

**DOE Oversight Bureau, New Mexico Environment Department**

**Groundwater Monitoring at  
Sandia National Laboratories/New Mexico  
Mixed Waste Landfill**

**Conducted by the  
New Mexico Environment Department DOE Oversight Bureau  
for FFY 2015 Q-1**

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**Final Report**

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The purpose of this communication is to transmit groundwater data collected by NMED DOE Oversight Bureau from Mixed Waste Landfill groundwater monitoring wells during first quarter FFY 2015.

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### **Introductory remarks**

The New Mexico Environment Department (NMED) DOE Oversight Bureau (Bureau) has compiled and assessed groundwater data collected during October 2014. The Bureau collected groundwater samples from Mixed Waste Landfill (MWL) groundwater monitoring wells MWL-MW7, MWL-MW8 and MWL-MW9. Split samples were collected using standard Sandia sampling procedures and equipment. The samples were submitted for analysis to an independent analytical laboratory for target analyte list (TAL) metals plus uranium, volatile organic compounds (VOCs), gamma-emitting isotopes, gross alpha/beta, radon, and tritium. No samples taken from MWL monitoring wells exceeded established EPA Maximum Contaminant Levels (MCLs) or trigger levels listed in the Long-Term Monitoring and Maintenance Plan (LTMMP).

### **Data Assessment**

All groundwater samples were collected and analyzed in accordance with U.S. Environmental Protection Agency (EPA) protocols. Data results are compared to applicable maximum contaminant levels (MCLs) established by the EPA National Primary Drinking Water Regulations (40 CFR 141), National Primary Drinking Water Standards, EPA, July 2002. Sample results are also compared to Mixed Waste Landfill Groundwater Monitoring Trigger Levels Table 5.2.4-1 of the Sandia National Laboratories/New Mexico (SNL/NM) Environmental Restoration Operations Long-Term Monitoring and Maintenance Plan (LTMMP) for the Mixed Waste Landfill, March 2012.

Under the current LTMMP, SNL/NM is only required to collect sample from Mixed Waste Landfill Monitoring wells MWL-BW2, MWL-MW7, MWL-MW8 and MWL-MW9. Samples are only analyzed for LTMMP list VOCs, metals (Cd, Cr, Ni, and U), gamma-emitting isotopes, gross alpha and beta, tritium, and radon. See table below for listed analytes and trigger levels.

### **Results**

Analytical results for total recoverable TAL metals plus uranium are presented in Table-1. All metal concentrations were below established MCLs and LTMMP trigger levels.

No VOCs were detected at concentrations above established MCLs or trigger levels. Table-2 summarizes the laboratory method detection limits (MDLs) for the volatile organic compounds analyzed from the samples collected at MWL monitoring wells.

Analytical results for radionuclides are listed in Table-3. Samples were analyzed for gross alpha and beta, gamma-emitting isotopes, radon, and tritium. Radon activity ranged from 180 pCi/L at MWL-MW7 to 430pCi/L at MWL-MW9, but was below the LTMMP trigger level of 1000 pCi/L. All other isotopes were detected below established EPA MCLs and LTMMP trigger levels.

### **Conclusion**

Groundwater samples were collected from three (3) monitoring wells during this sampling event at the Mixed Waste Landfill. Samples collected by the Oversight Bureau and analyzed by an independent laboratory show concentrations of metals, radionuclides and VOCs below established EPA MCLs and SNL/NM trigger levels based on LTMMP.

### **References**

Sandia National Laboratories, New Mexico Environmental Restoration Operations. Long-Term Monitoring and Maintenance Plan for the Mixed Waste Landfill, March 2012.

