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February 21, 2014

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U.S. Environmental Protection Agency – Region 7
11201 Renner Boulevard
Lenexa, KS 66129

SUBJECT: Groundwater Monitoring Report
October 2013 Additional Groundwater Sampling Event
West Lake Landfill Operable Unit 1, Bridgeton, Missouri

Dear Mr. Gravatt,

On behalf of Cotter Corporation (N.S.L.), Laidlaw Waste Systems (Bridgeton), Inc., Rock Road Industries, Inc., and the United Sates Department of Energy (the "Respondents"), enclosed please find two copies of the Groundwater Monitoring Report for the October 2013 Additional Groundwater Sampling Event. We have also transmitted one copy of the report to the Shawn Muenks of the Missouri Department of Natural Resources. If you have any questions or need additional copies, please do not hesitate to contact me.

Sincerely,
ENGINEERING MANAGEMENT SUPPORT, Inc.

Paul V. Rosasco, P.E.

Enclosure

Distribution:

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Groundwater Monitoring Report

October 2013 Additional Groundwater Sampling Event

West Lake Landfill Operable Unit-1

Prepared for

The United States Environmental Protection Agency Region VII

Prepared on behalf of

The West Lake Landfill OU-1 Respondents

Prepared by

Engineering Management Support, Inc.
7220 West Jefferson Avenue, Suite 406
Lakewood, Colorado 80235

February 21, 2014

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1. INTRODUCTION

In January 2013 the U.S. Environmental Protection Agency, Region VII (EPA) directed the West Lake Landfill Operable Unit-1 (OU-1) Respondents to perform additional groundwater sampling at the West Lake Landfill Superfund Site. Discussions with EPA resulted in a decision to perform three additional rounds of groundwater sampling in April, July and October 2013. Engineering Management Support Inc. (EMSI), on behalf of Cotter Corporation (N.S.L.), Bridgeton Landfill, LLC and Rock Road Industries, Inc., and with funding provided by the United States Department of Energy (collectively, the OU-1 Respondents), prepared this report presenting the results of the October 2013 groundwater sampling.

EPA requested that, similar to the July/August 2012 additional groundwater monitoring event, all available groundwater monitoring wells at the West Lake Landfill Superfund Site property be included in the October 2013 groundwater sampling event. This includes:

- Those wells still in existence from the group of 30 wells that had previously been sampled as part of the OU-1 RI/FS;
- The group of 24 wells that had previously been sampled as part of the OU-2 RI investigation but which, prior to the July/August 2012 event, had not been sampled since 1997 and had never been sampled for Radium-228; and
- Additional wells associated with the former Bridgeton Sanitary Landfill (a/k/a the Permitted Landfill) which, prior to the July/August 2012 sampling event, had never been sampled for any radioisotopes.

As a reminder, OU-1 consists of Radiological Areas 1 and 2 which contain radiologically-impacted materials (RIM). OU-2 consists of the remainder of the Site which did not receive RIM, including the Inactive Sanitary Landfill, the Closed Demolition Landfill, and the former Permitted Landfill's North and South Quarry units.

In addition to the above wells, Bridgeton Landfill, LLC, installed eight additional groundwater monitoring wells during the periods from October 2-8 and 15-20, 2013. The wells were constructed as four clusters of two wells each. At each of the four drilling locations, a St. Louis / Upper Salem well (-SS) and Deep Salem well (-SD) were installed. As shown on Figure 1, six of the wells (PZ-209-SD and –SS, PZ-210-SD and –SS, and PZ-211-SD and –SS) were installed in the vicinity of existing groundwater monitoring wells PZ-104-SS, -SD, and -KS on the southeastern side of the overall site property. These six wells were installed in order to provide a more detailed characterization of groundwater quality in the St. Louis / Upper Salem Unit and Deep Salem Unit near the PZ-104-SS/SD/KS cluster. The remaining two wells (PZ-212-SD and –SS) were installed further to the east, at the edge of the Bridgeton Landfill facility property boundary. These wells were installed to provide additional upgradient (i.e., upgradient of all of the OU-1 and OU-2 landfill units at the site) groundwater quality data. The new wells were developed and groundwater from the wells was sampled on November 6 and 7, 2013. A copy of the Groundwater Monitoring Well Installation Report (Herst & Associates, 2014) is provided as

Appendix A to this report and the analytical results from these new wells are included in this report.

EPA further directed that the samples obtained from the wells described above be analyzed for uranium, thorium, and radium radioisotopes (including Radium-226 and Radium-228), with all radioisotopes analyzed for both total (unfiltered samples) and dissolved (filtered samples) phases; plus total and dissolved phase trace metals; and volatile organic compounds (VOCs). EPA determined that analyses of the samples for semi-volatile organic compounds (SVOCs), which was performed as part of the July/August 2012 monitoring event, did not need to be repeated as part of the additional 2013 groundwater monitoring events.

This report presents the results of the October 2013 additional groundwater monitoring activities. Analytical results from samples collected on November 6-7, 2013 for the new PZ-209 through -212 series monitoring wells are also presented. Specifically, this report includes a description of the field and sample collection activities and summaries of the results of the laboratory analyses of the groundwater samples. This report also contains copies of the various field data sheets (Appendix B), the analytical laboratory reports (Appendix C), and the data validation reports and resultant database (Appendix D). Due to the size of these documents, the appendices are contained on the included compact disk.

2. FIELD AND SAMPLE COLLECTION ACTIVITIES

A Sampling and Analysis Plan (SAP) and associated planning documents were prepared to describe the proposed monitoring locations, sample collection procedures, analyte list, laboratory analyses, quality assurance/quality control samples and procedures, investigative-derived waste management, health and safety procedures, and data evaluation and management procedures for the July/August 2012 additional groundwater monitoring event (EMSI, 2012). EPA approved the SAP by letter dated July 3, 2012. This SAP and the associated planning documents continued to be used for the October 2013 event.

The groundwater sampling event began on September 30, 2013 with well inspections and collection of a complete set of water level measurements from all 77 of the monitoring wells located on the property at that time. A summary of the groundwater level measurement data obtained from these 77 wells is provided in Table 1. A base map showing the locations of the monitoring wells and various Site features is presented on Figure 1. Copies of the groundwater elevation measurement and the groundwater monitoring well condition report forms are contained in Appendix B.

Collection of groundwater samples from those wells where water levels were collected on September 30, 2013, began on October 1, 2013, and continued on a daily basis five days a week until sampling activities were completed on October 15, 2013. Groundwater samples were collected by Herst & Associates personnel in accordance with the procedures set forth in the SAP. Copies of the Field Information Logs from the groundwater sampling activities are

contained in Appendix B. Copies of the chain of custody forms are included in the laboratory analytical reports which are provided in Appendix C. Groundwater samples were obtained from 76 of the 77 total monitoring wells or piezometers at the Site (Table 2). Although a water level measurement was obtained from well LR-105 on September 30, 2013 (located southwest of the Inactive Sanitary Landfill), an actual sample of groundwater could not be collected due to the presence of a bend in the well casing that made it impossible to lower the sampling equipment into the saturated interval of this well. Nine field duplicate groundwater samples were also obtained during the course of the October 2013 groundwater sampling activities (Table 2).

MDNR was present for sampling activities conducted on October 7 - 9, 2013. During this period MDNR obtained split samples from 12 wells, as shown on Table 2. MDNR also collected split samples for EPA on October 7, 2013 from PZ-104-SD and on October 8, 2013 from well PZ-102-SS. The radium results from the EPA and MDNR split samples collected during the October 2013 monitoring event are provided in Section 6.

Groundwater samples from the eight new PZ-209 through -212 series wells installed in October 2013 were collected on November 6 and 7, 2013 by Herst & Associates personnel in accordance with the procedures set forth in the SAP. Copies of the Field Information Logs from these groundwater sampling activities are also contained in Appendix B. Copies of the chain of custody forms are included in the laboratory analytical reports which are provided in Appendix C. A field duplicate groundwater sample was collected from new well PZ-210-SD.

3. LABORATORY ANALYSES

Samples designated for radionuclide analyses were shipped by courier to the Eberline Services Oak Ridge, TN laboratory (Eberline). The sampling crews delivered samples designated for chemical analyses directly to the Test America St. Louis laboratory (Test America).

Eberline analyzed the samples for Radium-226 using EPA Modified Method 903.0; for Radium-228 using EPA Modified Method 904.0; for Thorium-228, -230 and -232 using EML Modified Method Th-01; and for Uranium-234, -235, and 238 using EML Modified Method U-02. The Eberline Analytical Reports are contained in Appendix C. The Eberline analytical laboratory reports include the laboratory results, the counting error, the combined standard uncertainty (included on the Electronic Data Deliverable [EDD] provided by the laboratory), the minimum detectable activity (MDA) levels, and associated laboratory documentation related to sample receipt, handling, preparation and analysis.

EPA (along with other agencies) has developed the Multi-Agency Radiological Laboratory Analytical Protocols (MARLAP) Manual to address the need for a nationally consistent approach to producing radioanalytical laboratory data (EPA, 2004). MARLAP states that an important aspect of sampling and measurement is uncertainty. The Combined Standard Uncertainty (CSU) can be viewed as the statistical standard deviation of an individual radiological result (McCurdy et al., 2008). The concentration of a radiological constituent in a sample is typically calculated

using a mathematical equation that includes such parameters as the measured signal response of a radiation detector (events per time unit), the detector background signal response, the detector efficiency for the radiation emission producing the response, sample aliquant size processed, chemical yield of the radiochemical process, and decay and ingrowth factors based on the half-life of the radionuclide or its decay product. Each measurement parameter in the equation has its own uncertainty defined as a standard uncertainty. The CSU of the final result is determined using the common statistical approach that the variance (squared CSU) of a function of several variables can be approximated by applying the function to the variance of each variable component (for example, MARLAP, Chapter 19 [EPA, 2004]). Using this logic, the CSU of a radiological result is the square root of a sum of variances. When a concentration and its associated CSU are reported, a confidence interval can be calculated that defines the range of concentration (the lower and upper concentration) for the "true concentration" with a certain confidence. For this project, Eberline calculated and reported the CSU at the 95-percent or 2-sigma confidence level (analogous to the standard confidence level used when reporting the standard deviation for other water-quality results). The confidence level that is used when interpreting or publishing radiological results is dependent on the Data Quality Objectives (DQOs) of the project. Reporting the concentration with its corresponding CSU (as provided in the data) provides the 95-percent confidence interval. Therefore, the summary tables of the radionuclide analyses (see Section 6) include the laboratory calculated CSU associated with each sample result.

Test America analyzed the chemical samples for VOCs by gas chromatography/mass spectrometry (GC/MS) using EPA Method 8260C; for the Target Analyte List (TAL) trace metals by Inductively Coupled Plasma (ICP) using EPA Method 6010C; and for Mercury by Cold Vapor Atomic Adsorption (CVAA) using EPA Method 7470A. At the request of EPA and the United States Geological Service (USGS), samples from the October 2013 event were also analyzed for boron and strontium. The Test America Analytical Reports are included in Appendix C.

In addition to the analyses requested by EPA, the samples were analyzed for certain chemistry characterizations: major anions by Ion Chromatography (IC) using SW-846 Method 300.0; major cations by ICP using EPA Method 6010C; alkalinity by SW-846 Method 310.1; and bromide and iodide by IC using SW-846 Method 300.0. Results of these analyses can also be found in the Test America Analytical Reports included in Appendix C.

4. DATA VALIDATION

A Level III validation was performed consisting of manually examining data deliverables to determine data quality for the analytical results involving samples collected by the Respondents. Analytical results provided by EPA and MDNR for their split samples were not validated. All validated data were validated using method applicable guidelines and in accordance with the requirements of the National Functional Guidelines for Organic and Inorganic Data Review (EPA, 2008 and 2010) and by EPA SW-846 guidelines (EPA, 2007) specific to the method.

Radionuclides were validated in general accordance with the guidelines and criteria specified in the MARLAP Manual (EPA, 2004). Data validation included application of data qualifiers to the analytical results based on adherence to method protocols and project-specific QA/QC limits. The data validation reports for each sample delivery group are included in Appendix D.

Method protocols reviewed included:

- Analytical holding times,
- Method blanks (MB),
- Trip blanks (TB),
- Equipments blanks (EBs),
- Matrix spikes/matrix spike duplicates (MS/MSDs),
- Laboratory control samples (LCSs),
- Shipping cooler temperatures,
- Calibrations,
- Laboratory duplicates,
- Internal Standards (ISs),
- Surrogates, and
- Chemical recovery (radionuclides).

Based on the data validation, appropriate data qualifiers, if any, were added to the analytical results. An analytical database that includes the applied data qualifiers is included in Appendix D.

Data quality assessment (DQA) criteria were used to evaluate the quality of the field sampling efforts and laboratory results for compliance with project DQOs. The DQA criteria are expressed in terms of analytical precision, accuracy, representativeness, completeness, and comparability (PARCC).

Precision is the measure of variability between individual sample measurements under prescribed conditions. The relative percent difference (RPD) for the field duplicate, matrix spike/matrix spike duplicate (MS/MSD), and laboratory duplicate analyses demonstrate the precision of the analytical methods. An RPD within the method-specific control limit indicates

satisfactory precision in a measurement system. For this sampling event, duplicate results were predominantly in control.

Accuracy is the degree of agreement of a measurement with an accepted reference or true value. The results of surrogate, MS/MSD, chemical recovery, and LCS analyses, when expressed in terms of percent recovery, demonstrate the accuracy of the method. Accuracy results for all methods and matrices are predominantly in control. The accuracy results which were out-of-control are not significant for any one compound, method, or matrix and do not represent a negative impact to data quality. Therefore, overall accuracy for this sampling event was acceptable, excepting only well S-5 for total and dissolved uranium results and well MW-1204 for dissolved thorium results, which in both cases were rejected because chemical recoveries were less than 20% due to spectral degradation (see Data Validation Reports "DVR 13-10095 Uranium.pdf" for the S-5 results and "DVR 13-10109 Thorium.pdf" for the MW-1204 results in Appendix D.1.).

Representativeness. Sample data are believed to be representative of the site conditions prevailing at the time of sample collection because most of the samples were properly collected, stored, and preserved. All samples were analyzed within holding time except nitrate for 15 samples where the laboratory experienced equipment problems and could not analyze for nitrate within the required time limit. The samples obtained from well S-5 for dissolved and total metals analyses, and from well PZ-113-AD field duplicate for total metals, were received at the laboratory without preservative. The laboratory corrected the pH to <2. Data quality was not adversely affected (see Data Validation Report "DVR-160-4022 METALS.pdf" in Appendix D.1.). Although blank contamination did occur (mostly with common lab contaminants), sample data quality was not adversely affected.

Comparability. All samples were reported in industry-standard units. Water reporting units were micrograms per liter (µg/L), milligrams per liter (mg/L) or picocuries per liter (pCi/L). Analytical protocols for the methods were adhered to (with the exceptions noted in this report) and analytical results are considered comparable.

Completeness is defined as the percentage of laboratory measurements judged to be valid on a method-by-method basis. Valid data are defined as all data and/or qualified data which meet the DQOs for this project. Data completeness is expressed as percent complete (PC), which is calculated as follows: (the number of rejected samples per compound ÷ total number of samples per compound) X 100. Completeness is 99%, understanding that all results qualified with U, UJ or J are usable to meet the project objectives of this sampling event. The goal for meeting analytical holding times was 100% completeness and was met for all samples except for the 15 nitrate sample analyses described above.

Sensitivity was evaluated using the RLs and MDLs for each sample as compared to project maximum allowable RLs. The laboratory RLs met required RL limits for most compounds except when adjusted for sample dilution. For radionuclides, when the sample results are greater than the MDA but have a combined standard uncertainty less than 50% of the sample activity,

the sample is qualified with a J. This is an indication that the value is near the MDA and has a relatively large combined standard uncertainty as compared to the sample result.

The groundwater data are of acceptable quality and are considered usable to support the project objectives for this sampling event. Samples are representative of the Site when used in accordance with the validation qualifiers.

5. GROUNDWATER LEVELS

Groundwater is present within the alluvium and bedrock deposits beneath the Site. The edge of the geomorphic floodplain for the Missouri River was evaluated as part of the Supplemental Feasibility Study (EMSI, 2011) and was determined to be located beneath the southeastern portion of the Site (Figure 2). To the northwest of this boundary, the uppermost (shallowest) groundwater occurs within the alluvial deposits. Because alluvium is not present beneath the southeastern portion of the Site, the uppermost groundwater is found in bedrock of the St. Louis Formation.

Water level measurements (Table 1) were obtained from the 77 monitoring wells existing on-site on September 30, 2013 (the PZ-209 through -212 series wells were not constructed until October 2013), and these data were used to develop a potentiometric surface (water level) map for the Site (Figure 2). Groundwater within the bedrock St. Louis Formation beneath the southern and southeastern boundaries of the Site displayed the highest water level elevations [ranging from approximately 451 to approximately 475 feet (ft) above mean sea level (amsl)], whereas the lowest groundwater elevations (approximately 420 to 430 ft amsl) were present within the alluvial deposits beneath the northern portion of the Site. These data indicate that the overall direction of the hydraulic gradient in the area of the Site is to the northwest, towards the Missouri River.

The water level data also indicate that overall, groundwater within the bedrock generally discharges to the alluvial deposits at the Site (Figure 2). With the exception of the area immediately around the North and South Quarry landfills, the water levels in the bedrock (e.g., PZ-208-SS, PZ-201A-SS, PZ-102-SS and PZ-102R-SS) are substantially higher (i.e., approximately 452 to 468 ft amsl) than the water levels in the nearby alluvial deposits (i.e., approximately 430 to 431 ft amsl), indicating that groundwater flows from the bedrock into the alluvium. In addition, water level data obtained from co-located alluvial and bedrock wells support the conclusion that groundwater within the bedrock discharges to the alluvium. The water level data indicate that the water levels within the bedrock wells are generally higher than the water levels in nearby alluvial wells, suggesting that an upward gradient generally exists from the bedrock to the alluvium beneath the Site. Comparison of the water levels in the PZ-113 well cluster indicates a slightly upward gradient between both the shallow alluvium and bedrock and between the deep alluvium and bedrock. For the co-located PZ-205 wells, there is a 2.26 foot difference in the water levels indicating an upward gradient between the St. Louis

Formation bedrock well PZ-205-SS (water level elevation 434.90) and co-located alluvial well PZ-205-AS (432.64).

Review of water level data obtained from well clusters completed within the alluvial deposits beneath the northern portion of the Site (Table 3) indicates that the relative heights of the water levels within co-located alluvial monitoring wells were variable on September 30, 2013. Some of the alluvial well clusters displayed higher water levels in the shallower alluvial wells which are completed in the upper portion of the alluvium while lower water levels appeared in the deeper alluvial wells that are completed near the base of the alluvial deposits (e.g., compare water levels from S-5, I-4, and D-3 and the S-84 and D-85 well clusters near OU-1 Area 1; the MW-102 and D-6 and the S-10, I-11 and D-12 well clusters near Area 2; and the PZ-302 well cluster near the Inactive Landfill). The water level data obtained from these well clusters indicate that a slight downward hydraulic gradient was present within the alluvial deposits beneath these portions of the Site on September 30, 2013. However, in other well clusters (e.g., compare the water levels in the S-8, I-62 and D-83 and S-82, I-9 and D-93 well clusters near Area 2 and the PZ-304 well cluster near the Inactive Landfill), the highest water levels occurred in the deeper portions of the alluvial aquifer. These data suggest that a slight upward hydraulic gradient was present within the alluvial deposits beneath these other portions of the Site on September 30, 2013.

The hydraulic gradient within the bedrock wells in the southern portion of the Site is relatively steep, as much as 17 vertical feet per 680 horizontal feet or 0.03 feet per feet (ft/ft) to the northwest beneath Area 1, and 10 feet per 135 feet (0.074 ft/ft) to 5 feet per 365 feet (0.014 ft/ft) to the northwest in the area to the east of the North Quarry Landfill. The hydraulic gradient within the alluvial deposit beneath the northern portion of the Site is very flat ranging from approximately 0.0003 to 0.0006 ft/ft beneath Areas 1 and 2. These values are within the range of values reported in the RI (EMSI, 2000). Based on reported average values of 3×10^{-2} to 3×10^{-3} cm/sec (85 to 8.5 ft/day) for the hydraulic conductivity of the alluvium (EMSI, 2000), an assumed effective porosity of 25%, and a hydraulic gradient of 0.0002 ft/ft to 0.0011 ft/ft, the overall velocity of groundwater flow within the alluvium would be approximately 0.0102 to 0.20 feet per day or approximately 3.7 to 73 feet per year.

6. GROUNDWATER SAMPLE RESULTS

This section summarizes the analytical laboratory results for the groundwater samples.

6.1 Radionuclides

The results of the laboratory analyses of the uranium, thorium and radium isotopes are summarized on Tables 4, 5 and 6, respectively. Of the 76 wells sampled in October 2013 (one well could not be sampled as explained above), 26 are OU-1 wells which historically have been sampled for uranium, thorium, and both Radium-226 and Radium-228. The remaining 50 wells

are OU-2 RI wells which, prior to the current rounds of additional groundwater sampling initiated in July/August 2012, were previously sampled for uranium, thorium, and Radium-226 (but not Radium-228) parameters in 1997 or 2004; or are Bridgeton Landfill monitoring wells which were not previously subject to radiological sampling and so, again, were not sampled for uranium, thorium or radium prior to the current West Lake Landfill 2012/2013 additional groundwater sampling events.

In accordance with the SAP, samples collected in early November 2013 from the eight new PZ-209 through -212 series monitoring wells constructed in late October 2013 also were analyzed for the same uranium, thorium and radium isotopes as the other October 2013 groundwater sampling event wells. Accordingly, a total of 84 wells (76 of the 77 wells present on the Site prior to November of 2013 plus the eight new wells) were sampled and are included in this October 2013 groundwater monitoring report.

6.1.1 Uranium

Table 4 presents a summary of the analytical results of the uranium isotopes. The reported results are presented in units of activity (picocuries per liter or pCi/L) which were converted to units of mass (micrograms per liter) [µg/L] using the procedure defined by EPA (2000).

One sample contained a calculated total uranium mass concentration that exceeded the EPA Maximum Contaminant Level (MCL) of 30 µg/L (Table 4). The total fraction (unfiltered) sample from the new deep St. Louis/Salem formation monitoring well PZ-211-SD located in the southeastern side of the site contained a total uranium concentration of 70.25 µg/L (Table 4). The reported dissolved (filtered) fraction total uranium concentration from this well was only 13.75 µg/L.

Of the samples that contained total uranium less than the EPA MCL, the highest concentration of total uranium (17.63 µg/L) was detected in the total fraction sample from alluvial monitoring well S-53. The concentration of total uranium in the dissolved fraction sample from this well was 11.35 µg/L. Well S-53 is located to the west of the southern portion of the Inactive Sanitary Landfill and the South Quarry Landfill. Well MW-102, an intermediate depth alluvial monitoring well located adjacent to the northwestern boundary of Area 2, contained 15.75 µg/L uranium in the total fraction sample and 15.15 µg/L in the dissolved fraction sample during the October 2013 event. The total fraction samples from alluvial monitoring wells PZ-302-AS, PZ-302-AI, and MW-104 located at the southern edge of the site south of the Inactive Sanitary Landfill contained uranium at concentrations of 13.82, 10.27, and 9.02 µg/L, respectively.

Higher levels of uranium were also reported in the total and dissolved fraction samples for monitoring wells completed in the deeper bedrock formations located to the south (upgradient) of OU-1 Radiological Areas 1 and 2 (e.g., PZ-102-SS: 15.32 µg/L total fraction and 6.89 µg/L dissolved fraction; PZ-102R-SS: 7.82 µg/L total fraction and 7.03 µg/L dissolved fraction; PZ-111-KS: 6.66 µg/L total fraction and 7.04 µg/L dissolved fraction; and LR-104: 5.87 µg/L total

fraction and 6.75 µg/L dissolved fraction). Again, all of these results were below the EPA MCL for uranium.

6.1.2 Thorium

Table 5 presents a summary of the analytical results of the Site groundwater samples for the thorium isotopes. Overall, only low levels (less than 1 pCi/L) of the thorium isotopes were detected in the majority of the wells. The highest total thorium (Thorium-228 plus Thorium-230 plus Thorium-232) values found in the October 2013 sampling event were reported in the total (unfiltered) fraction samples obtained from bedrock monitoring wells PZ-211-SD and PZ-102-SS, which are both located upgradient of OU-1 Areas 1 and 2, and alluvial monitoring wells D-85, S-61, and MW-104 (Table 5). In contrast, the dissolved fraction samples from these same wells contained only very low or non-detectable levels of total thorium, indicating that the thorium occurrences in these wells are most likely associated with the suspended sediment contained within the total fraction samples. There are no federal or State drinking water or other water quality standards for any of the thorium isotopes or for total thorium.

6.1.3 Radium

Table 6 summarizes the analytical results for the radium isotopes (Radium-226 and Radium-228) for the October 2013 groundwater samples. Figures 3 and 4 present the total and dissolved fraction Radium-226 results plotted on the Site base map. Figures 5 and 6 present the total and dissolved fraction Radium-228 results plotted on the Site base map. Figures 7 and 8 present the combined Radium-226 plus Radium-228 results for the total and dissolved fraction samples, respectively, on the Site base map. EPA has not set separate MCLs for the two radium isotopes, rather, EPA has set the MCL at 5 pCi/L for the combined total of Radium-226 and Radium-228.

6.1.3.1 Radium-226

The highest levels of Radium-226 detected in the total fraction samples were for samples obtained from upgradient (of OU-1 Areas 1 and 2) bedrock monitoring wells MW-1204 (26.93 pCi/L), PZ-211-SD (22.71 pCi/L), PZ-101-SS (15.7 pCi/L), PZ-102-SS (9.93 pCi/L), and PZ-107-SS (7.73 J pCi/L); and Area 1 bedrock monitoring well PZ-115-SS (8.89 pCi/L) [Table 6 and Figure 3]. The highest levels of Radium-226 detected in the dissolved fraction samples were obtained from upgradient (of OU-1 Areas 1 and 2) bedrock monitoring wells PZ-101-SS (17.4 pCi/L), PZ-107-SS (10.01 J pCi/L), and PZ 104-SD (6.29 J pCi/L); and Area 1 bedrock monitoring well PZ-115-SS (5.6 pCi/L) [Table 6 and Figure 4]. The highest concentrations of Radium-226 detected in any of the alluvial monitoring wells occurred in the total fraction samples obtained from Area 1 monitoring well D-85 (4.46 J pCi/L) and monitoring well I-73 (4.47 J pCi/L), which is located cross-gradient of Area 1 adjacent to the South Quarry Landfill and upgradient of Area 2.

6.1.3.2 Radium-228

The highest level of Radium-228 detected in the total fraction samples occurred in upgradient (of OU-1 Areas 1 and 2) bedrock monitoring wells PZ-211-SD (25.8 J+ pCi/L), PZ-209-SD (14.81 J+ pCi/L), MW-1204 (11.04 pCi/L), PZ-104-SD (8.05 J pCi/L) and PZ-200-SS (5.17 pCi/L); and in Area 1 alluvial monitoring wells I-4 (7.69 J pCi/L), PZ-113-AD (6.06 J+ pCi/L and 6.35 J+ pCi/L in the field duplicate sample), and S-84 (5.8 pCi/L in the field duplicate sample). The highest reported levels of Radium-228 detected in the dissolved fraction samples occurred in upgradient (of OU-1 Areas 1 and 2) bedrock monitoring wells PZ-104-SD (8.08 J pCi/L) and PZ-211-SD (5.65 J+ pCi/L); Area 1 alluvial monitoring well PZ-113-AD (6.2 J+ pCi/L and 8.44 J+ pCi/L in the field duplicate sample); and upgradient (of OU-1 Areas 1 and 2) alluvial monitoring wells PZ-302-AS (6.71 J+ pCi/L) and I-73 (5.8 J+ pCi/L) [Table 6 and Figure 6].

6.1.3.3 Combined Radium-226 and -228

Figures 7 and 8 present the combined Radium-226 plus Radium-228 results for the total and dissolved fraction samples, respectively, plotted on the Site base map. The highest combined Radium-226 plus Radium-228 values for the total (unfiltered) fraction samples occurred in bedrock monitoring wells PZ-211-SD (48.51 pCi/L), MW-1204 (37.97 pCi/L), PZ-101-SS (15.70 pCi/L), PZ-209-SD (14.81 pCi/L), PZ-102-SS (13.37 pCi/L), PZ-104-SD (10.89 pCi/L), PZ-107-SS (7.73 pCi/L), PZ-200-SS (7.06 pCi/L), PZ-106-SS (6.98 pCi/L), and PZ-100-SS (6.52 pCi/L), and alluvial monitoring wells I-73 (9.97 pCi/L) and MW-104 (7.29 pCi/L), all of which are located upgradient or cross-gradient from Areas 1 and 2. Combined Radium-226 plus Radium-228 levels above the MCL were also reported for Area 1 alluvial monitoring wells PZ-113-AD (8.88 pCi/L and 9.09 pCi/L in the field duplicate sample), I-4 (7.69 pCi/L), S-84 (7.2 pCi/L for the field duplicate, however the investigative sample only contained 2.75 pCi/L), and D-3 (7.13 pCi/L); Area 1 bedrock monitoring wells PZ-115-SS (8.89 pCi/L) and PZ-113-SS (6.88 pCi/L); and Area 2 alluvial monitoring well D-93 (7.54 pCi/L) [Table 6 and Figure 7].

The highest combined Radium-226 plus Radium-228 values for the dissolved (filtered) fraction samples occurred in upgradient bedrock monitoring wells PZ-101-SS (17.40 pCi/L), PZ-104-SD (14.37 pCi/L), PZ-107-SS (12.31 pCi/L), PZ-100-SS (6.59 pCi/L), PZ-211-SD (6.18 pCi/L), and PZ-203-SS (5.73 pCi/L), and upgradient (of OU-1 Areas 1 and 2) alluvial monitoring wells I-73 (8.85 pCi/L) and PZ-302-AS (6.97 pCi/L). Combined Radium-226 plus Radium-228 levels above the MCL were also reported for Area 1 alluvial monitoring wells PZ-113-AD (8.5 pCi/l and 10.82 pCi/L in the field duplicate sample) and D-3 (7.24 pCi/L); Area 1 bedrock monitoring wells PZ-113-SS (6.68 pCi/L) and PZ-115-SS (5.6 pCi/L); Inactive Sanitary Landfill monitoring well D-87 (6.44 pCi/L and 5.86 pCi/L in the field duplicate sample); and in Area 2 alluvial monitoring wells D-6 (6.28 pCi/L) and D-93 (6.23 pCi/L) [Table 6 and Figure 8].

A total of 30 of the 84 monitoring wells sampled for the October 2013 event showed an exceedance of the combined Radium-226 plus Radium-228 MCL of 5 pCi/L, either for total and dissolved fraction, total fraction only, or dissolved fraction only. The combined Radium-226 plus Radium-228 results from 14 of the 84 monitoring wells exceeded the MCL for both the total

fraction and the dissolved fraction. These include four bedrock monitoring wells located upgradient of OU-1 Areas 1 and 2 (PZ-100-SS, PZ-101-SS, PZ-104-SD, PZ-107-SS, and PZ-211-SD); one alluvial well (I-73) located upgradient of OU-1 Area 2 and cross-gradient of Area 1; four Area 1 alluvial (D-3 and PZ-113-AD) and bedrock (PZ-113-SS and PZ-115-SS) monitoring wells; three Area 2 alluvial monitoring wells (D-6, D-83, and D-93); and one Inactive Sanitary Landfill monitoring well (D-87) [Table 6 and Figures 7 and 8]. The combined total fraction (but not the dissolved fraction) radium results in 12 other monitoring wells exceeded the MCL. These 12 monitoring wells include three alluvial wells (D-81, MW-104, and PZ-304-AI) located upgradient or cross-gradient of Areas 1 and 2 and six bedrock monitoring wells (MW-1204, PZ-102-SS, PZ-106-SS, PZ-200-SS, PZ-204A-SS, and PZ-209-SD) located upgradient of OU-1 Areas 1 and 2; two Area 1 alluvial monitoring wells (I-4 and S-84 field duplicate [although the S-84 investigative sample was only 2.75 pCi/L]); and one (I-9) Area 2 alluvial monitoring well [Table 6 and Figure 7]. The combined dissolved fraction (but not the total fraction) radium results in four monitoring wells exceeded the MCL, including bedrock monitoring wells PZ-105-SS and PZ-203-SS located upgradient of OU-1 Areas 1 and 2 and alluvial monitoring wells LR-103 and PZ-302-AS, which are located upgradient of Area 2 and cross-gradient of Area 1.

The combined Radium-226 plus Radium-228 results for the other 54 of the 84 monitoring wells sampled for the October 2013 event were less than, and for the majority of the wells significantly less than, the EPA MCL of 5 pCi/L. For the combined total fraction, results for 16 of the 54 wells were less than 1 pCi/L; six were between 1 and 2 pCi/L; 11 were between 2 and 3 pCi/L; 15 were between 3 and 4 pCi/L; and only six were between 4 and 5 pCi/L.

6.1.3.4 Duplicate Sample Results for Radium

Nine field duplicate samples were collected as part of the October 2013 event (Tables 2 and 7). Field duplicate samples were obtained by filling two sets of sample bottles and submitting the two samples to the laboratories as unique samples. Comparisons of the field duplicate sample results for total and dissolved Radium-226 and Radium-228 are presented on Table 7. Relative percent difference (RPD) values are provided on Table 7 to assist in the evaluation of the field duplicate sample results.

The highest RPDs for the Radium-226 results were obtained from sample pairs that contained the lowest radium activity levels (i.e., less than 1 pCi/L of radium), and generally were associated with values that were qualified by the laboratory or the data validation effort as being estimated values. When the combined standard uncertainty values of the sample results are considered, the total Radium-226 results obtained from the duplicate samples were generally equivalent to the original samples.

In the cases where Radium-228 was detected in both the original and field duplicate sample and considering those sample pairs where the values were qualified by the laboratory or the data validation effort as being estimated, the results are generally equivalent with the exception of the duplicate sample results obtained from monitoring well S-84 (Table 7). Both the total and dissolved fraction results obtained from the S-84 field duplicate sample were approximately

twice the results obtained for the original investigative sample. This condition was also observed in the July 2013 results from well S-84, where, based on results obtained from a laboratory duplicate sample, it was determined that the variability in the reported results from monitoring well S-84 appears to reflect analytical variability as opposed to variability arising from sample collection.

