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Z-AREA SALTSTONE DISPOSAL FACILITY GROUNDWATER MONITORING REPORT FOR 2016 (U)

Class 3 Landfill Permit #025500-1603

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LIST OF ACRONYMS AND ABBREVIATIONS

1Q16	first quarter of 2016
3Q15	third quarter of 2015
3Q16	third quarter of 2016
Bi-214	bismuth-214
Cs-137	cesium-137
DPT	direct push technology
ft	feet
ft-msl	feet above mean sea level
GSA	General Separations Area
GWPS	groundwater protection standard
I-129	iodine-129
LAZ	Lower Aquifer Zone
µg/L	microgram per liter
µS/cm	microSiemens per centimeter
MDL	method detection limit
mg/L	milligram per liter
mrem	millirem
Ni-63	nickel-63
NTU	nephelometric turbidity units
Pb-214	lead-214
pCi/L	picoCuries per liter
pCi/mL	picoCuries per milliliter
PDWS	Primary Drinking Water Standard
PQL	Practical Quantitation Limit
Pu-238	plutonium-238
Pu-239	plutonium-239
QC	Quality Control
Ra-226	radium-226
Ra-228	radium-228
SCDHEC	South Carolina Department of Health and Environmental Control
SDF	Saltstone Disposal Facility
SDU	Saltstone Disposal Unit
SPF	Saltstone Production Facility
SRNS	Savannah River Nuclear Solutions, LLC
SRR	Savannah River Remediation LLC
SRS	Savannah River Site
SDWS	Secondary Drinking Water Standard
Sr-90	strontium-90
Tc-99	technetium-99
TCCZ	Tan Clay Confining Zone
Th-228	thorium-228
Th-230	thorium-230
Th-232	thorium-232
UAZ	Upper Aquifer Zone
U-234	uranium-234
U-235	uranium-235
U-238	uranium-238
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency
UTRA	Upper Three Runs Aquifer zone
WSRC	Washington Savannah River Company LLC (Oct. 2005 through Aug. 2008)
WSRC	Westinghouse Savannah River Company (before Oct. 2005)

1.0 SITE DESCRIPTION AND BACKGROUND

The Savannah River Site (SRS) Saltstone Facility is located within Z-Area (238 acres) on the SRS in Aiken County, and is operated by Savannah River Remediation LLC (SRR) for the U.S. Department of Energy (USDOE) (Figure 1). The Saltstone Facility consists of two facility segments, the Saltstone Production Facility (SPF), which receives and treats salt solution to produce solidified saltstone, and the Saltstone Disposal Facility (SDF), which consists of Saltstone Disposal Units (SDUs) used for the final disposal of the solidified saltstone. The SPF is permitted as a wastewater treatment facility per South Carolina Department of Health and Environmental Control (SCDHEC) regulations (SCDHEC 2011). The SDF is permitted as a Class 3 Landfill per SCDHEC regulations (SCDHEC 2011). The SDF currently contains two rectangular SDUs, formerly referred to as vaults, six circular SDUs, and one large circular SDU (SDU 6) (Figure 2).

2.0 GROUNDWATER MONITORING

In accordance with the SDF Class 3 Landfill permit (SCDHEC 2011), a groundwater monitoring plan is in place to monitor groundwater in the vicinity of the SDF (WSRC 2005). Currently, eighteen wells located up-gradient and down-gradient of the SDF (Figure 2) are sampled semiannually and biennially for the constituents and parameters listed in Table 1.

In 1987, wells ZBG 1 and ZBG 2 were installed to determine baseline groundwater chemistry in Z-Area. Construction of SDUs 1 and 4 was completed in February 1986 and July 1988, respectively. The SPF started radioactive operations June 1990, and disposal into SDU 1 occurred between June 1990 and September 1996. Disposal into SDU 4 began in January 1997 and was discontinued in 2012. Wells ZBG 3, ZBG 4, and ZBG 5 were installed in 2003 to monitor SDUs 1 and 4. Wells ZBG 6, ZBG 7, and ZBG 8 were installed in 2007 to provide improved groundwater monitoring for SDU 1.

In 2012, six wells (ZBG009D thru ZBG014D) were installed to monitor SDUs 2, 3, and 5, and a seventh well (ZBG015D) was installed to provide an additional background well (Figure 2). SDU 2 was put into service in September 2012, and was completely filled in 2014. SDU 5 was

put into service on December 5, 2013, and is actively being filled in 2016. SDU 3 has not been placed in operation yet, but will be put into operation, as needed by the SDF.