### Mixed Waste Landfill Groundwater Monitoring Trigger Levels

| Groundwater Monitoring Parameters                            | Final Trigger Levels (µg/L) <sup>a</sup> | Trigger Level Source <sup>a</sup>      | 2011 Laboratory Reporting Limits |                                     |
|--------------------------------------------------------------|------------------------------------------|----------------------------------------|----------------------------------|-------------------------------------|
|                                                              |                                          |                                        | Method Detection Limit (µg/L)    | Practical Quantitation Limit (µg/L) |
| EPA Method 8260 Volatile Organic Compounds                   |                                          |                                        |                                  |                                     |
| 1,1,1-Trichloroethane (1,1,1-TCA)                            | 15                                       | 25% NMED WQCC MAC                      | 0.325                            | 1                                   |
| 1,1,2,2-Tetrachloroethane                                    | 5                                        | 50% NMED WQCC MAC                      | 0.25                             | 1                                   |
| 1,1,2-Trichloroethane <sup>b</sup>                           | 2.5                                      | 50% EPA MCL                            | 0.25                             | 1                                   |
| 1,1-Dichloroethane                                           | 12.5                                     | 50% NMED WQCC MAC                      | 0.3                              | 1                                   |
| 1,1-Dichloroethene                                           | 2.5                                      | 50% NMED WQCC MAC                      | 0.3                              | 1                                   |
| 1,2-Dichloroethane                                           | 2.5                                      | 50% EPA MCL                            | 0.25                             | 1                                   |
| 1,2-Dichloropropane                                          | 2.5                                      | 50% EPA MCL                            | 0.25                             | 1                                   |
| 2-Butanone (methyl ethyl ketone) <sup>b</sup>                | 1,225                                    | 25% EPA RSL                            | 1.25                             | 5                                   |
| 2-Hexanone                                                   | 17                                       | 50% EPA RSL                            | 1.25                             | 5                                   |
| 4-methyl-, 2-Pentanone (Methyl isobutyl ketone) <sup>b</sup> | 250                                      | 25% EPA RSL                            | 1.25                             | 5                                   |
| Acetone <sup>b</sup>                                         | 3,000                                    | 25% EPA RSL                            | 1.25 – 5.0                       | 5.0 – 15.0                          |
| Benzene                                                      | 2.5                                      | 50% EPA MCL                            | 0.30 – 1.0                       | 1.0 – 3.0                           |
| Bromodichloromethane                                         | 0.6                                      | 50% NMED SL                            | 0.25                             | 1                                   |
| Bromoform                                                    | 4.0                                      | 50% EPA RSL                            | 0.25                             | 1                                   |
| Bromomethane                                                 | 3.5                                      | 50% EPA RSL                            | 0.3                              | 1                                   |
| Carbon disulfide                                             | 180                                      | 25% EPA RSL                            | 1.25                             | 5                                   |
| Carbon tetrachloride                                         | 2.5                                      | 50% EPA MCL                            | 0.3                              | 1                                   |
| Chlorobenzene                                                | 25                                       | 25% EPA MCL                            | 0.25                             | 1                                   |
| Chloroethane (ethyl chloride)                                | 5,250                                    | 25% EPA RSL                            | 0.3                              | 1                                   |
| Chloroform                                                   | 25                                       | 25% NMED WQCC MAC                      | 0.25                             | 1                                   |
| Chloromethane                                                | 47                                       | 25% NMED SL                            | 0.3                              | 1                                   |
| Dibromochloromethane                                         | 0.75                                     | 50% NMED SL                            | 0.3                              | 1                                   |
| Ethyl benzene                                                | 175                                      | 25% EPA MCL                            | 0.25                             | 1                                   |
| Methylene chloride                                           | 3 <sup>c</sup>                           | 60% EPA MCL                            | 3                                | 10                                  |
| Styrene                                                      | 25                                       | 25% EPA MCL                            | 0.25                             | 1                                   |
| Tetrachloroethene (PCE)                                      | 2.5                                      | 50% EPA MCL                            | 0.3                              | 1                                   |
| Toluene <sup>b</sup>                                         | 187.5                                    | 25% NMED WQCC MAC                      | 0.25 – 1.0                       | 1                                   |
| Trichloroethene (TCE)                                        | 2.5                                      | 50% EPA MCL                            | 0.25                             | 1                                   |
| Vinyl acetate                                                | 103                                      | 25% EPA RSL                            | 1.5 – 5.0                        | 5                                   |
| Vinyl chloride                                               | 0.5                                      | 50% NMED WQCC MAC                      | 0.5                              | 1                                   |
| Xylene                                                       | 155                                      | 25% NMED WQCC MAC                      | 0.3                              | 1                                   |
| cis-1,2-Dichloroethene                                       | 17.5                                     | 25% EPA MCL                            | 0.3                              | 1                                   |
| cis-1,3-Dichloropropene (1,3-Dichloropropene)                | 2.2                                      | 50% NMED SL                            | 0.25                             | 1                                   |
| trans-1,2-Dichloroethene                                     | 25                                       | 25% EPA MCL                            | 0.3                              | 1                                   |
| trans-1,3-Dichloropropene (1,3-Dichloropropene)              | 2.2                                      | 50% NMED SL                            | 0.25                             | 1                                   |
| Dichlorodifluoromethane                                      | 47.5                                     | 25% EPA RSL                            | 0.3                              | 1                                   |
| Metals with Trigger Levels                                   |                                          |                                        |                                  |                                     |
| Uranium (total)                                              | 15                                       | 50% EPA MCL                            | 0.05                             | 0.2                                 |
| Chromium (total)                                             | 43                                       | NMED-approved background concentration | 2.5                              | 10                                  |
| Cadmium                                                      | 2.5                                      | 50% of EPA MCL                         | 0.11                             | 1                                   |
| Nickel                                                       | 50                                       | 25% of NMED WQCC standard of 0.2 mg/L  | 0.5                              | 2                                   |

