 - 123                | 3.09   |            | F    | #  | 0.05               |             |
| Selenium   | mg/L         | 04/30/2014 | N001 | 98 - 123                | 0.0075 | U          | F    | #  | 0.0075             |             |
| Sodium   | mg/L         | 04/30/2014 | N001 | 98 - 123                | 57.7   |            | F    | #  | 0.1                |             |
| Specific Conductance                               | umhos<br>/cm | 04/30/2014 | N002 | 98 - 123                | 620    |            | F    | #  |                    |             |
| Stable isotope ratio<br>H2/H1 in Water             | ‰            | 04/30/2014 | 0001 | 98 - 123                | -76.4  |            | F    | #  |                    |             |
| Stable isotope ratio<br>O18/O16 in Water           | ‰            | 04/30/2014 | 0001 | 98 - 123                | -9.88  |            | F    | #  |                    |             |



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

REPORT DATE: 08/19/2014

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    |
| Stable isotope ratio<br>S-34/S-32 in Sulfate | ‰     | 04/30/2014 | 0001 | 98          | - | 123 | 9.85    | F          | #    |                 |             |       |
| Sulfate                                      | mg/L  | 04/30/2014 | N001 | 98          | - | 123 | 104     | F          | #    | 2.66            |             |       |
| Temperature                                  | C     | 04/30/2014 | N002 | 98          | - | 123 | 13.9    | F          | #    |                 |             |       |
| Total Dissolved Solids                       | mg/L  | 04/30/2014 | N001 | 98          | - | 123 | 417     | F          | #    | 3.4             |             |       |
| Tritium                                      | pCi/L | 04/30/2014 | N001 | 98          | - | 123 | 5.39    | UF         | #    | 2.52            | 3.86        |       |
| Turbidity                                    | NTU   | 04/30/2014 | N002 | 98          | - | 123 | 1.82    | F          | #    |                 |             |       |
| Uranium                                      | mg/L  | 04/30/2014 | N001 | 98          | - | 123 | 0.00513 | F          | #    | 0.000067        |             |       |
| Uranium-234                                  | pCi/L | 04/30/2014 | N001 | 98          | - | 123 | 3.26    | F          | #    | 0.284           | 0.695       |       |
| Uranium-235                                  | pCi/L | 04/30/2014 | N001 | 98          | - | 123 | 0.274   | U          | F    | #               | 0.274       | 0.125 |
| Uranium-238                                  | pCi/L | 04/30/2014 | N001 | 98          | - | 123 | 1.46    | F          | #    | 0.0693          | 0.41        |       |

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**

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STATIC WATER LEVELS (USEE700) FOR SITE BLU01, Bluewater Disposal Site  
 REPORT DATE: 08/19/2014

| Location Code | Flow Code | Top of Casing Elevation (Ft) | Measurement Date | Measurement Time | Depth From Top of Casing (Ft) | Water Elevation (Ft) |
|---------------|-----------|------------------------------|------------------|------------------|-------------------------------|----------------------|
| 11(SG)        | O,C       | 6639.19                      | 04/29/2014       | 15:15:38         | 207.01                        | 6432.18              |
| 13(SG)        | O,D       | 6593.57                      | 04/29/2014       | 08:30:41         | 167.48                        | 6426.09              |
| 14(SG)        | O,C       | 6617.2                       | 04/30/2014       | 15:30:50         | 189.41                        | 6427.79              |
| 15(SG)        | O,D       | 6612.53                      | 04/29/2014       | 13:25:24         | 185.82                        | 6426.71              |
| 16(SG)        | O,D       | 6618.25                      | 04/29/2014       | 10:35:58         | 186.25                        | 6432                 |
| 18(SG)        | O,D       | 6601.32                      | 04/30/2014       | 14:40:26         | 174.58                        | 6426.74              |
| 20(M)         | O,U       | 6613.38                      | 04/29/2014       | 16:50:00         | 106.15                        | 6507.23              |
| 21(M)         | O,D       | 6593.8                       | 04/29/2014       | 09:05:22         | 128.23                        | 6465.57              |
| 22(M)         | O,D       | 6606.48                      | 04/29/2014       | 11:40:34         | 137.36                        | 6469.12              |
| 23(M)         | O,D       | 6579.22                      | 04/30/2014       | 10:45:33         | 110.18                        | 6469.04              |
| E(M)          | O,B       | 6616.32                      | 04/30/2014       | 16:00:20         | 81.69                         | 6534.63              |
| F(M)          | O,D       | 6603.59                      | 04/30/2014       | 13:20:15         | 113.45                        | 6490.14              |
| HMC-951       | F,D       | 6576.79                      | 04/30/2014       | 10:10:29         | 152.29                        | 6424.5               |
| I(SG)         | O,D       | 6625.93                      | 04/30/2014       | 12:15:08         | 200.19                        | 6425.74              |
| L(SG)         | O,B       | 6606.09                      | 04/29/2014       | 16:15:00         | 165.28                        | 6440.81              |
| OBS-3         | O,D       | 6617.22                      | 04/29/2014       | 10:10:06         | 185.99                        | 6431.23              |
| S(SG)         | O,D       | 6625.25                      | 04/29/2014       | 14:00:51         | 193.2                         | 6432.05              |
| X(M)          | O,D       | 6598.91                      | 04/29/2014       | 12:30:23         | 132.15                        | 6466.76              |
| Y2(M)         | O,D       | 6614.13                      | 04/30/2014       | 14:05:30         | 117.34                        | 6496.79              |