In 2014 and 2015, three additional wells and one replacement well were added to the SDF monitoring network, and one well was abandoned.

- Surface water and sediment contamination (i.e. plutonium-239 [Pu-239], plutonium-238 [Pu-238], uranium-238 [U-238], uranium-235 [U-235], uranium-234 [U-234], thorium-232 [Th-232], thorium-230 [Th-230], thorium-228 [Th-228], cesium-137 [Cs-137], iodine-129 [I-129], technetium-99 [Tc-99], tritium, nonvolatile beta, and gross alpha) was detected in 2011 in Sedimentation Basin #4 (SRNS 2012). Concerns of potential groundwater contamination from Sedimentation Basin #4 initiated the installation of a shallow well (ZBG016D) and a deeper well (ZBG016C) to monitor perched water in the vadose zone and the groundwater.
- Deeper well ZBG002C was installed adjacent to shallow well ZBG 2, when contaminated water was observed at ZBG 2.
- Ultimately, well ZBG 2 was abandoned due to its potential as a pathway for contamination from the Upper Aquifer Zone (UAZ) into the Lower Aquifer Zone (LAZ) in the Upper Three Runs Aquifer (UTRA). Well ZBG 2 was replaced by well ZBG002D, which is screened entirely in the UAZ, and does not dissect through the Tan Clay Confining Zone (TCCZ).

The monitoring well network and monitoring plan for the SDF are designed to effectively detect any release associated with SDUs. As additional SDUs are constructed, or as conditions change at the facility, the monitoring network will be expanded accordingly.

Groundwater samples were collected during the first quarter of 2016 (1Q16) and third quarter of 2016 (3Q16) in accordance with the *Hydrogeologic Data Collection Procedures and Specifications* (SRNS 2010), and the samples were sent to SCDHEC certified labs for analyses. Two thresholds (8 picoCuries/liter [pCi/L] and 30 pCi/L) are established for gross beta (i.e. nonvolatile beta) analyses as part of the *Groundwater Monitoring Plan for the Z-Area Saltstone Disposal Facility* (WSRC 2005). If the 8 pCi/L threshold is exceeded by a well sample, then the same well is to be resampled within 30 days for the Contingent Analysis 1 (Strontium-90 [Sr-

90]) listed in Table 1. If the contingent Sr-90 analysis is above detection, then it will be added to the list of semiannual analytes. If the 30 pCi/L threshold is exceeded by a well sample, then the same well and the applicable background well (ZBG 1 or ZBG015D) are resampled within 30 days for the constituents listed as Contingent Analyses 2 in Table 1. If any contingent analyte is above maximum background well concentrations, then it will be added to the list of semiannual analytes. If the following sample event confirms the exceedance results for a constituent(s), then a characterization plan to determine plume extent will be developed and submitted to SCDHEC within 60 days (WSRC 2005).

3.0 GROUNDWATER FLOW DIRECTION AND RATE

Water level data collected for 1Q16 and 3Q16 are presented in Figures 3 and 4. Groundwater flow is radial in this area of SRS. The water table elevation at SDU 1 is approximately 236 feet above mean sea level (ft-msl) and is approximately 226 ft-msl at SDU 4. The water table at SDU 1 and SDU 4 indicate groundwater flow is to the northeast, groundwater flow at SDU 2 is to the north, and groundwater flow at SDUs 3 and 5 is to the northwest (Figures 3 and 4). Flow rates can be estimated using the distance and head difference between wells with the following equation:

$$Q = \frac{K}{n} \times \frac{dh}{dl}$$

Where:

- Q = Flow (feet [ft]/day);
- K = Hydraulic Conductivity (ft/day) = 13 ft/day^a;
- n = Effective Porosity = 0.25^a;
- dh = Difference in Head (ft) = 10.53 ft; and
- dl = Distance between Wells (ft) = 1,085 ft^b.

- a) In 2013 these parameters were changed to be consistent with the Performance Assessment modeling data in the SRS General Separations Area (GSA) (WSRC 2007).
- b) Replacement well ZBG002D provides a better flow estimate for the water table, and is now used for the distance (dl) between ZBG 7 and ZBG002D, as recommended by the U.S. Nuclear Regulatory Commission.