The Radium-228 results for several of the other duplicate samples were non-detect in the original sample, the duplicate sample or both samples (Table 7). In instances where one sample reportedly contained a detectable level of Radium-228 but the other sample did not, comparison of the minimum detectable activity (MDA) value for the non-detect result to the detected result in the other sample and consideration of the combined standard uncertainty of the results indicates that the results, although non-detect for one sample, are generally consistent.

6.1.3.5 Split Sample Results for Radium

MDNR collected both total and dissolved fraction split samples from 11 monitoring wells (S-5, S-82, D-3, D-6, D-83, D-85, D-93, PZ-101-SS, PZ-102-SS, PZ-104-SD, and PZ-113-AD) during the October 2013 sampling event. MDNR also collected a total fraction-only split sample from well I-9. On behalf of EPA, MDNR collected split samples (total fraction-only) from PZ-102-SS and PZ-104-SD. The list of wells where split samples were collected is provided on Table 2.

Analytical results for Radium-226 and Radium-228 for the split samples are included on Table 8. The results provided by MDNR and EPA were unvalidated. For comparison purposes, the validated radium results for the split and field duplicate samples collected by the Respondents are also shown on Table 8. RPD values are provided on Table 8 to assist in the evaluation of the split sample results.

For the total fraction samples from well PZ-102-SS, even if the combined standard uncertainty values of the sample results are considered, the RPDs for Radium-226 (54 percent between the investigative sample collected by the Respondents and the EPA split sample; and 65 percent between the investigative sample and the MDNR split sample) indicate that the results are substantially different, with the result obtained by the Respondents significantly higher than those obtained from the EPA and MDNR split samples. It should be noted that MDNR used the same radiochemistry laboratory as Respondents to perform MDNR's analyses of the split samples. A substantial difference was also observed for the Radium-226 results in the total fraction samples from well PZ-101-SS, and the Radium-228 results in the total fraction samples from well S-5. Given that MDNR used the same analytical laboratory as the Respondents, the variability in the sample results likely reflects inherent variability in sample handling, preservation, laboratory preparation, and laboratory analysis.

With the exception of Radium-226 in the dissolved fraction sample from well D-83, for both the total and dissolved fraction samples from all of the other wells, the highest RPDs for the Radium-226 and Radium-228 results were obtained from split samples that were associated with results that were qualified by the laboratory or the Respondents' data validation effort as being

estimated values. When considering the combined standard uncertainty values for Radium-226 in the dissolved fraction sample from well D-83, the results obtained from the MDNR split sample were generally equivalent to the results from the sample collected by the Respondents.

6.1.3.6 Comparison to Prior Radium Sampling Results

Figures 9 and 10 present the historic total and dissolved Radium-226 results obtained for samples collected during the October 2013, July 2013, April 2013, and July/August 2012 sampling events, as well as those reported for the OU-1 RI/FS sampling events (McLaren Hart, 1996, and EMSI, 2000 and 2006), and the OU-2 RI/FS sampling events (Herst & Associates, 2005). Because the OU-2 RI/FS samples were only analyzed for Radium-226 (the RIM-associated radium isotope) and not Radium-228, these figures only include results for Radium-226 at those OU-2 wells. Likewise, because the Bridgeton Sanitary Landfill was not required to monitor for radiological parameters, the monitoring well results for the former Permitted Landfill do not include radiological parameters prior to the July/August 2012 sampling event. Finally, the Radium-226 results for split samples collected by EPA during the August 2012 (dissolved-only), April 2013 (total-only), July 2013 (total-only), and October 2013 (total-only, with two samples collected by MDNR for EPA) sampling events; and by MDNR during the August 2012, July 2013, and October 2013 sampling events (MDNR did not collect split samples in April 2013), are also included on Figures 9 and 10.

6.2 Trace Metals

The groundwater samples (including those from the eight new PZ-209 through -212 series wells sampled in November 2013) were analyzed for 19 trace metals, exclusive of the major chemistry cations (e.g., calcium, magnesium, sodium and potassium). Results obtained for the 13 most frequently detected trace metals are summarized on Table 9.

Arsenic was detected in one or both of the sample fractions (total or dissolved) obtained from 26 of the 84 monitoring wells. All of these 26 monitoring wells reportedly contained arsenic concentrations in the total, dissolved, or both fractions at levels that were at or exceeded the drinking water standard (MCL) of 10 µg/L. The highest reported arsenic concentrations (130 to 250 µg/L) were found in alluvial wells S-82, S-84, I-73, MW-102, PZ-112-AS, PZ-114-AS, PZ-302-AS, PZ-303-AS, and PZ-304-AS (Table 9).

The most frequently detected trace metals were iron and manganese (Table 9). Iron was detected in 74 wells. The majority (70) of the iron results exceed the drinking water standard (which is a secondary standard based on aesthetic considerations) of 300 µg/L. The highest levels of iron (i.e., greater than 50,000 µg/L) were found in both the total (unfiltered) and dissolved (filtered) sample fractions obtained from alluvial wells S-10, S-84, I-73, D-85, MW-1204, PZ-114-AS, PZ-302-AS, and PZ-303-AS; and only the total fraction samples obtained from MW-104 and PZ-205-AS.

Manganese was detected in 73 wells. The manganese results in 69 of the 73 wells exceeded the drinking water standard (a secondary standard based on aesthetic considerations) of 50 µg/L. The highest levels of manganese (i.e., greater than 5,000 µg/L) were found in the total and dissolved sample fractions obtained from alluvial wells S-10, MW-1204, and PZ-113-AS and bedrock well PZ-200-SS; and the total sample fraction from alluvial well MW-104.

It should be noted that the solubility of arsenic, iron and manganese is largely controlled by their oxidation states, with the reduced form of these metals possessing higher solubility values. Consequently, these metals are commonly detected at solid waste landfills where the anaerobic biodegradation of organic matter and the decreased infiltration of typically oxygen-rich precipitation (recharge) due to the presence of a lower permeability landfill cover results in the creation of reducing conditions. The presence of these trace metals can reflect dissolution of the metals from either the waste materials or dissolution of naturally occurring arsenic, iron and manganese within cover soil material, contained in the waste materials, or in the soil and bedrock adjacent to the waste deposits.

6.3 Volatile Organic Compounds

Table 10 presents a summary of the primary VOCs that were detected in the groundwater samples. The most commonly detected VOC was benzene, which was reported to be present in 36 of the 84 wells. Other VOCs (exclusive of common laboratory contaminants) that were detected in a number of the groundwater wells included cis-1,2-dichloroethene (detected in 15 of the wells), chlorobenzene (detected in 25 of the wells), methyl-tert-butyl ether [MTBE] (detected in 18 of the wells), and 1,4-dichlorobenzene (detected in 17 of the wells). Other VOCs that were detected include ethyl benzene (detected in 11 of the wells), isopropylbenzene [also known as cumene] (detected in 15 of the wells), xylenes (detected in 15 of the wells), and toluene (detected in 13 of the wells). Vinyl chloride was only detected in four of the wells.

Benzene was detected in 18 monitoring wells at concentrations greater than its water quality standard of 5 µg/L. The highest concentrations of benzene were detected in bedrock monitoring wells PZ-104-SS and PZ-104-SD, which are located upgradient of all of the OU-1 and OU-2 landfill units at the site, and alluvial monitoring well PZ-205-AS. Alluvial monitoring well PZ-205-AS is located upgradient of OU-1 Area 2 and cross-gradient of Area 1. Groundwater monitoring wells PZ-104-SS, PZ-104-SD, and PZ-205-AS are all located adjacent to the South Quarry Landfill. These are the same wells in which the higher levels of other hydrocarbon constituents (e.g., ethyl benzene, cumene, xylenes and MTBE) were detected, although the highest xylene levels were found in PZ-303-AS. Water quality in monitoring wells adjacent to the South Quarry Landfill is being addressed by Herst & Associates as part of an assessment pursuant to the Missouri Solid Waste Regulations.

7. REFERENCES

Engineering Management Support, Inc. (EMSI), 2013a, Groundwater Monitoring Report, July 2013 Additional Groundwater Sampling Event, West Lake Landfill Operable Unit-1, December 1.

EMSI, 2013b, Groundwater Monitoring Report, April 2013 Additional Groundwater Sampling Event, West Lake Landfill Operable Unit-1, July 8.

EMSI, 2012, Groundwater Monitoring Report, July/August 2012 Additional Groundwater Sampling Event, West Lake Landfill Operable Unit-1, December 14.

EMSI, 2012, Sampling and Analysis Plan – Additional Groundwater Monitoring, West Lake Landfill Operable Unit-1, Bridgeton, Missouri, June 29.

EMSI, 2011, Supplemental Feasibility Study, Radiological-Impacted Material Excavation Alternatives Analysis, West Lake Landfill Operable Unit-1, September 30.

EMSI, 2000, Remedial Investigation, West Lake Landfill Operable Unit-1, April 10.

Herst & Associates, 2014, Groundwater Monitoring Well Installation Report, Bridgeton Landfill, LLC – Bridgeton Landfill, Bridgeton, Missouri, Missouri DNR Permit #MO – 118912, January 2.

Herst & Associates, 2005, Remedial Investigation Report, West Lake Landfill, Operable Unit 2, Bridgeton, Missouri, Revised, September 16.

McCurdy, D.E., Garbarino, J.R., and Mullin, A.H., 2008, Interpreting and reporting radiological water-quality data: U.S. Geological Survey Techniques and Methods, book 5, chap. B6, 33 p.

McLaren/Hart, 1996, Groundwater Conditions Report, West Lake Landfill Areas 1 & 2.

EPA, 2010, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, USEPA-540-R-10-11, February.

EPA, 2008, USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, USEPA-540-R-08-01, June.

EPA, 2007, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, February.

EPA, 2004, Multi-Agency Radiological Laboratory Analytical Protocols Manual (MARLAP), USEPA-402-B-04-001A, July.

EPA, 2000, Soil Screening Guidance for Radionuclides: Technical Background Document, EPA/540-R-00-006, October.

Tables

Table 1: Groundwater Elevation Measurements, September 30, 2013, West Lake Landfill OU-1

Well	Top of Casing (TOC) Elevation (ft. MSL)*	Water Level (ft. below TOC)	Water Level Elevation (ft. MSL)	Well	Top of Casing (TOC) Elevation (ft. MSL)*	Water Level (ft. below TOC)	Water Level Elevation (ft. MSL)
D-3	467.92	37.50	430.42	PZ-106-SD	463.36	12.38	450.98
D-6	447.09	17.36	429.73	PZ-106-SS	462.71	11.39	451.32
D-12	479.67	49.61	430.06	PZ-107-SS	464.56	33.62	430.94
D-13	470.25	40.05	430.20	PZ-109-SS	458.56	27.81	430.75
D-14	483.09	30.17	452.92	PZ-110-SS	461.15	30.65	430.50
D-81	450.87	20.34	430.53	PZ-111-KS	465.56	9.11	456.45
D-83	448.55	18.37	430.18	PZ-111-SD	466.46	35.11	431.35
D-85	457.06	26.63	430.43	PZ-112-AS	462.29	31.87	430.42
D-87	464.41	44.05	420.36	PZ-113-AD	461.54	30.98	430.56
D-93	450.76	19.75	431.01	PZ-113-AS	461.40	30.90	430.50
I-4	465.88	35.39	430.49	PZ-113-SS	461.77	31.17	430.60
I-9	449.84	20.68	429.16	PZ-114-AS	451.26	20.54	430.72
I-11	480.01	49.89	430.12	PZ-115-SS	452.27	17.11	435.16
I-62	446.37	16.00	430.37	PZ-116-SS	484.85	24.21	460.64
I-65	441.53	11.49	430.04	PZ-200-SS	485.57	26.27	459.30
I-66	441.87	11.54	430.33	PZ-201A-SS	480.20	11.95	468.25
I-67	441.78	11.45	430.33	PZ-202-SS	481.02	15.49	465.53
I-68	450.39	19.92	430.47	PZ-203-SS	486.44	25.23	461.21
I-73	461.40	30.73	430.67	PZ-204A-SS	462.60	5.63	456.97
LR-100	468.14	16.58	451.56	PZ-204-SS	464.79	7.52	457.27
LR-103	470.54	39.95	430.59	PZ-205-AS	459.95	27.31	432.64
LR-104	459.38	28.55	430.83	PZ-205-SS	461.73	26.83	434.90
LR-105	485.36	31.39	453.97	PZ-206-SS	460.29	26.80	433.49
MW-102	447.90	17.93	429.97	PZ-207-AS	462.17	31.77	430.40
MW-103	438.85	8.85	430.00	PZ-208-SS	474.19	21.40	452.79
MW-104	440.91	10.39	430.52	PZ-302-AI	451.02	20.52	430.50
MW-1204	485.53	25.38	460.15	PZ-302-AS	451.33	20.56	430.77
PZ-100-KS	485.61	26.07	459.54	PZ-303-AS	453.08	23.08	430.00
PZ-100-SD	485.72	34.99	450.73	PZ-304-AI	453.86	23.48	430.38
PZ-100-SS	485.75	33.72	452.03	PZ-304-AS	453.61	23.26	430.35
PZ-101-SS	491.26	54.49	436.77	PZ-305-AI	459.83	29.01	430.82
PZ-102R-SS	485.62	25.48	460.14	S-5	466.45	35.76	430.69
PZ-102-SS	483.90	24.77	459.13	S-8	443.83	13.81	430.02
PZ-103-SS	483.56	8.64	474.92	S-10	480.06	49.94	430.12
PZ-104-KS	483.95	20.05	463.90	S-53	444.18	13.70	430.48
PZ-104-SD	483.51	21.99	461.52	S-61	449.52	19.53	429.99
PZ-104-SS	483.45	19.56	463.89	S-82	449.94	19.79	430.15
PZ-105-SS	483.51	24.69	458.82	S-84	456.78	26.34	430.44
PZ-106-KS	464.20	5.05	459.15				

* Survey Data provided by Aquaterra in a spreadsheet dated 9/14/2012; except for I-4, D-13, PZ-112-AS, and PZ-207-AS, which were provided by an April 17, 2013 electronic mail from Weaver Boos Consultants.

Table 2: Wells Sampled During October 2013 Groundwater Monitoring Effort

Well	Well	Duplicate Samples	
PZ-100-SS	PZ-302-AI	S-84	
PZ-100-SD	PZ-302-AS	I-9	
PZ-100-KS	PZ-303-AS	I-67	
PZ-101-SS	PZ-304-AS	D-87	
PZ-102-SS	PZ-304-AI	LR-100	
PZ-102R-SS	PZ-305-AI	PZ-106-KS	
PZ-103-SS		PZ-113-AD	
PZ-104-SS	LR-100	PZ-210-SD	
PZ-104-SD	LR-103	PZ-304-AI	
PZ-104-KS	LR-104		
PZ-105-SS		EPA Split Samples	
PZ-106-SS	MW-102	PZ-102-SS (total fraction only)	
PZ-106-SD	MW-103	PZ-104-SD (total fraction only)	
PZ-106-KS	MW-104		
PZ-107-SS	MW-1204	MDNR Split Samples	
PZ-109-SS		S-5	
PZ-110-SS	S-5	S-82	
PZ-111-SD	S-8	I-9 (total fraction only)	
PZ-111-KS	S-10	D-3	
PZ-112-AS	S-53	D-6	
PZ-113-AS	S-61	D-83	
PZ-113-AD	S-82	D-85	
PZ-113-SS	S-84	D-93	
PZ-114-AS		PZ-101-SS	
PZ-115-SS	I-4	PZ-102-SS	
PZ-116-SS	I-9	PZ-104-SD	
PZ-200-SS	I-11	PZ-113-AD	
PZ-201A-SS	I-62		
PZ-202-SS	I-65		
PZ-203-SS	I-66		
PZ-204-SS	I-67		
PZ-204A-SS	I-68	Well Legend	
PZ-205-AS	I-73	S prefix or AS suffix	Shallow alluvial well
PZ-205-SS		I prefix or AI suffix	Intermediate alluvial well
PZ-206-SS	D-3	D prefix or AD suffix	Deep alluvial well
PZ-207-AS	D-6	SS suffix	St. Louis Fm. bedrock well
PZ-208-SS	D-12	SD suffix	Salem Fm. bedrock well
PZ-209-SD	D-13	KS suffix	Keokuk Fm. Bedrock well
PZ-209-SS	D-14		
PZ-210-SD	D-81		
PZ-210-SS	D-83		
PZ-211-SD	D-85		
PZ-211-SS	D-87		
PZ-212-SD	D-93		
PZ-212-SS			
	Total = 84 wells	Not sampled: LR-105 (see discussion in the Report text)	

Table 3: Vertical Groundwater Gradients, September 30, 2013

Well	Water Level Elevation (ft amsl)	Original Top of Screen Elevation (ft amsl)	Original Bottom of Screen Elevation (ft amsl)	Midpoint Elevation of Screen Interval (ft amsl)	Head Difference (ft)	Difference in Screen Midpoint Elevations (ft)	Vertical Gradient (ft/ft)
Alluvial Well Clusters							
S-5	430.69	435.70	425.70	430.70	0.20	36.20	0.0055
I-4	430.49	399.50	389.50	394.50	0.07	28.80	0.0024
D-3	430.42	370.70	360.70	365.70	0.27	65.00	0.0042
MW-102	429.97	432.18	422.18	427.18	0.24	84.28	0.0028
D-6	429.73	347.90	337.90	342.90			
S-10	430.12	445.50	425.50	435.50	0.00	43.40	0.0000
I-11	430.12	397.10	387.10	392.10	0.06	53.40	0.0011
D-12	430.06	343.70	333.70	338.70	0.06	96.80	0.0006
S-8	430.02	434.80	414.80	424.80	-0.35	19.70	-0.0178
I-62	430.37	410.10	400.10	405.10	0.19	47.70	0.0040
D-83	430.18	367.40	347.40	357.40	-0.16	67.40	-0.0024
S-84	430.44	432.00	422.00	427.00	0.01	45.90	0.0002
D-85	430.43	391.10	371.10	381.10			
S-82	430.15	432.20	422.20	427.20	0.99	26.80	0.0369
I-9	429.16	405.40	395.40	400.40	-1.85	29.70	-0.0623
D-93	431.01	380.70	360.70	370.70	-0.86	56.50	-0.0152
PZ-302-AS	430.77	437.30	427.50	432.40	0.27	19.90	0.0136
PZ-302-AI	430.50	417.40	407.60	412.50			
PZ-304-AS	430.35	434.30	424.50	429.40	-0.03	21.70	-0.0014
PZ-304-AI	430.38	412.60	402.80	407.70			
Alluvial and Bedrock Well Clusters							
PZ-113-AS	430.50	431.00	421.20	426.10	-0.06	69.70	-0.0009
PZ-113-AD	430.56	361.30	351.50	356.40	-0.04	49.87	-0.0008
PZ-113-SS	430.60	311.43	301.63	306.53	-0.10	119.57	-0.0008
PZ-205-AS	432.64	420.75	410.95	415.85	-2.26	49.82	-0.0454
PZ-205-SS	434.90	370.93	361.13	366.03			

Notes: Positive values for vertical gradient indicate a downward gradient whereas negative values indicate an upward gradient.

Table 4: Summary of Uranium Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Uranium-234				Uranium-235				Uranium-238				TOTAL U-234 + U-235 + U-238		Total Uranium (µg/L)
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
S-5 DIS	10/7/2013	0	0.53	1.15	R	0	0.65	1.41	R	0.54	0.67	0.79	R	R	*	R
S-5 TOT	10/7/2013	0.58	0.78	1.16	R	0	0.66	1.44	R	0	0.54	1.16	R	R	*	R
S-8 DIS	10/1/2013	1.19	0.4	0.16	J	0.11	0.14	0.21	UJ	0.77	0.31	0.17	J	1.96	*	2.39
S-8 TOT	10/1/2013	1.16	0.37	0.19	J	0.22	0.17	0.17	J	1.18	0.37	0.15	J	2.56		3.62
S-10 DIS	10/1/2013	0.32	0.24	0.24	J	0.14	0.17	0.2	U	0.17	0.18	0.22	U	0.32	*	0.75
S-10 TOT	10/1/2013	0.63	0.34	0.27	J	0.15	0.2	0.31	U	0.82	0.38	0.19		1.45	*	2.59
S-53 DIS	10/15/2013	4.44	0.99	0.22	J+	0.2	0.19	0.2	J	3.78	0.89	0.2		8.42		11.35
S-53 TOT	10/15/2013	6.83	1.35	0.2	J+	0.5	0.31	0.27	J	5.84	1.2	0.22		13.17		17.63
S-61 DIS	10/3/2013	0.98	0.34	0.15	J	0.16	0.15	0.19	UJ	0.79	0.3	0.11	J	1.77	*	2.44
S-61 TOT	10/3/2013	0.91	0.33	0.11		0.16	0.15	0.14	J	0.82	0.31	0.13		1.89		2.52
S-82 DIS	10/8/2013	1.25	0.42	0.16	J	0.25	0.2	0.18	J	0.47	0.24	0.14	J	1.97		1.52
S-82 TOT	10/8/2013	0.62	0.29	0.17		0.18	0.17	0.16	J	0.23	0.17	0.15	J	1.03		0.77
S-84 DIS	10/9/2013	0.14	0.17	0.2	UJ	-0.01	0.12	0.25	UJ	-0.02	0.1	0.23	UJ	ND		0.80
S-84 FD DIS	10/9/2013	0.55	0.38	0.26	J	0.06	0.15	0.32	UJ	0.11	0.17	0.26	UJ	0.55	*	0.92
S-84 FD TOT	10/9/2013	0.33	0.28	0.34	UJ	-0.03	0.12	0.32	UJ	0.18	0.25	0.4	UJ	ND		1.34
S-84 TOT	10/9/2013	0.56	0.28	0.23	J	-0.04	0.08	0.24	U	0.44	0.25	0.22	J	1.00	*	1.42
I-4 DIS	10/7/2013	0.41	0.41	0.48	UJ	0.05	0.23	0.59	UJ	0.23	0.31	0.47	UJ	ND		1.67
I-4 TOT	10/7/2013	0.58	0.46	0.36	J	0.52	0.51	0.63	UJ	0.24	0.29	0.35	UJ	0.58	*	1.33
I-9 DIS	10/8/2013	0.28	0.21	0.21	J	0.21	0.21	0.26	U	0.17	0.17	0.21	U	0.28	*	0.75
I-9 FD DIS	10/8/2013	0.35	0.26	0.19	J	0.16	0.19	0.23	UJ	0.13	0.18	0.27	UJ	0.35	*	0.91
I-9 FD TOT	10/8/2013	0.27	0.2	0.21	J	0.04	0.12	0.26	U	0.19	0.16	0.16	J	0.46	*	0.69
I-9 TOT	10/8/2013	0.14	0.16	0.21	UJ	0.18	0.2	0.24	UJ	0.2	0.18	0.17	J	0.20	*	0.71
I-11 DIS	10/1/2013	1.45	0.58	0.21	J	0.14	0.22	0.35	UJ	1.05	0.49	0.3	J	2.50	*	3.29
I-11 TOT	10/1/2013	1.34	0.43	0.12		0.36	0.24	0.22	J	1.4	0.44	0.17		3.10		4.34
I-62 DIS	10/1/2013	0.15	0.12	0.11	J	0.09	0.11	0.13	U	0.18	0.14	0.14	J	0.33	*	0.60
I-62 TOT	10/1/2013	0.38	0.21	0.16	J	0.09	0.12	0.18	U	0.21	0.16	0.15	J	0.59	*	0.71
I-65 DIS	10/15/2013	1.04	0.38	0.18	J+	-0.01	0.07	0.15	U	0.79	0.32	0.14		1.83	*	2.42
I-65 TOT	10/15/2013	1.45	0.47	0.15	J+	0.31	0.22	0.16	J	1.06	0.39	0.15		2.82		3.30
I-66 DIS	10/9/2013	0.72	0.28	0.1	J	0.03	0.08	0.18	UJ	0.45	0.21	0.12	J	1.17	*	1.42

Table 4: Summary of Uranium Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Uranium-234				Uranium-235				Uranium-238				TOTAL U-234 + U-235 + U-238		Total Uranium (µg/L)
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
I-66 TOT	10/9/2013	0.43	0.21	0.1	J	0.15	0.14	0.18	UJ	0.54	0.23	0.1	J	0.97	*	1.69
I-67 DIS	10/3/2013	1.03	0.39	0.25		0.17	0.19	0.26	U	0.33	0.21	0.2	J	1.36	*	1.10
I-67 FD DIS	10/3/2013	0.86	0.36	0.17		0.34	0.26	0.26	J	0.73	0.33	0.21		1.93		2.33
I-67 FD TOT	10/3/2013	0.86	0.31	0.18	J	0.13	0.13	0.17	UJ	0.65	0.27	0.2	J	1.51	*	2.02
I-67 TOT	10/3/2013	0.89	0.31	0.15	J	0.23	0.16	0.12	J	0.81	0.29	0.11	J	1.93		2.52
I-68 DIS	10/4/2013	0.59	0.24	0.09	J	0.17	0.15	0.17	J	0.47	0.22	0.14	J	1.23		1.48
I-68 TOT	10/4/2013	1.63	0.48	0.17		0.11	0.14	0.21	U	1.36	0.43	0.12		2.99	*	4.15
I-73 DIS	10/3/2013	-0.11	1.24	3.79	UJ	-0.48	1.47	4.01	UJ	1.9	2.32	3.23	UJ	ND		11.48
I-73 TOT	10/3/2013	-0.45	0.94	2.77	UJ	0.54	1.51	3.26	UJ	0.8	1.23	1.83	UJ	ND		6.96
D-3 DIS	10/7/2013	0.27	0.24	0.26	J	0.28	0.27	0.29	UJ	0.15	0.19	0.29	UJ	0.27	*	1.00
D-3 TOT	10/7/2013	0.28	0.27	0.29	UJ	0.27	0.3	0.36	UJ	0.04	0.12	0.29	UJ	ND		1.03
D-6 DIS	10/8/2013	0.23	0.18	0.19	J	0.24	0.19	0.17	J	0.15	0.14	0.18	U	0.23	*	0.65
D-6 TOT	10/8/2013	0.55	0.27	0.18		0.04	0.11	0.24	U	0.05	0.11	0.2	U	0.55	*	0.71
D-12 DIS	10/1/2013	0.2	0.15	0.14	J	0.28	0.2	0.16	J	0.19	0.15	0.15	J	0.67		0.70
D-12 TOT	10/1/2013	0.19	0.15	0.12	J	0.03	0.1	0.21	U	0.11	0.11	0.12	U	0.19	*	0.45
D-13 DIS	10/7/2013	0.34	0.2	0.17	J	0.03	0.1	0.21	U	0.16	0.14	0.12	J	0.50	*	0.57
D-13 TOT	10/7/2013	0.3	0.17	0.1	J	0.06	0.09	0.13	UJ	0.09	0.1	0.12	UJ	0.30	*	0.42
D-14 DIS	10/15/2013	0.4	0.35	0.34	J+	0.09	0.24	0.53	UJ	0.14	0.24	0.43	UJ	0.40	*	1.53
D-14 TOT	10/15/2013	0.71	0.64	0.75	UJ+	-0.02	0.29	0.61	UJ	-0.18	0.38	1.11	UJ	ND		3.59
D-81 DIS	10/3/2013	1.72	0.46	0.15	J	0.15	0.14	0.18	UJ	1.13	0.35	0.1	J	2.85	*	3.45
D-81 TOT	10/3/2013	1.44	0.4	0.13	J	0.17	0.15	0.17	J	1.34	0.38	0.09	J	2.95		4.07
D-83 DIS	10/8/2013	0.14	0.21	0.31	UJ	0.18	0.32	0.55	UJ	0.07	0.21	0.45	UJ	ND		1.60
D-83 TOT	10/8/2013	-0.01	0.12	0.24	UJ	0.14	0.24	0.43	UJ	0.15	0.2	0.28	UJ	ND		1.03
D-85 DIS	10/9/2013	0.37	0.19	0.14	J	0.05	0.08	0.12	UJ	0.04	0.06	0.11	UJ	0.37	*	0.38
D-85 TOT	10/9/2013	1.06	0.35	0.12	J	0.21	0.17	0.13	J	1.06	0.35	0.12	J	2.33		3.26
D-87 DIS	10/2/2013	0.31	0.23	0.25	J	-0.05	0.1	0.28	U	0.17	0.16	0.17	J	0.48	*	0.64
D-87 FD DIS	10/2/2013	0.22	0.17	0.14	J	0.04	0.1	0.22	U	0.23	0.16	0.12	J	0.45	*	0.79
D-87 FD TOT	10/2/2013	0.63	0.27	0.12		0	0.09	0.2	U	0.25	0.18	0.17	J	0.88	*	0.84
D-87 TOT	10/2/2013	1.14	0.4	0.13	J	0.05	0.11	0.21	UJ	0.63	0.29	0.18	J	1.77	*	1.97

Table 4: Summary of Uranium Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Uranium-234				Uranium-235				Uranium-238				TOTAL U-234 + U-235 + U-238		Total Uranium (µg/L)
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
D-93 DIS	10/8/2013	0.49	0.26	0.18	J	0.17	0.18	0.22	U	0.3	0.2	0.18	J	0.79	*	1.00
D-93 TOT	10/8/2013	0.55	0.25	0.16		0.04	0.09	0.18	U	0.31	0.19	0.16	J	0.86	*	1.01
LR-100 DIS	10/4/2013	0.17	0.15	0.17	J	0.02	0.07	0.17	U	0.14	0.13	0.12	J	0.31	*	0.50
LR-100 FD DIS	10/4/2013	0.33	0.24	0.17	J	0	0.14	0.31	UJ	0	0.11	0.25	UJ	0.33	*	0.89
LR-100 FD TOT	10/4/2013	0.13	0.17	0.26	UJ	-0.01	0.11	0.22	UJ	0.12	0.15	0.18	UJ	ND		0.64
LR-100 TOT	10/4/2013	0	0.12	0.27	UJ	0.06	0.15	0.33	UJ	-0.01	0.09	0.19	UJ	ND		0.72
LR-103 DIS	10/2/2013	0.23	0.18	0.16	J	0.07	0.12	0.2	U	0.1	0.12	0.14	U	0.23	*	0.51
LR-103 TOT	10/2/2013	0.15	0.15	0.18	UJ	0.11	0.13	0.16	U	0.15	0.15	0.18	U	ND		0.61
LR-104 DIS	10/2/2013	2.98	1.3	0.57	J	0.27	0.46	0.8	UJ	2.14	1.06	0.45	J	5.12	*	6.75
LR-104 TOT	10/2/2013	2.93	0.66	0.12	J	0.19	0.17	0.19	J	1.94	0.51	0.16	J	5.06		5.87
MW-102 DIS	10/3/2013	5.9	1.13	0.18		0.28	0.2	0.15	J	5.04	1	0.14		11.22		15.15
MW-102 TOT	10/3/2013	6.14	1.22	0.13		0.55	0.31	0.24	J	5.2	1.08	0.19		11.89		15.75
MW-103 DIS	10/4/2013	1.2	0.43	0.21		0.2	0.19	0.24	U	1.55	0.49	0.14		2.75	*	4.73
MW-103 TOT	10/4/2013	2.32	0.64	0.2		0.12	0.16	0.25	U	2.04	0.58	0.14		4.36	*	6.19
MW-104 DIS	10/3/2013	2.31	0.6	0.22		0.4	0.25	0.2	J	1.37	0.44	0.24		4.08		4.27
MW-104 TOT	10/3/2013	3.49	0.76	0.17		0.25	0.19	0.17	J	2.99	0.68	0.15		6.73		9.02
MW-1204 DIS	10/11/2013	0.05	0.09	0.17	UJ	0.06	0.11	0.19	U	0.03	0.06	0.13	UJ	ND		0.48
MW-1204 TOT	10/11/2013	0.17	0.14	0.12	J	0.07	0.1	0.15	U	0.09	0.12	0.18	UJ	0.17	*	0.61
PZ-100-KS DIS	10/15/2013	0.19	0.14	0.1	J+	0.11	0.12	0.12	UJ	0.1	0.11	0.14	UJ	0.19	*	0.47
PZ-100-KS TOT	10/15/2013	0.1	0.18	0.33	UJ+	0	0.14	0.41	UJ	0.19	0.21	0.25	UJ	ND		0.93
PZ-100-SD DIS	10/8/2013	0.29	0.17	0.14	J	0.06	0.1	0.17	UJ	0.11	0.1	0.1	J	0.40	*	0.41
PZ-100-SD TOT	10/8/2013	0.47	0.22	0.13	J	0.17	0.14	0.12	J	0.14	0.13	0.14	J	0.78		0.50
PZ-100-SS DIS	10/8/2013	4.04	0.92	0.14		0.16	0.17	0.17	U	1.33	0.46	0.16		5.37	*	4.04
PZ-100-SS TOT	10/8/2013	4.98	1.1	0.26		0.27	0.24	0.28	U	1.92	0.59	0.25		6.90	*	5.85
PZ-101-SS DIS	10/8/2013	0.71	0.45	0.32	J	-0.01	0.16	0.34	UJ	0.31	0.3	0.32	UJ	0.71	*	1.11
PZ-101-SS TOT	10/8/2013	0.28	0.26	0.28	J	0.22	0.29	0.44	UJ	0.24	0.26	0.35	UJ	0.28	*	1.25
PZ-102R-SS DIS	10/8/2013	4.4	0.89	0.17	J	0.65	0.31	0.19	J	2.26	0.57	0.13	J	7.31		7.03
PZ-102R-SS TOT	10/8/2013	4.31	0.93	0.16		0.19	0.19	0.23	U	2.59	0.66	0.15		6.90	*	7.82
PZ-102-SS DIS	10/8/2013	4.07	0.78	0.12	J	0.54	0.25	0.13	J	2.23	0.52	0.13	J	6.84		6.89