| Groundwater Monitoring Parameters             | Final Trigger Levels <sup>a</sup> | Trigger Level Source <sup>a</sup> | 2011 Laboratory Reporting Limits |                                     |
|-----------------------------------------------|-----------------------------------|-----------------------------------|----------------------------------|-------------------------------------|
|                                               |                                   |                                   | Method Detection Limit (µg/L)    | Practical Quantitation Limit (µg/L) |
| Radiological Constituents with Trigger Levels |                                   |                                   |                                  |                                     |
| Tritium                                       | 4 mrem/yr                         | EPA MCL                           | — <sup>d</sup>                   | — <sup>d</sup>                      |
| Radon                                         | 1,000 pCi/L                       | No Regulatory Standard            | — <sup>d</sup>                   | — <sup>d</sup>                      |
| Gross Alpha Activity                          | 15 pCi/L <sup>e</sup>             | EPA MCL                           | — <sup>d</sup>                   | — <sup>d</sup>                      |
| Gross Beta Activity                           | 4 mrem/yr                         | EPA MCL                           | — <sup>d</sup>                   | — <sup>d</sup>                      |

<sup>a</sup>All trigger levels reviewed and updated in February 2012 and are based upon current EPA (November 2011) RSLs for Tap Water, EPA (May 2009) MCLs, NMED WQCC (2002) MACs for Tap Water, and NMED (February 2012) SLs for Tap Water. Percentage of standard/screening level based upon NMED guidance (Bearzi October 2008a).

<sup>b</sup>Common laboratory contaminants specified in EPA (November 1992) technical guidance.

<sup>c</sup>Methylene chloride trigger level is adjusted to 60% of the EPA (May 2009) MCL, which is the analytical laboratory method detection limit.

<sup>d</sup>Critical level and minimum detectable activity for all radiological analyses vary greatly but are below the associated trigger level.

<sup>e</sup>Gross alpha activity data corrected for naturally occurring uranium in accordance with 40 CFR Parts 9, 141, and 142, Table I-4.

— = Not applicable.

µg/L = Micrograms per liter.

CFR = Code of Federal Regulations.

EPA = U.S. Environmental Protection Agency.

MAC = Maximum Allowable Concentration.

MCL = Maximum Contaminant Level.

mg/L = Milligram(s) per liter.

mrem/yr = Millirem per year.

NMED = New Mexico Environment Department.

pCi/L = Picocurie(s) per liter.

RSL = Regional Screening Level.

SL = Tap Water Screening Level.

WQCC = Water Quality Control Commission.

**Table-1 NMED DOE OB FFY 2015 Q-1 Mixed Waste Landfill Groundwater Quality Results: Total Target Analyte List Metals plus Uranium**