The hydraulic conductivity (K) is 13 ft/day, and the effective porosity (n) value is 25 percent (WSRC 2007). The head difference (dh) was 10.53 ft for 1Q16, and 10.33 ft for 3Q16. The horizontal distance (dl) is 1,085 ft, which is the distance between wells ZBG 7 and ZBG002D (Figure 2). The first and third quarter groundwater flow rates are calculated as follows:

$$\text{First Quarter: } Q = \frac{13 \text{ ft/day}}{0.25} \times \frac{10.53 \text{ ft}}{1,085 \text{ ft}}$$

$$Q = 0.50466 \text{ ft/day or } 184.2 \text{ ft/year}$$

$$\text{Third Quarter: } Q = \frac{13 \text{ ft/day}}{0.25} \times \frac{10.33 \text{ ft}}{1,085 \text{ ft}}$$

$$Q = 0.49508 \text{ ft/day or } 180.7 \text{ ft/year}$$

The 2016 groundwater flow rates (184.2 ft/yr and 180.7 ft/yr) are lower than the 2015 flow rates (315.9 ft/yr and 344.2 ft/yr) (SRNS 2015a). The lower flow rate estimates for 2016 are primarily due to using replacement well ZBG002D as the new down gradient well. ZBG002D provides a more accurate flow rate estimate for the UAZ when compared to ZBG 4.

Wells ZBG 1 and ZBG 2 provide the long term fluctuations in the water table elevation (Figure 5). The water table in the GSA is located in the UAZ-UTRA. However, as the water table approaches McQueens Branch and Upper Three Runs, the water table drops into the underlying LAZ-UTRA (Figure 6). The TCCZ separates the LAZ-UTRA from the overlying UAZ-UTRA.

4.0 GROUNDWATER CONSTITUENTS AND PARAMETERS

In accordance with the Z-Area SDF Class 3 Landfill Permit (SCDHEC 2011), the monitoring wells were sampled during 1Q16 and 3Q16 for the semiannual analytes and the parameters listed in Table 1. The next samples for semiannual and biennial analyses will be collected in the first quarter of 2017.

5.0 RESULTS

Groundwater samples were collected during 1Q16 and 3Q16 from the nine wells monitoring SDUs 1 and 4 (Figure 2). Groundwater samples were also collected during 1Q16 and 3Q16 from the seven wells monitoring SDUs 2, 3, and 5. Groundwater samples were collected during 1Q16 and 3Q16 for well ZBG016C that monitors Sedimentation Basin #4 (Figure 2). Data collected to date at well ZBG016C indicate there have been no impacts to the groundwater at Sedimentation Basin #4. Well ZBG016D, also installed downgradient of Sedimentation Basin #4, is positioned on top of the TCCZ to monitor for potentially contaminated perched water in the vadose zone. Well ZBG016D was dry when sampling was conducted in 1Q16 and 3Q16. The laboratory

results are presented in Table 2, the field measurements are presented in Table 3, and the water elevation data are presented in Table 4.

Groundwater monitoring results are compared to Practical Quantitation Limits (PQLs), background concentrations, and Groundwater Protection Standards (GWPSs). PQLs are indicators of laboratory instrument sensitivity, but are not regulatory limits, nor are they risk-based. The PQL is the lowest concentration of an analyte which can be reliably quantified in a given sample. In contrast, the method detection limit (MDL) is the lowest concentration of an analyte which can be detected, but not quantified, in a given sample. Background concentrations are based on historical data from wells (ZBG 1 and ZBG015D) upgradient of the SDF. Comparison with background is important because several SRS facilities are upgradient of the SDF. The GWPSs for the SDF are based on the Primary Drinking Water Standards (PDWSs), proposed PDWSs, or Secondary Drinking Water Standards (SDWSs), and are listed in Table 1 (WSRC 2005). Unlike PQLs and background concentrations, GWPSs are regulatory limits, and exceedances are relevant to water quality.

6.0 DISCUSSION

The following constituents exceeded the PQL in one or more wells monitoring the SDF and are discussed in further detail below (Table 2):

- Bismuth-214 (Bi-214);
- Gross Alpha;
- Lead-214 (Pb-214);
- Nitrate-Nitrite as Nitrogen;
- Nonvolatile Beta*;
- Radium-226 (Ra-226)
- Tc-99; and
- Tritium.

* Results exceeded the 8 pCi/L and 30 pCi/L thresholds for nonvolatile beta (gross beta) requiring all contingent analyses listed in Table 1.

Well ZBG015D was sampled independently for four quarters to establish initial background concentrations as required by the monitoring plan (WSRC 2005). Data from well ZBG015D is now used for background comparisons to monitoring data collected at wells downgradient of SDUs 1 and 4. Data from well ZBG 1 is used for background comparisons to monitoring data collected at wells downgradient of SDUs 2, 3, 5, and 6 (Figure 2).