Table 4: Summary of Uranium Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Uranium-234				Uranium-235				Uranium-238				TOTAL U-234 + U-235 + U-238		Total Uranium (µg/L)
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
PZ-102-SS TOT	10/8/2013	5.25	0.96	0.11	J	0.34	0.2	0.14	J	5.09	0.94	0.11	J	10.68		15.32
PZ-103-SS DIS	10/4/2013	0.29	0.19	0.14	J	0.06	0.1	0.17	U	0.13	0.13	0.15	U	0.29	*	0.53
PZ-103-SS TOT	10/4/2013	0.73	0.28	0.16	J	0.01	0.06	0.17	UJ	0.42	0.21	0.14	J	1.15	*	1.33
PZ-104-KS DIS	10/4/2013	0.28	0.19	0.17	J	0.17	0.16	0.15	J	0.14	0.13	0.12	J	0.59		0.50
PZ-104-KS TOT	10/4/2013	0.22	0.17	0.16	J	0.08	0.12	0.19	U	0.13	0.12	0.13	J	0.35	*	0.48
PZ-104-SD DIS	10/7/2013	0.32	0.45	0.68	UJ	0.26	0.45	0.76	UJ	-0.01	0.39	1	UJ	ND		3.33
PZ-104-SD TOT	10/7/2013	0.44	0.3	0.21	J	0.06	0.17	0.37	UJ	0.1	0.17	0.3	UJ	0.44	*	1.07
PZ-104-SS DIS	10/9/2013	0.25	0.15	0.1	J	0.03	0.08	0.17	UJ	0.07	0.08	0.1	UJ	0.25	*	0.38
PZ-104-SS TOT	10/9/2013	0.47	0.25	0.19	J	0.07	0.11	0.16	U	0.11	0.12	0.15	UJ	0.47	*	0.52
PZ-105-SS DIS	10/9/2013	2.12	0.52	0.11	J	0.08	0.1	0.12	UJ	1.59	0.43	0.11	J	3.71	*	4.79
PZ-105-SS TOT	10/9/2013	2.24	0.58	0.14	J	0.21	0.19	0.21	J	1.49	0.46	0.17	J	3.94		4.54
PZ-106-KS DIS	10/11/2013	1.62	0.44	0.14	J+	0.1	0.12	0.17	UJ	0.67	0.27	0.14	J	2.29	*	2.07
PZ-106-KS FD DIS	10/11/2013	1.65	0.44	0.12	J+	0.25	0.18	0.14	J	0.63	0.25	0.11	J	2.53		1.99
PZ-106-KS FD TOT	10/11/2013	1.8	0.46	0.13	J+	0.08	0.1	0.12	UJ	0.32	0.18	0.11	J	2.12	*	1.01
PZ-106-KS TOT	10/11/2013	1.98	0.48	0.13	J+	0.15	0.13	0.15	J	0.57	0.24	0.13	J	2.70		1.77
PZ-106-SD DIS	10/8/2013	0.21	0.17	0.13	J	0.07	0.11	0.16	UJ	0.21	0.16	0.15	J	0.42	*	0.70
PZ-106-SD TOT	10/8/2013	0.5	0.23	0.17	J	0.09	0.12	0.18	UJ	0.24	0.16	0.16	J	0.74	*	0.80
PZ-106-SS DIS	10/7/2013	0.85	0.31	0.15	J	0.19	0.17	0.19	J	0.17	0.13	0.11	J	1.21		0.59
PZ-106-SS TOT	10/7/2013	0.93	0.35	0.12	J	0.11	0.14	0.22	J	0.41	0.23	0.17	J	1.45		1.27
PZ-107-SS DIS	10/3/2013	1.54	0.59	0.28	J	0.05	0.11	0.24	UJ	1.43	0.56	0.22	J	2.97	*	4.37
PZ-107-SS TOT	10/3/2013	0.59	0.26	0.11		0.22	0.18	0.17	J	1.09	0.37	0.13		1.90		3.35
PZ-109-SS DIS	10/9/2013	0.94	0.31	0.11	J	0.06	0.1	0.17	UJ	0.58	0.24	0.14	J	1.52	*	1.81
PZ-109-SS TOT	10/9/2013	1.51	0.47	0.19	J	0.11	0.13	0.16	UJ	0.16	0.18	0.28	UJ	1.51	*	0.91
PZ-110-SS DIS	10/8/2013	0.13	0.12	0.11	J	0.13	0.13	0.14	U	0.05	0.09	0.16	U	0.13	*	0.54
PZ-110-SS TOT	10/8/2013	0.23	0.19	0.19	J	0.09	0.15	0.26	U	0.14	0.16	0.21	U	0.23	*	0.75
PZ-111-KS DIS	10/3/2013	6.55	1.14	0.15	J	0.4	0.22	0.16	J	2.3	0.55	0.13	J	9.25		7.04
PZ-111-KS TOT	10/3/2013	7.15	1.48	0.23	J	0.23	0.21	0.2	J	2.2	0.66	0.19	J	9.58		6.66
PZ-111-SD DIS	10/7/2013	0.35	0.21	0.17	J	0.04	0.1	0.21	U	0.26	0.17	0.12	J	0.61	*	0.87
PZ-111-SD TOT	10/7/2013	0.48	0.22	0.13		0.1	0.12	0.17	U	0.16	0.13	0.12	J	0.64	*	0.56

Table 4: Summary of Uranium Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Uranium-234				Uranium-235				Uranium-238				TOTAL U-234 + U-235 + U-238		Total Uranium (µg/L)
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
PZ-112-AS DIS	10/2/2013	3.53	0.91	0.17	J	0.3	0.26	0.3	J	0.24	0.2	0.17	J	4.07		0.85
PZ-112-AS TOT	10/2/2013	0.09	0.11	0.13	UJ	-0.02	0.08	0.21	U	0.11	0.13	0.17	U	ND		0.60
PZ-113-AD DIS	10/7/2013	0.06	0.16	0.34	UJ	0.14	0.24	0.42	UJ	0.1	0.16	0.23	UJ	ND		0.88
PZ-113-AD FD DIS	10/7/2013	0.14	0.17	0.26	U	0.05	0.13	0.28	U	-0.03	0.08	0.21	U	ND		0.76
PZ-113-AD FD TOT	10/7/2013	0.26	0.22	0.23	J	0.02	0.1	0.29	UJ	0.03	0.08	0.17	UJ	0.26	*	0.64
PZ-113-AD TOT	10/7/2013	0.17	0.2	0.26	UJ	0.14	0.21	0.35	UJ	0.08	0.14	0.24	UJ	ND		0.88
PZ-113-AS DIS	10/2/2013	0.58	0.24	0.1	J	0.12	0.13	0.17	UJ	0.49	0.22	0.14	J	1.07	*	1.54
PZ-113-AS TOT	10/2/2013	0.75	0.33	0.18	J	0.16	0.17	0.24	UJ	0.35	0.22	0.19	J	1.10	*	1.15
PZ-113-SS DIS	10/3/2013	1.2	0.36	0.15	J	0.14	0.14	0.17	UJ	0.48	0.22	0.15	J	1.68	*	1.51
PZ-113-SS TOT	10/3/2013	1.19	0.36	0.19	J	0.07	0.11	0.19	UJ	0.97	0.32	0.15	J	2.16	*	2.98
PZ-114-AS DIS	10/8/2013	-0.01	0.06	0.13	U	0	0.11	0.24	U	-0.01	0.06	0.13	U	ND		0.50
PZ-114-AS TOT	10/8/2013	0.13	0.15	0.2	U	0.12	0.14	0.17	U	0.15	0.15	0.16	U	ND		0.56
PZ-115-SS DIS	10/8/2013	4.18	0.91	0.13		0.19	0.17	0.16	J	2.01	0.56	0.13		6.38		6.08
PZ-115-SS TOT	10/8/2013	4.05	0.96	0.25		0.34	0.25	0.23	J	2.15	0.64	0.3		6.54		6.56
PZ-116-SS DIS	10/11/2013	5.77	1.13	0.18	J	0.24	0.19	0.17	J	1.58	0.48	0.14	J	7.59		4.82
PZ-116-SS TOT	10/11/2013	5.83	1.19	0.2	J	0.2	0.2	0.24	U	1.7	0.52	0.2	J	7.53	*	5.18
PZ-200-SS DIS	10/2/2013	0.14	0.15	0.21	UJ	-0.02	0.07	0.19	U	0.34	0.2	0.17	J	0.34	*	1.10
PZ-200-SS TOT	10/2/2013	0.45	0.22	0.13	J	0.05	0.08	0.14	UJ	0.52	0.23	0.14	J	0.97	*	1.61
PZ-201A-SS DIS	10/9/2013	2.42	0.6	0.11	J	0.1	0.13	0.2	U	1.58	0.46	0.16	J	4.00	*	4.80
PZ-201A-SS TOT	10/9/2013	2.11	0.53	0.11	J	0.41	0.24	0.19	J	1.49	0.43	0.12	J	4.01		4.63
PZ-202-SS DIS	10/11/2013	1.64	0.55	0.16	J+	0.09	0.14	0.2	U	0.84	0.38	0.19		2.48	*	2.60
PZ-202-SS TOT	10/11/2013	1.58	0.49	0.23	J+	0.04	0.11	0.24	U	0.76	0.33	0.22		2.34	*	2.38
PZ-203-SS DIS	10/2/2013	3.07	0.74	0.18	J	-0.02	0.08	0.2	U	0.58	0.28	0.16		3.65	*	1.82
PZ-203-SS TOT	10/2/2013	3.12	0.66	0.14	J	0.08	0.1	0.12	UJ	0.34	0.18	0.13	J	3.46	*	1.07
PZ-204A-SS DIS	10/8/2013	1.36	0.5	0.22	J	0.11	0.17	0.27	UJ	1.09	0.44	0.22	J	2.45	*	3.37
PZ-204A-SS TOT	10/8/2013	1.21	0.79	0.66	J	-0.09	0.28	0.76	UJ	0.98	0.71	0.66	J	2.19	*	3.27
PZ-204-SS DIS	10/8/2013	2.97	0.71	0.14		0.07	0.12	0.22	U	1.18	0.4	0.18		4.15	*	3.62
PZ-204-SS TOT	10/8/2013	3.04	0.77	0.23		0.2	0.19	0.2	J	1.53	0.52	0.34		4.77		4.65
PZ-205-AS DIS	10/15/2013	0.41	0.22	0.12	J+	0.15	0.16	0.22	U	0.14	0.13	0.14	J	0.55	*	0.52

Table 4: Summary of Uranium Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Uranium-234				Uranium-235				Uranium-238				TOTAL U-234 + U-235 + U-238		Total Uranium (µg/L)
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
PZ-205-AS TOT	10/15/2013	0.71	0.3	0.12	J+	0.07	0.13	0.22	U	0.47	0.24	0.12	J	1.18	*	1.50
PZ-205-SS DIS	10/9/2013	0.48	0.22	0.13	J	0.15	0.14	0.16	UJ	0.41	0.2	0.13	J	0.89	*	1.30
PZ-205-SS TOT	10/9/2013	0.44	0.22	0.15	J	0.16	0.15	0.17	U	0.24	0.16	0.15	J	0.68	*	0.79
PZ-206-SS DIS	10/7/2013	0.26	0.18	0.18	J	0.07	0.11	0.2	U	0.14	0.13	0.15	U	0.26	*	0.54
PZ-206-SS TOT	10/7/2013	0.12	0.15	0.21	U	0.01	0.1	0.26	U	0.18	0.17	0.16	J	0.18	*	0.66
PZ-207-AS DIS	10/4/2013	0.26	0.18	0.12	J	0.1	0.12	0.15	U	0.09	0.12	0.17	U	0.26	*	0.58
PZ-207-AS TOT	10/4/2013	-0.02	0.07	0.2	U	-0.02	0.09	0.23	U	0.03	0.1	0.23	U	ND		0.79
PZ-208-SS DIS	10/8/2013	1.26	0.4	0.17	J	0.15	0.14	0.17	UJ	0.67	0.28	0.18	J	1.93	*	2.07
PZ-208-SS TOT	10/8/2013	1.52	0.44	0.13	J	0.13	0.15	0.2	UJ	1.13	0.37	0.15	J	2.65	*	3.46
PZ-209-SD DIS	11/7/2013	6.43	1.1	0.13	J	0.33	0.2	0.18	J	3.67	0.73	0.14	J	10.43		11.09
PZ-209-SD TOT	11/7/2013	8.49	1.43	0.14	J	0.18	0.15	0.13	J	4.36	0.87	0.11	J	13.03		13.07
PZ-209-SS DIS	11/7/2013	3.5	0.83	0.27	J	0.12	0.16	0.24	UJ	1.77	0.55	0.32	J	5.27	*	5.38
PZ-209-SS TOT	11/7/2013	4.34	0.86	0.1		0.27	0.19	0.13	J	1.65	0.45	0.1		6.26		5.04
PZ-210-SD DIS	11/6/2013	5.34	1.03	0.22		0.04	0.1	0.2	U	1.84	0.51	0.18		7.18	*	5.57
PZ-210-SD FD DIS	11/6/2013	4.97	1.07	0.24		0.25	0.22	0.25	J	2.49	0.67	0.22		7.71		7.53
PZ-210-SD FD TOT	11/6/2013	5.79	1.92	0.47	J	0.3	0.42	0.64	UJ	3.08	1.27	0.55	J	8.87	*	9.47
PZ-210-SD TOT	11/6/2013	6.2	1.26	0.21		0.24	0.21	0.2	J	2.79	0.72	0.2		9.23		8.42
PZ-210-SS DIS	11/7/2013	1.76	0.47	0.16	J+	0	0.06	0.19	UJ	0.81	0.3	0.15	J	2.57	*	2.50
PZ-210-SS TOT	11/7/2013	1.97	0.55	0.13	J+	0.04	0.1	0.23	U	0.55	0.27	0.18		2.52	*	1.75
PZ-211-SD DIS	11/6/2013	14.08	2.13	0.13	J	0.36	0.22	0.18	J	4.56	0.87	0.14	J	19.00		13.75
PZ-211-SD TOT	11/6/2013	26.42	5.11	0.28	J	1.99	0.82	0.43	J	23.27	4.56	0.24	J	51.68		70.25
PZ-211-SS DIS	11/7/2013	2.77	0.61	0.1	J+	0.06	0.1	0.17	UJ	0.92	0.31	0.14	J	3.69	*	2.82
PZ-211-SS TOT	11/7/2013	3.17	0.69	0.15	J+	0.16	0.15	0.19	UJ	1.27	0.39	0.11	J	4.44	*	3.87
PZ-212-SD DIS	11/7/2013	10.76	1.73	0.11	J+	0.34	0.21	0.13	J	3.62	0.75	0.11		14.72		10.94
PZ-212-SD TOT	11/7/2013	11.25	1.87	0.12	J+	0.35	0.23	0.21	J	3.73	0.81	0.12		15.33		11.28
PZ-212-SS DIS	11/7/2013	2.43	0.54	0.12	J	0.14	0.13	0.16	UJ	1.31	0.37	0.13	J	3.74	*	3.98
PZ-212-SS TOT	11/7/2013	2.63	0.61	0.15	J	0.08	0.11	0.15	UJ	1.74	0.47	0.15	J	4.37	*	5.25
PZ-302-AI DIS	10/3/2013	4.6	0.93	0.12		0.32	0.22	0.18	J	3.44	0.76	0.13		8.36		10.40
PZ-302-AI TOT	10/3/2013	4.47	0.82	0.14	J	0.42	0.22	0.17	J	3.38	0.67	0.15	J	8.27		10.27

Table 4: Summary of Uranium Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Uranium-234				Uranium-235				Uranium-238				TOTAL U-234 + U-235 + U-238		Total Uranium (µg/L)
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
PZ-302-AS DIS	10/8/2013	0.97	0.35	0.16	J	0.14	0.15	0.21	UJ	0.36	0.2	0.12	J	1.33	*	1.17
PZ-302-AS TOT	10/8/2013	6.22	1.37	0.17		0.2	0.23	0.31	U	4.59	1.1	0.25		10.81	*	13.82
PZ-303-AS DIS	10/4/2013	0.51	0.29	0.18	J	0.12	0.16	0.22	UJ	0.48	0.27	0.16	J	0.99	*	1.53
PZ-303-AS TOT	10/4/2013	0.87	0.41	0.26	J	0.05	0.15	0.34	UJ	0.89	0.41	0.21	J	1.76	*	2.81
PZ-304-AI DIS	10/1/2013	0.35	0.28	0.25	J	0.06	0.18	0.38	UJ	0.1	0.18	0.31	UJ	0.35	*	1.10
PZ-304-AI FD DIS	10/1/2013	0.18	0.18	0.21	U	0	0.13	0.29	U	0.35	0.24	0.16	J	0.35	*	1.18
PZ-304-AI FD TOT	10/1/2013	0.15	0.25	0.42	UJ	-0.04	0.22	0.52	UJ	0.16	0.24	0.36	UJ	ND		1.31
PZ-304-AI TOT	10/1/2013	0.26	0.24	0.28	U	0.05	0.12	0.26	U	-0.04	0.18	0.47	U	ND		1.52
PZ-304-AS DIS	10/1/2013	0.53	0.47	0.53	J	0.09	0.22	0.45	UJ	0	0.24	0.52	UJ	0.53	*	1.76
PZ-304-AS TOT	10/1/2013	-0.04	0.17	0.43	UJ	0.1	0.28	0.6	UJ	0.15	0.23	0.34	UJ	ND		1.29
PZ-305-AI DIS	10/2/2013	0.45	0.26	0.19	J	0.12	0.14	0.17	UJ	0.04	0.16	0.32	UJ	0.45	*	1.03
PZ-305-AI TOT	10/2/2013	0.05	0.08	0.12	UJ	0.17	0.15	0.14	J	0.09	0.11	0.16	U	0.09	*	0.56

Notes:

All values are in units of picoCuries per liter (pCi/L), except as noted.

DIS = dissolved sample (field filtered sample); TOT = total sample (unfiltered sample)

FD = Field duplicate sample

CSU = Combined Standard Uncertainty (2-sigma)

Data Validation Qualifiers (Final Q) include: R = rejected; data not usable; U = Non-detect at the reported value;

UJ = Non-Detect at the estimated reported value; UJ+ = Non-Detect at the estimated reported value which may be biased high;

UJ- = Non-Detect at the estimated reported value which may be biased low;

J = estimated result; J+ = estimated result which may be biased high.

TOTAL U-238 + U-235 + U-234 based on sum of detected values only. The * flag indicates one or more of the individual isotopes was non-detect.

Total uranium values in µg/L based on use of Minimum Detectable Activity (MDA) values for non-detect results.

Table 5: Summary of Thorium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Thorium-228				Thorium-230				Thorium-232				TOTAL Thorium 228 + 230 + 232	
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q		
S-5 DIS	10/7/2013	-0.01	0.07	0.14	U	0.2	0.17	0.14	J	0.13	0.15	0.2	U	0.20	*
S-5 TOT	10/7/2013	0.02	0.1	0.24	U	0.35	0.24	0.24	J	0.09	0.12	0.14	U	0.35	*
S-8 DIS	10/1/2013	0.07	0.12	0.21	U	0.21	0.19	0.21	J	0	0.1	0.21	U	0.21	*
S-8 TOT	10/1/2013	0.03	0.07	0.15	UJ	0.25	0.17	0.16	J	0.04	0.07	0.12	UJ	0.25	*
S-10 DIS	10/1/2013	-0.02	0.09	0.22	UJ	0.2	0.19	0.17	J	0.08	0.12	0.17	UJ	0.20	*
S-10 TOT	10/1/2013	0.05	0.12	0.25	UJ	0.19	0.19	0.2	UJ	0.04	0.12	0.25	UJ	ND	*
S-53 DIS	10/15/2013	0.2	0.27	0.36	UJ	0.14	0.21	0.31	UJ	0.07	0.21	0.44	UJ	ND	*
S-53 TOT	10/15/2013	0.39	0.22	0.15	J	0.49	0.24	0.13		0.4	0.21	0.11	J	1.28	
S-61 DIS	10/3/2013	0.02	0.09	0.2	U	0.16	0.16	0.22	U	-0.06	0.1	0.3	U	ND	*
S-61 TOT	10/3/2013	0.86	0.35	0.19		6.97	1.64	0.16		0.64	0.29	0.16		8.47	
S-82 DIS	10/8/2013	0.03	0.08	0.19	U	0.09	0.13	0.21	U	0.04	0.1	0.23	U	ND	*
S-82 TOT	10/8/2013	0.08	0.18	0.35	UJ	0.06	0.17	0.36	UJ	-0.03	0.12	0.31	UJ	ND	*
S-84 DIS	10/9/2013	0.08	0.18	0.36	UJ	0.24	0.25	0.26	UJ	-0.02	0.14	0.43	UJ	ND	*
S-84 FD DIS	10/9/2013	-0.02	0.07	0.19	U	0.45	0.27	0.18	J	-0.02	0.07	0.18	U	0.45	*
S-84 TOT	10/9/2013	0.87	0.38	0.22		0.8	0.36	0.18		0.75	0.35	0.2		2.42	
S-84 FD TOT	10/9/2013	0.44	0.22	0.17	J	0.46	0.23	0.17	J	0.45	0.22	0.18	J	1.35	
I-4 DIS	10/7/2013	0.07	0.12	0.22	U	0.27	0.21	0.2	J	0.03	0.07	0.14	U	0.27	*
I-4 TOT	10/7/2013	0.04	0.1	0.2	U	0.26	0.17	0.13	J	0.1	0.11	0.11	U	0.26	*
I-9 DIS	10/8/2013	0.03	0.08	0.18	U	0.1	0.11	0.11	U	0	0.08	0.16	U	ND	*
I-9 FD DIS	10/8/2013	0.12	0.22	0.39	UJ	0.13	0.16	0.19	UJ	0.11	0.16	0.24	UJ	ND	*
I-9 TOT	10/8/2013	0.2	0.15	0.13	J	0.46	0.24	0.12	J	0.02	0.05	0.11	U	0.66	*
I-9 FD TOT	10/8/2013	0.17	0.19	0.29	U	0.19	0.17	0.2	U	0.02	0.08	0.19	U	ND	*
I-11 DIS	10/1/2013	0.06	0.09	0.15	UJ	0.25	0.16	0.11	J	0	0.07	0.15	UJ	0.25	*
I-11 TOT	10/1/2013	-0.08	0.15	0.46	UJ	0.48	0.4	0.41	J	0.15	0.24	0.41	UJ	0.48	*
I-62 DIS	10/1/2013	0.1	0.14	0.22	U	0.13	0.14	0.16	U	0	0.09	0.2	U	ND	*
I-62 TOT	10/1/2013	-0.02	0.07	0.23	U	0.22	0.17	0.13	J	0.06	0.11	0.19	U	0.22	*
I-65 DIS	10/15/2013	0.03	0.09	0.19	U	0.38	0.24	0.19	J	0.09	0.13	0.19	U	0.38	*
I-65 TOT	10/15/2013	0.19	0.15	0.17	J	0.21	0.16	0.16	J	0.14	0.13	0.14	J	0.54	
I-66 DIS	10/9/2013	0.05	0.09	0.16	U	0.15	0.15	0.18	U	0.05	0.09	0.16	U	ND	*
I-66 TOT	10/9/2013	0.28	0.2	0.19	J	0.07	0.11	0.17	U	0.06	0.11	0.18	U	0.00	*

Table 5: Summary of Thorium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Thorium-228				Thorium-230				Thorium-232				TOTAL Thorium 228 + 230 + 232	
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q		
I-67 DIS	10/3/2013	0.03	0.08	0.16	U	0.15	0.13	0.13	J	0.05	0.08	0.11	U	0.15	*
I-67 FD DIS	10/3/2013	0.02	0.08	0.18	U	0.14	0.14	0.19	UJ	-0.02	0.1	0.26	U	ND	*
I-67 TOT	10/3/2013	0.11	0.15	0.23	U	1.34	0.57	0.18	J	0.08	0.12	0.18	U	1.34	*
I-67 FD TOT	10/3/2013	0.08	0.12	0.2	U	0.45	0.25	0.17	J	0.11	0.13	0.17	U	0.45	*
I-68 DIS	10/4/2013	0.12	0.13	0.17	UJ	0.25	0.16	0.11	J	0.07	0.09	0.1	UJ	0.25	*
I-68 TOT	10/4/2013	0.86	0.39	0.19		2.25	0.73	0.14	J	0.42	0.26	0.21	J	3.53	
I-73 DIS	10/3/2013	0.04	0.1	0.21	U	0.08	0.12	0.21	U	0.17	0.16	0.15	J	0.00	*
I-73 TOT	10/3/2013	0.11	0.15	0.25	U	0.33	0.22	0.14	J	0.12	0.13	0.16	U	0.33	*
D-3 DIS	10/7/2013	0.04	0.11	0.22	U	0.15	0.14	0.13	J	0.05	0.08	0.14	U	0.15	*
D-3 TOT	10/7/2013	-0.01	0.1	0.31	UJ	0.22	0.21	0.19	J	0.27	0.23	0.19	J	0.49	*
D-6 DIS	10/8/2013	0.11	0.15	0.24	U	0.3	0.2	0.2	J	0.1	0.11	0.13	U	0.30	*
D-6 TOT	10/8/2013	0.09	0.13	0.21	UJ	0.14	0.13	0.16	UJ	0.09	0.1	0.13	UJ	ND	*
D-12 DIS	10/1/2013	0.08	0.15	0.26	UJ	0.28	0.22	0.17	J	0.03	0.08	0.2	UJ	0.28	*
D-12 TOT	10/1/2013	0.04	0.15	0.32	UJ	0.57	0.31	0.15	J	0.01	0.07	0.2	U	0.57	*
D-13 DIS	10/7/2013	-0.08	0.1	0.33	UJ	0.07	0.12	0.2	UJ	0.03	0.09	0.2	UJ	ND	*
D-13 TOT	10/7/2013	0.27	0.21	0.23	J	0.15	0.15	0.18	U	-0.1	0.09	0.33	U	0.00	*
D-14 DIS	10/15/2013	0.34	0.24	0.24	J	0.96	0.4	0.13		0.1	0.13	0.19	U	1.30	*
D-14 TOT	10/15/2013	0.15	0.16	0.24	U	0.5	0.26	0.17	J	0.11	0.11	0.12	U	0.50	*
D-81 DIS	10/3/2013	0.01	0.08	0.2	U	0.08	0.1	0.11	U	-0.01	0.06	0.13	U	ND	*
D-81 TOT	10/3/2013	-0.02	0.09	0.25	U	0.18	0.16	0.2	U	0.06	0.11	0.2	U	ND	*
D-83 DIS	10/8/2013	0.18	0.18	0.21	U	0.34	0.25	0.19	J	0.22	0.2	0.19	J	0.56	*
D-83 TOT	10/8/2013	0.43	0.29	0.35	J	0.25	0.19	0.19	J	0.05	0.09	0.15	U	0.68	*
D-85 DIS	10/9/2013	0.05	0.1	0.17	U	0.03	0.07	0.16	U	0.05	0.07	0.11	U	ND	*
D-85 TOT	10/9/2013	3.01	0.86	0.16	J	4.37	1.19	0.14	J	2.67	0.78	0.17	J	10.05	
D-87 DIS	10/2/2013	0.15	0.15	0.18	U	0.15	0.14	0.18	U	0.15	0.14	0.18	U	ND	*
D-87 FD DIS	10/2/2013	0.03	0.1	0.23	U	0.33	0.22	0.14	J	0.06	0.09	0.14	U	0.33	*
D-87 TOT	10/2/2013	0.43	0.25	0.18	J	1.63	0.55	0.19		0.71	0.32	0.14		2.77	
D-87 FD TOT	10/2/2013	0.37	0.21	0.14	J	0.81	0.34	0.11		0.22	0.16	0.16	J	1.40	
D-93 DIS	10/8/2013	0.33	0.24	0.26	J	0.55	0.3	0.15	J	0.03	0.1	0.21	U	0.88	*
D-93 TOT	10/8/2013	0.38	0.24	0.24	J	0.44	0.24	0.17	J	0.05	0.08	0.12	U	0.82	*

Table 5: Summary of Thorium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Thorium-228				Thorium-230				Thorium-232				TOTAL Thorium 228 + 230 + 232	
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q		
LR-100 DIS	10/4/2013	0	0.05	0.14	UJ	0.04	0.06	0.11	UJ	0	0.04	0.09	UJ	ND	*
LR-100 FD DIS	10/4/2013	0.03	0.09	0.19	U	0.15	0.14	0.13	J	0.02	0.06	0.14	U	0.15	*
LR-100 TOT	10/4/2013	-0.01	0.06	0.15	U	0.16	0.15	0.17	U	0.04	0.08	0.15	U	ND	*
LR-100 FD TOT	10/4/2013	0.03	0.13	0.28	U	0.09	0.11	0.13	U	0.07	0.11	0.18	U	ND	*
LR-103 DIS	10/2/2013	0.02	0.11	0.23	UJ	0.19	0.15	0.13	J	0.06	0.09	0.14	UJ	0.19	*
LR-103 TOT	10/2/2013	0.15	0.2	0.29	UJ	0.23	0.22	0.2	J	0.14	0.17	0.2	UJ	0.23	*
LR-104 DIS	10/2/2013	-0.03	0.06	0.19	U	0.26	0.17	0.12	J	0.01	0.05	0.14	U	0.26	*
LR-104 TOT	10/2/2013	-0.03	0.08	0.23	U	0.22	0.17	0.18	J	0.05	0.09	0.16	U	0.22	*
MW-102 DIS	10/3/2013	-0.09	0.12	0.38	UJ	0.09	0.15	0.25	UJ	0.04	0.1	0.21	UJ	ND	*
MW-102 TOT	10/3/2013	1.26	0.46	0.23		0.7	0.32	0.14		0.55	0.27	0.14		2.51	
MW-103 DIS	10/4/2013	-0.02	0.06	0.19	U	0.25	0.17	0.12	J	0.1	0.1	0.11	U	0.25	*
MW-103 TOT	10/4/2013	1.11	0.42	0.22		1.08	0.41	0.14	J	1.22	0.43	0.14		3.41	
MW-104 DIS	10/3/2013	0.15	0.15	0.2	UJ	0.28	0.18	0.14	J	0.09	0.1	0.12	UJ	0.28	*
MW-104 TOT	10/3/2013	1.94	0.6	0.16		2.04	0.64	0.18		1.77	0.56	0.18		5.75	
MW-1204 DIS	10/11/2013	3.34	5.03	7.07	R	8.52	8.38	4.54	R	7.6	7.91	6.51	R	19.46	
MW-1204 TOT	10/11/2013	0.17	0.31	0.55	UJ	0.35	0.33	0.3	J	0	0.2	0.43	UJ	0.35	*
PZ-100-KS DIS	10/15/2013	0.11	0.14	0.19	U	0.32	0.22	0.18	J	0.12	0.13	0.18	U	0.32	*
PZ-100-KS TOT	10/15/2013	0.23	0.27	0.4	UJ	0.32	0.31	0.42	UJ	0.09	0.22	0.44	UJ	ND	*
PZ-100-SD DIS	10/8/2013	-0.03	0.06	0.19	UJ	0.26	0.17	0.14	J	0.04	0.07	0.1	UJ	0.26	*
PZ-100-SD TOT	10/8/2013	0.11	0.11	0.14	UJ	0.19	0.14	0.13	J	0.03	0.07	0.14	UJ	0.19	*
PZ-100-SS DIS	10/8/2013	0.07	0.13	0.24	U	0.34	0.23	0.2	J	-0.01	0.06	0.13	U	0.34	*
PZ-100-SS TOT	10/8/2013	0.01	0.09	0.25	U	0.07	0.11	0.19	U	0.08	0.14	0.24	U	ND	*
PZ-101-SS DIS	10/8/2013	0.27	0.21	0.27	J	0.13	0.14	0.19	U	-0.01	0.06	0.18	U	0.00	*
PZ-101-SS TOT	10/8/2013	0.28	0.2	0.24	J	0.23	0.17	0.14	J	0.13	0.13	0.17	U	0.51	*
PZ-102R-SS DIS	10/8/2013	0.14	0.15	0.22	U	0.09	0.1	0.13	U	0.05	0.09	0.14	U	ND	*
PZ-102R-SS TOT	10/8/2013	0.13	0.13	0.17	UJ	0.31	0.19	0.13	J	0.36	0.2	0.11	J	0.67	*
PZ-102-SS DIS	10/8/2013	0.14	0.15	0.21	U	0.21	0.18	0.19	J	0.03	0.07	0.14	U	0.21	*
PZ-102-SS TOT	10/8/2013	3.03	0.8	0.13		2.97	0.82	0.11		2.91	0.77	0.11		8.91	
PZ-103-SS DIS	10/4/2013	0.06	0.11	0.19	U	0.17	0.15	0.18	UJ	0.02	0.05	0.11	U	ND	*
PZ-103-SS TOT	10/4/2013	0.23	0.16	0.16	J	1	0.37	0.15	J	0.37	0.2	0.1	J	1.60	