| Monitoring Well/<br>Sample Date | Analyte   | Result<br>(mg/L) | EPA<br>MCL<br>(mg/L) | Reporting<br>Limit<br>(mg/L) | MDL<br>(mg/L) | Laboratory<br>Qualifier | Analytical<br>Method |
|---------------------------------|-----------|------------------|----------------------|------------------------------|---------------|-------------------------|----------------------|
| MWL-MW7<br>17-Oct-14            | Aluminum  | 0.017            | NE                   | 0.05                         | 0.017         | U                       | SW-846:6020          |
|                                 | Antimony  | 0.00017          | 0.006                | 0.0003                       | 0.00017       | U                       | SW-846:6020          |
|                                 | Arsenic   | 0.0018           | 0.01                 | 0.002                        | 0.00025       | J                       | SW-846:6020          |
|                                 | Barium    | 0.1              | 2                    | 0.001                        | 0.00041       |                         | SW-846:6020          |
|                                 | Beryllium | 0.00013          | 0.004                | 0.0005                       | 0.00013       | U                       | SW-846:6020          |
|                                 | Cadmium   | 0.00012          | 0.005                | 0.0003                       | 0.00012       | U                       | SW-846:6020          |
|                                 | Calcium   | 56               | NE                   | 1                            | 0.09          |                         | SW-846:6020          |
|                                 | Chromium  | 0.0013           | 0.1                  | 0.01                         | 0.0013        | U                       | SW-846:6020          |
|                                 | Cobalt    | 0.00017          | NE                   | 0.001                        | 0.00017       | U                       | SW-846:6020          |
|                                 | Copper    | 0.0028           | NE                   | 0.01                         | 0.0028        | U                       | SW-846:6020          |
|                                 | Iron      | 0.016            | NE                   | 0.1                          | 0.016         | U                       | SW-846:6020          |
|                                 | Lead      | 0.00025          | NE                   | 0.0005                       | 0.00025       | U                       | SW-846:6020          |
|                                 | Magnesium | 20               | NE                   | 0.1                          | 0.039         |                         | SW-846:6020          |
|                                 | Manganese | 0.00052          | NE                   | 0.002                        | 0.00052       | U                       | SW-846:6020          |
|                                 | Mercury   | 0.00006          | 0.002                | 0.0001                       | 0.00006       | U                       | SW-846:7470A         |
|                                 | Nickel    | 0.0015           | NE                   | 0.005                        | 0.0014        | J                       | SW-846:6020          |
|                                 | Potassium | 4.7              | NE                   | 1                            | 0.16          |                         | SW-846:6020          |
|                                 | Selenium  | 0.00054          | 0.05                 | 0.001                        | 0.00054       | U                       | SW-846:6020          |
|                                 | Silver    | 0.00004          | NE                   | 0.0001                       | 0.00004       | U                       | SW-846:6020          |
|                                 | Sodium    | 47               | NE                   | 1                            | 0.24          |                         | SW-846:6020          |
|                                 | Thallium  | 0.00006          | 0.002                | 0.0002                       | 0.000042      | J                       | SW-846:6020          |
|                                 | Uranium   | 0.0074           | 0.03                 | 0.0001                       | 0.000088      |                         | SW-846:6020          |
|                                 | Vanadium  | 0.0068           | NE                   | 0.001                        | 0.00052       |                         | SW-846:6020          |
|                                 | Zinc      | 0.0068           | NE                   | 0.02                         | 0.0068        | U                       | SW-846:6020          |

B = Compound was found in the blank and sample.

J = the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL).

NE = Not Established

U = the analyte was analyzed for but not detected

**Table-1 NMED DOE OB FFY 2015 Q-1 Mixed Waste Landfill Groundwater Quality Results: Total Target Analyte List Metals plus Uranium**

| Monitoring Well/<br>Sample Date | Analyte   | Result<br>(mg/L) | EPA<br>MCL<br>(mg/L) | Reporting<br>Limit<br>(mg/L) | MDL<br>(mg/L) | Laboratory<br>Qualifier | Analytical<br>Method |
|---------------------------------|-----------|------------------|----------------------|------------------------------|---------------|-------------------------|----------------------|
| MWL-MW8<br>21-Oct-14            | Aluminum  | 0.017            | NE                   | 0.05                         | 0.017         | U                       | SW-846:6020          |
|                                 | Antimony  | 0.00017          | 0.006                | 0.0003                       | 0.00017       | U                       | SW-846:6020          |
|                                 | Arsenic   | 0.0005           | 0.01                 | 0.002                        | 0.00025       | J                       | SW-846:6020          |
|                                 | Barium    | 0.12             | 2                    | 0.001                        | 0.00041       |                         | SW-846:6020          |
|                                 | Beryllium | 0.00013          | 0.004                | 0.0005                       | 0.00013       | U                       | SW-846:6020          |
|                                 | Cadmium   | 0.00012          | 0.005                | 0.0003                       | 0.00012       | U                       | SW-846:6020          |
|                                 | Calcium   | 57               | NE                   | 1                            | 0.09          |                         | SW-846:6020          |
|                                 | Chromium  | 0.0013           | 0.1                  | 0.01                         | 0.0013        | U                       | SW-846:6020          |
|                                 | Cobalt    | 0.00017          | NE                   | 0.001                        | 0.00017       | U                       | SW-846:6020          |
|                                 | Copper    | 0.0028           | NE                   | 0.01                         | 0.0028        | U                       | SW-846:6020          |
|                                 | Iron      | 0.016            | NE                   | 0.1                          | 0.016         | U                       | SW-846:6020          |
|                                 | Lead      | 0.00025          | NE                   | 0.0005                       | 0.00025       | U                       | SW-846:6020          |
|                                 | Magnesium | 19               | NE                   | 0.1                          | 0.039         |                         | SW-846:6020          |
|                                 | Manganese | 0.0031           | NE                   | 0.002                        | 0.00052       |                         | SW-846:6020          |
|                                 | Mercury   | 0.00006          | 0.002                | 0.0001                       | 0.00006       | U                       | SW-846:7470A         |
|                                 | Nickel    | 0.0014           | NE                   | 0.005                        | 0.0014        | U                       | SW-846:6020          |
|                                 | Potassium | 4.9              | NE                   | 1                            | 0.16          |                         | SW-846:6020          |
|                                 | Selenium  | 0.00054          | 0.05                 | 0.001                        | 0.00054       | U                       | SW-846:6020          |
|                                 | Silver    | 0.00004          | NE                   | 0.0001                       | 0.00004       | U                       | SW-846:6020          |
|                                 | Sodium    | 47               | NE                   | 1                            | 0.24          |                         | SW-846:6020          |
|                                 | Thallium  | 0.000042         | 0.002                | 0.0002                       | 0.000042      | U                       | SW-846:6020          |
|                                 | Uranium   | 0.0069           | 0.03                 | 0.0001                       | 0.000088      |                         | SW-846:6020          |
|                                 | Vanadium  | 0.0018           | NE                   | 0.001                        | 0.00052       |                         | SW-846:6020          |
|                                 | Zinc      | 0.0068           | NE                   | 0.02                         | 0.0068        | U                       | SW-846:6020          |