FLOW CODES:

B BACKGROUND  
 N UNKNOWN

C CROSS GRADIENT  
 O ONSITE

D DOWN GRADIENT  
 U UPGRADIENT

F OFFSITE

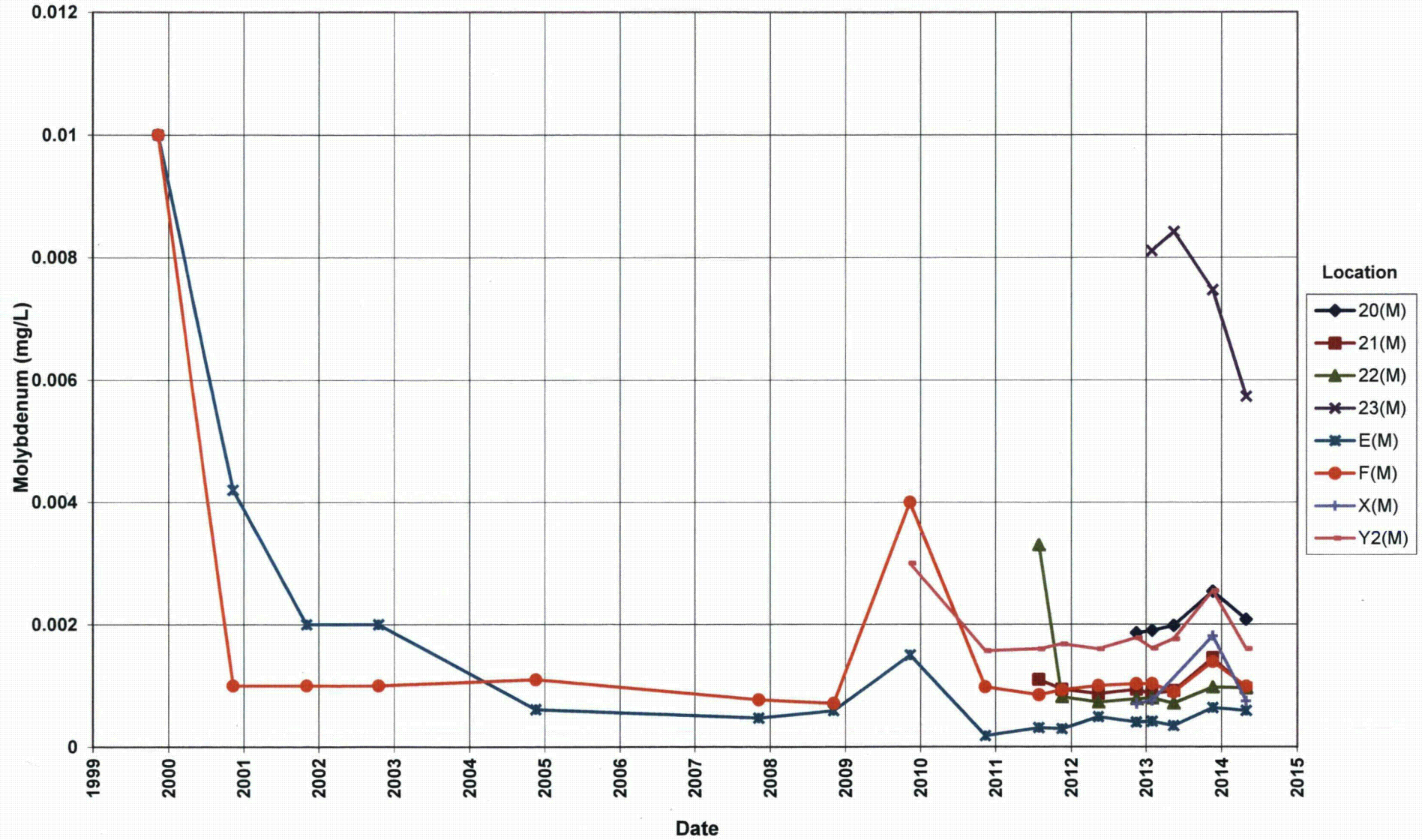
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## **Time-Concentration Graphs**