Table 5: Summary of Thorium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Thorium-228				Thorium-230				Thorium-232				TOTAL Thorium 228 + 230 + 232	
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q		
PZ-104-KS DIS	10/4/2013	0.14	0.2	0.3	UJ	0.07	0.14	0.25	UJ	0.05	0.14	0.29	UJ	ND	*
PZ-104-KS TOT	10/4/2013	0.06	0.1	0.18	U	0.24	0.16	0.12	J	0	0.07	0.19	U	0.24	*
PZ-104-SD DIS	10/7/2013	0.22	0.17	0.19	J	0.17	0.15	0.17	J	0.03	0.08	0.17	U	0.39	*
PZ-104-SD TOT	10/7/2013	0.12	0.13	0.18	U	0.21	0.17	0.17	J	0.05	0.08	0.12	U	0.21	*
PZ-104-SS DIS	10/9/2013	0.05	0.1	0.19	U	0.22	0.17	0.12	J	0.11	0.11	0.12	U	0.22	*
PZ-104-SS TOT	10/9/2013	0.1	0.12	0.15	U	0.39	0.23	0.17	J	0.01	0.06	0.15	U	0.39	*
PZ-105-SS DIS	10/9/2013	0	0.06	0.18	U	0.16	0.15	0.17	U	0	0.06	0.18	U	ND	*
PZ-105-SS TOT	10/9/2013	-0.05	0.09	0.28	UJ	0.17	0.19	0.26	UJ	-0.01	0.09	0.18	UJ	ND	*
PZ-106-KS DIS	10/11/2013	-0.02	0.09	0.23	UJ	0.29	0.25	0.26	J	0.05	0.13	0.27	UJ	0.29	*
PZ-106-KS FD DIS	10/11/2013	0.12	0.24	0.44	UJ	0.18	0.23	0.27	UJ	0.12	0.18	0.27	UJ	ND	*
PZ-106-KS TOT	10/11/2013	-0.02	0.07	0.19	UJ	0.22	0.18	0.19	J	0.05	0.09	0.17	UJ	0.22	*
PZ-106-KS FD TOT	10/11/2013	0.06	0.11	0.19	U	0.54	0.31	0.22	J	0.05	0.1	0.19	U	0.54	*
PZ-106-SD DIS	10/8/2013	0	0.08	0.18	U	0.17	0.15	0.17	J	0.03	0.08	0.17	U	0.17	*
PZ-106-SD TOT	10/8/2013	0.1	0.14	0.21	U	0.17	0.16	0.19	U	0.08	0.11	0.17	U	ND	*
PZ-106-SS DIS	10/7/2013	0.07	0.13	0.24	UJ	0.17	0.18	0.19	UJ	0.13	0.18	0.27	UJ	ND	*
PZ-106-SS TOT	10/7/2013	0.04	0.1	0.2	U	0.09	0.11	0.16	U	0.03	0.07	0.14	U	ND	*
PZ-107-SS DIS	10/3/2013	0	0.06	0.19	U	0.47	0.26	0.18	J	0.06	0.1	0.18	U	0.47	*
PZ-107-SS TOT	10/3/2013	0.5	0.27	0.14	J	0.99	0.42	0.14		1	0.41	0.2		2.49	
PZ-109-SS DIS	10/9/2013	0.02	0.2	0.43	UJ	0.14	0.19	0.3	UJ	0.06	0.12	0.22	UJ	ND	*
PZ-109-SS TOT	10/9/2013	-0.04	0.11	0.31	U	0.13	0.15	0.21	U	0.04	0.1	0.19	U	ND	*
PZ-110-SS DIS	10/8/2013	0.07	0.12	0.21	U	0.14	0.13	0.12	J	-0.01	0.06	0.14	U	0.14	*
PZ-110-SS TOT	10/8/2013	0	0.06	0.17	UJ	0.25	0.17	0.12	J	0.1	0.1	0.11	UJ	0.25	*
PZ-111-KS DIS	10/3/2013	0.07	0.12	0.2	U	0.41	0.25	0.2	J	0.06	0.09	0.14	U	0.41	*
PZ-111-KS TOT	10/3/2013	-0.06	0.08	0.25	U	0.26	0.2	0.14	J	0.02	0.07	0.16	U	0.26	*
PZ-111-SD DIS	10/7/2013	-0.08	0.12	0.36	U	0.11	0.15	0.23	U	0.12	0.14	0.2	U	ND	*
PZ-111-SD TOT	10/7/2013	0.05	0.11	0.21	UJ	0.25	0.2	0.18	J	0.07	0.1	0.15	UJ	0.25	*
PZ-112-AS DIS	10/2/2013	0.06	0.09	0.16	U	0.1	0.11	0.13	U	0.05	0.07	0.11	U	ND	*
PZ-112-AS TOT	10/2/2013	0.17	0.15	0.16	J	0.21	0.17	0.19	J	0.1	0.12	0.17	U	0.38	*
PZ-113-AD DIS	10/7/2013	0.29	0.19	0.13	J	0.1	0.11	0.11	U	0	0.05	0.11	U	0.00	*
PZ-113-AD FD DIS	10/7/2013	0.31	0.23	0.21	J	0.16	0.15	0.16	J	0.06	0.1	0.14	U	0.47	*

Table 5: Summary of Thorium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Thorium-228				Thorium-230				Thorium-232				TOTAL Thorium 228 + 230 + 232	
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q		
PZ-113-AD TOT	10/7/2013	0.09	0.12	0.18	UJ	0.16	0.13	0.14	J	0.04	0.06	0.09	UJ	0.16	*
PZ-113-AD FD TOT	10/7/2013	0.06	0.11	0.19	U	0.25	0.18	0.17	J	0.05	0.08	0.12	U	0.25	*
PZ-113-AS DIS	10/2/2013	0.05	0.09	0.16	U	0.25	0.16	0.11	J	0.12	0.11	0.12	J	0.37	*
PZ-113-AS TOT	10/2/2013	0.06	0.13	0.25	U	0.14	0.13	0.12	J	-0.02	0.06	0.16	U	0.14	*
PZ-113-SS DIS	10/3/2013	0.02	0.1	0.23	U	0.18	0.17	0.23	U	0.06	0.09	0.13	U	ND	*
PZ-113-SS TOT	10/3/2013	0.16	0.15	0.17	U	0.43	0.23	0.16	J	0.18	0.14	0.11	J	0.61	*
PZ-114-AS DIS	10/8/2013	-0.01	0.14	0.34	U	0.29	0.23	0.24	J	-0.01	0.07	0.18	U	0.29	*
PZ-114-AS TOT	10/8/2013	0.1	0.12	0.17	U	0.34	0.2	0.14	J	0.02	0.05	0.11	U	0.34	*
PZ-115-SS DIS	10/8/2013	-0.01	0.09	0.21	UJ	0.1	0.15	0.24	UJ	0	0.12	0.25	UJ	ND	*
PZ-115-SS TOT	10/8/2013	0.18	0.17	0.19	U	0.19	0.17	0.18	J	0.07	0.11	0.2	U	0.19	*
PZ-116-SS DIS	10/11/2013	0	0.14	0.31	UJ	0.3	0.27	0.3	J	0.15	0.2	0.3	UJ	0.30	*
PZ-116-SS TOT	10/11/2013	0.03	0.09	0.19	U	0.27	0.19	0.18	J	0.04	0.08	0.15	U	0.27	*
PZ-200-SS DIS	10/2/2013	0	0.06	0.18	U	0.18	0.15	0.14	J	0.03	0.08	0.16	U	0.18	*
PZ-200-SS TOT	10/2/2013	0.21	0.19	0.23	U	0.25	0.19	0.15	J	0.19	0.19	0.25	U	0.25	*
PZ-201A-SS DIS	10/9/2013	0.1	0.17	0.28	UJ	0.16	0.2	0.24	UJ	0	0.16	0.35	UJ	ND	*
PZ-201A-SS TOT	10/9/2013	-0.02	0.07	0.2	U	0.3	0.22	0.18	J	0.06	0.1	0.15	U	0.30	*
PZ-202-SS DIS	10/11/2013	-0.02	0.06	0.17	U	0.12	0.12	0.15	U	0	0.06	0.16	U	ND	*
PZ-202-SS TOT	10/11/2013	0.06	0.16	0.36	U	0.11	0.19	0.33	U	0.05	0.11	0.23	U	ND	*
PZ-203-SS DIS	10/2/2013	0.01	0.08	0.22	U	0.03	0.07	0.15	U	0.04	0.1	0.22	U	ND	*
PZ-203-SS TOT	10/2/2013	-0.03	0.05	0.16	UJ	0.17	0.13	0.14	J	-0.02	0.05	0.14	UJ	0.17	*
PZ-204A-SS DIS	10/8/2013	0.09	0.15	0.25	UJ	0.42	0.32	0.31	J	0.05	0.14	0.31	UJ	0.42	*
PZ-204A-SS TOT	10/8/2013	0.42	0.23	0.17	J	0.29	0.19	0.13	J	0.02	0.05	0.11	U	0.71	*
PZ-204-SS DIS	10/8/2013	0.17	0.16	0.2	U	0.45	0.24	0.16	J	-0.01	0.08	0.22	U	0.45	*
PZ-204-SS TOT	10/8/2013	0.17	0.15	0.17	J	0.35	0.2	0.11	J	0.22	0.16	0.16	J	0.74	
PZ-205-AS DIS	10/15/2013	0.02	0.07	0.15	U	0.07	0.11	0.18	U	0.03	0.09	0.19	U	ND	*
PZ-205-AS TOT	10/15/2013	0.64	0.28	0.14	J	0.81	0.32	0.15	J	0.45	0.23	0.13	J	1.90	
PZ-205-SS DIS	10/9/2013	0.13	0.28	0.53	UJ	0.08	0.21	0.43	UJ	0.15	0.2	0.31	UJ	ND	*
PZ-205-SS TOT	10/9/2013	0.22	0.19	0.24	U	0.33	0.22	0.19	J	0.03	0.06	0.13	U	0.33	*
PZ-206-SS DIS	10/7/2013	0.07	0.13	0.24	U	0.4	0.28	0.19	J	0.22	0.2	0.19	J	0.62	*
PZ-206-SS TOT	10/7/2013	-0.01	0.13	0.31	U	0.18	0.16	0.2	U	0.06	0.11	0.2	U	ND	*

Table 5: Summary of Thorium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Thorium-228				Thorium-230				Thorium-232				TOTAL Thorium 228 + 230 + 232	
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q		
PZ-207-AS DIS	10/4/2013	0.05	0.09	0.17	U	0.05	0.09	0.15	U	0.03	0.09	0.19	U	ND	*
PZ-207-AS TOT	10/4/2013	0	0.06	0.18	U	0.07	0.1	0.13	U	0.08	0.11	0.17	U	ND	*
PZ-208-SS DIS	10/8/2013	0.02	0.06	0.15	U	0.25	0.18	0.17	J	0.03	0.08	0.18	U	0.25	*
PZ-208-SS TOT	10/8/2013	0.08	0.12	0.19	U	0.28	0.2	0.17	J	0.29	0.21	0.2	J	0.57	*
PZ-209-SD DIS	11/7/2013	0.15	0.14	0.13	J	0.16	0.15	0.19	UJ	0.06	0.11	0.19	U	0.00	*
PZ-209-SD TOT	11/7/2013	0.24	0.23	0.21	J	0.3	0.27	0.3	J	0.09	0.14	0.21	UJ	0.54	*
PZ-209-SS DIS	11/7/2013	0.05	0.09	0.16	U	0.32	0.19	0.11	J	0.05	0.07	0.11	U	0.32	*
PZ-209-SS TOT	11/7/2013	-0.03	0.16	0.5	UJ	0.28	0.3	0.3	UJ	0.15	0.25	0.43	UJ	ND	*
PZ-210-SD DIS	11/6/2013	0.12	0.13	0.16	U	0.33	0.22	0.18	J	0.04	0.09	0.18	U	0.33	*
PZ-210-SD FD DIS	11/6/2013	1.59	0.84	0.48	J	2.74	1.22	0.47	J	1.4	0.76	0.33	J	5.73	
PZ-210-SD TOT	11/6/2013	0.03	0.09	0.19	U	0.16	0.14	0.14	J	-0.04	0.08	0.24	U	0.16	*
PZ-210-SD FD TOT	11/6/2013	0.03	0.08	0.17	U	0.25	0.18	0.14	J	-0.01	0.06	0.14	U	0.25	*
PZ-210-SS DIS	11/7/2013	0.03	0.09	0.2	U	0.13	0.14	0.19	U	-0.01	0.06	0.14	U	ND	*
PZ-210-SS TOT	11/7/2013	0	0.06	0.17	U	0.25	0.18	0.14	J	0.02	0.06	0.14	U	0.25	*
PZ-211-SD DIS	11/6/2013	0.57	0.29	0.23	J	0.95	0.39	0.18	J	0.85	0.35	0.14		2.37	
PZ-211-SD TOT	11/6/2013	6.82	1.87	0.35	J	7.98	2.22	0.27	J	7.11	1.91	0.19	J	21.91	
PZ-211-SS DIS	11/7/2013	-0.02	0.09	0.24	UJ	0.01	0.09	0.25	UJ	0.04	0.09	0.19	UJ	ND	*
PZ-211-SS TOT	11/7/2013	-0.03	0.06	0.22	U	0.14	0.13	0.16	U	0.02	0.05	0.11	U	ND	*
PZ-212-SD DIS	11/7/2013	0.11	0.12	0.15	U	0.26	0.19	0.17	J	0.01	0.06	0.17	U	0.26	*
PZ-212-SD TOT	11/7/2013	0.23	0.26	0.39	UJ	0.28	0.26	0.29	UJ	0.01	0.22	0.5	UJ	ND	*
PZ-212-SS DIS	11/7/2013	0.01	0.07	0.18	UJ	0.17	0.13	0.1	J	0.02	0.05	0.12	UJ	0.17	*
PZ-212-SS TOT	11/7/2013	0.36	0.21	0.18	J	0.25	0.17	0.13	J	0	0.06	0.16	UJ	0.61	*
PZ-302-AI DIS	10/3/2013	0.09	0.13	0.2	U	0.27	0.19	0.13	J	0.09	0.1	0.13	U	0.27	*
PZ-302-AI TOT	10/3/2013	0.12	0.12	0.14	UJ	0.17	0.14	0.11	J	0.13	0.12	0.15	UJ	0.17	*
PZ-302-AS DIS	10/8/2013	0.06	0.1	0.17	UJ	0.16	0.14	0.13	J	0	0.08	0.17	UJ	0.16	*
PZ-302-AS TOT	10/8/2013	1.06	0.45	0.18		0.94	0.43	0.22		0.73	0.36	0.22		2.73	
PZ-303-AS DIS	10/4/2013	0.01	0.07	0.2	U	0.15	0.15	0.16	UJ	-0.01	0.07	0.14	U	ND	*
PZ-303-AS TOT	10/4/2013	0.13	0.13	0.14	U	0.32	0.21	0.13	J	0.16	0.16	0.19	U	0.32	*
PZ-304-AI DIS	10/1/2013	0.04	0.09	0.19	U	0.33	0.22	0.15	J	0.03	0.06	0.13	U	0.33	*
PZ-304-AI FD DIS	10/1/2013	0.2	0.16	0.18	J	0.16	0.14	0.12	J	0.07	0.1	0.13	U	0.36	*

Table 5: Summary of Thorium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Thorium-228				Thorium-230				Thorium-232				TOTAL Thorium 228 + 230 + 232	
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q		
PZ-304-AI TOT	10/1/2013	0.09	0.13	0.19	UJ	0.4	0.26	0.23	J	0.05	0.1	0.2	UJ	0.40	*
PZ-304-AI FD TOT	10/1/2013	0	0.09	0.21	UJ	0.09	0.09	0.1	UJ	0.01	0.05	0.13	UJ	ND	*
PZ-304-AS DIS	10/1/2013	-0.03	0.07	0.21	U	0.24	0.19	0.17	J	0	0.07	0.19	U	0.24	*
PZ-304-AS TOT	10/1/2013	0.16	0.18	0.26	U	0.21	0.18	0.15	J	-0.04	0.08	0.28	U	0.21	*
PZ-305-AI DIS	10/2/2013	-0.06	0.08	0.25	UJ	0.22	0.18	0.21	J	0.06	0.08	0.13	UJ	0.22	*
PZ-305-AI TOT	10/2/2013	0.17	0.15	0.2	UJ	0.22	0.15	0.12	J	0.06	0.09	0.14	UJ	0.22	*

Notes:

All values are in units of picoCuries per liter (pCi/L)

DIS = dissolved sample (field filtered sample); TOT = total sample (unfiltered sample)

CSU = Combined Standard Uncertainty (2-sigma); MDA = Minimum Detectable Activity

FD = Field duplicate sample

Data Validation Qualifiers (Final Q) include: R = rejected, data not usable; U = Non-detect at the reported value;

UJ = Non-Detect at the estimated reported value; UJ+ = Non-Detect at the estimated reported value which may be biased high;

UJ- = Non-Detect at the estimated reported value which may be biased low;

J = estimated result; J+ = estimated result which may be biased high; J- = estimated result which may be biased low

Total Thorium - 228 + 230 +232 based on sum of detected values. ND indicates that results for all Thorium isotopes were non-detect and a * flag indicates that only one or two of the isotopes were detected.

Table 6: Summary of Radium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Radium-226				Radium-228				Combined Radium 226 + 228		Combined Radium relative to 5 pCi/L MCL
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
S-5 DIS	10/7/2013	0.39	0.23	0.17	J	-0.10	1.26	2.69	UJ	0.39	*	Less Than MCL
S-5 TOT	10/7/2013	0.37	0.21	0.16	J	0.31	1.25	2.63	UJ	0.37	*	Less Than MCL
S-8 DIS	10/1/2013	0.30	0.22	0.20	J	1.48	0.81	1.41	J	1.78		Less Than MCL
S-8 TOT	10/1/2013	0.47	0.29	0.19	J	3.45	1.01	1.00		3.92		Less Than MCL
S-10 DIS	10/1/2013	0.17	0.16	0.16	J	1.05	0.78	1.47	U	0.17	*	Less Than MCL
S-10 TOT	10/1/2013	0.13	0.14	0.21	UJ	2.95	0.98	1.17		2.95	*	Less Than MCL
S-53 DIS	10/15/2013	0.27	0.20	0.14	J	2.72	0.90	1.15	J	2.99		Less Than MCL
S-53 TOT	10/15/2013	0.40	0.27	0.22	J	0.37	0.75	1.56	UJ	0.40	*	Less Than MCL
S-61 DIS	10/3/2013	0.75	0.37	0.20	J	1.13	0.67	1.20	UJ+	0.75	*	Less Than MCL
S-61 TOT	10/3/2013	1.05	0.51	0.24	J	1.28	0.84	1.55	UJ+	1.05	*	Less Than MCL
S-82 DIS	10/8/2013	1.33	0.54	0.32		1.91	0.79	1.20	J+	3.24		Less Than MCL
S-82 TOT	10/8/2013	2.00	0.75	0.39		2.77	1.04	1.52	J+	4.77		Less Than MCL
S-84 DIS	10/9/2013	0.35	0.29	0.29	J	1.88	0.80	1.24		2.23		Less Than MCL
S-84 FD DIS	10/9/2013	0.27	0.21	0.19	J	4.58	1.28	1.17		4.85		Less Than MCL
S-84 FD TOT	10/9/2013	1.40	0.65	0.37		5.80	1.55	1.20		7.20		Exceeds MCL
S-84 TOT	10/9/2013	0.53	0.33	0.32	J	2.22	0.77	0.99		2.75		Less Than MCL
I-4 DIS	10/7/2013	0.39	0.43	0.50	UJ	0.14	0.74	1.55	UJ	Non-Detect		Less Than MCL
I-4 TOT	10/7/2013	0.16	0.16	0.19	UJ	7.69	2.09	1.73	J	7.69	*	Exceeds MCL
I-9 DIS	10/8/2013	1.26	0.53	0.22		3.23	1.13	1.51	J+	4.49		Less Than MCL
I-9 FD DIS	10/8/2013	1.83	0.74	0.29		2.58	0.96	1.37	J+	4.41		Less Than MCL
I-9 FD TOT	10/8/2013	2.22	0.79	0.34	J	2.79	0.93	1.17	J+	5.01		Exceeds MCL
I-9 TOT	10/8/2013	2.11	0.78	0.25		3.27	1.23	1.80	J+	5.38		Exceeds MCL
I-11 DIS	10/1/2013	0.80	0.40	0.23		3.47	1.14	1.39		4.27		Less Than MCL
I-11 TOT	10/1/2013	1.02	0.46	0.17		2.84	0.99	1.28		3.86		Less Than MCL
I-62 DIS	10/1/2013	0.56	0.32	0.20	J	0.97	0.80	1.55	U	0.56	*	Less Than MCL
I-62 TOT	10/1/2013	0.38	0.25	0.23	J	0.60	0.74	1.49	U	0.38	*	Less Than MCL
I-65 DIS	10/15/2013	0.14	0.14	0.16	U	0.06	0.70	1.49	UJ	Non-Detect		Less Than MCL
I-65 TOT	10/15/2013	0.40	0.24	0.17	J	1.15	0.77	1.42	UJ	0.40	*	Less Than MCL
I-66 DIS	10/9/2013	0.39	0.27	0.24	J	0.96	0.71	1.35	UJ+	0.39	*	Less Than MCL
I-66 TOT	10/9/2013	0.28	0.24	0.28	J	0.95	0.65	1.20	UJ+	0.28	*	Less Than MCL

Table 6: Summary of Radium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Radium-226				Radium-228				Combined Radium 226 + 228		Combined Radium relative to 5 pCi/L MCL
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
I-67 DIS	10/3/2013	0.45	0.28	0.19	J	4.10	1.19	1.13	J+	4.55		Less Than MCL
I-67 FD DIS	10/3/2013	0.38	0.24	0.15	J	1.85	0.69	0.95	J+	2.23		Less Than MCL
I-67 FD TOT	10/3/2013	0.90	0.40	0.15	J	1.44	0.67	1.08	J+	2.34		Less Than MCL
I-67 TOT	10/3/2013	1.10	0.46	0.19	J	1.39	0.69	1.17	J+	2.49		Less Than MCL
I-68 DIS	10/4/2013	0.81	0.40	0.29	J	2.87	1.07	1.49	J+	3.68		Less Than MCL
I-68 TOT	10/4/2013	0.65	0.31	0.13	J	3.69	1.58	2.42	J+	4.34		Less Than MCL
I-73 DIS	10/3/2013	3.05	1.43	1.06	J	5.8	1.99	2.59	J+	8.85		Exceeds MCL
I-73 TOT	10/3/2013	4.47	1.79	0.93	J	5.5	1.93	2.58	J+	9.97		Exceeds MCL
D-12 DIS	10/1/2013	0.47	0.30	0.21	J	3	1.01	1.3		3.47		Less Than MCL
D-12 TOT	10/1/2013	0.31	0.26	0.27	J	2.59	0.89	1.17		2.90		Less Than MCL
D-13 DIS	10/7/2013	0.90	0.41	0.19	J	1.68	0.81	1.36	J	2.58		Less Than MCL
D-13 TOT	10/7/2013	0.91	0.42	0.30	J	2.94	1.03	1.4	J	3.85		Less Than MCL
D-14 DIS	10/15/2013	0.85	0.36	0.12		1.89	1.26	2.32	UJ	0.85	*	Less Than MCL
D-14 TOT	10/15/2013	0.90	0.44	0.25		2.26	1.05	1.71	J	3.16		Less Than MCL
D-3 DIS	10/7/2013	2.81	0.94	0.20	J	4.43	1.28	1.28	J	7.24		Exceeds MCL
D-3 TOT	10/7/2013	1.77	0.70	0.30	J	5.36	1.5	1.35	J	7.13		Exceeds MCL
D-6 DIS	10/8/2013	2.96	0.95	0.32		3.32	1.06	1.23	J+	6.28		Exceeds MCL
D-6 TOT	10/8/2013	2.40	0.80	0.27		4	1.19	1.21	J+	6.4		Exceeds MCL
D-81 DIS	10/3/2013	0.26	0.21	0.18	J	3.14	1.18	1.7	J+	3.40		Less Than MCL
D-81 TOT	10/3/2013	0.73	0.38	0.29	J	5.4	1.59	1.67	J+	6.13		Exceeds MCL
D-83 DIS	10/8/2013	2.86	0.95	0.29		2.81	1.02	1.41	J+	5.67		Exceeds MCL
D-83 TOT	10/8/2013	3.26	1.04	0.29	J	3.14	1.01	1.2	J+	6.40		Exceeds MCL
D-85 DIS	10/9/2013	1.42	0.61	0.31		0.87	0.72	1.39	UJ+	1.42	*	Less Than MCL
D-85 TOT	10/9/2013	4.46	1.43	0.56	J	1.65	1.07	1.96	UJ+	4.46	*	Less Than MCL
D-87 DIS	10/2/2013	1.77	0.67	0.19		4.67	1.26	1.02	J+	6.44		Exceeds MCL
D-87 FD DIS	10/2/2013	2.24	0.78	0.21	J	3.62	1.05	1.04	J+	5.86		Exceeds MCL
D-87 FD TOT	10/2/2013	1.82	0.69	0.24	J	3.82	1.12	1.12	J+	5.64		Exceeds MCL
D-87 TOT	10/2/2013	2.40	0.82	0.25		3.71	1.06	0.98	J+	6.11		Exceeds MCL
D-93 DIS	10/8/2013	3.08	0.97	0.23		3.15	0.96	1.07	J+	6.23		Exceeds MCL
D-93 TOT	10/8/2013	3.28	1.03	0.27		4.26	1.18	1.05	J+	7.54		Exceeds MCL

Table 6: Summary of Radium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Radium-226				Radium-228				Combined Radium 226 + 228		Combined Radium relative to 5 pCi/L MCL
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
LR-100 DIS	10/4/2013	0.56	0.32	0.2	J	1.46	0.75	1.29	J+	2.02		Less Than MCL
LR-100 FD DIS	10/4/2013	0.43	0.26	0.16	J	2.36	0.76	0.89	J+	2.79		Less Than MCL
LR-100 FD TOT	10/4/2013	0.45	0.26	0.13	J	1.93	0.74	1.09	J+	2.38		Less Than MCL
LR-100 TOT	10/4/2013	0.38	0.25	0.23	J	0.87	0.53	0.95	UJ+	0.38	*	Less Than MCL
LR-103 DIS	10/2/2013	1.1	0.48	0.19		4.33	1.34	1.51	J+	5.43		Exceeds MCL
LR-103 TOT	10/2/2013	0.71	0.36	0.16	J	3.78	1.18	1.33	J+	4.49		Less Than MCL
LR-104 DIS	10/2/2013	0.52	0.29	0.19	J	3.43	1.06	1.23	J+	3.95		Less Than MCL
LR-104 TOT	10/2/2013	0.3	0.23	0.23	J	3.62	1.08	1.15	J+	3.92		Less Than MCL
MW-102 DIS	10/3/2013	0.15	0.15	0.16	UJ	1.12	0.67	1.21	UJ+	Non-Detect		Less Than MCL
MW-102 TOT	10/3/2013	2.23	0.77	0.18	J	1.47	0.83	1.47	J+	3.70		Less Than MCL
MW-103 DIS	10/4/2013	0.32	0.22	0.21	J	0.95	0.8	1.54	UJ+	0.32	*	Less Than MCL
MW-103 TOT	10/4/2013	0.97	0.42	0.15	J	2.08	0.94	1.51	J+	3.05		Less Than MCL
MW-104 DIS	10/3/2013	0.5	0.29	0.19	J	1.94	0.85	1.32	J+	2.44		Less Than MCL
MW-104 TOT	10/3/2013	3.14	1.03	0.26	J	4.15	1.35	1.61	J+	7.29		Exceeds MCL
MW-1204 DIS	10/11/2013	0.04	0.06	0.09	U	-0.07	0.66	1.42	U	Non-Detect		Less Than MCL
MW-1204 TOT	10/11/2013	26.93	6.28	0.4		11.04	2.74	1.25		37.97		Exceeds MCL
PZ-100-KS DIS	10/15/2013	0.33	0.24	0.2	J	1.05	0.65	1.15	UJ	0.33	*	Less Than MCL
PZ-100-KS TOT	10/15/2013	0.37	0.24	0.2	J	-0.32	0.62	1.36	UJ	0.37	*	Less Than MCL
PZ-100-SD DIS	10/8/2013	1.87	0.64	0.2		0.6	0.55	1.08	UJ+	1.87	*	Less Than MCL
PZ-100-SD TOT	10/8/2013	1.95	0.66	0.16		-0.29	0.54	1.18	UJ+	1.95	*	Less Than MCL
PZ-100-SS DIS	10/8/2013	2.6	0.82	0.21		3.99	1.15	1.16	J+	6.59		Exceeds MCL
PZ-100-SS TOT	10/8/2013	2.58	0.81	0.17		3.94	1.19	1.33	J+	6.52		Exceeds MCL
PZ-101-SS DIS	10/8/2013	17.4	4.09	0.18		0.99	0.67	1.23	UJ+	17.40	*	Exceeds MCL
PZ-101-SS TOT	10/8/2013	15.7	3.72	0.25		-0.52	0.63	1.38	UJ+	15.70	*	Exceeds MCL
PZ-102R-SS DIS	10/8/2013	1.4	0.54	0.15		0.9	0.59	1.09	UJ+	1.4	*	Less Than MCL
PZ-102R-SS TOT	10/8/2013	2.54	0.8	0.19		1.81	0.73	1.07	J+	4.35		Less Than MCL
PZ-102-SS DIS	10/8/2013	2.96	0.91	0.16		0.99	0.62	1.11	UJ+	2.96	*	Less Than MCL
PZ-102-SS TOT	10/8/2013	9.93	2.49	0.26		3.44	1.18	1.51	J+	13.37		Exceeds MCL
PZ-103-SS DIS	10/4/2013	2.41	0.83	0.34	J	2.32	1.03	1.65	J+	4.73		Less Than MCL
PZ-103-SS TOT	10/4/2013	2.29	0.89	0.37	J	1.73	0.96	1.67	J+	4.02		Less Than MCL

Table 6: Summary of Radium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Radium-226				Radium-228				Combined Radium 226 + 228		Combined Radium relative to 5 pCi/L MCL
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
PZ-104-KS DIS	10/4/2013	0.22	0.19	0.18	J	0.78	0.59	1.11	UJ+	0.22	*	Less Than MCL
PZ-104-KS TOT	10/4/2013	0.19	0.18	0.22	U	2.27	0.76	0.93	J+	2.27	*	Less Than MCL
PZ-104-SD DIS	10/7/2013	6.29	2.11	0.45	J	8.08	2.04	1.24	J	14.37		Exceeds MCL
PZ-104-SD TOT	10/7/2013	2.84	0.84	0.16	J	8.05	2.05	1.29	J	10.89		Exceeds MCL
PZ-104-SS DIS	10/9/2013	1.76	0.65	0.26		1.63	0.81	1.37		3.39		Less Than MCL
PZ-104-SS TOT	10/9/2013	1.67	0.63	0.34		1.89	0.75	1.13		3.56		Less Than MCL
PZ-105-SS DIS	10/9/2013	1.23	0.52	0.21		4.12	1.17	1.1		5.35		Exceeds MCL
PZ-105-SS TOT	10/9/2013	1.68	0.62	0.19		2.24	0.79	1.06		3.92		Less Than MCL
PZ-106-KS DIS	10/11/2013	0.37	0.27	0.29	J	1.02	0.62	1.11	UJ	0.37	*	Less Than MCL
PZ-106-KS FD DIS	10/11/2013	0.24	0.21	0.22	J	0.75	0.61	1.16	UJ	0.24	*	Less Than MCL
PZ-106-KS FD TOT	10/11/2013	0.44	0.28	0.22	J	2.31	0.77	0.97	J	2.75		Less Than MCL
PZ-106-KS TOT	10/11/2013	0.42	0.28	0.27	J	1.36	0.7	1.19	J	1.78		Less Than MCL
PZ-106-SD DIS	10/8/2013	0.9	0.43	0.31		0.81	0.55	1.02	UJ+	0.90	*	Less Than MCL
PZ-106-SD TOT	10/8/2013	1.01	0.45	0.16		1.1	0.58	0.99	J+	2.11		Less Than MCL
PZ-106-SS DIS	10/7/2013	1.04	0.42	0.2	J	3.56	1.14	1.36	J	4.60		Less Than MCL
PZ-106-SS TOT	10/7/2013	3.35	0.98	0.16	J	3.63	1.12	1.23	J	6.98		Exceeds MCL
PZ-107-SS DIS	10/3/2013	10.01	2.51	0.33	J	2.3	1.01	1.6	J+	12.31		Exceeds MCL
PZ-107-SS TOT	10/3/2013	7.73	1.99	0.24	J	11.1	2.88	2.03	UJ+	7.73	*	Exceeds MCL
PZ-109-SS DIS	10/9/2013	3.02	0.98	0.22		-0.21	0.66	1.44	UJ+	3.02	*	Less Than MCL
PZ-109-SS TOT	10/9/2013	1.96	0.71	0.21		0.91	0.72	1.37	UJ+	1.96	*	Less Than MCL
PZ-110-SS DIS	10/8/2013	2.64	0.83	0.3		1.46	0.88	1.6	UJ+	2.64	*	Less Than MCL
PZ-110-SS TOT	10/8/2013	3.89	1.14	0.17		1.15	0.85	1.6	UJ+	3.89	*	Less Than MCL
PZ-111-KS DIS	10/3/2013	0.27	0.21	0.19	J	0.96	0.65	1.21	UJ+	0.27	*	Less Than MCL
PZ-111-KS TOT	10/3/2013	0.33	0.26	0.23	J	0.85	0.66	1.25	UJ+	0.33	*	Less Than MCL
PZ-111-SD DIS	10/7/2013	1.52	0.59	0.27	J	1.43	0.69	1.15	J	2.95		Less Than MCL
PZ-111-SD TOT	10/7/2013	1.27	0.48	0.13	J	1.93	0.75	1.09	J	3.20		Less Than MCL
PZ-112-AS DIS	10/2/2013	0.99	0.47	0.22		2.97	0.9	0.98	J+	3.96		Less Than MCL
PZ-112-AS TOT	10/2/2013	1.94	0.71	0.23		2.5	0.89	1.21	J+	4.44		Less Than MCL
PZ-113-AD DIS	10/7/2013	2.3	0.86	0.39		6.2	1.57	0.95	J+	8.5		Exceeds MCL
PZ-113-AD FD DIS	10/7/2013	2.38	0.91	0.26		8.44	2.05	0.88	J+	10.82		Exceeds MCL