B = Compound was found in the blank and sample.

J = the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL).

NE = Not Established

U = the analyte was analyzed for but not detected

**Table-1 NMED DOE OB FFY 2015 Q-1 Mixed Waste Landfill Groundwater Quality Results: Total Target Analyte List Metals plus Uranium**

| Monitoring Well/<br>Sample Date | Analyte   | Result<br>(mg/L) | EPA<br>MCL<br>(mg/L) | Reporting<br>Limit<br>(mg/L) | MDL<br>(mg/L) | Laboratory<br>Qualifier | Analytical<br>Method |
|---------------------------------|-----------|------------------|----------------------|------------------------------|---------------|-------------------------|----------------------|
| MWL-MW9<br>20-Oct-14            | Aluminum  | 0.018            | NE                   | 0.05                         | 0.017         | J                       | SW-846:6020          |
|                                 | Antimony  | 0.00017          | 0.006                | 0.0003                       | 0.00017       | U                       | SW-846:6020          |
|                                 | Arsenic   | 0.0035           | 0.01                 | 0.002                        | 0.00025       |                         | SW-846:6020          |
|                                 | Barium    | 0.1              | 2                    | 0.001                        | 0.00041       |                         | SW-846:6020          |
|                                 | Beryllium | 0.00013          | 0.004                | 0.0005                       | 0.00013       | U                       | SW-846:6020          |
|                                 | Cadmium   | 0.00012          | 0.005                | 0.0003                       | 0.00012       | U                       | SW-846:6020          |
|                                 | Calcium   | 57               | NE                   | 1                            | 0.09          |                         | SW-846:6020          |
|                                 | Chromium  | 0.0013           | 0.1                  | 0.01                         | 0.0013        | U                       | SW-846:6020          |
|                                 | Cobalt    | 0.00017          | NE                   | 0.001                        | 0.00017       | U                       | SW-846:6020          |
|                                 | Copper    | 0.0028           | NE                   | 0.01                         | 0.0028        | U                       | SW-846:6020          |
|                                 | Iron      | 0.016            | NE                   | 0.1                          | 0.016         | U                       | SW-846:6020          |
|                                 | Lead      | 0.00025          | NE                   | 0.0005                       | 0.00025       | U                       | SW-846:6020          |
|                                 | Magnesium | 20               | NE                   | 0.1                          | 0.039         | B                       | SW-846:6020          |
|                                 | Manganese | 0.0024           | NE                   | 0.002                        | 0.00052       |                         | SW-846:6020          |
|                                 | Mercury   | 0.00006          | 0.002                | 0.0001                       | 0.00006       | U                       | SW-846:7470A         |
|                                 | Nickel    | 0.0014           | NE                   | 0.005                        | 0.0014        | U                       | SW-846:6020          |
|                                 | Potassium | 5.1              | NE                   | 1                            | 0.16          |                         | SW-846:6020          |
|                                 | Selenium  | 0.0014           | 0.05                 | 0.001                        | 0.00054       |                         | SW-846:6020          |
|                                 | Silver    | 0.00004          | NE                   | 0.0001                       | 0.00004       | U                       | SW-846:6020          |
|                                 | Sodium    | 47               | NE                   | 1                            | 0.24          |                         | SW-846:6020          |
|                                 | Thallium  | 0.000042         | 0.002                | 0.0002                       | 0.000042      | U                       | SW-846:6020          |
|                                 | Uranium   | 0.009            | 0.03                 | 0.0001                       | 0.000088      |                         | SW-846:6020          |
|                                 | Vanadium  | 0.0085           | NE                   | 0.001                        | 0.00052       | B                       | SW-846:6020          |
|                                 | Zinc      | 0.0068           | NE                   | 0.02                         | 0.0068        | U                       | SW-846:6020          |