Gross Alpha

Gross alpha results have been detected above the MDL in 15 of the 18 wells since January 2004 and in the background wells. No gross alpha results exceeded their PQL in 1Q16 or 3Q16, but gross alpha is briefly discussed because historical results have been above the PQL. In 1Q16, the maximum gross alpha concentration (4.93 pCi/L) at well ZBG002D exceeded the historic maximum (1.48 pCi/L) at background well ZBG015D, but it was below the GWPS (15 pCi/L). In 3Q16, the only gross alpha result (3.52 pCi/L) above the MDL was at background well ZBG 1, which is below this well's historic maximum (4.28 pCi/L) and below the GWPS (15 pCi/L). The historic well data indicate the gross alpha concentrations are naturally-occurring in origin.

Radium-226

Ra-226 results have been detected above the MDL in 16 of the 18 wells since January 2004 including the background wells. No Ra-226 results exceeded the PQL in 1Q16 or 3Q16, but Ra-226 is briefly discussed because historic results have been above the PQL and Ra-226 contributes to the gross alpha activity in groundwater. The maximum Ra-226 concentration (1.76 pCi/L) sample was collected at well ZBG002D in 1Q16, and in 3Q16 the maximum Ra-226 concentration (1.10 pCi/L) sample was collected at background well ZBG015D. The 2016 Ra-226 maximum groundwater concentrations are equal to and greater than the historic maximum (1.10 pCi/L) for background well ZBG015D, but less than the SDF GWPS (5 pCi/L). The 1Q16 maximum Ra-226 concentration is also less than the 2004 historic maximum (2.6 pCi/L) for former background well ZBG 1. Ra-226 is commonly detected in the groundwater (USGS 2011). Collectively, the ZBG well data indicate the Ra-226 concentrations are naturally-occurring in origin.

Bismuth-214 and Lead-214

The maximum Bi-214 concentration (80.3 pCi/L) sample was collected at well ZBG 3 in 1Q16, and in 3Q16 the maximum Bi-214 concentration (41.5 pCi/L) sample was collected at well ZBG 7. The 2016 Bi-214 maximum groundwater concentrations are below the historic maximum (160 pCi/L) for background well ZBG015D, and below the 4 millirem (mrem) GWPS for Bi-214 (18,900 pCi/L) (USEPA 2000).

The 1Q16 maximum Pb-214 groundwater concentration (101 pCi/L) sample was collected at well ZBG 3, and no Pb-214 groundwater samples were above the MDL in 3Q16. The 1Q16 maximum Pb-214 groundwater concentration (101 pCi/L) is below the historic maximum (171 pCi/L) for background well ZBG015D and below the 4 mrem GWPS for Pb-214 (11,800 pCi/L) (USEPA 2000). Since January 2004, Bi-214 and Pb-214 results have been detected above the PQL in 15 of the 18 wells including the background wells. Pb-214 and Bi-214 are short-lived daughter products in the naturally-occurring uranium-238 decay series, and are supported by the relatively long-lived (half-life 1,599 years) Ra-226 intermediary radionuclide. Bi-214, Pb-214, and Radium-226 appear to be of natural origin, not related to SDF operations.

Nonvolatile Beta

Samples from well ZBG002D, which replaced well ZBG 2, continue to have the highest groundwater concentrations for nonvolatile beta and Tc-99. The 1Q16 maximum nonvolatile beta groundwater concentration (72.9 pCi/L) was at well ZBG002D, and the 3Q16 maximum nonvolatile beta groundwater concentration (27.6 pCi/L) was at well ZBG002D. The 2016 maximum nonvolatile beta groundwater concentrations (72.9 pCi/L and 27.6 pCi/L) are lower than the third quarter of 2015 (3Q15) nonvolatile beta groundwater concentration (132 pCi/L) at well ZBG002D (Figure 7). Figure 8 depicts the approximate area of the Z-Area nonvolatile beta groundwater plume 3Q16.

Initially, the lab reported a nonvolatile beta result of 13 pCi/L for the 1Q16 sample from ZBG002D, but a reanalysis was requested by SRR as the original result seemed to be too large of a decrease from the 3Q15 sample (132 pCi/L). The reanalysis nonvolatile beta result (72.9 pCi/L) appears to be more consistent with previous results and other 1Q16 analyses (Tc-99, specific conductance and water elevation) (Tables 2, 3 and 4). The laboratory performed a quality control (QC) duplicate nonvolatile beta analysis (85.5 pCi/L), which was also consistent with the reanalysis nonvolatile beta result (72.9 pCi/L). The higher reanalysis nonvolatile beta result is used for discussion in this report.