Table 6: Summary of Radium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Radium-226				Radium-228				Combined Radium 226 + 228		Combined Radium relative to 5 pCi/L MCL
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
PZ-113-AD FD TOT	10/7/2013	2.74	0.98	0.48		6.35	1.6	0.89	J+	9.09		Exceeds MCL
PZ-113-AD TOT	10/7/2013	2.82	0.95	0.21		6.06	1.55	1.01	J+	8.88		Exceeds MCL
PZ-113-AS DIS	10/2/2013	0.75	0.38	0.19	J	1.17	0.54	0.88	J+	1.92		Less Than MCL
PZ-113-AS TOT	10/2/2013	0.83	0.45	0.29	J	1.68	0.71	1.1	J+	2.51		Less Than MCL
PZ-113-SS DIS	10/3/2013	2.22	0.75	0.25	J	4.46	1.32	1.42	J+	6.68		Exceeds MCL
PZ-113-SS TOT	10/3/2013	3.67	1.1	0.18	J	3.21	1.07	1.38	J+	6.88		Exceeds MCL
PZ-114-AS DIS	10/8/2013	0.28	0.22	0.2	J	0.92	0.74	1.42	UJ+	0.28	*	Less Than MCL
PZ-114-AS TOT	10/8/2013	0.37	0.28	0.25	J	0.77	0.76	1.51	UJ+	0.37	*	Less Than MCL
PZ-115-SS DIS	10/8/2013	5.6	1.49	0.19		0.56	0.63	1.27	UJ+	5.6	*	Exceeds MCL
PZ-115-SS TOT	10/8/2013	8.89	2.28	0.19		-0.17	0.79	1.71	UJ+	8.89	*	Exceeds MCL
PZ-116-SS DIS	10/11/2013	0.36	0.25	0.17	J	1.76	0.82	1.34		2.12		Less Than MCL
PZ-116-SS TOT	10/11/2013	0.33	0.24	0.2	J	0.48	0.6	1.2	U	0.33	*	Less Than MCL
PZ-200-SS DIS	10/2/2013	2.86	0.94	0.37		2.03	0.74	1.03	J+	4.89		Less Than MCL
PZ-200-SS TOT	10/2/2013	1.89	0.69	0.25		5.17	1.44	1.26	J+	7.06		Exceeds MCL
PZ-201A-SS DIS	10/9/2013	0.2	0.18	0.21	U	1.48	0.71	1.18		1.48	*	Less Than MCL
PZ-201A-SS TOT	10/9/2013	0.3	0.24	0.27	J	1.71	0.71	1.09		2.01		Less Than MCL
PZ-202-SS DIS	10/11/2013	0.98	0.48	0.25		0.43	0.58	1.17	UJ	0.98	*	Less Than MCL
PZ-202-SS TOT	10/11/2013	1.19	0.52	0.33		1.84	0.78	1.21	J	3.03		Less Than MCL
PZ-203-SS DIS	10/2/2013	2	0.69	0.2		3.73	1.07	1.01	J+	5.73		Exceeds MCL
PZ-203-SS TOT	10/2/2013	1.32	0.52	0.2		2.35	0.86	1.23	J+	3.67		Less Than MCL
PZ-204A-SS DIS	10/8/2013	1.4	0.57	0.22		1.55	0.84	1.48	J+	2.95		Less Than MCL
PZ-204A-SS TOT	10/8/2013	1.65	0.6	0.19		3.53	1.02	0.98	J+	5.18		Exceeds MCL
PZ-204-SS DIS	10/8/2013	0.4	0.26	0.18	J	0.14	0.53	1.11	UJ+	0.4	*	Less Than MCL
PZ-204-SS TOT	10/8/2013	1.35	0.54	0.2		0.45	0.52	1.04	UJ+	1.35	*	Less Than MCL
PZ-205-AS DIS	10/15/2013	1.16	0.52	0.28		1.39	0.81	1.45	UJ	1.16	*	Less Than MCL
PZ-205-AS TOT	10/15/2013	0.99	0.46	0.27		1.5	0.83	1.47	J	2.49		Less Than MCL
PZ-205-SS DIS	10/9/2013	1.01	0.44	0.25		1.47	0.66	1.05		2.48		Less Than MCL
PZ-205-SS TOT	10/9/2013	1.38	0.55	0.26		2.38	0.91	1.3		3.76		Less Than MCL
PZ-206-SS DIS	10/7/2013	1.46	0.64	0.23	J	1.58	0.66	1	J	3.04		Less Than MCL
PZ-206-SS TOT	10/7/2013	1.61	0.59	0.3	J	1.33	0.64	1.05	J	2.94		Less Than MCL

Table 6: Summary of Radium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Radium-226				Radium-228				Combined Radium 226 + 228		Combined Radium relative to 5 pCi/L MCL
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q			
PZ-207-AS DIS	10/4/2013	0.64	0.36	0.23	J	1.53	0.67	1.06	J+	2.17		Less Than MCL
PZ-207-AS TOT	10/4/2013	0.63	0.34	0.22	J	2.05	0.7	0.89	J+	2.68		Less Than MCL
PZ-208-SS DIS	10/8/2013	0.4	0.25	0.15	J	1.15	0.53	0.84	J+	1.55		Less Than MCL
PZ-208-SS TOT	10/8/2013	1.07	0.44	0.21		1.13	0.55	0.91	J+	2.20		Less Than MCL
PZ-209-SD DIS	11/7/2013	0.09	0.12	0.14	U	1.18	0.79	1.47	UJ+	Non-Detect		Less Than MCL
PZ-209-SD TOT	11/7/2013	0.14	0.14	0.16	U	14.81	3.54	1.32	J+	14.81	*	Exceeds MCL
PZ-209-SS DIS	11/7/2013	1.05	0.44	0.15		0.84	0.63	1.19	UJ+	1.05	*	Less Than MCL
PZ-209-SS TOT	11/7/2013	1.08	0.46	0.24		1.37	0.87	1.59	UJ+	1.08	*	Less Than MCL
PZ-210-SD DIS	11/6/2013	0.5	0.28	0.2	J	0.85	0.72	1.4	UJ+	0.5	*	Less Than MCL
PZ-210-SD FD DIS	11/6/2013	1.42	0.53	0.18		1.7	0.97	1.72	UJ+	1.42	*	Less Than MCL
PZ-210-SD FD TOT	11/6/2013	0.73	0.34	0.14	J	1.69	0.9	1.55	J+	2.42		Less Than MCL
PZ-210-SD TOT	11/6/2013	0.58	0.3	0.19	J	0.07	0.62	1.31	UJ+	0.58	*	Less Than MCL
PZ-210-SS DIS	11/7/2013	0.52	0.31	0.22	J	0.49	0.56	1.11	UJ-	0.52	*	Less Than MCL
PZ-210-SS TOT	11/7/2013	0.61	0.37	0.26	J	-0.29	0.52	1.13	UJ-	0.61	*	Less Than MCL
PZ-211-SD DIS	11/6/2013	0.53	0.34	0.24	J	5.65	1.71	1.91	J+	6.18		Exceeds MCL
PZ-211-SD TOT	11/6/2013	22.71	5.21	0.31		25.8	6.18	2.23	J+	48.51		Exceeds MCL
PZ-211-SS DIS	11/7/2013	0.57	0.33	0.29	J	0.12	0.49	1.03	UJ-	0.57	*	Less Than MCL
PZ-211-SS TOT	11/7/2013	0.56	0.3	0.2	J	0.58	0.47	0.89	UJ-	0.56	*	Less Than MCL
PZ-212-SD DIS	11/7/2013	0.2	0.17	0.19	J	-0.33	0.53	1.17	UJ-	0.2	*	Less Than MCL
PZ-212-SD TOT	11/7/2013	0.48	0.26	0.18	J	0.18	0.47	0.99	UJ-	0.48	*	Less Than MCL
PZ-212-SS DIS	11/7/2013	0.05	0.1	0.18	UJ	0.43	0.53	1.06	UJ+	Non-Detect		Less Than MCL
PZ-212-SS TOT	11/7/2013	0.04	0.12	0.26	U	-0.34	0.55	1.21	UJ+	Non-Detect		Less Than MCL
PZ-302-AI DIS	10/3/2013	0.42	0.3	0.33	J	1.26	0.67	1.15	J+	1.68		Less Than MCL
PZ-302-AI TOT	10/3/2013	0.5	0.32	0.3	J	1.18	0.72	1.3	UJ+	0.5	*	Less Than MCL
PZ-302-AS DIS	10/8/2013	0.26	0.22	0.24	J	6.71	1.66	0.78	J+	6.97		Exceeds MCL
PZ-302-AS TOT	10/8/2013	1.88	0.69	0.21		2.47	0.9	1.27	J+	4.35		Less Than MCL
PZ-303-AS DIS	10/4/2013	0.69	0.36	0.21	J	2.34	1.09	1.78	J+	3.03		Less Than MCL
PZ-303-AS TOT	10/4/2013	0.47	0.31	0.24	J	2.69	1.24	2.02	J+	3.16		Less Than MCL
PZ-304-AI DIS	10/1/2013	1.23	0.53	0.21		3.22	1.12	1.48		4.45		Less Than MCL
PZ-304-AI FD DIS	10/1/2013	1.63	0.67	0.25		2.89	1.1	1.61		4.52		Less Than MCL

Table 6: Summary of Radium Isotope Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Date	Radium-226				Radium-228				Combined Radium 226 + 228	Combined Radium relative to 5 pCi/L MCL
		Result	CSU	MDA	FINAL Q	Result	CSU	MDA	FINAL Q		
PZ-304-AI FD TOT	10/1/2013	1.21	0.54	0.28		3.98	1.26	1.49		5.19	Exceeds MCL
PZ-304-AI TOT	10/1/2013	1.15	0.51	0.19		2.22	0.89	1.31		3.37	Less Than MCL
PZ-304-AS DIS	10/1/2013	1.52	0.64	0.21		1.91	0.9	1.48		3.43	Less Than MCL
PZ-304-AS TOT	10/1/2013	1.73	0.71	0.33		2	0.94	1.54		3.73	Less Than MCL
PZ-305-AI DIS	10/2/2013	0.84	0.4	0.21		4.02	1.2	1.29	J+	4.86	Less Than MCL
PZ-305-AI TOT	10/2/2013	0.48	0.3	0.27	J	3.06	1.03	1.32	J+	3.54	Less Than MCL

Notes:

All values are in units of picoCuries per liter (pCi/L)

DIS = dissolved (filtered) sample; TOT = total (unfiltered) sample

CSU = Combined Standard Uncertainty (2-sigma); MDA = Minimum Detectable Activity

Data Validation Qualifiers (Final Q) include: U = Non-detect at the reported value, UJ = Non-Detect at the estimated reported value,

UJ+ = Non-Detect at the estimated reported value which may be biased high;

UJ- = Non-Detect at the estimated reported value which may be biased low;

J = estimated result; J+ = estimated result which may be biased high; R = rejected, data not usable.

Combined Radium-226 plus Radium-228 = the sum of the Ra-226 and Ra-228 results unless one of results was non-detect, in which case is only the detected result shown and the value is flagged with a *.

Non-Detect = neither Radium-226 nor Radium-228 were detected in the sample

MCL = Maximum Contaminant Level for drinking water systems of 5 pCi/L for combined Radium-226 plus Radium-228

FB - Field blank

FD - Field duplicate sample

Table 7: Comparision of Radium Results for Field Duplicate Samples - October 2013 Groundwater Sampling

Sample ID	Sample Date	Radium-226						Radium-228					
		Result	CSU	MDA	FINAL Q	Ra-226 = Detect?	Relative Percent Difference (%)	Result	CSU	MDA	FINAL Q	Ra228 = Detect?	Relative Percent Difference (%)
S-84 DIS	10/9/2013	0.35	0.29	0.29	J	Detect		1.88	0.8	1.24		Detect	
S-84 FD DIS	10/9/2013	0.27	0.21	0.19	J	Detect	26	4.58	1.28	1.17		Detect	84
S-84 TOT	10/9/2013	0.53	0.33	0.32	J	Detect		2.22	0.77	0.99		Detect	
S-84 FD TOT	10/9/2013	1.4	0.65	0.37		Detect	90	5.8	1.55	1.2		Detect	89
I-67 DIS	10/3/2013	0.45	0.28	0.19	J	Detect		4.1	1.19	1.13	J+	Detect	
I-67 FD DIS	10/3/2013	0.38	0.24	0.15	J	Detect	17	1.85	0.69	0.95	J+	Detect	76
I-67 TOT	10/3/2013	1.1	0.46	0.19	J	Detect		1.39	0.69	1.17	J+	Detect	
I-67 FD TOT	10/3/2013	0.9	0.4	0.15	J	Detect	20	1.44	0.67	1.08	J+	Detect	4
I-9 DIS	10/8/2013	1.26	0.53	0.22		Detect		3.23	1.13	1.51	J+	Detect	
I-9 FD DIS	10/8/2013	1.83	0.74	0.29		Detect	37	2.58	0.96	1.37	J+	Detect	22
I-9 TOT	10/8/2013	2.11	0.78	0.25		Detect		3.27	1.23	1.8	J+	Detect	
I-9 FD TOT	10/8/2013	2.22	0.79	0.34	J	Detect	5	2.79	0.93	1.17	J+	Detect	16
D-87 DIS	10/2/2013	1.77	0.67	0.19		Detect		4.67	1.26	1.02	J+	Detect	
D-87 FD DIS	10/2/2013	2.24	0.78	0.21	J	Detect	23	3.62	1.05	1.04	J+	Detect	25
D-87 TOT	10/2/2013	2.4	0.82	0.25		Detect		3.71	1.06	0.98	J+	Detect	
D-87 FD TOT	10/2/2013	1.82	0.69	0.24	J	Detect	27	3.82	1.12	1.12	J+	Detect	3
LR-100 DIS	10/4/2013	0.56	0.32	0.2	J	Detect		1.46	0.75	1.29	J+	Detect	
LR-100 FD DIS	10/4/2013	0.43	0.26	0.16	J	Detect	26	2.36	0.76	0.89	J+	Detect	47
LR-100 TOT	10/4/2013	0.38	0.25	0.23	J	Detect		0.87	0.53	0.95	UJ+	Non-Detect	
LR-100 FD TOT	10/4/2013	0.45	0.26	0.13	J	Detect	17	1.93	0.74	1.09	J+	Detect	Non-Detect
PZ-106-KS DIS	10/11/2013	0.37	0.27	0.29	J	Detect		1.02	0.62	1.11	UJ	Non-Detect	
PZ-106-KS FD DIS	10/11/2013	0.24	0.21	0.22	J	Detect	43	0.75	0.61	1.16	UJ	Non-Detect	Non-Detect
PZ-106-KS TOT	10/11/2013	0.42	0.28	0.27	J	Detect		1.36	0.7	1.19	J	Detect	
PZ-106-KS FD TOT	10/11/2013	0.44	0.28	0.22	J	Detect	5	2.31	0.77	0.97	J	Detect	52
PZ-113-AD DIS	10/7/2013	2.3	0.86	0.39		Detect		6.2	1.57	0.95	J+	Detect	
PZ-113-AD FD DIS	10/7/2013	2.38	0.91	0.26		Detect	3	8.44	2.05	0.88	J+	Detect	31
PZ-113-AD TOT	10/7/2013	2.82	0.95	0.21		Detect		6.06	1.55	1.01	J+	Detect	
PZ-113-AD FD TOT	10/7/2013	2.74	0.98	0.48		Detect	3	6.35	1.6	0.89	J+	Detect	5
PZ-210-SD DIS	11/6/2013	0.5	0.28	0.2	J	Detect		0.85	0.72	1.4	UJ+	Non-Detect	
PZ-210-SD FD DIS	11/6/2013	1.42	0.53	0.18		Detect	96	1.7	0.97	1.72	UJ+	Non-Detect	Non-Detect
PZ-210-SD TOT	11/6/2013	0.58	0.3	0.19	J	Detect		0.07	0.62	1.31	UJ+	Non-Detect	
PZ-210-SD FD TOT	11/6/2013	0.73	0.34	0.14	J	Detect	23	1.69	0.9	1.55	J+	Detect	Non-Detect
PZ-304-AI DIS	10/1/2013	1.23	0.53	0.21		Detect		3.22	1.12	1.48		Detect	
PZ-304-AI FD DIS	10/1/2013	1.63	0.67	0.25		Detect	28	2.89	1.1	1.61		Detect	11
PZ-304-AI TOT	10/1/2013	1.15	0.51	0.19		Detect		2.22	0.89	1.31		Detect	
PZ-304-AI FD TOT	10/1/2013	1.21	0.54	0.28		Detect	5	3.98	1.26	1.49		Detect	57

Notes: All results are in units of pCi/L; FD = Field duplicate; CSU = Combined Standard Uncertainty (2-sigma); MDA = Minimum Detectable Activity
Data Validation Qualifiers (Final Q) include: J = estimated result, J+ = estimated result which may be biased high, U = Non-detect at the reported value,
UJ+ = Non-Detect at the estimated reported value which may be biased high, and UJ- = Non-Detect at the estimated reported value which may be biased low.

Table 8: Comparision of Split Sample Radium Results - October 2013 Groundwater Sampling

Sample ID	Sample Date	Radium-226						Radium-228					
		Result	CSU	MDA	FINAL Q	Ra-226 = Detect?	Relative Percent Difference (%)	Result	CSU	MDA	FINAL Q	Ra228 = Detect?	Relative Percent Difference (%)
D-3 TOT	10/07/13	2.81	0.94	0.2	J	Detect		5.36	1.5	1.35	J	Detect	
D-3 MDNR TOT	10/07/13	2.96	0.87	0.42		Detect	5	5.01	0.96	1.55		Detect	7
D-6 TOT	10/08/13	2.4	0.8	0.27		Detect		4	1.19	1.21	J+	Detect	
D-6 MDNR TOT	10/08/13	2.96	0.87	0.42		Detect	21	3.46	0.86	1.48		Detect	15
D-83 TOT	10/08/13	3.26	1.04	0.29	J	Detect		3.14	1.01	1.2	J+	Detect	
D-83 MDNR TOT	10/08/13	3.20	0.74	0.23		Detect	2	5.61	0.92	1.37		Detect	56
D-85 TOT	10/09/13	4.46	1.43	0.56	J	Detect		1.65	1.07	1.96	UJ+	Non-Detect	
D-85 MDNR TOT	10/09/13	2.22	0.83	0.51		Detect	67	NM				NM	NM
D-93 TOT	10/08/13	3.28	1.03	0.27		Detect		4.26	1.18	1.05	J+	Detect	
D-93 MDNR TOT	10/08/13	2.12	0.62	0.19		Detect	43	2.91	1.24	2.37	J	Detect	38
I-9 TOT	10/08/13	2.11	0.78	0.25		Detect		3.27	1.23	1.8	J+	Detect	
I-9 MDNR TOT	10/08/13	2.01	0.64	0.22		Detect	5	3.52	0.88	1.50		Detect	7
PZ-101-SS TOT	10/08/13	15.7	3.72	0.25		Detect		-0.52	0.63	1.38	UJ+	Non-Detect	
PZ-101-SS MDNR TOT	10/08/13	24.23	2.21	0.32		Detect	43	NM				NM	NM
PZ-102-SS TOT	10/08/13	9.93	2.49	0.26		Detect		3.44	1.18	1.51	J+	Detect	
PZ-102-SS EPA TOT	10/08/13	5.72	1.06	0.38		Detect	54	NM				NM	NM
PZ-102-SS MDNR TOT	10/08/13	5.04	0.88	0.20		Detect	65	NM				NM	NM
PZ-104-SD TOT	10/07/13	2.84	0.84	0.16	J	Detect		8.05	2.05	1.29	J	Detect	
PZ-104-SD EPA TOT	10/07/13	3.44	0.70	0.28		Detect	19	1.40	0.69	1.31	J	Detect	141
PZ-104-SD MDNR TOT	10/07/13	4.15	0.87	0.22		Detect	37	2.47	0.75	1.32		Detect	106
PZ-113-AD TOT	10/07/13	2.82	0.95	0.21		Detect		6.06	1.55	1.01	J+	Detect	
PZ-113-AD MDNR TOT	10/07/13	2.93	0.76	0.31		Detect	4	7.08	1.14	1.83		Detect	16
S-5 TOT	10/07/13	0.37	0.21	0.16	J	Detect		0.31	1.25	2.63	UJ	Non-Detect	
S-5 MDNR TOT	10/07/13	0.56	0.51	0.59	J	Detect	41	8.20	2.39	4.47		Detect	Non-Detect
S-82 TOT	10/08/13	2	0.75	0.39		Detect		2.77	1.04	1.52	J+	Detect	
S-82 MDNR TOT	10/08/13	1.29	0.54	0.27		Detect	43	NM				NM	NM

Table 8: Comparision of Split Sample Radium Results - October 2013 Groundwater Sampling

Sample ID	Sample Date	Radium-226						Radium-228					
		Result	CSU	MDA	FINAL Q	Ra-226 = Detect?	Relative Percent Difference (%)	Result	CSU	MDA	FINAL Q	Ra228 = Detect?	Relative Percent Difference (%)
D-3 DIS	10/07/13	2.81	0.94	0.2	J	Detect		4.43	1.28	1.28	J	Detect	
D-3 MDNR DIS	10/07/13	2.84	0.83	0.48		Detect	1	6.55	1.02	1.55		Detect	39
D-6 DIS	10/08/13	2.96	0.95	0.32		Detect		3.32	1.06	1.23	J+	Detect	
D-6 MDNR DIS	10/08/13	2.30	0.68	0.42		Detect	25	4.70	0.91	1.43		Detect	34
D-83 DIS	10/08/13	2.86	0.95	0.29		Detect		2.81	1.02	1.41	J+	Detect	
D-83 MDNR DIS	10/08/13	1.53	0.52	0.22		Detect	61	4.53	0.98	1.66		Detect	47
D-85 DIS	10/09/13	1.42	0.61	0.31		Detect		0.87	0.72	1.39	UJ+	Non-Detect	
D-85 MDNR DIS	10/09/13	1.61	0.66	0.51		Detect	12	NM				NM	NM
D-93 DIS	10/08/13	3.08	0.97	0.23		Detect		3.15	0.96	1.07	J+	Detect	
D-93 MDNR DIS	10/08/13	1.97	0.58	0.28		Detect	44	4.85	1.30	2.32		Detect	43
I-9 DIS	10/08/13	3.08	0.97	0.23		Detect		3.23	1.13	1.51	J+	Detect	
I-9 MDNR DIS	10/08/13	-0.01	0.10	0.21	U	Non-Detect	Non-Detect	4.48	1.30	2.33		Detect	32
PZ-101-SS DIS	10/08/13	17.4	4.09	0.18		Detect		0.99	0.67	1.23	UJ+	Non-Detect	
PZ-101-SS MDNR DIS	10/08/13	23.62	2.15	0.37		Detect	30	NM				NM	NM
PZ-102-SS DIS	10/08/13	2.96	0.91	0.16		Detect		0.99	0.62	1.11	UJ+	Non-Detect	
PZ-102-SS MDNR DIS	10/08/13	3.18	0.67	0.17		Detect	7	NM				NM	NM
PZ-104-SD DIS	10/07/13	6.29	2.11	0.45	J	Detect		8.08	2.04	1.24	J	Detect	
PZ-104-SD MDNR DIS	10/07/13	5.26	1.01	0.20		Detect	18	1.60	1.01	1.98	J	Detect	134
PZ-113-AD DIS	10/07/13	0.75	0.38	0.19	J	Detect		6.2	1.57	0.95	J+	Detect	
PZ-113-AD MDNR DIS	10/07/13	2.81	0.80	0.30		Detect	116	7.71	1.25	2.00		Detect	22
S-5 DIS	10/07/13	0.39	0.23	0.17	J	Detect		-0.1	1.26	2.69	UJ	Non-Detect	
S-5 MDNR DIS	10/07/13	1.62	0.91	0.91	J	Detect	122	2.05	1.38	2.73	J	Detect	Non-Detect
S-82 DIS	10/08/13	1.33	0.54	0.32		Detect		1.91	0.79	1.2	J+	Detect	
S-82 MDNR DIS	10/08/13	1.18	0.50	0.23		Detect	12	NM				NM	NM

Notes: All results are in units of pCi/L; FD = Field duplicate; CSU = Combined Standard Uncertainty (2-sigma); MDA = Minimum Detectable Activity
Data Validation Qualifiers (Final Q) include: J = estimated result, J+ = estimated result which may be biased high, U = Non-detect at the reported value,
UJ+ = Non-Detect at the estimated reported value which may be biased high, and UJ- = Non-Detect at the estimated reported value which may be biased low.
NM = not measured

Table 9: Summary of Detected Trace Metal Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Fraction	Sample Date	Alumi-num	Antimony	Arsenic	Barium	Chro-mium	Cobalt	Iron	Lead	Manga-nese	Mercury	Nickel	Vana-dium	Zinc
S-5	DIS	10/7/2013	1000 U	50 U	50 U	390	50 U	250 U	9900	50 U	90	0.20 U	200 U	250 U	100 U
S-5	TOT	10/7/2013	1000 U	50 U	20	620	50 U	250 U	19000	14	160	0.20 U	82	250 U	61
S-8	DIS	10/1/2013	1000 U	50 U	50 U	330	50 U	250 U	250 U	50 U	550	0.20 U	200 U	250 U	100 U
S-8	TOT	10/1/2013	1000 U	50 U	50 U	340	50 U	250 U	630	50 U	560	0.20 U	200 U	250 U	100 U
S-10	DIS	10/1/2013	400	50 U	26	110 U	50 U	250 U	130000	10	7900	0.20 U	200 U	250 U	100 U
S-10	TOT	10/1/2013	760	50 U	28	85	50 U	24	150000	13	9500	0.20 U	200 U	22	100 U
S-53	DIS	10/15/2013	1000 U	21	50 U	290	50 U	250 U	500 U	50 U	2000	0.20 U	200 U	250 U	100 U
S-53	TOT	10/15/2013	13000	20	50 U	500	19	52	17000	31	2400	0.20 U	200 U	24	110
S-61	DIS	10/3/2013	1000 U	50 U	50 U	220	50 U	250 U	500 U	50 U	570	0.20 U	200 U	250 U	100 U
S-61	TOT	10/3/2013	8100	50 U	50 U	390	21	28	11000	39	770	0.20 U	200 U	250 U	51
S-82	DIS	10/8/2013	1000 U	50 U	230	910	18	25 J+	38000	8.0	1600	0.20 U	200 U	250 U	100 U
S-82	TOT	10/8/2013	1000 U	50 U	230	930	50 U	36	38000 J	50 U	1600 J	0.20 U	200 U	250 U	100 U
S-84	DIS	10/9/2013	1000 U	50 U	150	880	50 U	29	72000	16	1900	0.20 U	200 U	250 U	100 U
S-84 FD	DIS	10/9/2013	1000 U	50 U	140	840	50 U	250 U	70000	16 U	1900	0.20 U	200 U	250 U	100 U
S-84	TOT	10/9/2013	4700	50 U	170	1200	50 U	38	95000	36 U	2800	0.20 U	200 U	24	92
S-84 FD	TOT	10/9/2013	10000	50 U	170	1300	27	42	97000	37	2700	0.20 U	67	49	110
I-4	DIS	10/7/2013	1000 U	50 U	50 U	220	50 U	250 U	14000	50 U	250	0.20 U	200 U	250 U	100 U
I-4	TOT	10/7/2013	1000 U	50 U	14	300	50 U	250 U	19000	50 U	360	0.20 U	200 U	250 U	34
I-9	DIS	10/8/2013	1000 U	20	24	1700	50 U	250 U	37000	50 U	1200	0.20 U	200 U	250 U	100 U
I-9 FD	DIS	10/8/2013	1000 U	50 U	21	1700	50 U	250 U	38000	7.5	1200	0.20 U	200 U	250 U	100 U
I-9	TOT	10/8/2013	1000 U	50 U	26	1500	50 U	250 U	34000 J	50 U	1100 J	0.20 U	200 U	250 U	100 U
I-9 FD	TOT	10/8/2013	1000 U	50 U	21	1600	50 U	250 U	34000 J	10	1100 J	0.20 U	200 U	250 U	100 U
I-11	DIS	10/1/2013	1000 U	50 U	15	650	50 U	250 U	36000	50 U	2200	0.20 U	200 U	250 U	100 U
I-11	TOT	10/1/2013	1600	50 U	29	670	50 U	250 U	43000	12	2300	0.20 U	200 U	250 U	100 U
I-62	DIS	10/1/2013	1000 U	50 U	50 U	420	50 U	250 U	7600	50 U	550	0.20 U	200 U	250 U	100 U
I-62	TOT	10/1/2013	1000 U	50 U	12	440	50 U	250 U	8300	8.0	580	0.20 U	200 U	250 U	100 U
I-65	DIS	10/15/2013	1000 U	50 U	50 U	180	50 U	250 U	500 U	50 U	100	0.20 U	200 U	250 U	100 U
I-65	TOT	10/15/2013	620	50 U	50 U	210	50 U	250 U	870	50 U	270	0.20 U	200 U	250 U	100 U
I-66	DIS	10/9/2013	1000 U	50 U	50 U	130	50 U	250 U	1400	7.5	4400	0.20 U	200 U	250 U	100 U
I-66	TOT	10/9/2013	1000 U	50 U	50 U	150	50 U	250 U	2200	11 U	4900	0.20 U	200 U	250 U	100 U
I-67	DIS	10/3/2013	1000 U	50 U	50 U	300	50 U	250 U	7900	50 U	1500	0.20 U	200 U	250 U	100 U
I-67 FD	DIS	10/3/2013	1000 U	50 U	50 U	290	50 U	250 U	7800	7.5	1400	0.20 U	200 U	250 U	100 U
I-67	TOT	10/3/2013	1000 U	50 U	50 U	290	50 U	250 U	10000	50 U	1400	0.20 U	200 U	250 U	100 U
I-67 FD	TOT	10/3/2013	1000 U	50 U	50 U	300	50 U	250 U	11000	9.5	1400	0.20 U	200 U	250 U	100 U
I-68	DIS	10/4/2013	1000 U	50 U	50 U	450	50 U	250 U	490	9.0	2000	0.20 U	200 U	250 U	100 U
I-68	TOT	10/4/2013	8400	50 U	50 U	530	30	29	8000	28	2100	0.077	200 U	21	100
I-73	DIS	10/3/2013	2000 U	100 U	200	4700	140	200	140000	22	1700	2.0 U	710	53	830
I-73	TOT	10/3/2013	4800	100 U	210	4900	150	200	160000	84	1800	2.0 U	750	89	3500
D-3	DIS	10/7/2013	1000 U	50 U	50 U	2500	50 U	250 U	34000	50 U	550	0.20 U	200 U	250 U	100 U
D-3	TOT	10/7/2013	1000 U	50 U	50 U	2500	50 U	250 U	35000	8.0	570	0.20 U	200 U	250 U	100 U

Table 9: Summary of Detected Trace Metal Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Fraction	Sample Date	Alumi-num	Antimony	Arsenic	Barium	Chro-mium	Cobalt	Iron	Lead	Manga-nese	Mercury	Nickel	Vana-dium	Zinc
D-6	DIS	10/8/2013	1000 U	50 U	50 U	1500	50 U	250 U	19000	50 U	560	0.20 U	200 U	250 U	100 U
D-6	TOT	10/8/2013	1000 U	50 U	50 U	1400	50 U	250 U	18000 J	50 U	530 J	0.20 U	200 U	250 U	100 U
D-12	DIS	10/1/2013	1000 U	50 U	50 U	450	50 U	250 U	9200	8.5	1100	0.20 U	200 U	250 U	100 U
D-12	TOT	10/1/2013	1000 U	50 U	50 U	380	50 U	250 U	9400	50 U	1100	0.20 U	200 U	250 U	100 U
D-13	DIS	10/7/2013	1000 U	50 U	50 U	650	50 U	25	14000	50 U	400	0.20 U	200 U	250 U	100 U
D-13	TOT	10/7/2013	510	50 U	50 U	670	50 U	250 U	15000	8.5	430	0.20 U	200 U	250 U	100 U
D-14	DIS	10/15/2013	1000 U	50 U	50 U	560	50 U	250 U	6800	50 U	950	0.20 U	200 U	250 U	100 U
D-14	TOT	10/15/2013	800	50 U	50 U	700	50 U	250 U	17000	50 U	1200	0.26	200 U	250 U	26
D-81	DIS	10/3/2013	1000 U	50 U	50 U	350	50 U	250 U	16000	50 U	860	0.20 U	200 U	250 U	100 U
D-81	TOT	10/3/2013	1000 U	50 U	50 U	350	50 U	250 U	15000	50 U	830	0.20 U	200 U	250 U	100 U
D-83	DIS	10/8/2013	1000 U	50 U	50 U	1900	50 U	250 U	18000	50 U	440	0.20 U	200 U	250 U	100 U
D-83	TOT	10/8/2013	1000 U	50 U	50 U	1800	50 U	250 U	16000 J	50 U	430 J	0.20 U	200 U	250 U	100 U
D-85	DIS	10/9/2013	1000 U	50 U	43	1900	50 U	250 U	55000	11 U	1000	0.20 U	200 U	250 U	100 U
D-85	TOT	10/9/2013	15000	50 U	51	2600	24	32	97000	63	2200	0.20 U	82	50	170
D-87	DIS	10/2/2013	1000 U	50 U	50 U	1500	50 U	34	34000	7.5	640	0.20 U	200 U	250 U	100 U
D-87 FD	DIS	10/2/2013	1000 U	50 U	50 U	1500	50 U	250 U	35000	12	630	0.20 U	200 U	250 U	100 U
D-87	TOT	10/2/2013	2300	50 U	50 U	1500	50 U	250 U	36000	14	670	0.20 U	200 U	250 U	100 U
D-87 FD	TOT	10/2/2013	2200	50 U	50 U	1500	50 U	250 U	37000	11	670	0.20 U	200 U	250 U	26
D-93	DIS	10/8/2013	1000 U	50 U	50 U	1300	50 U	250 U	22000	50 U	480	0.20 U	200 U	250 U	100 U
D-93	TOT	10/8/2013	690	50 U	50 U	1100	50 U	250 U	23000 J	11	580 J	0.20 U	200 U	250 U	100 U
LR-100	DIS	10/4/2013	1000 U	50 U	50 U	470	50 U	250 U	23000	9.5	190	0.20 U	200 U	250 U	100 U
LR-100 FD	DIS	10/4/2013	1000 U	50 U	50 U	460	50 U	34	22000	50 U	180	0.20 U	200 U	250 U	100 U
LR-100	TOT	10/4/2013	1000 U	50 U	50 U	460	16	21	23000	13	190	0.20 U	200 U	250 U	100 U
LR-100 FD	TOT	10/4/2013	1000 U	50 U	50 U	460	50 U	250 U	23000	9.0	190	0.20 U	200 U	250 U	100 U
LR-103	DIS	10/2/2013	1000 U	50 U	74	1100	50 U	250 U	38000	11	920	0.20 U	200 U	250 U	100 U
LR-103	TOT	10/2/2013	1000 U	50 U	75	1100	50 U	250 U	40000	50 U	950	0.20 U	200 U	250 U	100 U
LR-104	DIS	10/2/2013	1000 U	50 U	50 U	400	50 U	250 U	14000	50 U	1200	0.20 U	200 U	250 U	100 U
LR-104	TOT	10/2/2013	1000 U	50 U	50 U	390	50 U	250 U	14000	9.5	1200	0.20 U	200 U	250 U	100 U
MW-102	DIS	10/3/2013	1000 U	50 U	44	110	50 U	27	500 U	50 U	1400	0.20 U	200 U	250 U	100 U
MW-102	TOT	10/3/2013	6200	50 U	130	550	17	99	45000	55	2500	0.20 U	220	39	170
MW-103	DIS	10/4/2013	1000 U	50 U	50 U	180	50 U	250 U	1400	50 U	1100	0.20 U	200 U	250 U	100 U
MW-103	TOT	10/4/2013	15000	50 U	50 U	300	28	21	14000	31	1200	0.20 U	200 U	29	78
MW-104	DIS	10/3/2013	1000 U	50 U	30	520	50 U	250 U	30000	50 U	3400	0.20 U	200 U	250 U	100 U
MW-104	TOT	10/3/2013	62000	50 U	55	1600	91	50	110000	130	5300	0.13	150	180	430
MW-1204	DIS	10/11/2013	2400 J	100 UJ	100 UJ	4100 J	220 J	84 J	130000 J	100 UJ	6400 J	0.20 U	400 UJ	62 J	200 UJ
MW-1204	TOT	10/11/2013	2700 J	49 J	100 UJ	3900 J	220 J	500 UJ	140000 J	32 J	7400 J	0.20 U	400 UJ	61 UJ	200 UJ
PZ-100-KS	DIS	10/15/2013	1000 U	50 U	50 U	250 U	50 U	250 U	500 U	50 U	17	0.20 U	200 U	250 U	100 U
PZ-100-KS	TOT	10/15/2013	1000 U	50 U	50 U	250 U	50 U	250 U	520	50 U	28	0.20 U	200 U	250 U	100 U
PZ-100-SD	DIS	10/8/2013	1000 U	50 U	50 U	350	50 U	250 U	820	50 U	73	0.20 U	200 U	250 U	100 U
PZ-100-SD	TOT	10/8/2013	1000 U	50 U	50 U	320	50 U	250 U	640 J	50 U	63 J	0.20 U	200 U	250 U	100 U