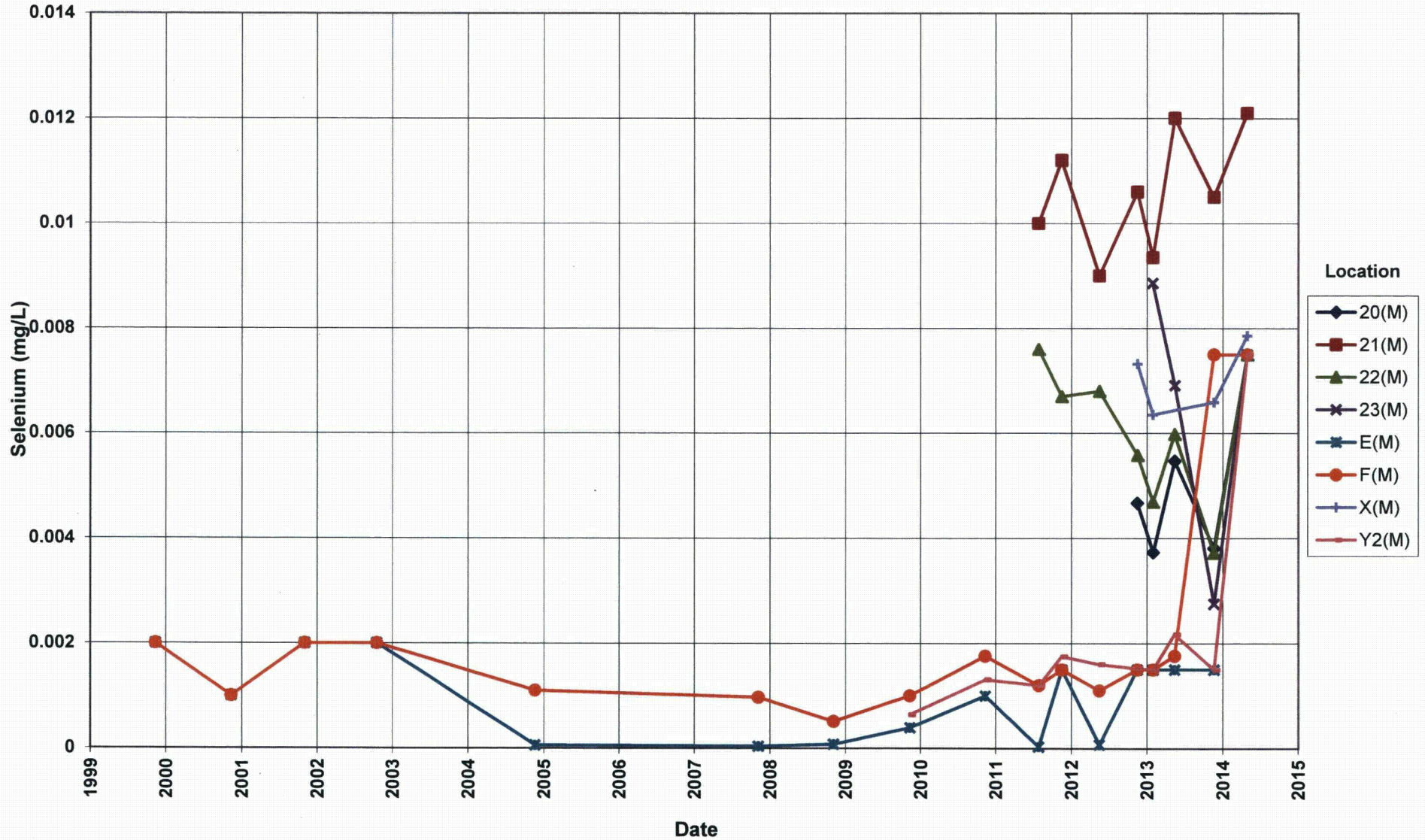
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**Bluewater Disposal Site  
Alluvium Wells  
Molybdenum Concentration**  
Alternate Concentration Limit (ACL) = 0.10 mg/L