B = Compound was found in the blank and sample.

J = the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL).

NE = Not Established

U = the analyte was analyzed for but not detected

**Table-2 NMED DOE OB FFY 2015 Q-1 Mixed Waste Landfill Groundwater Quality Results: Method Detection Limits for Volatile Organic Compounds by Method SW-846:8260B\_25**

| Analyte                       | MDL (µg/L) |
|-------------------------------|------------|
| Acetone                       | 3          |
| Benzene                       | 0.3        |
| Bromobenzene                  | 0.3        |
| Bromochloromethane            | 0.3        |
| Bromodichloromethane          | 0.3        |
| Bromoform                     | 0.3        |
| Bromomethane                  | 0.3        |
| Butanone[2-]                  | 3          |
| Butylbenzene[n-]              | 0.3        |
| Butylbenzene[sec-]            | 0.3        |
| Butylbenzene[tert-]           | 0.3        |
| Carbon Disulfide              | 0.3        |
| Carbon Tetrachloride          | 0.3        |
| Chlorobenzene                 | 0.3        |
| Chlorodibromomethane          | 0.3        |
| Chloroethane                  | 0.3        |
| Chloroform                    | 0.3        |
| Chlorohexane[1-]              | 0.3        |
| Chloromethane                 | 0.3        |
| Chlorotoluene[2-]             | 0.3        |
| Chlorotoluene[4-]             | 0.3        |
| Dibromo-3-Chloropropane[1,2-] | 0.6        |
| Dibromoethane[1,2-]           | 0.3        |
| Dibromomethane                | 0.3        |
| Dichlorobenzene[1,2-]         | 0.3        |
| Dichlorobenzene[1,3-]         | 0.3        |
| Dichlorobenzene[1,4-]         | 0.3        |
| Dichlorodifluoromethane       | 0.3        |
| Dichloroethane[1,1-]          | 0.3        |
| Dichloroethane[1,2-]          | 0.3        |
| Dichloroethene[1,1-]          | 0.3        |
| Dichloroethene[cis-1,2-]      | 0.3        |
| Dichloroethene[trans-1,2-]    | 0.3        |
| Dichloropropane[1,2-]         | 0.3        |
| Dichloropropane[1,3-]         | 0.3        |
| Dichloropropane[2,2-]         | 0.3        |
| Dichloropropene[1,1-]         | 0.3        |
| Dichloropropene[cis-1,3-]     | 0.3        |
| Dichloropropene[trans-1,3-]   | 0.3        |
| Ethylbenzene                  | 0.3        |
| Hexachlorobutadiene           | 0.3        |

| Analyte                                 | MDL (µg/L) |
|-----------------------------------------|------------|
| Hexanone[2-]                            | 3          |
| Iodomethane                             | 0.3        |
| Isopropylbenzene                        | 0.3        |
| Isopropyltoluene[4-]                    | 0.3        |
| Methyl tert-Butyl Ether                 | 0.3        |
| Methyl-2-pentanone[4-]                  | 3          |
| Methylene Chloride                      | 0.43       |
| Naphthalene                             | 0.3        |
| Propylbenzene[1-]                       | 0.3        |
| Styrene                                 | 0.3        |
| Tetrachloroethane[1,1,1,2-]             | 0.3        |
| Tetrachloroethane[1,1,2,2-]             | 0.3        |
| Tetrachloroethene                       | 0.2        |
| Toluene                                 | 0.3        |
| Trichloro-1,2,2-trifluoroethane[1,1,2-] | 0.3        |
| Trichlorobenzene[1,2,3-]                | 0.3        |
| Trichlorobenzene[1,2,4-]                | 0.3        |
| Trichloroethane[1,1,1-]                 | 0.3        |
| Trichloroethane[1,1,2-]                 | 0.3        |
| Trichloroethene                         | 0.3        |
| Trichlorofluoromethane                  | 0.3        |
| Trichloropropane[1,2,3-]                | 0.3        |
| Trimethylbenzene[1,2,4-]                | 0.3        |
| Trimethylbenzene[1,3,5-]                | 0.3        |
| Vinyl acetate                           | 0.68       |
| Vinyl Chloride                          | 0.3        |
| Xylene[1,2-]                            | 0.3        |
| Xylene[1,3-]+Xylene[1,4-]               | 0.3        |