Table 9: Summary of Detected Trace Metal Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Fraction	Sample Date	Alumi-num	Antimony	Arsenic	Barium	Chro-mium	Cobalt	Iron	Lead	Manga-nese	Mercury	Nickel	Vana-dium	Zinc
PZ-100-SS	DIS	10/8/2013	1000 U	50 U	50 U	69	50 U	250 U	500 U	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-100-SS	TOT	10/8/2013	1000 U	50 U	50 U	68	50 U	250 U	500 U	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-101-SS	DIS	10/8/2013	1000 U	50 U	50 U	620	50 U	26 J+	1100	50 U	85	0.20 U	200 U	250 U	100 U
PZ-101-SS	TOT	10/8/2013	1000 U	50 U	50 U	580	50 U	250 U	1900 J	50 U	89 J	0.20 U	200 U	250 U	100 U
PZ-102R-SS	DIS	10/8/2013	1000 U	50 U	50 U	79	50 U	250 U	500 U	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-102R-SS	TOT	10/8/2013	420	50 U	50 U	72	50 U	250 U	230 J	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-102-SS	DIS	10/8/2013	1000 U	50 U	50 U	350	50 U	26 J+	870	50 U	230	0.20 U	200 U	250 U	100 U
PZ-102-SS	TOT	10/8/2013	4600	50 U	50 U	340	50 U	250 U	4100 J	8.5	260 J	0.20 U	200 U	250 U	100 U
PZ-103-SS	DIS	10/4/2013	1000 U	50 U	50 U	390	50 U	250 U	14000	7.5	330	0.20 U	200 U	250 U	100 U
PZ-103-SS	TOT	10/4/2013	2400	50 U	50 U	400	18	250 U	18000	13	350	0.20 U	200 U	250 U	44
PZ-104-KS	DIS	10/4/2013	1000 U	50 U	50 U	51	50 U	36	440	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-104-KS	TOT	10/4/2013	1000 U	50 U	50 U	51	50 U	250 U	560	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-104-SD	DIS	10/7/2013	1000 U	50 U	12	670	50 U	250 U	8700	50 U	170	0.20 U	200 U	250 U	100 U
PZ-104-SD	TOT	10/7/2013	1000 U	50 U	50 U	480	50 U	250 U	6500	50 U	130	0.20 U	200 U	250 U	120
PZ-104-SS	DIS	10/9/2013	1000 U	50 U	50 U	100	50 U	35	1400	50 U	40	0.20 U	200 U	250 U	100 U
PZ-104-SS	TOT	10/9/2013	1000 U	50 U	50 U	110	50 U	250 U	1500	50 U	41	0.20 U	200 U	250 U	100 U
PZ-105-SS	DIS	10/9/2013	1000 U	50 U	50 U	160	50 U	250 U	500 U	9.5	75 U	0.20 U	200 U	250 U	27
PZ-105-SS	TOT	10/9/2013	1000 U	50 U	50 U	160	50 U	250 U	280	50 U	75 U	0.20 U	200 U	250 U	29
PZ-106-KS	DIS	10/11/2013	1000 U	50 U	50 U	46	50 U	250 U	240	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-106-KS FD	DIS	10/11/2013	1000 R	50 R	50 R	620 R	50 R	250 R	12000 R	9.5 R	1100 R	0.20 U	200 R	250 R	100 R
PZ-106-KS	TOT	10/11/2013	1000 U	50 U	50 U	45	50 U	250 U	270	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-106-KS FD	TOT	10/11/2013	1000 U	50 U	50 U	45	50 U	250 U	260	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-106-SD	DIS	10/8/2013	1000 U	50 U	50 U	100	50 U	250 U	570	50 U	70	0.20 U	200 U	250 U	100 U
PZ-106-SD	TOT	10/8/2013	710	50 U	50 U	120	50 U	250 U	1900 J	50 U	63 J	0.20 U	200 U	250 U	100 U
PZ-106-SS	DIS	10/7/2013	1000 U	50 U	50 U	150	50 U	250 U	590	50 U	20	0.20 U	200 U	250 U	100 U
PZ-106-SS	TOT	10/7/2013	1000 U	50 U	50 U	150	50 U	250 U	520	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-107-SS	DIS	10/3/2013	1000 U	50 U	50 U	720	18	250 U	540	8.5	380	0.20 U	200 U	250 U	26
PZ-107-SS	TOT	10/3/2013	3000	50 U	50 U	740	21	250 U	4100	18	400	0.20 U	200 U	250 U	50
PZ-109-SS	DIS	10/9/2013	1000 U	50 U	50 U	69	50 U	250 U	500 U	8.0 U	75 U	0.20 U	200 U	250 U	29
PZ-109-SS	TOT	10/9/2013	1000 U	50 U	50 U	63	50 U	250 U	500 U	7.5 U	75 U	0.20 U	200 U	250 U	33
PZ-110-SS	DIS	10/8/2013	1000 U	50 U	50 U	320	50 U	250 U	7200	9.5	210	0.20 U	200 U	250 U	100 U
PZ-110-SS	TOT	10/8/2013	1000 U	50 U	50 U	300	50 U	250 U	6500 J	50 U	190 J	0.20 U	200 U	250 U	100 U
PZ-111-KS	DIS	10/3/2013	1000 U	50 U	50 U	250 U	50 U	250 U	500 U	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-111-KS	TOT	10/3/2013	1000 U	50 U	50 U	250 U	50 U	250 U	150	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-111-SD	DIS	10/7/2013	1000 U	50 U	50 U	110	50 U	250 U	500 U	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-111-SD	TOT	10/7/2013	1000 U	50 U	50 U	110	50 U	250 U	500 U	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-112-AS	DIS	10/2/2013	1000 U	50 U	180	2100	50 U	250 U	39000	11	220	0.20 U	200 U	250 U	100 U
PZ-112-AS	TOT	10/2/2013	1000 U	50 U	190	2100	50 U	250 U	40000	11	230	0.20 U	200 U	250 U	100 U
PZ-113-AD	DIS	10/7/2013	1000 U	50 U	50 U	2300	50 U	30	36000	8.5	660	0.20 U	200 U	250 U	100 U
PZ-113-AD FD	DIS	10/7/2013	1000 U	50 U	50 U	2300	50 U	250 U	36000	50 U	650	0.20 U	200 U	250 U	100 U

Table 9: Summary of Detected Trace Metal Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Fraction	Sample Date	Alumi-num	Antimony	Arsenic	Barium	Chro-mium	Cobalt	Iron	Lead	Manga-nese	Mercury	Nickel	Vana-dium	Zinc
PZ-113-AD	TOT	10/7/2013	1000 U	50 U	50 U	2300	50 U	250 U	36000	50 U	670	0.20 U	200 U	250 U	100 U
PZ-113-AD FD	TOT	10/7/2013	1000 U	50 U	50 U	2300	50 U	250 U	37000	7.5	680	0.20 U	200 U	250 U	100 U
PZ-113-AS	DIS	10/2/2013	1000 U	50 U	16	800	50 U	25	11000	8.0	6300	0.20 U	200 U	250 U	100 U
PZ-113-AS	TOT	10/2/2013	1000 U	50 U	17	840	50 U	250 U	13000	8.0	6400	0.20 U	200 U	250 U	100 U
PZ-113-SS	DIS	10/3/2013	1000 U	50 U	50 U	190	50 U	250 U	500 U	50 U	35	0.20 U	200 U	250 U	100 U
PZ-113-SS	TOT	10/3/2013	5900	50 U	50 U	220	24	250 U	5300	10	94	0.20 U	200 U	250 U	35
PZ-114-AS	DIS	10/8/2013	1000 U	50 U	240	460	21	26 J+	74000	15	1900	0.20 U	200 U	250 U	100 U
PZ-114-AS	TOT	10/8/2013	1000 U	50 U	250	450	50 U	250 U	72000 J	12	1800 J	0.20 U	200 U	250 U	100 U
PZ-115-SS	DIS	10/8/2013	1000 U	50 U	50 U	340	50 U	31 J+	1300	50 U	51	0.20 U	200 U	250 U	100 U
PZ-115-SS	TOT	10/8/2013	1000 U	50 U	50 U	330	50 U	250 U	1200 J	50 U	48 J	0.20 U	200 U	250 U	100 U
PZ-116-SS	DIS	10/11/2013	1000 U	50 U	50 U	70	50 U	28	500 U	50 U	75 U	0.20 U	200 U	250 U	100 U
PZ-116-SS	TOT	10/11/2013	1000 U	50 U	50 U	76	50 U	250 U	500 U	50 U	75 U	0.20 U	200 U	250 U	30
PZ-200-SS	DIS	10/2/2013	1000 U	50 U	50 U	790	50 U	250 U	9500	50 U	5800	0.20 U	200 U	250 U	100 U
PZ-200-SS	TOT	10/2/2013	800	50 U	50 U	800	50 U	41	12000	11	5900	0.20 U	200 U	250 U	100 U
PZ-201A-SS	DIS	10/9/2013	1000 U	50 U	50 U	140	50 U	250 U	500 U	50 U	75 U	0.20 U	200 U	250 U	30
PZ-201A-SS	TOT	10/9/2013	1000 U	50 U	10	140	50 U	250 U	500 U	11 U	75 U	0.20 U	200 U	250 U	33
PZ-202-SS	DIS	10/11/2013	1000 U	50 U	50 U	620	50 U	29	11000	8.5 U	1100	0.20 U	200 U	250 U	100 U
PZ-202-SS	TOT	10/11/2013	1000 U	50 U	50 U	630	50 U	36	12000	13	1200	0.20 U	200 U	250 U	100 U
PZ-203-SS	DIS	10/2/2013	1000 U	50 U	50 U	88	50 U	250 U	270	50 U	22	0.20 U	200 U	250 U	100 U
PZ-203-SS	TOT	10/2/2013	1000 U	50 U	50 U	89	50 U	250 U	350	50 U	23	0.20 U	200 U	250 U	100 U
PZ-204A-SS	DIS	10/8/2013	1000 U	50 U	17	300	17	25 J+	8600	50 U	2000	0.20 U	200 U	250 U	100 U
PZ-204A-SS	TOT	10/8/2013	1400	50 U	17	450	50 U	26	9800 J	15	2100 J	0.20 U	200 U	250 U	46
PZ-204-SS	DIS	10/8/2013	1000 U	50 U	50 U	170	50 U	250 U	340	50 U	110	0.20 U	200 U	250 U	100 U
PZ-204-SS	TOT	10/8/2013	1000 U	50 U	50 U	140	50 U	250 U	810 J	12	100 J	0.20 U	200 U	250 U	100 U
PZ-205-AS	DIS	10/15/2013	1000 U	22	19	1600	50 U	250 U	45000	50 U	740	0.20 U	200 U	250 U	100 U
PZ-205-AS	TOT	10/15/2013	23000	26	30	1900	41	51	70000	48	1000	0.086	200 U	42	99
PZ-205-SS	DIS	10/9/2013	1000 U	50 U	50 U	140	50 U	250 U	500 U	9.5	75 U	0.20 U	200 U	250 U	100 U
PZ-205-SS	TOT	10/9/2013	1000 U	50 U	50 U	150	50 U	250 U	500 U	10 U	75 U	0.20 U	200 U	250 U	100 U
PZ-206-SS	DIS	10/7/2013	1000 U	50 U	50 U	57	50 U	250 U	500 U	50 U	22	0.20 U	200 U	250 U	100 U
PZ-206-SS	TOT	10/7/2013	1900	50 U	50 U	92	50 U	250 U	3100	7.5	65	0.20 U	200 U	250 U	100 U
PZ-207-AS	DIS	10/4/2013	1000 U	50 U	50 U	700	50 U	24	22000	50 U	69	0.20 U	200 U	250 U	100 U
PZ-207-AS	TOT	10/4/2013	1000 U	50 U	50 U	690	17	250 U	22000	10	66	0.11	200 U	250 U	41
PZ-208-SS	DIS	10/8/2013	1000 U	50 U	50 U	170	50 U	250 U	500 U	12	28	0.20 U	200 U	250 U	100 U
PZ-208-SS	TOT	10/8/2013	1800	50 U	50 U	220	50 U	250 U	2300 J	50 U	93 J	0.20 U	200 U	250 U	100 U
PZ-209-SD	DIS	11/7/2013	1000 U	50 U	50 U	32	50 U	250 U	500 U	50 U	39	0.20 U	200 U	250 U	100 U
PZ-209-SD	TOT	11/7/2013	1000 U	50 U	50 U	38	50 U	250 U	500 U	50 U	46	0.20 U	200 U	250 U	100 U
PZ-209-SS	DIS	11/7/2013	1000 U	50 U	50 U	160	50 U	250 U	500 U	50 U	180	0.20 U	200 U	250 U	100 U
PZ-209-SS	TOT	11/7/2013	1000 U	50 U	50 U	160	50 U	250 U	500 U	50 U	160	0.20 U	200 U	250 U	100 U
PZ-210-SD	DIS	11/6/2013	8500 J+	50 U	50 U	140	23	30	2100 J+	11	51	0.20 U	200 U	250 U	46 U
PZ-210-SD FD	DIS	11/6/2013	23000 J+	50 U	50 U	220	28	26	5800 J+	25	63	0.20 U	200 U	250 U	72 U

Table 9: Summary of Detected Trace Metal Results - October 2013 Groundwater Sampling, West Lake Landfill OU-1

Sample ID	Sample Fraction	Sample Date	Alumi-num	Antimony	Arsenic	Barium	Chro-mium	Cobalt	Iron	Lead	Manga-nese	Mercury	Nickel	Vana-dium	Zinc
PZ-210-SD	TOT	11/6/2013	75000	50 U	21	630	27	250 U	20000	78	130	0.20 U	74	250 U	190
PZ-210-SD FD	TOT	11/6/2013	60000	50 U	14	500	28	250 U	16000	65	110	0.20 U	68	250 U	160
PZ-210-SS	DIS	11/7/2013	1000 U	50 U	50 U	97	50 U	250 U	500 U	8.0	83	0.20 U	200 U	250 U	100 U
PZ-210-SS	TOT	11/7/2013	480	50 U	50 U	63	50 U	250 U	240	50 U	90	0.20 U	200 U	250 U	30
PZ-211-SD	DIS	11/6/2013	42000 J+	50 U	16	110	19	39	11000 J+	44	59	0.20 U	200 U	250 U	50 U
PZ-211-SD	TOT	11/6/2013	160000	50 U	59	480	50 U	250 U	42000	170	240	0.062	200 U	250 U	190
PZ-211-SS	DIS	11/7/2013	1000 U	50 U	50 U	63	50 U	250 U	500 U	50 U	21	0.20 U	200 U	250 U	100 U
PZ-211-SS	TOT	11/7/2013	1000 U	50 U	50 U	64	50 U	250 U	500 U	50 U	22	0.20 U	200 U	250 U	100 U
PZ-212-SD	DIS	11/7/2013	1000 U	50 U	50 U	140	50 U	250 U	500 U	50 U	280	0.20 U	200 U	250 U	100 U
PZ-212-SD	TOT	11/7/2013	1000 U	50 U	50 U	140	50 U	250 U	500 U	50 U	280	0.20 U	200 U	250 U	100 U
PZ-212-SS	DIS	11/7/2013	1000 U	50 U	50 U	140	50 U	250 U	500 U	50 U	28	0.20 U	200 U	250 U	100 U
PZ-212-SS	TOT	11/7/2013	770	50 U	50 U	150	50 U	250 U	700	50 U	78	0.20 U	200 U	250 U	100 U
PZ-302-AI	DIS	10/3/2013	1000 U	50 U	50 U	360	50 U	250 U	1700	9.5	250	0.20 U	200 U	250 U	100 U
PZ-302-AI	TOT	10/3/2013	1000 U	50 U	50 U	350	50 U	26	1800	50 U	250	0.20 U	200 U	250 U	100 U
PZ-302-AS	DIS	10/8/2013	1000 U	50 U	140	620	17	26	77000	8.5	4800	0.20 U	200 U	250 U	100 U
PZ-302-AS	TOT	10/8/2013	4300 J+	50 U	200	800	50 U	250 U	83000 J	18	4900 J	0.20 U	96	250 U	55
PZ-303-AS	DIS	10/4/2013	1000 U	50 U	190	810	50 U	21	88000	9.0	3800	0.20 U	200 U	250 U	100 U
PZ-303-AS	TOT	10/4/2013	1000 U	50 U	200	940	24	250 U	92000	29	3600	0.20 U	200 U	250 U	100 U
PZ-304-AI	DIS	10/1/2013	1000 U	50 U	50 U	1600	50 U	250 U	19000	50 U	1000	0.20 U	200 U	250 U	100 U
PZ-304-AI FD	DIS	10/1/2013	1000 U	50 U	50 U	1600	50 U	250 U	19000	50 U	1000	0.20 U	200 U	250 U	100 U
PZ-304-AI	TOT	10/1/2013	1000 U	50 U	50 U	1600	50 U	250 U	19000	7.5	1000	0.20 U	200 U	250 U	100 U
PZ-304-AI FD	TOT	10/1/2013	1000 U	50 U	50 U	1600	50 U	250 U	19000	9.5	1000	0.20 U	200 U	250 U	100 U
PZ-304-AS	DIS	10/1/2013	1000 U	50 U	210	2400	50 U	250 U	31000	50 U	130 J+	0.20 U	200 U	250 U	100 U
PZ-304-AS	TOT	10/1/2013	1000 U	50 U	210	2300	50 U	250 U	30000	13	120	0.20 U	200 U	24	100 U
PZ-305-AI	DIS	10/2/2013	1000 U	50 U	50 U	710	50 U	250 U	40000	8.0	3300	0.20 U	200 U	250 U	100 U
PZ-305-AI	TOT	10/2/2013	1000 U	50 U	25	640	50 U	250 U	45000	13	3500	0.20 U	200 U	250 U	100 U

Notes:
All values are in units of micrograms per liter (µg/L)
Sample Fractions: DIS = Dissolved (filtered sample); TOT = Total (unfiltered sample)
FD - Field duplicate sample
Data Validation Qualifiers (Final Q) include:
U = non-detect at the reported value
J = estimated result
J+ = estimated result which may be biased high
J- = estimated result which may be biased low
UJ = non-detect at the estimated reported value
UJ- = non-detect at the estimated reported value which may be biased low

Table 10: Summary of Most Frequently Detected Volatile Organic Compounds - October 2013 Groundwater Sampling

Sample ID	Sample Date	Benzene	Ethyl Benzene	M, P- Xylenes	O-Xylene	Total Xylenes	Isopropyl-benzene (Cumene)	MTBE	Chloro-benzene	1,4-Dichloro-benzene	cis-1,2-Dichloro-ethene	Toluene	Vinyl Chloride
S-5	10/7/2013	3.9	5.0 U	6.4	4.8	11	2.4	0.63	2.3	8.2	5.0 U	1.0	5.0 U
S-8	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
S-10	10/1/2013	3.4	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	8.9	1.3	4.1	5.0 U	2.1
S-53	10/15/2013	0.67	5.0 UJ-	5.0 U	5.0 UJ-	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
S-61	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.59	5.0 U	5.0 U
S-82	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	1.2	5.0 U	1.1	5.0 U	5.0 U
S-84	10/9/2013	2.8	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	13	5.0 U	0.45	5.0 U	5.0 U
S-84 FD	10/9/2013	3.5	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	12	5.0 U	5.0 U	5.0 U	5.0 U
I-4	10/7/2013	5.6	5.0 U	24	14	38	3.3	0.64	6.4	7.3	5.0 U	5.7	5.0 U
I-9	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-9 FD	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-11	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	1.3	5.0 U	2.1	5.0 U	5.0 U
I-62	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-65	10/15/2013	5.0 U	5.0 UJ-	5.0 U	5.0 UJ-	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-66	10/9/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-67	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-67 FD	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.85	5.0 U	5.0 U
I-68	10/4/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-73	10/3/2013	130	15	20	9.2	29	9.8	2.5	63	5.0 U	1.1	40	5.0 U
D-3	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	0.55	2.1	5.0 U	5.0 U	5.0 U	5.0 U
D-6	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	3.3	5.0 U	5.0 U	0.52	5.0 U	5.0 U
D-12	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.56	5.0 U	5.0 U
D-13	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	8.5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
D-14	10/15/2013	15	2.9 J-	5.0	2.5 J-	7.5	3.7	0.70	65	16	5.0 U	4.4	0.84
D-81	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
D-83	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	1.6	2.3	5.0 U	5.0 U	5.0 U	5.0 U
D-85	10/9/2013	0.45	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	59	5.0 U	5.0 U	5.0 U	5.0 U
D-87	10/2/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
D-87 FD	10/2/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.75	5.0 U	5.0 U
D-93	10/8/2013	2.7	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	53	5.0 U	31
LR-100	10/4/2013	6.9	5.0 U	0.91	0.35	1.3	17	5.0 U	63	5.6	5.0 U	5.0 U	5.0 U
LR-100 FD	10/4/2013	7.7	5.0 U	0.99	0.36	1.4	18	5.0 U	65	6.1	5.0 U	5.0 U	5.0 U
LR-103	10/2/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
LR-104	10/2/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.57	5.0 U	5.0 U
MW-102	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
MW-103	10/4/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
MW-104	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
MW-1204	10/11/2013	53	500 U	500 U	500 U	1000 U	500 U	500 U	500 U	500 U	500 U	2400	500 U
PZ-100-KS	10/15/2013	5.0 U	5.0 UJ-	5.0 U	5.0 UJ-	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Table 10: Summary of Most Frequently Detected Volatile Organic Compounds - October 2013 Groundwater Sampling

Sample ID	Sample Date	Benzene	Ethyl Benzene	M, P- Xylenes	O-Xylene	Total Xylenes	Isopropyl-benzene (Cumene)	MTBE	Chloro-benzene	1,4-Dichloro-benzene	cis-1,2-Dichloro-ethene	Toluene	Vinyl Chloride
S-5	10/7/2013	3.9	5.0 U	6.4	4.8	11	2.4	0.63	2.3	8.2	5.0 U	1.0	5.0 U
S-8	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
S-10	10/1/2013	3.4	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	8.9	1.3	4.1	5.0 U	2.1
S-53	10/15/2013	0.67	5.0 UJ-	5.0 U	5.0 UJ-	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
S-61	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.59	5.0 U	5.0 U
S-82	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	1.2	5.0 U	1.1	5.0 U	5.0 U
S-84	10/9/2013	2.8	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	13	5.0 U	0.45	5.0 U	5.0 U
S-84 FD	10/9/2013	3.5	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	12	5.0 U	5.0 U	5.0 U	5.0 U
I-4	10/7/2013	5.6	5.0 U	24	14	38	3.3	0.64	6.4	7.3	5.0 U	5.7	5.0 U
I-9	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-9 FD	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-11	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	1.3	5.0 U	2.1	5.0 U	5.0 U
I-62	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-65	10/15/2013	5.0 U	5.0 UJ-	5.0 U	5.0 UJ-	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-66	10/9/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-67	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-67 FD	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.85	5.0 U	5.0 U
I-68	10/4/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-73	10/3/2013	130	15	20	9.2	29	9.8	2.5	63	5.0 U	1.1	40	5.0 U
D-3	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	0.55	2.1	5.0 U	5.0 U	5.0 U	5.0 U
D-6	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	3.3	5.0 U	5.0 U	0.52	5.0 U	5.0 U
D-12	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.56	5.0 U	5.0 U
D-13	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	8.5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
D-14	10/15/2013	15	2.9 J-	5.0	2.5 J-	7.5	3.7	0.70	65	16	5.0 U	4.4	0.84
PZ-100-SD	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-101-SS	10/8/2013	0.74	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.7	1.1	5.0 U	5.0 U	5.0 U
PZ-102R-SS	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-102-SS	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-103-SS	10/4/2013	77	6.6	12	6.9	19	1.1	5.0 U	5.0 U	12	5.0 U	13	5.0 U
PZ-104-KS	10/4/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-104-SD	10/7/2013	640	17	29	9.0	38	100 U	100 U	100 U	100 U	100 U	200	100 U
PZ-104-SS	10/9/2013	2000	31	49	26	75	3.5	6.9	5.0 U	8.0	5.0 U	150	5.0 U
PZ-105-SS	10/9/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-106-KS	10/11/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-106-KS FD	10/11/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-106-SD	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-106-SS	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-107-SS	10/3/2013	4.1	5.0 U	5.0 U	5.0 U	10 U	5.0 U	0.73	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-109-SS	10/9/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Table 10: Summary of Most Frequently Detected Volatile Organic Compounds - October 2013 Groundwater Sampling

Sample ID	Sample Date	Benzene	Ethyl Benzene	M, P- Xylenes	O-Xylene	Total Xylenes	Isopropyl-benzene (Cumene)	MTBE	Chloro-benzene	1,4-Dichloro-benzene	cis-1,2-Dichloro-ethene	Toluene	Vinyl Chloride
S-5	10/7/2013	3.9	5.0 U	6.4	4.8	11	2.4	0.63	2.3	8.2	5.0 U	1.0	5.0 U
S-8	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
S-10	10/1/2013	3.4	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	8.9	1.3	4.1	5.0 U	2.1
S-53	10/15/2013	0.67	5.0 UJ-	5.0 U	5.0 UJ-	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
S-61	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.59	5.0 U	5.0 U
S-82	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	1.2	5.0 U	1.1	5.0 U	5.0 U
S-84	10/9/2013	2.8	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	13	5.0 U	0.45	5.0 U	5.0 U
S-84 FD	10/9/2013	3.5	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	12	5.0 U	5.0 U	5.0 U	5.0 U
I-4	10/7/2013	5.6	5.0 U	24	14	38	3.3	0.64	6.4	7.3	5.0 U	5.7	5.0 U
I-9	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-9 FD	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-11	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	1.3	5.0 U	2.1	5.0 U	5.0 U
I-62	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-65	10/15/2013	5.0 U	5.0 UJ-	5.0 U	5.0 UJ-	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-66	10/9/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-67	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-67 FD	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.85	5.0 U	5.0 U
I-68	10/4/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-73	10/3/2013	130	15	20	9.2	29	9.8	2.5	63	5.0 U	1.1	40	5.0 U
D-3	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	0.55	2.1	5.0 U	5.0 U	5.0 U	5.0 U
D-6	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	3.3	5.0 U	5.0 U	0.52	5.0 U	5.0 U
D-12	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.56	5.0 U	5.0 U
D-13	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	8.5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
D-14	10/15/2013	15	2.9 J-	5.0	2.5 J-	7.5	3.7	0.70	65	16	5.0 U	4.4	0.84
PZ-10D-SS	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-110-SS	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	2.4	5.0 U	5.0 U
PZ-111-KS	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-111-SD	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-112-AS	10/2/2013	38	1.1	0.77	0.47	1.2	2.3	5.0 U	3500	22	5.0 U	5.0 U	5.0 U
PZ-113-AD	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-113-AD FD	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-113-AS	10/2/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	2.0	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-113-SS	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-114-AS	10/8/2013	3.4	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	61	6.0	5.0 U	5.0 U	5.0 U
PZ-115-SS	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-116-SS	10/11/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-200-SS	10/2/2013	0.85	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-201A-SS	10/9/2013	2.7	5.0 U	5.0 U	0.56	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-202-SS	10/11/2013	20	5.0 U	5.0 U	5.0 U	10 U	5.0 U	3.1	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

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Sample ID	Sample Date	Benzene	Ethyl Benzene	M, P- Xylenes	O-Xylene	Total Xylenes	Isopropyl-benzene (Cumene)	MTBE	Chloro-benzene	1,4-Dichloro-benzene	cis-1,2-Dichloro-ethene	Toluene	Vinyl Chloride
S-5	10/7/2013	3.9	5.0 U	6.4	4.8	11	2.4	0.63	2.3	8.2	5.0 U	1.0	5.0 U
S-8	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
S-10	10/1/2013	3.4	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	8.9	1.3	4.1	5.0 U	2.1
S-53	10/15/2013	0.67	5.0 UJ-	5.0 U	5.0 UJ-	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
S-61	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.59	5.0 U	5.0 U
S-82	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	1.2	5.0 U	1.1	5.0 U	5.0 U
S-84	10/9/2013	2.8	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	13	5.0 U	0.45	5.0 U	5.0 U
S-84 FD	10/9/2013	3.5	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	12	5.0 U	5.0 U	5.0 U	5.0 U
I-4	10/7/2013	5.6	5.0 U	24	14	38	3.3	0.64	6.4	7.3	5.0 U	5.7	5.0 U
I-9	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-9 FD	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-11	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	1.3	5.0 U	2.1	5.0 U	5.0 U
I-62	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-65	10/15/2013	5.0 U	5.0 UJ-	5.0 U	5.0 UJ-	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-66	10/9/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-67	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-67 FD	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.85	5.0 U	5.0 U
I-68	10/4/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-73	10/3/2013	130	15	20	9.2	29	9.8	2.5	63	5.0 U	1.1	40	5.0 U
D-3	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	0.55	2.1	5.0 U	5.0 U	5.0 U	5.0 U
D-6	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	3.3	5.0 U	5.0 U	0.52	5.0 U	5.0 U
D-12	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.56	5.0 U	5.0 U
D-13	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	8.5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
D-14	10/15/2013	15	2.9 J-	5.0	2.5 J-	7.5	3.7	0.70	65	16	5.0 U	4.4	0.84
PZ-203-SS	10/2/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-204A-SS	10/8/2013	20	5.0 U	5.0 U	5.0 U	10 U	5.0 U	0.62	1.6	5.0 U	5.0 U	5.0 U	5.0 U
PZ-204-SS	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-205-AS	10/15/2013	1500	140 J-	480	140 J-	460	35	10	80	8.7	5.0 U	870	5.0 U
PZ-205-SS	10/9/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-206-SS	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-207-AS	10/4/2013	1.5	5.0 U	5.0 U	5.0 U	10 U	4.6	0.88	17	3.8	5.0 U	5.0 U	5.0 U
PZ-208-SS	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-209-SD	11/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-209-SS	11/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-210-SD	11/6/2013	38	0.48	0.70	0.43	1.1	5.0 U	0.83	5.0 U	5.0 U	5.0 U	3.8	5.0 U
PZ-210-SD FD	11/6/2013	38	0.44	0.67	0.38	1.1	5.0 U	0.93	5.0 U	5.0 U	5.0 U	4.0	5.0 U
PZ-210-SS	11/7/2013	0.54	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-211-SD	11/6/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-211-SS	11/7/2013	2.0	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