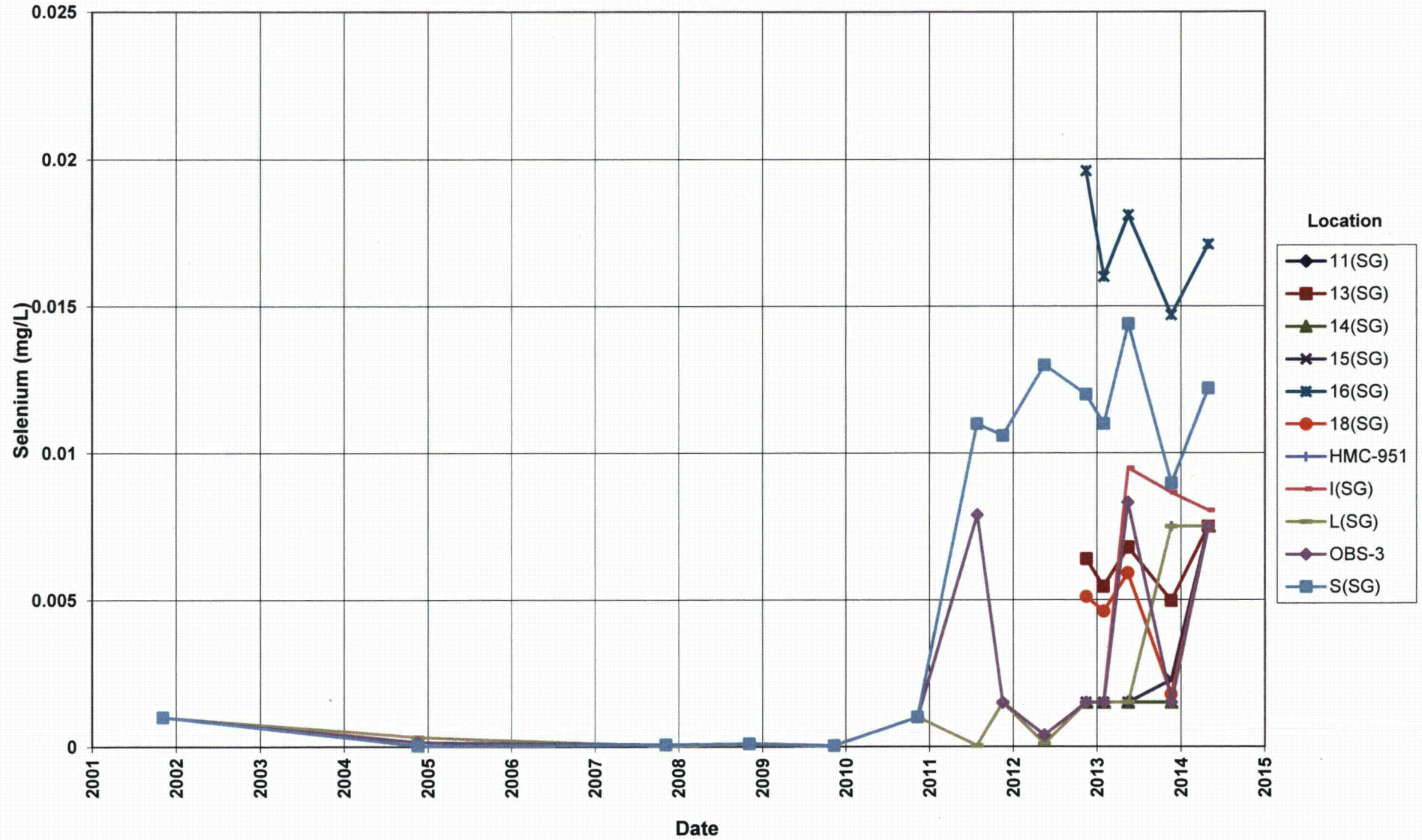


**Bluewater Disposal Site  
Alluvium Wells  
Selenium Concentration**  
Alternate Concentration Limit (ACL) = 0.05 mg/L