**Table-3 NMED DOE OB FFY 2015 Q-1 Mixed Waste Landfill Groundwater Quality Results: Gross Alpha, Gross Beta, Gamma Spectroscopy, Radon and Tritium**

| Monitoring Well/<br>Sample Date | Analyte           | Activity<br>(pCi/L) | MDA<br>(pCi/L) | Laboratory<br>Qualifier | Analytical<br>Method |
|---------------------------------|-------------------|---------------------|----------------|-------------------------|----------------------|
| MWL-MW7<br>17-Oct-14            | Actinium-228      | 14 ± 5.2            | 17             | U                       | EPA:901.1            |
|                                 | Americium-241     | -8.2 ± 8.3          | 28             | U                       | EPA:901.1            |
|                                 | Beryllium-7       | 13 ± 12             | 40             | U                       | EPA:901.1            |
|                                 | Bismuth-212       | 8.7 ± 18            | 62             | U                       | EPA:901.1            |
|                                 | Bismuth-214       | 5.8 ± 5.5           | 21             | UJ                      | EPA:901.1            |
|                                 | Cesium-134        | -2.7 ± 1.5          | 5              | U                       | EPA:901.1            |
|                                 | Cesium-137        | 0.93 ± 1.3          | 4.4            | U                       | EPA:901.1            |
|                                 | Cobalt-60         | 1.6 ± 1.5           | 4.9            | U                       | EPA:901.1            |
|                                 | Gross alpha       | 5.9 ± 0.62          | 0.94           |                         | EPA:900              |
|                                 | Gross beta        | 7 ± 0.7             | 1.2            |                         | EPA:900              |
|                                 | Iodine-131        | 8.7 ± 7.2           | 24             | U                       | EPA:901.1            |
|                                 | Lead-212          | -1.6 ± 3.8          | 13             | U                       | EPA:901.1            |
|                                 | Lead-214          | -6.1 ± 4.9          | 16             | UJ                      | EPA:901.1            |
|                                 | Potassium-40      | 24 ± 37             | 120            | U                       | EPA:901.1            |
|                                 | Protactinium-234m | -180 ± 230          | 810            | U                       | EPA:901.1            |
|                                 | Rn-222            | 180 ± 19            | 42             |                         | Rn222                |
|                                 | Rn-222            | 170 ± 18            | 42             |                         | Rn222                |
|                                 | Sodium-22         | -0.72 ± 1.5         | 5.1            | U                       | EPA:901.1            |
|                                 | Thallium-208      | -0.57 ± 3.4         | 11             | U                       | EPA:901.1            |
|                                 | Thorium-234       | -21 ± 41            | 140            | U                       | EPA:901.1            |
|                                 | Tritium           | 87 ± 96             | 320            | U                       | EPA:906.0            |

J = The activity is an estimated value.

U = Result is less than the sample specific MDC or less than the associated TPU.

**Table-3 NMED DOE OB FFY 2015 Q-1 Mixed Waste Landfill Groundwater Quality Results: Gross Alpha, Gross Beta, Gamma Spectroscopy, Radon and Tritium**