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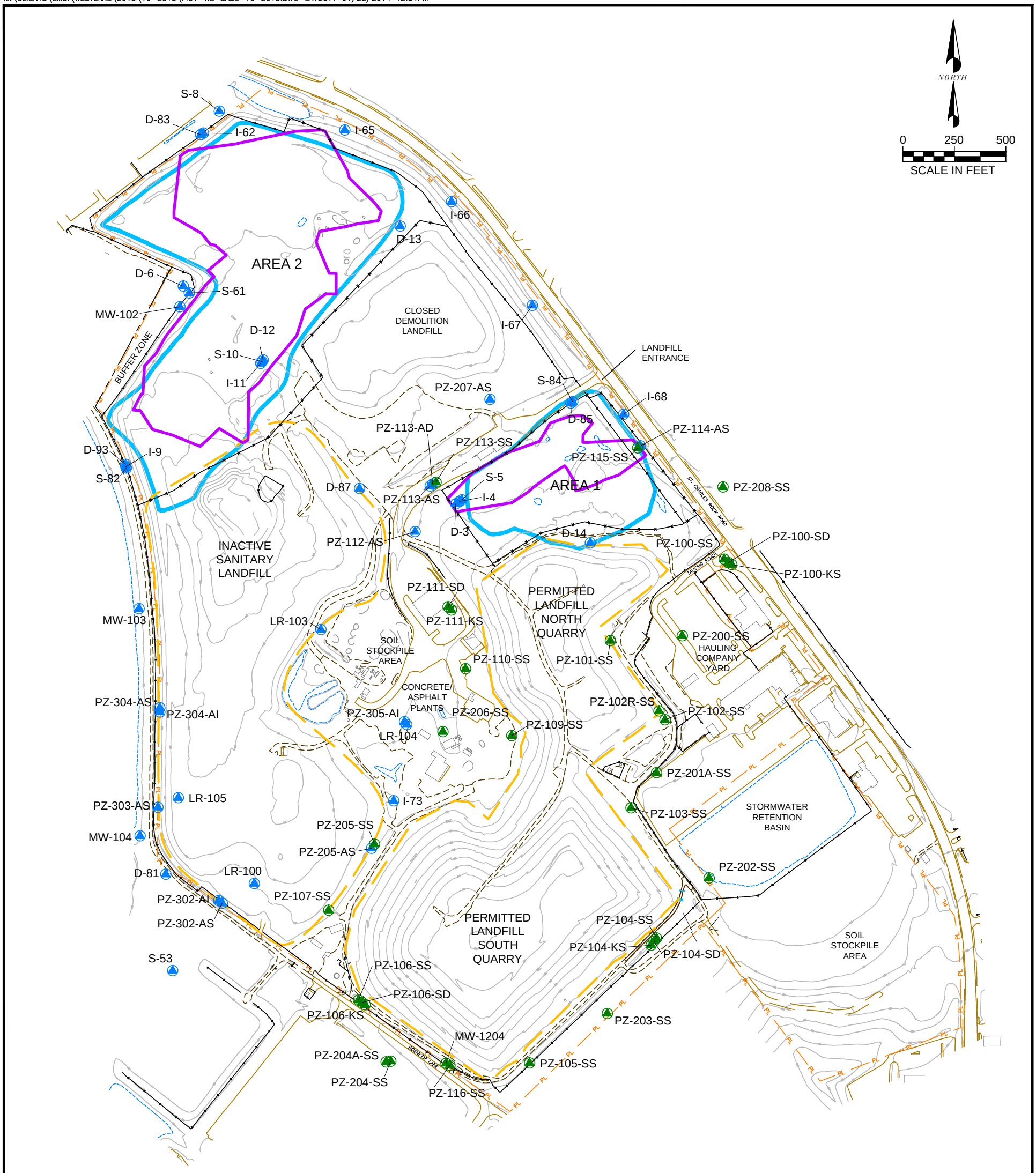
S-8	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
S-10	10/1/2013	3.4	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	8.9	1.3	4.1	5.0 U	2.1
S-53	10/15/2013	0.67	5.0 UJ-	5.0 U	5.0 UJ-	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
S-61	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.59	5.0 U	5.0 U
S-82	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	1.2	5.0 U	1.1	5.0 U	5.0 U
S-84	10/9/2013	2.8	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	13	5.0 U	0.45	5.0 U	5.0 U
S-84 FD	10/9/2013	3.5	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	12	5.0 U	5.0 U	5.0 U	5.0 U
I-4	10/7/2013	5.6	5.0 U	24	14	38	3.3	0.64	6.4	7.3	5.0 U	5.7	5.0 U
I-9	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-9 FD	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-11	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	1.3	5.0 U	2.1	5.0 U	5.0 U
I-62	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-65	10/15/2013	5.0 U	5.0 UJ-	5.0 U	5.0 UJ-	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-66	10/9/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-67	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-67 FD	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.85	5.0 U	5.0 U
I-68	10/4/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
I-73	10/3/2013	130	15	20	9.2	29	9.8	2.5	63	5.0 U	1.1	40	5.0 U
D-3	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	0.55	2.1	5.0 U	5.0 U	5.0 U	5.0 U
D-6	10/8/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	3.3	5.0 U	5.0 U	0.52	5.0 U	5.0 U
D-12	10/1/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	0.56	5.0 U	5.0 U
D-13	10/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	8.5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
D-14	10/15/2013	15	2.9 J-	5.0	2.5 J-	7.5	3.7	0.70	65	16	5.0 U	4.4	0.84
PZ-212-SD	11/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-212-SS	11/7/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-302-AI	10/3/2013	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
PZ-302-AS	10/8/2013	80	0.40	0.59	5.0 U	10 U	1.3	5.0 U	52	4.9	5.0 U	2.7	5.0 U
PZ-303-AS	10/4/2013	40	16	190	190	380	5.0 U	0.63	5.0 U	5.0 U	6.4	280	1.9
PZ-304-AI	10/1/2013	1.7	5.0 U	5.0 U	5.0 U	10 U	0.48	5.0 U	16	2.4	5.0 U	5.0 U	5.0 U
PZ-304-AI FD	10/1/2013	1.7	5.0 U	5.0 U	5.0 U	10 U	0.45	5.0 U	16	2.4	5.0 U	5.0 U	5.0 U
PZ-304-AS	10/1/2013	9.7	5.0 U	5.0 U	5.0 U	10 U	0.61	5.0 U	58	14	0.63	5.0 U	5.0 U
PZ-305-AI	10/2/2013	1.1	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.4	5.0 U	5.0 U	5.0 U	5.0 U

Notes: All values are in units of micrograms per liter (µg/L).
FD = Field duplicate sample.
Data Validation Qualifiers (Final Q) include:
U = non-detect at the reported value
J = estimated result. J- = estimated result which may be biased low
UJ = non-detect at the estimated reported value

Figures



LEGEND

- Alluvium Groundwater Well
- Bedrock Groundwater Well
- Operable Unit-1 Area as Defined By ROD
- Estimated Extent of Radiologically Impacted Material
- 320 Existing 10' Contours
- Building or Structure
- PL Property Line
- Fence
- Paved Road
- Unpaved Road

WELL FORMATION DESIGNATIONS

LR or MW: Undifferentiated
S or AS: Alluvial Shallow Well
I or AI: Alluvial Intermediate Well
D or AD: Alluvial Deep Well
SS: St. Louis Formation Well
SD: Salem Formation Well
KS: Keokuk Formation Well

NOTES:

1. Horizontal Coordinates Based on State Plane Missouri East Zone NAD 27
2. Elevations Based on U.S.G.S. Datum.
3. Existing Grade Contours are from the Aerial Survey Completed by the Sanborn Mapping Company on July 20, 2011.
4. Base Map Prepared by Aquaterra Environmental Solutions, Inc.

Generalized Stratagraphic Column

System	Series	Group	Formation	Thickness (ft)	Dominant Lithology
Quaternary	Holocene		Alluvium	0-150	Sand, gravel, silt, and clay.
	Pleistocene		Loess Glacial Till	1-110 0-55	Silt. Pebbly clay and silt.
Pennsylvanian	Missourian	Pleasanton	Undifferentiated	0-75	Shales, siltstones, "dirty" sandstones, coal beds and thin limestone beds.
	Desmoinesian	Marmaton	Undifferentiated	0-90	
		Cherokee	Undifferentiated	0-200	
	Atokan		Cheltenham Formation	unknown	
Mississippian	Meremacian		Ste. Genevieve Formation	0-160	Argillaceous to arenaceous limestone.
			St. Louis Limestone	0-180	
			Salem Formation	0-180	
			Warsaw Formation	0-110	Shales in upper portion, limestone in lower portions.
	Osagean		Burlington-Keokuk Formation	0-240	Cherty limestone.
			Fern Glen Formation	0-105	Red limestone and shale.

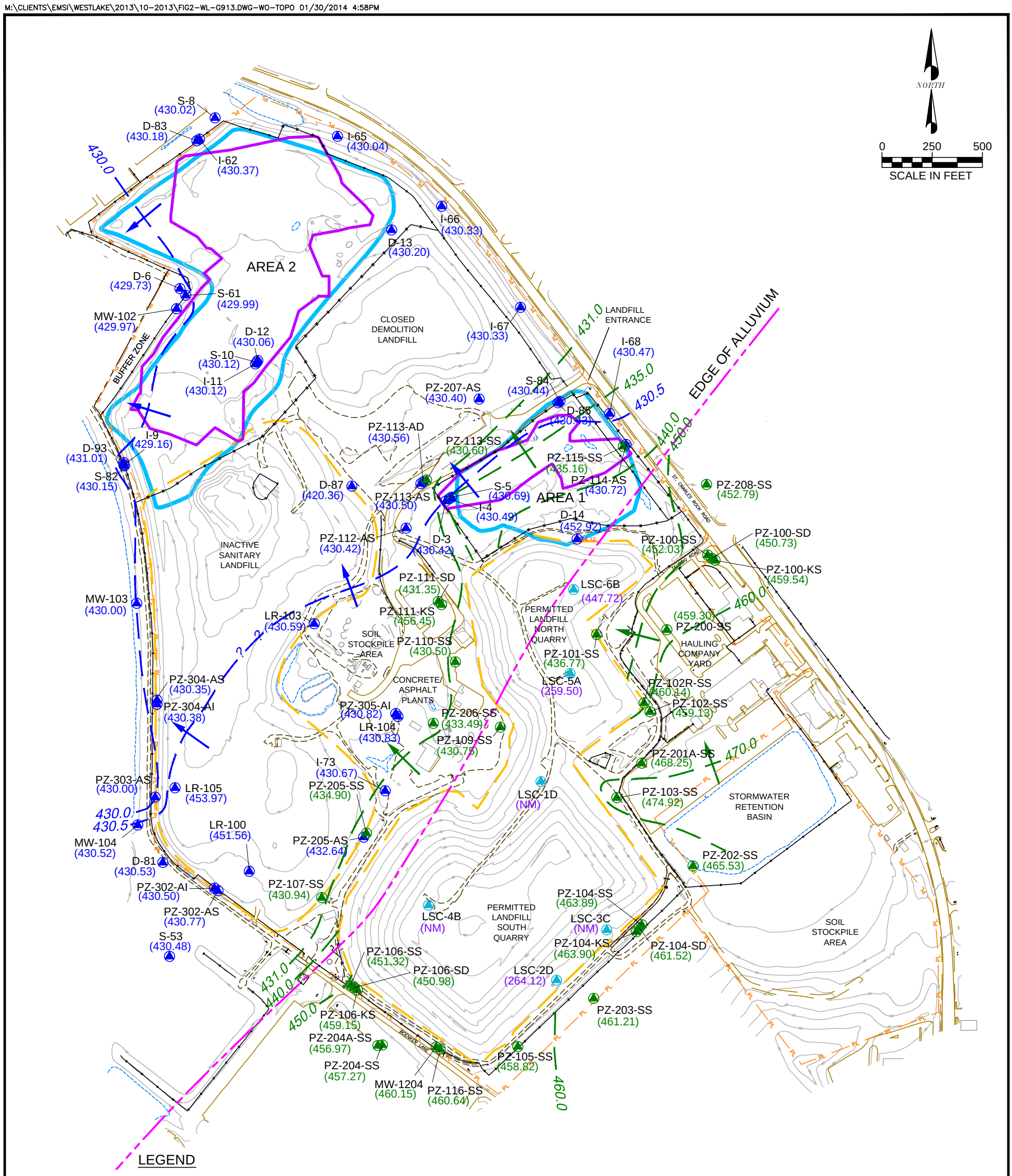
Figure 1

Base Map

West Lake Landfill Operable Unit-1

EMSI Engineering Management Support, Inc.

M:\CLIENTS\EMSI\WESTLAKE\2013\10-2013\FIG2-WL-G913.DWG-WO-TOPO 01/30/2014 4:58PM



WELL FORMATION DESIGNATIONS

LR or MW: Undifferentiated
S or AS: Alluvial Shallow Well
I or AI: Alluvial Intermediate Well
D or AD: Alluvial Deep Well
SS: St. Louis Formation Well
SD: Salem Formation Well
KS: Keokuk Formation Well

NOTES:

1. Horizontal Coordinates Based on State Plane Missouri East Zone NAD 27
2. Elevations Based on U.S.G.S. Datum.
3. Existing Grade Contours are from the Aerial Survey Completed by the Sanborn Mapping Company on July 20, 2011.
4. Base Map Prepared by Aquaterra Environmental Solutions, Inc.

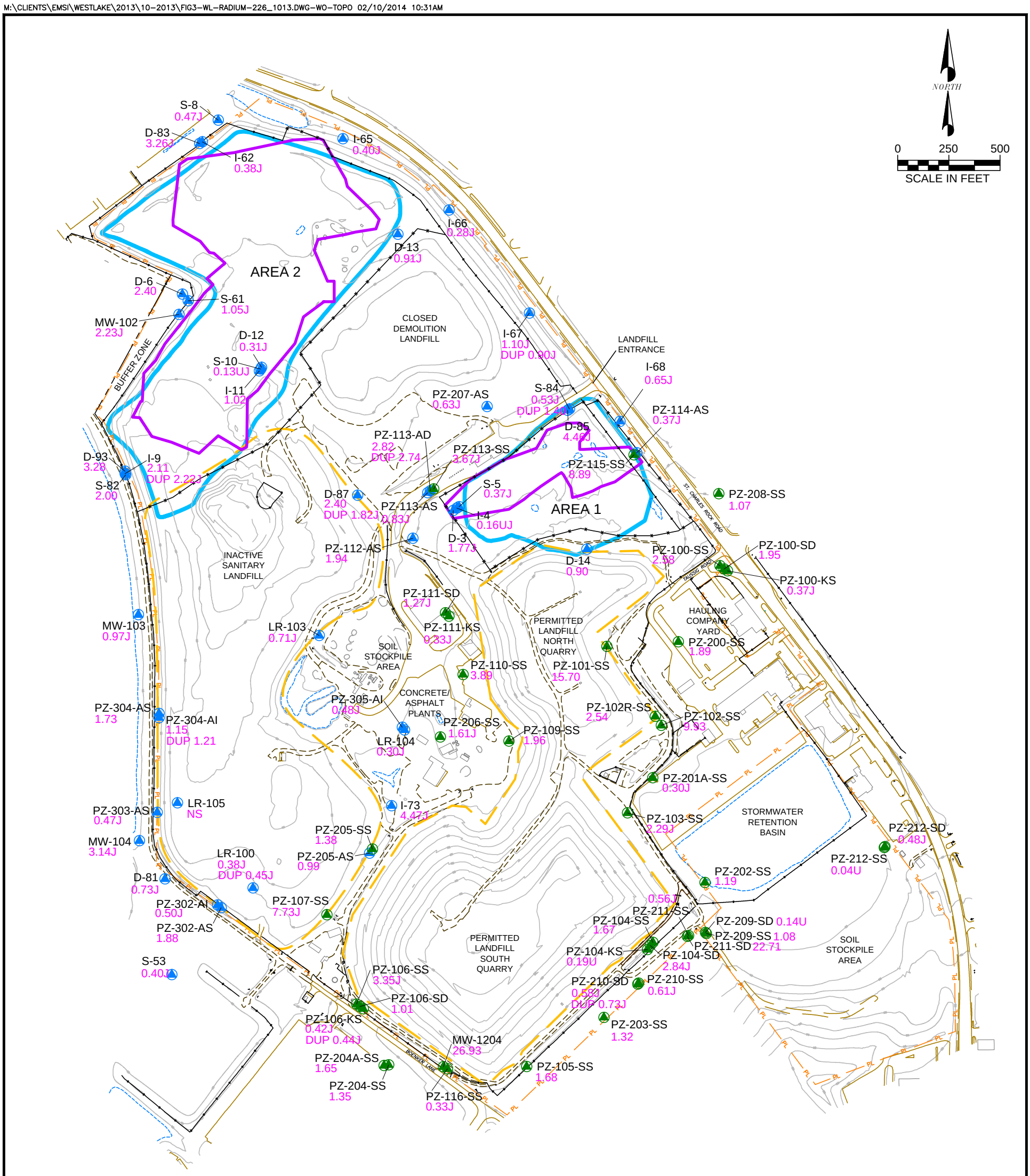
Figure 2

Alluvial Groundwater Table and St. Louis FM. Potentiometric Elevation Map September 30, 2013

West Lake Landfill Operable Unit-1

EMSI Engineering Management Support, Inc.

M:\CLIENTS\EMSI\WESTLAKE\2013\10-2013\FIG3-WL-RADIUM-226_1013.DWG-WO-TOPO 02/10/2014 10:31AM



LEGEND

- Alluvium Groundwater Well
- Bedrock Groundwater Well
- Operable Unit-1 Area as Defined By ROD
- Estimated Extent of Radiologically Impacted Material
- Paved Road
- Unpaved Road

WELL FORMATION DESIGNATIONS

LR or MW: Undifferentiated
S or AS: Alluvial Shallow Well
I or AI: Alluvial Intermediate Well
D or AD: Alluvial Deep Well
SS: St. Louis Formation Well
SD: Salem Formation Well
KS: Keokuk Formation Well

NOTES:

1. Horizontal Coordinates Based on State Plane Missouri East Zone NAD 27
2. Elevations Based on U.S.G.S. Datum.
3. Existing Grade Contours are from the Aerial Survey Completed by the Sanborn Mapping Company on July 20, 2011.
4. Base Map Prepared by Aquaterra Environmental Solutions, Inc.

RADIUM EXPLANATION

.092 Radium-226 (pCi/L)
NS Not Sampled

Data Validation Qualifiers:

U = Non-detect at the reported value
UJ = Non-Detect at the estimated reported value
UJ+ = Non-Detect at the estimated reported value which may be biased high
UJ- = Non-Detect at the estimated reported value which may be biased low
J = Estimated result
J+ = Esitmated result which may be biased high

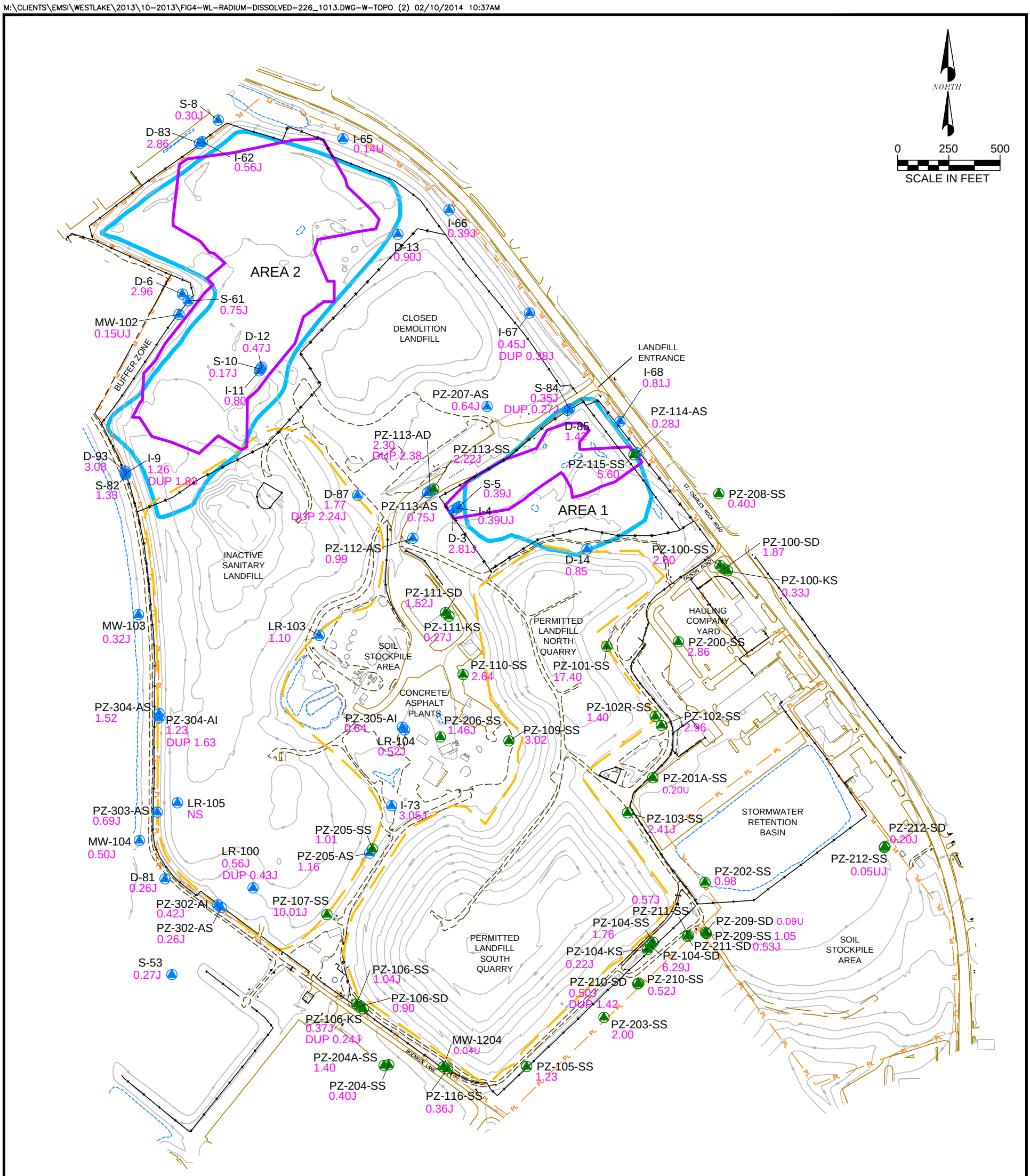
Figure 3

Total Radium-226 in Groundwater
October - November 2013

West Lake Landfill Operable Unit-1

EMSI Engineering Management Support, Inc.

M:\CLIENTS\EMSI\WESTLAKE\2013\10-2013\FIG4-WL-RADIUM-DISSOLVED-226_1013.DWG-W-TOPO (2) 02/10/2014 10:37AM



LEGEND

- Alluvium Groundwater Well
- Bedrock Groundwater Well
- Operable Unit-1 Area as Defined By ROD
- Estimated Extent of Radiologically Impacted Material
- Paved Road
- Unpaved Road

WELL FORMATION DESIGNATIONS

LR or MW: Undifferentiated
S or AS: Alluvial Shallow Well
I or AI: Alluvial Intermediate Well
D or AD: Alluvial Deep Well
SS: St. Louis Formation Well
SD: Salem Formation Well
KS: Keokuk Formation Well

NOTES:

1. Horizontal Coordinates Based on State Plane Missouri East Zone NAD 27
2. Elevations Based on U.S.G.S. Datum.
3. Existing Grade Contours are from the Aerial Survey Completed by the Sanborn Mapping Company on July 20, 2011.
4. Base Map Prepared by Aquaterra Environmental Solutions, Inc.

RADIUM EXPLANATION

.092 Radium-226 (pCi/L)
NS Not Sampled

Data Validation Qualifiers:

U = Non-detect at the reported value
UJ = Non-Detect at the estimated reported value
UJ+ = Non-Detect at the estimated reported value which may be biased high
UJ- = Non-Detect at the estimated reported value which may be biased low
J = Estimated result
J+ = Esitmated result which may be biased high

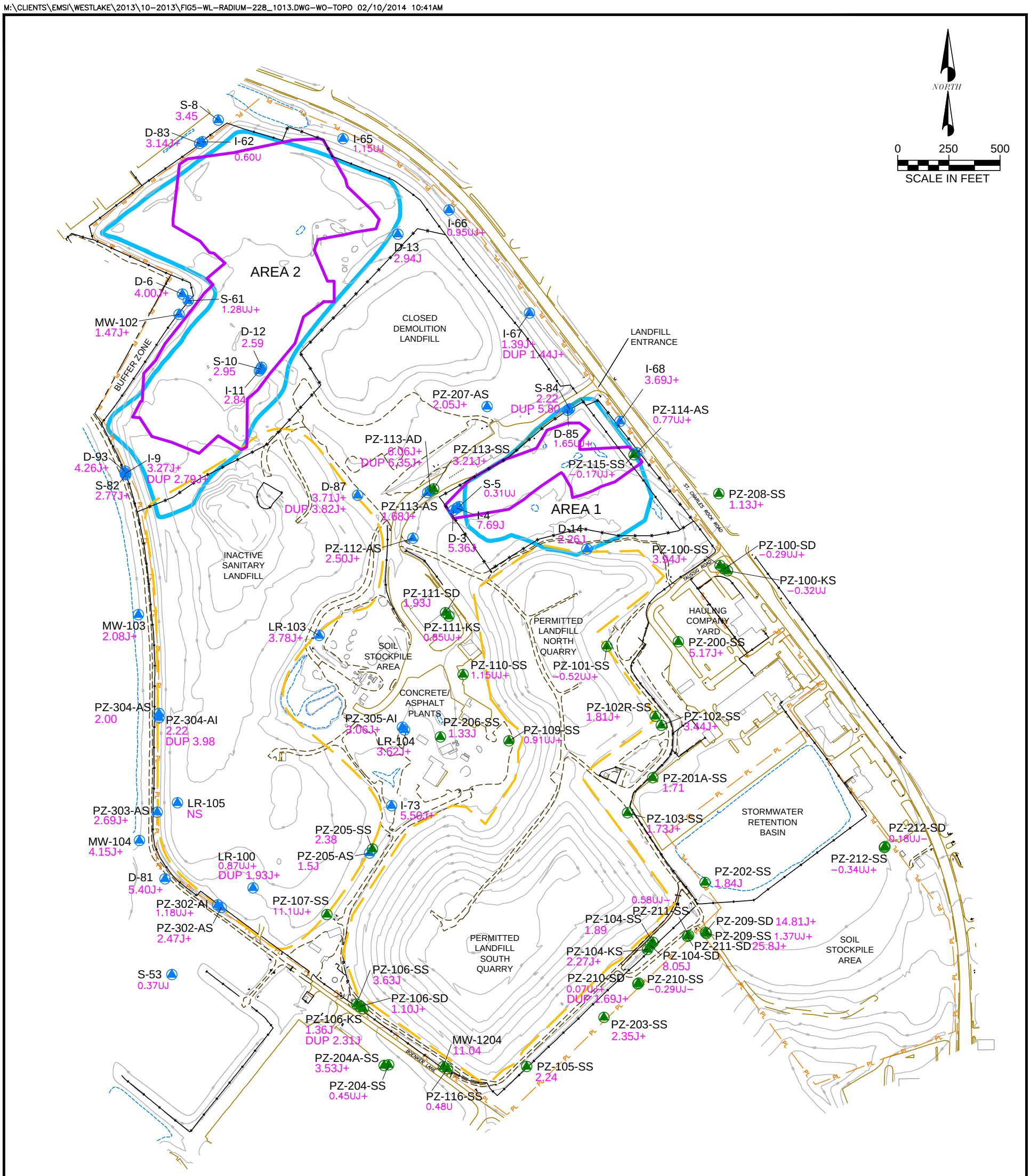
Figure 4

Dissolved Radium-226 in Groundwater
October - November 2013

West Lake Landfill Operable Unit-1

EMSI Engineering Management Support, Inc.

M:\CLIENTS\EMSI\WESTLAKE\2013\10-2013\FIG5-WL-RADIUM-228_1013.DWG-WO-TOPO 02/10/2014 10:41AM



LEGEND

- Alluvium Groundwater Well
- Bedrock Groundwater Well
- Operable Unit-1 Area as Defined By ROD
- Estimated Extent of Radiologically Impacted Material
- Paved Road
- Unpaved Road

WELL FORMATION DESIGNATIONS

LR or MW: Undifferentiated
S or AS: Alluvial Shallow Well
I or AI: Alluvial Intermediate Well
D or AD: Alluvial Deep Well
SS: St. Louis Formation Well
SD: Salem Formation Well
KS: Keokuk Formation Well

NOTES:

1. Horizontal Coordinates Based on State Plane Missouri East Zone NAD 27
2. Elevations Based on U.S.G.S. Datum.
3. Existing Grade Contours are from the Aerial Survey Completed by the Sanborn Mapping Company on July 20, 2011.
4. Base Map Prepared by Aquaterra Environmental Solutions, Inc.

RADIUM EXPLANATION

.092 Radium-228 (pCi/L)
NS Not Sampled

Data Validation Qualifiers:

U = Non-detect at the reported value
UJ = Non-Detect at the estimated reported value
UJ+ = Non-Detect at the estimated reported value which may be biased high
UJ- = Non-Detect at the estimated reported value which may be biased low
J = Estimated result
J+ = Esitmated result which may be biased high

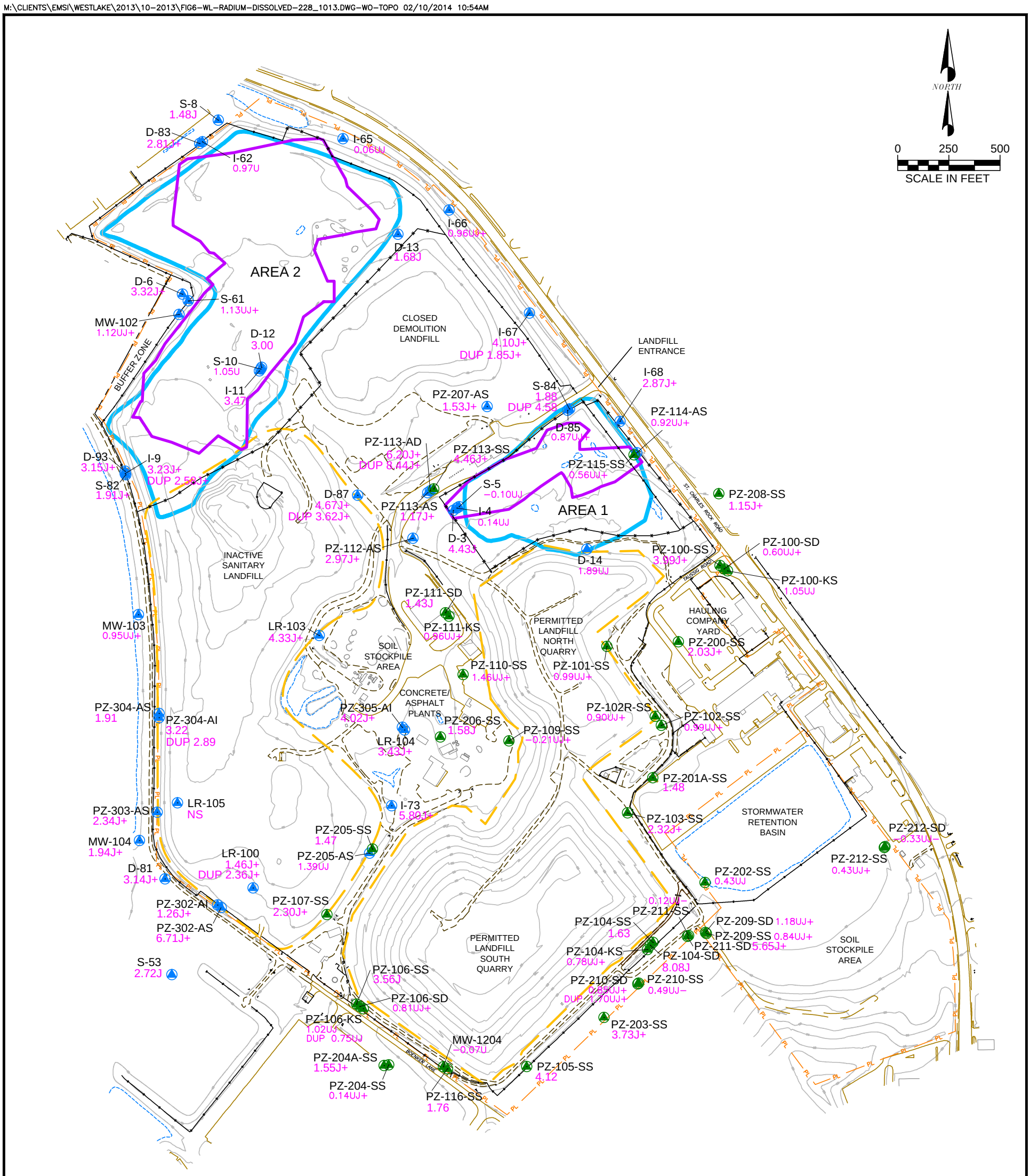
Figure 5

Total Radium-228 in Groundwater
October - November 2013

West Lake Landfill Operable Unit-1

EMSI Engineering Management Support, Inc.

M:\CLIENTS\EMSI\WESTLAKE\2013\10-2013\FIG6-WL-RADIUM-DISSOLVED-228_1013.DWG-WO-TOPO 02/10/2014 10:54AM



LEGEND

- Alluvium Groundwater Well
- Bedrock Groundwater Well
- Operable Unit-1 Area as Defined By ROD
- Estimated Extent of Radiologically Impacted Material
- Paved Road
- Unpaved Road

WELL FORMATION DESIGNATIONS

LR or MW: Undifferentiated
S or AS: Alluvial Shallow Well
I or AI: Alluvial Intermediate Well
D or AD: Alluvial Deep Well
SS: St. Louis Formation Well
SD: Salem Formation Well
KS: Keokuk Formation Well

NOTES:

1. Horizontal Coordinates Based on State Plane Missouri East Zone NAD 27
2. Elevations Based on U.S.G.S. Datum.
3. Existing Grade Contours are from the Aerial Survey Completed by the Sanborn Mapping Company on July 20, 2011.
4. Base Map Prepared by Aquaterra Environmental Solutions, Inc.