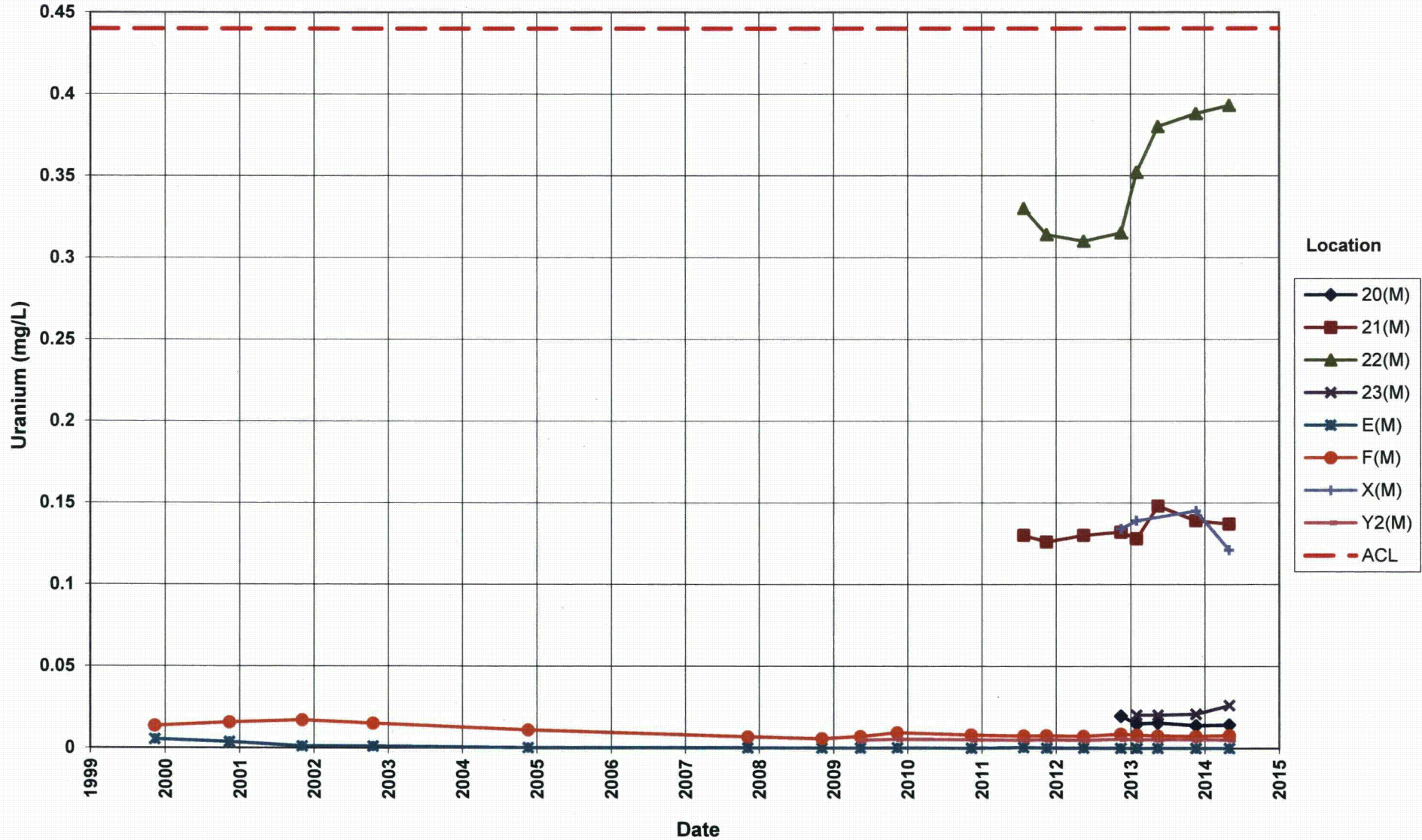




**Bluewater Disposal Site**  
**Bedrock Wells**  
**Selenium Concentration**  
 Alternate Concentration Limit (ACL) = 0.05 mg/L