| Monitoring Well/<br>Sample Date | Analyte           | Activity<br>(pCi/L) | MDA<br>(pCi/L) | Laboratory<br>Qualifier | Analytical<br>Method |
|---------------------------------|-------------------|---------------------|----------------|-------------------------|----------------------|
| MWL-MW8<br>21-Oct-14            | Actinium-228      | 23 ± 5.3            | 16             |                         | EPA:901.1            |
|                                 | Americium-241     | 2.9 ± 6.9           | 23             | U                       | EPA:901.1            |
|                                 | Beryllium-7       | -11 ± 11            | 38             | U                       | EPA:901.1            |
|                                 | Bismuth-212       | 17 ± 19             | 64             | U                       | EPA:901.1            |
|                                 | Bismuth-214       | -1.8 ± 7            | 23             | UJ                      | EPA:901.1            |
|                                 | Cesium-134        | -0.24 ± 1.3         | 4.4            | U                       | EPA:901.1            |
|                                 | Cesium-137        | -0.87 ± 1.3         | 4.3            | U                       | EPA:901.1            |
|                                 | Cobalt-60         | 0 ± 1.5             | 5              | U                       | EPA:901.1            |
|                                 | Gross alpha       | 6.5 ± 0.69          | 1              |                         | EPA:900              |
|                                 | Gross beta        | 6.4 ± 0.69          | 1.3            |                         | EPA:900              |
|                                 | Iodine-131        | 0 ± 5.1             | 17             | U                       | EPA:901.1            |
|                                 | Lead-212          | -0.98 ± 3.8         | 13             | U                       | EPA:901.1            |
|                                 | Lead-214          | -0.29 ± 5.3         | 18             | UJ                      | EPA:901.1            |
|                                 | Potassium-40      | 16 ± 34             | 110            | U                       | EPA:901.1            |
|                                 | Protactinium-234m | 570 ± 220           | 690            | U                       | EPA:901.1            |
|                                 | Rn-222            | 240 ± 19            | 32             |                         | Rn222                |
|                                 | Rn-222            | 190 ± 17            | 32             |                         | Rn222                |
|                                 | Sodium-22         | -1.5 ± 1.3          | 4.6            | U                       | EPA:901.1            |
|                                 | Thallium-208      | -0.55 ± 2.9         | 9.6            | U                       | EPA:901.1            |
|                                 | Thorium-234       | 18 ± 40             | 130            | U                       | EPA:901.1            |
|                                 | Tritium           | 140 ± 97            | 320            | U                       | EPA:906.0            |

J = The activity is an estimated value.

U = Result is less than the sample specific MDC or less than the associated TPU.

**Table-3 NMED DOE OB FFY 2015 Q-1 Mixed Waste Landfill Groundwater Quality Results: Gross Alpha, Gross Beta, Gamma Spectroscopy, Radon and Tritium**

| Monitoring Well/<br>Sample Date | Analyte           | Activity<br>(pCi/L) | MDA<br>(pCi/L) | Laboratory<br>Qualifier | Analytical<br>Method |
|---------------------------------|-------------------|---------------------|----------------|-------------------------|----------------------|
| MWL-MW9<br>20-Oct-14            | Actinium-228      | 12 ± 4.3            | 14             | U                       | EPA:901.1            |
|                                 | Americium-241     | 2.4 ± 1.3           | 4.3            | U                       | EPA:901.1            |
|                                 | Beryllium-7       | 1.6 ± 11            | 36             | U                       | EPA:901.1            |
|                                 | Bismuth-212       | 15 ± 16             | 54             | U                       | EPA:901.1            |
|                                 | Bismuth-214       | 1.8 ± 5.9           | 19             | UJ                      | EPA:901.1            |
|                                 | Cesium-134        | 1.3 ± 1.2           | 3.9            | U                       | EPA:901.1            |
|                                 | Cesium-137        | -0.71 ± 1.2         | 4              | U                       | EPA:901.1            |
|                                 | Cobalt-60         | -1.5 ± 1.2          | 4.4            | U                       | EPA:901.1            |
|                                 | Gross alpha       | 6.7 ± 0.7           | 0.96           |                         | EPA:900              |
|                                 | Gross beta        | 6.2 ± 0.66          | 1.3            |                         | EPA:900              |
|                                 | Iodine-131        | 4.7 ± 4.7           | 16             | U                       | EPA:901.1            |
|                                 | Lead-212          | 1.9 ± 3.3           | 11             | U                       | EPA:901.1            |
|                                 | Lead-214          | 6.2 ± 4.2           | 14             | UJ                      | EPA:901.1            |
|                                 | Potassium-40      | -26 ± 34            | 110            | U                       | EPA:901.1            |
|                                 | Protactinium-234m | 250 ± 200           | 650            | U                       | EPA:901.1            |
|                                 | Rn-222            | 430 ± 29            | 33             |                         | Rn222                |
|                                 | Rn-222            | 410 ± 28            | 32             |                         | Rn222                |
|                                 | Sodium-22         | 1.3 ± 1.3           | 4.5            | U                       | EPA:901.1            |
|                                 | Thallium-208      | -1.5 ± 2.3          | 7.7            | U                       | EPA:901.1            |
|                                 | Thorium-234       | 16 ± 21             | 71             | U                       | EPA:901.1            |
|                                 | Tritium           | 8 ± 99              | 330            | U                       | EPA:906.0            |

J = The activity is an estimated value.

U = Result is less than the sample specific MDC or less than the associated TPU.