RADIUM EXPLANATION

.092 Radium-228 (pCi/L)
NS Not Sampled

Data Validation Qualifiers:

U = Non-detect at the reported value
UJ = Non-Detect at the estimated reported value
UJ+ = Non-Detect at the estimated reported value which may be biased high
UJ- = Non-Detect at the estimated reported value which may be biased low
J = Estimated result
J+ = Esitmated result which may be biased high

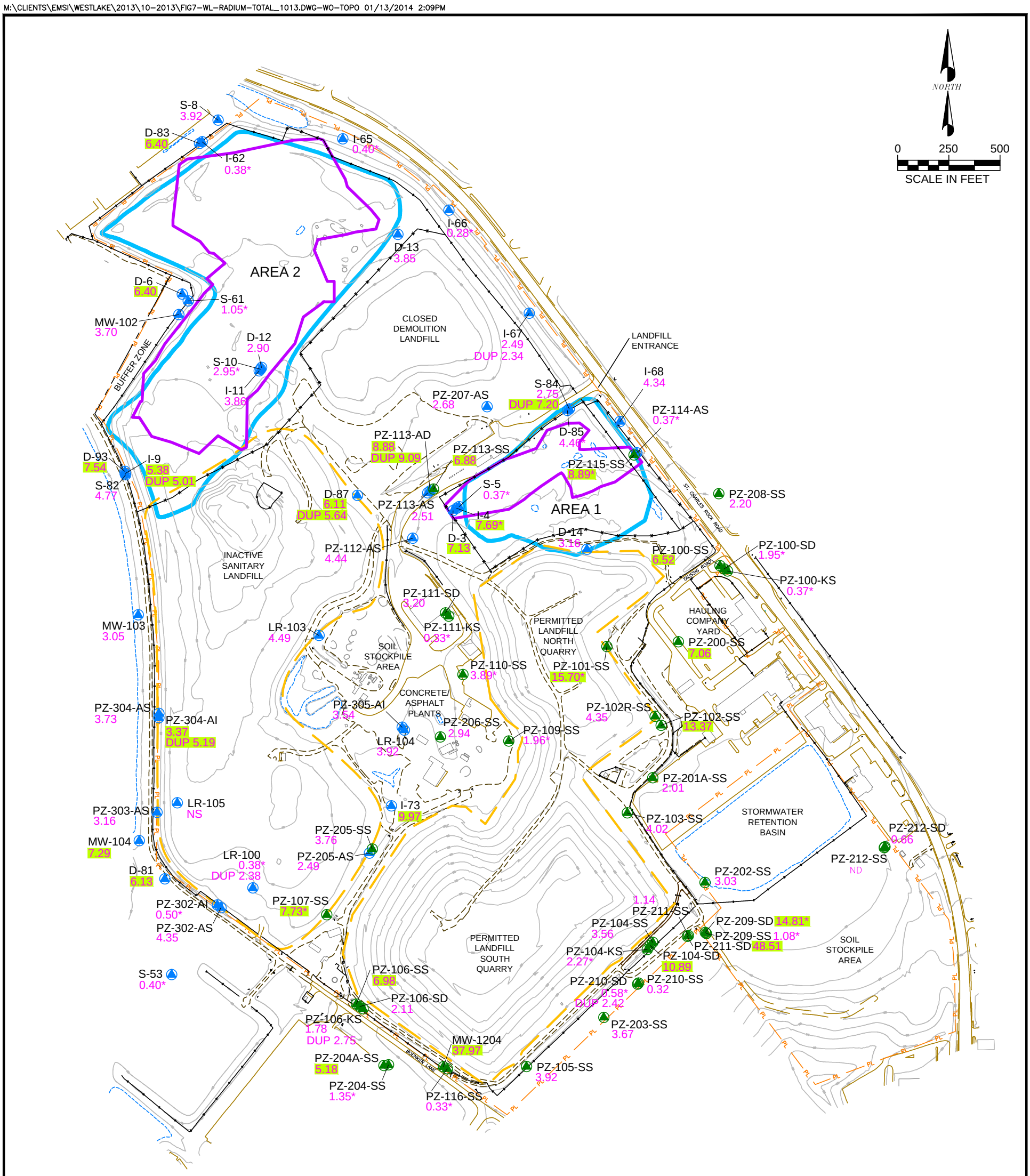
Figure 6

Dissolved Radium-228 in Groundwater October - November 2013

West Lake Landfill Operable Unit-1

EMSI Engineering Management Support, Inc.

M:\CLIENTS\EMSI\WESTLAKE\2013\10-2013\FIG7-WL-RADIUM-TOTAL_1013.DWG-WO-TOPO 01/13/2014 2:09PM



LEGEND

- Alluvium Groundwater Well
- Bedrock Groundwater Well
- Operable Unit-1 Area as Defined By ROD
- Estimated Extent of Radiologically Impacted Material
- Paved Road
- Unpaved Road

WELL FORMATION DESIGNATIONS

LR or MW: Undifferentiated
S or AS: Alluvial Shallow Well
I or AI: Alluvial Intermediate Well
D or AD: Alluvial Deep Well
SS: St. Louis Formation Well
SD: Salem Formation Well
KS: Keokuk Formation Well

NOTES:

1. Horizontal Coordinates Based on State Plane Missouri East Zone NAD 27
2. Elevations Based on U.S.G.S. Datum.
3. Existing Grade Contours are from the Aerial Survey Completed by the Sanborn Mapping Company on July 20, 2011.
4. Base Map Prepared by Aquaterra Environmental Solutions, Inc.

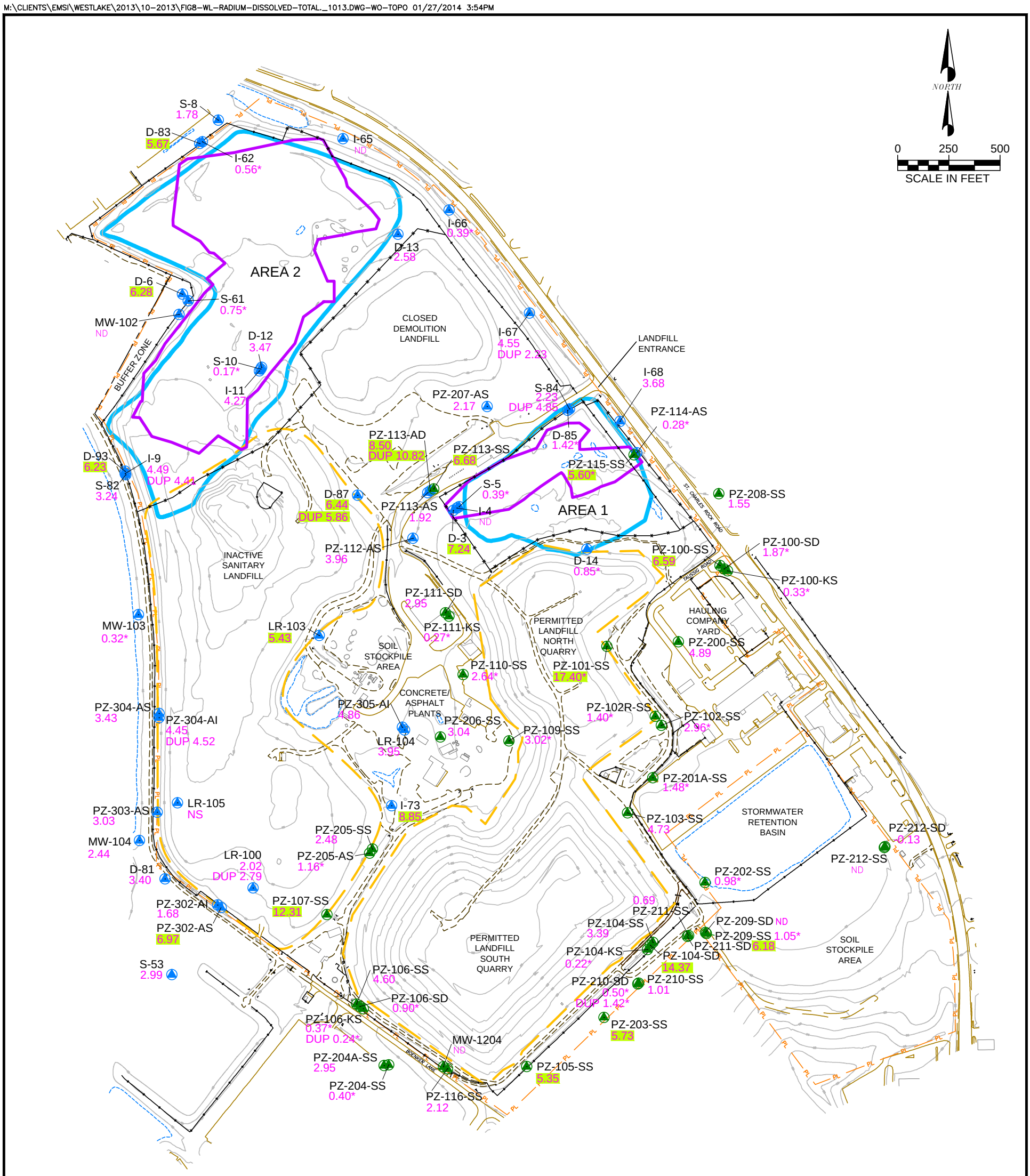
RADIUM EXPLANATION

1.72	Total Radium result that is less than the Maximum Contaminant Level of 5 pCi/L for combined Radium-226 and Radium-228
4.50*	Combined Ra-226 and Ra-228 results unless one of results was non-detect, in which case only the detected result is shown and the value is flagged with a *
6.10	Total Radium greater than the Maximum Contaminant Level of 5 pCi/L for combined Radium-226 and Radium-228
ND	Both Radium-226 and Radium-228 were non-detect
NS	Not Sampled

Figure 7
Combined Total Radium-226 + Total Radium-228 in Groundwater
October - November 2013
West Lake Landfill Operable Unit-1

EMSI Engineering Management Support, Inc.

M:\CLIENTS\EMSI\WESTLAKE\2013\10-2013\FIG8-WL-RADIUM-DISSOLVED-TOTAL._1013.DWG-WO-TOPO 01/27/2014 3:54PM



LEGEND

- Alluvium Groundwater Well
- Bedrock Groundwater Well
- Operable Unit-1 Area as Defined By ROD
- Estimated Extent of Radiologically Impacted Material
- Paved Road
- Unpaved Road

WELL FORMATION DESIGNATIONS

LR or MW: Undifferentiated
S or AS: Alluvial Shallow Well
I or AI: Alluvial Intermediate Well
D or AD: Alluvial Deep Well
SS: St. Louis Formation Well
SD: Salem Formation Well
KS: Keokuk Formation Well

NOTES:

1. Horizontal Coordinates Based on State Plane Missouri East Zone NAD 27
2. Elevations Based on U.S.G.S. Datum.
3. Existing Grade Contours are from the Aerial Survey Completed by the Sanborn Mapping Company on July 20, 2011.
4. Base Map Prepared by Aquaterra Environmental Solutions, Inc.

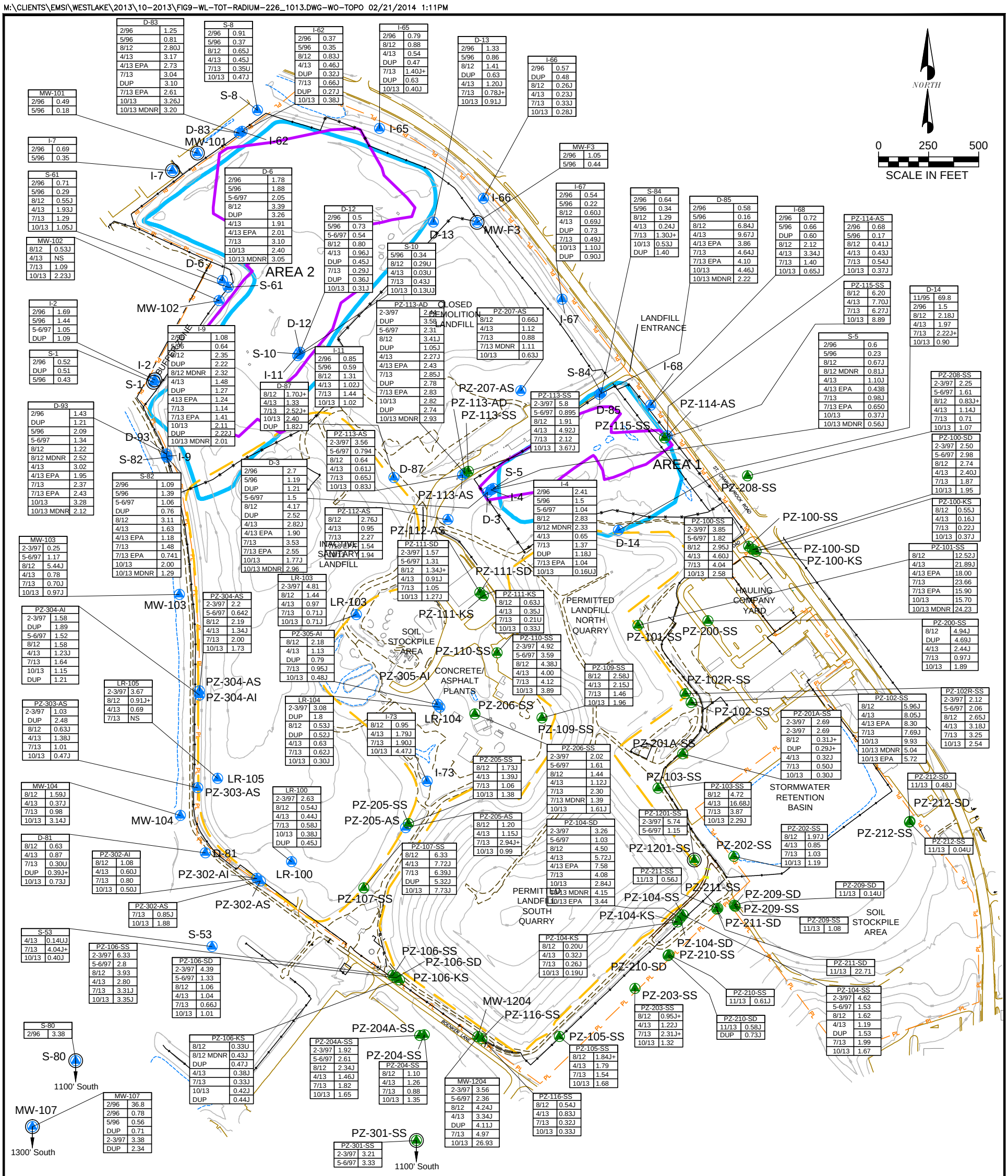
RADIUM EXPLANATION

.092	Total Dissolved Radium that is less than the Maximum Contaminant Level of 5 pCi/L for combined Radium-226 and Radium-228
1.08*	Combined Ra-226 and Ra-228 results unless one of results was non-detect, in which case only the detected result is shown and the value is flagged with a *
5.20	Total Dissolved Radium greater than the Maximum Contaminant Level of 5 pCi/L for combined Radium-226 and Radium-228
ND	Both Radium-226 and Radium-228 were non-detect
NS	Not Sampled

Figure 8
Combined Dissolved Radium-226 + Dissolved Radium-228 in Groundwater
October - November 2013
West Lake Landfill Operable Unit-1

EMSI Engineering Management Support, Inc.

M:\CLIENTS\EMSI\WESTLAKE\2013\10-2013\FIG9-WL-TOT-RADIUM-226_1013.DWG-WO-TOPO 02/21/2014 1:11PM



LEGEND

- Alluvium Groundwater Well
- Bedrock Groundwater Well
- RI/FS Groundwater Well That No Longer Exists
- Operable Unit-1 Area as Defined By ROD
- Estimated Extent of Radiologically Impacted Material
- Paved Road
- Unpaved Road

WELL FORMATION DESIGNATIONS

LR or MW: Undifferentiated
S or AS: Alluvial Shallow Well
I or AI: Alluvial Intermediate Well
D or AD: Alluvial Deep Well
SS: St. Louis Formation Well
SD: Salem Formation Well
KS: Keokuk Formation Well

Data Validation Qualifiers:

U = Non-detect at the reported value
UJ = Non-Detect at the estimated reported value
UJ+ = Non-Detect at the estimated reported value which may be biased high
UJ- = Non-Detect at the estimated reported value which may be biased low
J = Estimated result
J+ = esitmated result which may be biased high

Well Number — MW-1204
Date Sampled — 2-3/97 — 3.56 — Total Radium-226 Concentration in (pCi/L)

RADIUM EXPLANATION

EMSI has concluded that D-14 results are not vaild due to extreme variations between filtered and unfiltered results and extreme variations among sampling events.

OU-1 Wells Sampled 11/95, 2/96, 5/96, 5/97, 3/04, 5/04, 8/12, 4/13 and 7/13
OU-2 Wells Sampled 2-3/97 and 5-6/97, 8/12, 4/13 and 7/13

Data from either OU-1 RI (EMSI, 2000), OU-2 RI (Herst & Associates, 2000), or 2004 Data for OU-1 FS Effort.

NOTES:

1. Horizontal Coordinates Based on State Plane Missouri East Zone NAD 27
2. Elevations Based on U.S.G.S. Datum.
3. Existing Grade Contours are from the Aerial Survey Completed by the Sanborn Mapping Company on July 20, 2011.
4. Base Map Prepared by Aquaterra Environmental Solutions, Inc.

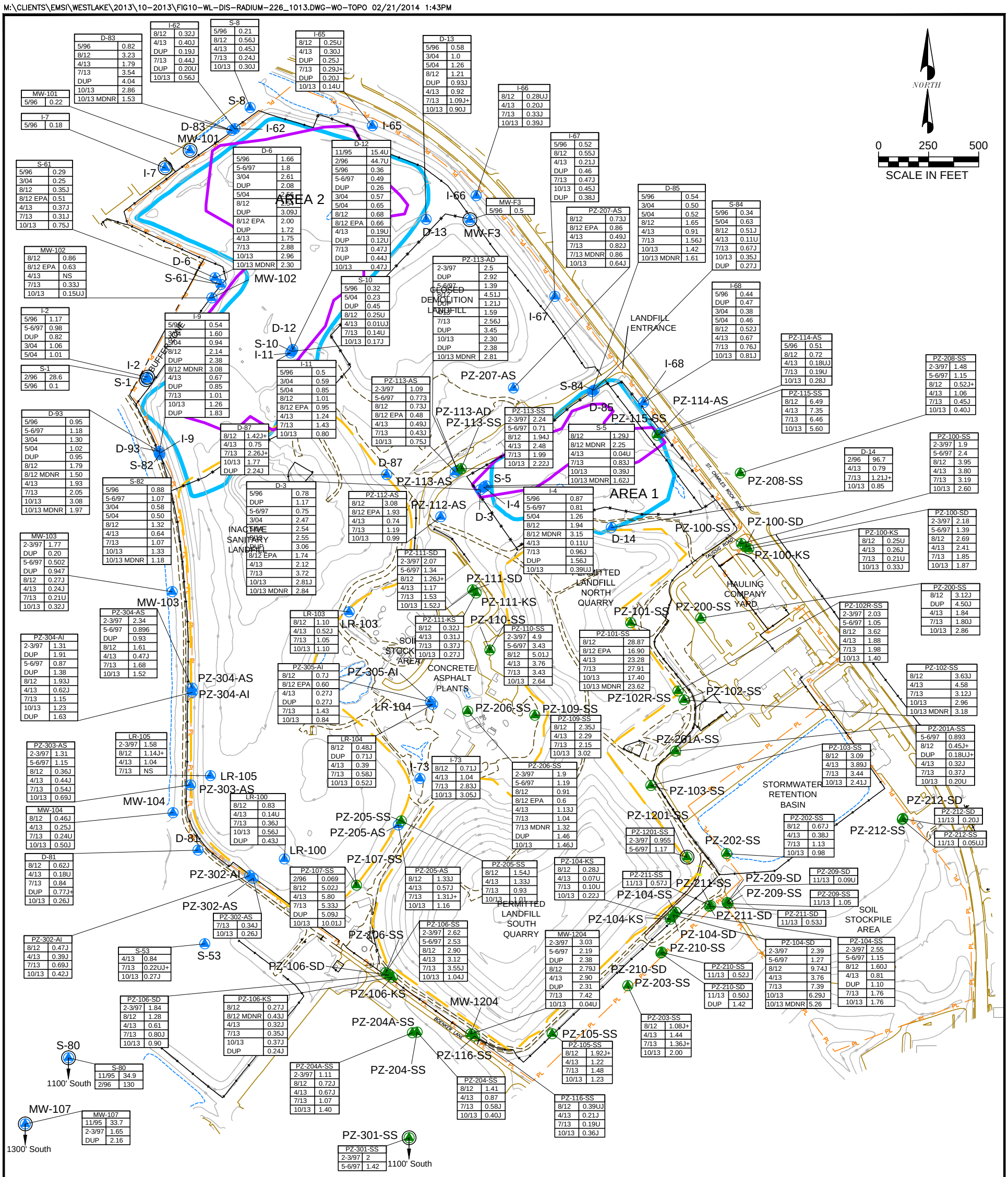
Figure 9

2013, 2012 and RI/FS Results for Total Radium-226 in Groundwater

West Lake Landfill Operable Unit-1

EMSI Engineering Management Support, Inc.

M:\CLIENTS\EMSI\WESTLAKE\2013\10-2013\FIG10-WL-DIS-RADIUM-226_1013.DWG-WO-TOPO 02/21/2014 1:43PM



D-83	
5/96	0.82
8/12	3.23
4/13	1.79
7/13	3.54
DUP	4.04
10/13	2.86
10/13 MDNR	1.53

I-62	
8/12	0.32J
4/13	0.40J
DUP	0.19J
7/13	0.44J
DUP	0.20U
10/13	0.56J

S-8	
5/96	0.21
8/12	0.56J
4/13	0.45J
7/13	0.24J
10/13	0.30J

I-65	
8/12	0.25U
4/13	0.30J
DUP	0.25J
7/13	0.29J+
DUP	0.20J
10/13	0.14U

D-13	
5/96	0.58
3/04	1.0
5/04	1.26
8/12	1.21
DUP	0.93J
4/13	0.92
7/13	1.09J+
10/13	0.90J

I-66	
8/12	0.28UJ
4/13	0.20J
7/13	0.33J
10/13	0.39J

I-67	
5/96	0.52
8/12	0.55J
4/13	0.21J
DUP	0.46
7/13	0.47J
10/13	0.45J
DUP	0.38J

MW-101	
5/96	0.22

I-7	
5/96	0.18

S-61	
5/96	0.29
3/04	0.25
8/12	0.35J
8/12 EPA	0.51
4/13	0.37J
7/13	0.31J
10/13	0.75J

D-6	
5/96	1.66
5-6/97	1.8
3/04	2.61
DUP	2.08
5/04	2.66
8/12	2.53
DUP	3.09J
8/12 EPA	2.00
DUP	1.72
4/13	1.75
7/13	2.88
10/13	2.96
10/13 MDNR	2.30

D-12	
11/95	15.4U
2/96	44.7U
5/96	0.36
5-6/97	0.49
DUP	0.26
3/04	0.57
5/04	0.65
8/12	0.68
8/12 EPA	0.66
4/13	0.19U
DUP	0.12U
7/13	0.47J
DUP	0.44J
10/13	0.47J

MW-F3	
5/96	0.5

PZ-207-AS	
8/12	0.73J
8/12 EPA	0.86
4/13	0.49J
7/13	0.82J
7/13 MDNR	0.86
10/13	0.64J

D-85	
5/96	0.54
3/04	0.50
5/04	0.52
8/12	1.65
4/13	0.91
7/13	1.56J
10/13	1.42
10/13 MDNR	1.61

S-84	
5/96	0.34
5/04	0.63
8/12	0.51J
4/13	0.11U
7/13	0.67J
10/13	0.35J
DUP	0.27J

MW-102	
8/12	0.86
8/12 EPA	0.63
4/13	NS
7/13	0.33J
10/13	0.15UJ

S-10	
5/96	0.32
5/04	0.23
DUP	0.45
8/12	0.25U
4/13	0.01UJ
7/13	0.14U
10/13	0.17J

PZ-113-AD	
2-3/97	2.5
DUP	2.92
5-6/97	1.39
8/12	4.51J
DUP	1.21J
4/13	1.59
7/13	2.56J
DUP	3.45
10/13	2.30
DUP	2.38
10/13 MDNR	2.81

I-68	
5/96	0.44
DUP	0.47
3/04	0.38
5/04	0.46
8/12	0.52J
4/13	0.67
7/13	0.76J
10/13	0.81J

I-2	
5/96	1.17
5-6/97	0.98
DUP	0.82
3/04	1.06
5/04	1.01

I-9	
5/96	0.54
3/04	1.60
5/04	0.94
8/12	2.14
DUP	2.38
8/12 MDNR	3.08
4/13	0.67
DUP	0.85
7/13	1.01
10/13	1.26
DUP	1.83

I-11	
5/96	0.5
3/04	0.59
5/04	0.85
8/12	1.01
8/12 EPA	0.95
4/13	1.24
7/13	1.43
10/13	0.80

S-1	
2/96	28.6
5/96	0.1

D-93	
5/96	0.95
5-6/97	1.18
3/04	1.30
5/04	1.02
DUP	0.95
8/12	1.79
8/12 MDNR	1.50
4/13	1.93
7/13	2.05
10/13	3.08
10/13 MDNR	1.97

D-87	
8/12	1.42J+
4/13	0.75
7/13	2.26J+
10/13	1.77
DUP	2.24J

PZ-113-AS	
2-3/97	1.09
5-6/97	0.773
8/12	0.73J
8/12 EPA	0.48
4/13	0.49J
7/13	0.43J
10/13	0.75J

PZ-113-SS	
2-3/97	2.24
5-6/97	0.71
8/12	1.94J
4/13	2.48
7/13	1.99
10/13	2.22J

S-5	
8/12	1.29J
8/12 MDNR	2.25
4/13	0.04U
7/13	0.83J
10/13	0.39J
10/13 MDNR	1.62J

PZ-114-AS	
5/96	0.51
8/12	0.72
4/13	0.18UJ
7/13	0.19U
10/13	0.28J

PZ-115-SS	
8/12	6.49
4/13	7.35
7/13	6.46
10/13	5.60

PZ-208-SS	
2-3/97	1.48
5-6/97	1.15
8/12	0.52J+
4/13	1.06
7/13	0.45J
10/13	0.40J

D-14	
2/96	96.7
4/13	0.79
7/13	1.21J+
10/13	0.85

I-4	
5/96	0.87
5-6/97	0.81
5/04	1.26
8/12	1.94
8/12 MDNR	3.15
4/13	0.11U
7/13	0.96J
DUP	1.56J
10/13	0.39UJ

PZ-100-SS	
2-3/97	1.9
5-6/97	2.4
8/12	3.95
4/13	3.80
7/13	3.19
10/13	2.60

PZ-100-SD	
2-3/97	2.18
5-6/97	1.39
8/12	2.69
4/13	2.41
7/13	1.85
10/13	1.87

PZ-100-KS	
8/12	0.25U
4/13	0.26J
7/13	0.21U
10/13	0.33J

D-3	
5/96	0.78
DUP	1.17
5-6/97	0.75
3/04	2.47
5/04	2.54
8/12	2.55
DUP	3.06
8/12 EPA	1.74
4/13	2.12
7/13	3.72
10/13	2.81J
10/13 MDNR	2.84

PZ-112-AS	
8/12	3.08
8/12 EPA	1.93
4/13	0.74
7/13	1.19
10/13	0.99

S-82	
5/96	0.88
5-6/97	1.07
3/04	0.58
5/04	0.50
8/12	1.32
4/13	0.64
7/13	1.07
10/13	1.33
10/13 MDNR	1.18

MW-103	
2-3/97	1.77
DUP	0.20
5-6/97	0.502
DUP	0.947
8/12	0.27J
4/13	0.24J
7/13	0.21U
10/13	0.32J

PZ-304-AS	
2-3/97	2.34
5-6/97	0.896
DUP	0.93
8/12	1.61
4/13	0.47J
7/13	1.68
10/13	1.52

PZ-304-AI	
2-3/97	1.31
DUP	1.91
5-6/97	0.87
DUP	1.38
8/12	1.93J
4/13	0.62J
7/13	1.15
10/13	1.23
DUP	1.63

LR-103	
8/12	1.10
4/13	0.52J
7/13	1.05
10/13	1.10

PZ-111-SD	
2-3/97	2.07
5-6/97	1.34
8/12	1.26J+
4/13	1.17
7/13	1.53
10/13	1.52J

PZ-111-KS	
8/12	0.32J
4/13	0.31J
7/13	0.37J
10/13	0.27J

PZ-110-SS	
2-3/97	4.9
5-6/97	3.43
8/12	5.01J
4/13	3.76
7/13	3.43
10/13	2.64

PZ-101-SS	
8/12	28.87
8/12 EPA	16.90
4/13	23.28
7/13	27.91
10/13	17.40
10/13 MDNR	23.62

PZ-102R-SS	
2-3/97	2.03
5-6/97	1.05
8/12	3.62
4/13	1.88
7/13	1.98
10/13	1.40

PZ-200-SS	
8/12	3.12J
DUP	4.50J
4/13	1.84
7/13	1.80J
10/13	2.86

PZ-305-AI	
8/12	0.7J
8/12 EPA	0.60
4/13	0.27J
DUP	0.27J
7/13	1.43
10/13	0.84

PZ-109-SS	
8/12	2.35J
4/13	2.29
7/13	2.15
10/13	3.02

PZ-102-SS	
8/12	3.63J
4/13	4.58
7/13	3.12J
10/13	2.96
10/13 MDNR	3.18

LR-104	
8/12	0.48J
DUP	0.71J
4/13	0.39
7/13	0.58J
10/13	0.52J

PZ-206-SS	
2-3/97	1.9
5-6/97	1.19
8/12	0.91
8/12 EPA	0.6
4/13	1.13J
7/13	1.04
7/13 MDNR	1.32
DUP	1.46
10/13	1.46J

PZ-201A-SS	
5-6/97	0.893
8/12	0.45J+
DUP	0.18UJ+
4/13	0.32J
7/13	0.37J
10/13	0.20U

PZ-103-SS	
8/12	3.09
4/13	3.89J
7/13	3.44
10/13	2.41J

LR-105	
2-3/97	1.58
8/12	1.14J+
4/13	1.04
7/13	NS

I-73	
8/12	0.71J
4/13	1.04
7/13	2.83J
10/13	3.05J

PZ-303-AS	
2-3/97	1.31
5-6/97	1.15
8/12	0.36J
4/13	0.44J
7/13	0.54J
10/13	0.69J

LR-100	
8/12	0.83
4/13	0.14U
7/13	0.36J
10/13	0.56J
DUP	0.43J

PZ-1201-SS	
2-3/97	0.955
5-6/97	1.17

PZ-202-SS	
8/12	0.67J
4/13	0.38J
7/13	1.13
10/13	0.98

PZ-212-SD	
11/13	0.20J

PZ-212-SS	
11/13	0.05UJ

MW-104	
8/12	0.46J
4/13	0.25J
7/13	0.24U
10/13	0.50J

PZ-107-SS	
2/96	0.069
8/12	5.02J
4/13	5.80
7/13	5.33J
DUP	5.09J
10/13	10.01J

PZ-205-AS	
8/12	1.33J
4/13	0.57J
7/13	1.31J+
10/13	1.16

PZ-205-SS	
8/12	1.54J
4/13	1.33J
7/13	0.93
10/13	1.01

PZ-104-KS	
8/12	0.28J
4/13	0.07U
7/13	0.10U
10/13	0.22J

PZ-211-SS	
11/13	0.57J

PZ-209-SD	
11/13	0.09U

PZ-209-SS	
11/13	1.05

PZ-211-SD	
11/13	0.53J

D-81	
8/12	0.62J
4/13	0.18U
7/13	0.84
DUP	0.77J+
10/13	0.26J

PZ-302-AS	
7/13	0.34J
10/13	0.26J

PZ-106-SS	
2-3/97	2.62
5-6/97	2.53
8/12	2.90
4/13	3.12
7/13	3.55J
10/13	1.04J

MW-1204	
2-3/97	3.03
5-6/97	2.19
DUP	2.38
8/12	2.79J
4/13	2.90
DUP	2.31
7/13	7.42
10/13	0.04U

PZ-104-SD	
2-3/97	2.39
5-6/97	1.27
8/12	9.74J
4/13	3.76
7/13	7.39
10/13	6.29J
10/13 MDNR	5.26

PZ-104-SS	
2-3/97	2.55
5-6/97	1.15
8/12	1.60J
4/13	0.81
DUP	1.10
7/13	1.76
10/13	1.76

PZ-210-SS	
11/13	0.52J

PZ-210-SD	
11/13	0.50J
DUP	1.42

S-53	
4/13	0.84
7/13	0.22UJ+
10/13	0.27J

PZ-106-SD	
2-3/97	1.84
8/12	1.28
4/13	0.61
7/13	0.80J
10/13	0.90

PZ-106-KS	
8/12	0.27J
8/12 MDNR	0.43J
4/13	0.32J
7/13	0.35J
10/13	0.37J
DUP	0.24J

PZ-203-SS	
8/12	1.08J+
4/13	1.44
7/13	1.36J+
10/13	2.00

PZ-105-SS	
8/12	1.92J+
4/13	1.22
7/13	1.48
10/13	1.23

PZ-204A-SS	
2-3/97	1.11
8/12	0.72J
4/13	0.67J
7/13	1.07
10/13	1.40

PZ-204-SS	
8/12	1.41
4/13	0.87
7/13	0.58J
10/13	0.40J

PZ-116-SS	
8/12	0.39UJ
4/13	0.21J
7/13	0.19U
10/13	0.36J

S-80	
11/95	34.9
2/96	130

MW-107	
11/95	33.7
2-3/97	1.65
DUP	2.16

PZ-301-SS	
2-3/97	2
5-6/97	1.42

LEGEND

- Alluvium Groundwater Well
- Bedrock Groundwater Well
- RI/FS Groundwater Well That No Longer Exists
- Operable Unit-1 Area as Defined By ROD
- Estimated Extent of Radiologically Impacted Material
- Paved Road
- Unpaved Road

WELL FORMATION DESIGNATIONS

LR or MW: Undifferentiated
S or AS: Alluvial Shallow Well
I or AI: Alluvial Intermediate Well
D or AD: Alluvial Deep Well
SS: St. Louis Formation Well
SD: Salem Formation Well
KS: Keokuk Formation Well

Data Validation Qualifiers:

U = Non-detect at the reported value
UJ = Non-Detect at the estimated reported value
UJ+ = Non-Detect at the estimated reported value which may be biased high
UJ- = Non-Detect at the estimated reported value which may be biased low
J = Estimated result
J+ = esitmated result which may be biased high

RADIUM EXPLANATION

Well Number — MW-1204
Date Sampled — 2-3/97 | 3.03 — Dissolved Radium-226 Concentration in (pCi/L)

EMSI has concluded that D-14 results are not vaild due to extreme variations between filtered and unfiltered results and extreme variations among sampling events.

OU-1 Wells Sampled 11/95, 2/96, 5/96, 5/97, 3/04, 5/04, 8/12, 4/13 and 7/13
OU-2 Wells Sampled 2-3/97 and 5-6/97, 8/12, 4/13 and 7/13

Data from either OU-1 RI (EMSI, 2000), OU-2 RI (Herst & Associates, 2000), or 2004 Data for OU-1 FS Effort.

NOTES:

1. Horizontal Coordinates Based on State Plane Missouri East Zone NAD 27
2. Elevations Based on U.S.G.S. Datum.
3. Existing Grade Contours are from the Aerial Survey Completed by the Sanborn Mapping Company on July 20, 2011.
4. Base Map Prepared by Aquaterra Environmental Solutions, Inc.

Figure 10

2013, 2012 and RI/FS Results for Dissolved Radium-226 in Groundwater

West Lake Landfill Operable Unit-1

EMSI Engineering Management Support, Inc.

Appendices

(on compact disk)