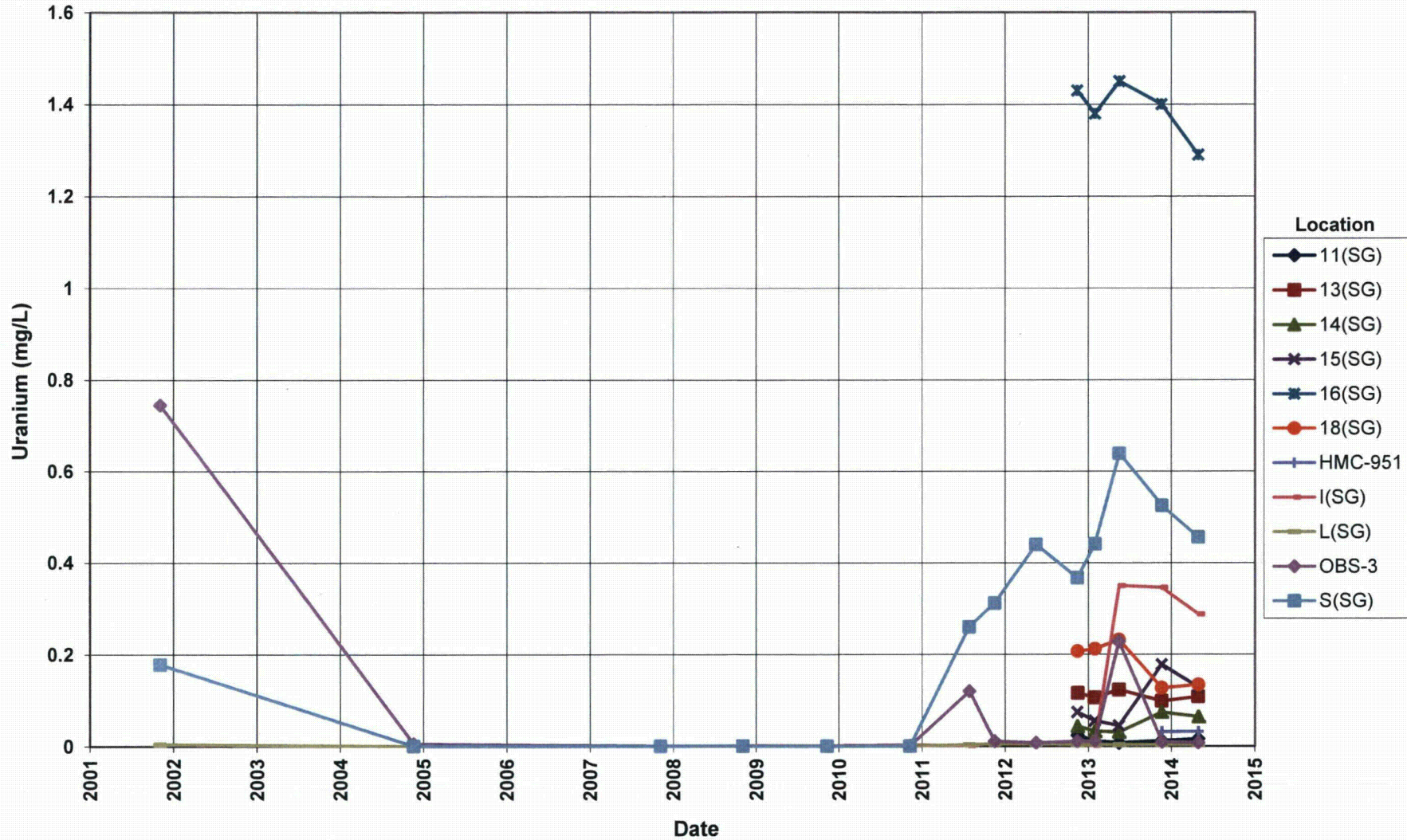


**Bluewater Disposal Site  
Alluvium Wells  
Uranium Concentration**  
Alternate Concentration Limit (ACL) = 0.44 mg/L





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



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**Attachment 3**  
**Sampling and Analysis Work Order**

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April 17, 2014

Task Order LM-501  
Control Number 14-0507

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-AM01-07LM00060, The S.M. Stoller Corporation, a wholly owned subsidiary of Huntington Ingalls Industries (Stoller)  
May 2014 Environmental Sampling at Bluewater, New Mexico, Disposal Site

REFERENCE: Task Order LM00-501-03-203-402, 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 May 12, 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 15(SG) Sg 20(M) Al 22(M) Al  
Y2(M) Al X(M) Al OBS-3 Sg 13(SG) Sg 16(SG) Sg 21(M) Al 23(M) Al  
F(M) Al L(SG) Sg I(SG) Sg 14(SG) Sg 18(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 14-0507  
Page 2

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

Sincerely,



Richard K. Johnson  
Site Lead

RKJ/lcg/lb

Enclosures (3)

cc: (electronic)

Christina Pennal, DOE  
Steve Donovan, Stoller  
Bev Gallagher, Stoller  
Lauren Goodknight, Stoller  
Richard Johnson, Stoller  
EDD Delivery  
rc-grand.junction  
File: BLU 410.02(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                 |
|-------------------------|-----------|--------------|----------|-------------|-------------|-----------------------|
| <b>Monitoring Wells</b> |           |              |          |             |             |                       |
| 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            |          |             |             |                       |
| OBS-3                   |           | X            |          |             |             |                       |
| 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            |          |             |             | May be dry            |
| <b>Private Wells</b>    |           |              |          |             |             |                       |
| HMC-951                 |           | X            |          |             |             |                       |

Sampling conducted in May and November.



### Constituent Sampling Breakdown

| Site   | Bluewater  |                  | Required<br>Detection<br>Limit (mg/L) | Analytical<br>Method | Line Item<br>Code |
|--|--|------------------|---------------------------------------|----------------------|-------------------|
|  | Groundwater  | Surface<br>Water |                                       |                      |                   |
| Approx. No. Samples/yr                                       | 21   | 0                |                                       |                      |                   |
| <b>Field Measurements</b>                                    |  |                  |                                       |                      |                   |
| Alkalinity   | X  |                  |                                       |                      |                   |
| Iron (filtered, ferrous)                                     | X  |                  |                                       |                      |                   |
| Dissolved Oxygen   | X  |                  |                                       |                      |                   |
| Redox Potential  | X  |                  |                                       |                      |                   |
| pH   | X  |                  |                                       |                      |                   |
| Specific Conductance   | X  |                  |                                       |                      |                   |
| Turbidity  | X  |                  |                                       |                      |                   |
| Temperature  | X  |                  |                                       |                      |                   |
| <b>Laboratory Measurements</b>                               |  |                  |                                       |                      |                   |
| Aluminum   |  |                  |                                       |                      |                   |
| Ammonia as N (NH <sub>3</sub> -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         |
| Deuterium  | X  |                  | NA                                    | Mass Spectrometry    | LMW-08            |
| 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 (NO <sub>3</sub> +NO <sub>2</sub> )-N | X  |                  | 0.05                                  | EPA 353.1            | WCH-A-022         |
| Oxygen-18  | X  |                  | NA                                    | Mass Spectrometry    | LMW-08            |
| PCBs   | E(M), Y2(M),<br>F(M), T(M), and<br>X(M) only<br>(November<br>only) |                  | 0.0005                                | SW-846 8082          | PEP-A-006         |
| Potassium  | X  |                  | 1                                     | SW-846 6010          | LMM-01            |
| Radium-226   |  |                  |                                       |                      |                   |
| Radium-228   |  |                  |                                       |                      |                   |
| Selenium   | X  |                  | 0.0001                                | SW-846 6020          | LMM-02            |
| Silica   |  |                  |                                       |                      |                   |
| Sodium   | X  |                  | 1                                     | SW-846 6010          | LMM-01            |
| Strontium  |  |                  |                                       |                      |                   |
| Sulfate  | X  |                  | 0.5                                   | SW-846 9056          | MIS-A-044         |
| Sulfur-34 (from SO <sub>4</sub> )                            | X  |                  | NA                                    | Mass Spectrometry    | LMW-09            |
| Total Dissolved Solids                                       | X  |                  | 10                                    | SM2540 C             | WCH-A-033         |

### Constituent Sampling Breakdown

| Site                         | Bluewater   |                  | Required<br>Detection<br>Limit (mg/L) | Analytical<br>Method    | Line Item<br>Code |
|------------------------------|-------------|------------------|---------------------------------------|-------------------------|-------------------|
| Analyte                      | Groundwater | Surface<br>Water |                                       |                         |                   |
| Enriched Tritium             | X           |                  | 10 pCi/L                              | Liquid<br>Scintillation | LMR-15            |
| U-234, -238                  | X           |                  | 1 pCi/L                               | Alpha<br>Spectrometry   | ASP-A-024         |
| Uranium                      | X           |                  | 0.0001                                | SW-846 6020             | LMM-02            |
| Vanadium                     |             |                  |                                       |                         |                   |
| Zinc                         |             |                  |                                       |                         |                   |
| <b>Total No. of Analytes</b> | 20          | 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.

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**Attachment 4**  
**Trip Report**

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# Stoller

## Memorandum

DATE: May 6, 2014  
TO: Dick Johnson  
FROM: Jeff Price  
SUBJECT: Sampling Trip Report

**Site:** Bluewater, NM, Site

**Dates of Sampling Event:** April 28 – May 1, 2014

**Team Members:** David Atkinson and Jeff Price

**Number of Locations Sampled:** Samples were collected at 19 of the 20 monitoring well locations identified on the sampling notification letter.

**Locations Not Sampled/Reason:** Location T(M) was dry.

**Location Specific Information:**

| LOCATION | COMMENTS                                |
|----------|---|
| I(SG)    | Need to install 0.4 liter bladder pump. |
| F(M)     | Need to install 0.4 liter bladder pump. |

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

| FALSE ID | TRUE ID | SAMPLE TYPE | ASSOCIATED MATRIX | TICKET NUMBER        |
|----------|---------|-------------|-------------------|----------------------|
| 2484     | HMC 951 | Duplicate   | Groundwater       | MFZ 224 (GEL Lab)    |
| 2604     | HMC 951 | Duplicate   | Groundwater       | MFZ 247 (Reston Lab) |

**RIN Number Assigned:** Samples were assigned to RIN 14046116 (GEL Labs) and 14046117 (Reston Stable Isotopes).

**Sample Shipment:** Samples were shipped overnight via FedEx to GEL labs and Reston Stable Isotopes Lab, from Farmington, NM, on May 1, 2014.

**Water Level Measurements:** Water levels were measured at all wells prior to the start of sampling.

**Well Inspection Summary:** No issues were identified.

**Sampling Method:** Samples were collected according to the *Sampling and Analysis Plan for the U.S. Department of Energy Office Management Sites* (LMS/PRO/S04351, continually updated). Groundwater samples at monitoring well locations S(SG) and OBS-3 were collected according to the Bluewater Groundwater Sampling Program Directive (BLU-2013-01, effective date 10/1/2012, expiration date 9/30/2014).

**Field Variance:**

| LOCATION ID                 | COMMENTS                                  |
|-----------------------------|---|
| E(M), 23(M), OBS-3, HMC 951 | Turbidity not met, samples were filtered. |

**Equipment:** All equipment functioned properly.

**Institutional Controls:**

- Fences, Gates, Locks:** All ok.
- Signs:** No issues identified.
- Trespassing/Site Disturbances:** None observed.

**Site Issues:**

- Disposal Cell/Drainage Structure Integrity:** N/A
- Vegetation/Noxious Weed Concerns:** None.
- Maintenance Requirements:** None
- Access Issues:** None

**Corrective Action Required:** None.

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

**Data Validation Package for the  
Bluewater, New Mexico, Disposal Site,  
April 2014**

The U.S. Department of Energy (DOE) has prepared a Data Validation Package containing the groundwater monitoring data generated from the April 2014 sampling event at the Bluewater, New Mexico, Disposal Site. This package includes worksheets and reports that document the sampling activities and validation procedures conducted. **At your request, you are receiving a hard copy of the report.**

The report is also available for your review on the Internet at the DOE Office of Legacy Management (LM) website – <http://energy.gov/lm>. From the LM website home page, select the LM SITES MAP. Then select Bluewater Site from the LM SITES list in the right column. The report will be available on the Bluewater Disposal Site page of the LM website under Site Documents and Links.



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