In 1Q16, nonvolatile beta groundwater concentrations exceeded the 8 pCi/L and 30 pCi/L thresholds only at well ZBG002D, and the 3Q16 nonvolatile beta groundwater concentration exceeded the 8 pCi/L threshold only at well ZBG002D. At LAZ wells ZBG002C and ZBG 4,

the 1Q16 and 3Q16 nonvolatile beta groundwater concentrations did not exceed the 8 pCi/L threshold. However, the 1Q16 and 3Q16 concentrations at both wells exceeded the maximum nonvolatile beta value (2.17) for background well ZBG015D, which indicates potential contamination below the TCCZ.

The 1Q16 and 3Q16 nonvolatile beta results for well ZBG002D (72.9.0 pCi/L and 27.6 pCi/L, respectively) exceeded the 8 pCi/L threshold for nonvolatile beta, initiating Sr-90 analyses for these well samples. The 1Q16 and 3Q16 ZBG002D Sr-90 sample results were both below their MDLs (6.43 pCi/L and 4.68 pCi/L, respectively) indicating that Sr-90 was not detected in either sample. The 1Q16 nonvolatile beta result for well ZBG002D (72.9.0 pCi/L) also exceeded the 30 pCi/L threshold for nonvolatile beta, initiating all contingent analyses (Table 1) for the 1Q16 well sample and the background well ZBG015D sample. Except for Tc-99, none of the other results for the contingent analyses were above detection limits for the ZBG002D sample or the background well ZBG015D sample.

Technetium-99

The sample from well ZBG002D had the maximum Tc-99 result (149 pCi/L) in 1Q16, and the sample from well ZBG002D also had the maximum Tc-99 result (58.6 pCi/L) in 3Q16. The 1Q16 and 3Q16 Tc-99 sample results for ZBG002D did not exceed the GWPS (900 pCi/L). The decreasing Tc-99 groundwater concentration at well ZBG002D in 2016, relative to the 3Q15 Tc-99 groundwater concentration (230 pCi/L) at well ZBG002D, is primarily attributed to dilution of the groundwater. The Tc-99, nonvolatile beta, nitrate and specific conductance results tend to inversely correlate with water elevation measurements at abandoned well ZBG 2 and its replacement well ZBG002D (Figures 5 and 7) indicating this dilution effect. Figure 9 depicts the approximate area of the Z-Area Tc-99 groundwater plume in 3Q16.

Initially, the lab reported a Tc-99 result of 19.7 pCi/L for the 1Q16 sample from ZBG002D, but a reanalysis was requested by SRR, as the original result seemed to be too large of a decrease from the 3Q15 sample (230 pCi/L). The reanalysis Tc-99 result (149 pCi/L) appears to be more consistent with previous results and other analyses (nonvolatile beta, specific conductance and water elevation) (Tables 2, 3 and 4). The higher reanalysis Tc-99 result is used for discussion in this report.

In 1Q16 and 3Q16, well ZBG002D had the highest sum (1.08 mrem and 0.46 mrem, respectively) of beta-emitting radionuclides (Bi-214, Pb-214, Tc-99, and tritium) greater than their PQLs (non-qualified results in Table 2), but the activity level is below the GWPS (4 mrem).

Samples from wells ZBG002C and ZBG 4 also had Tc-99 results above detection in both 1Q16 and 3Q16, which is consistent with the nonvolatile beta results from the same well samples and historical data. Tc-99 detected in wells ZBG002C and ZBG 4 indicates Tc-99 contamination has migrated through the TCCZ but at low concentrations.

As demonstrated by the 1Q16 data at well ZBG002D, it is not uncommon for a Tc-99 result (149 pCi/L) to be higher than a nonvolatile beta result (72.9 pCi/L) for the same sample, as some Tc-99 is volatilized by the drying step in the nonvolatile beta analytical method. In contrast the Tc-99 analytical method does not include a drying step, thus avoiding any volatilization of Tc-99.

Nitrate

Nitrates in the groundwater are determined using Nitrate – Nitrite as Nitrogen EPA methods 353.1 or 353.2. At SRS nitrogen in the groundwater is primarily in the form of nitrate, because the groundwater is typically well oxygenated especially in the UAZ. The sample from well ZBG002C had the highest groundwater concentration (2.03 milligrams/liter [mg/L]) for nitrates in 1Q16, and the sample from well ZBG002D had the highest groundwater concentration (2.97 mg/L) for nitrates in 3Q16. The ZBG002C nitrate sample result and the ZBG002D nitrate sample result did not exceed the GWPS (10 mg/L). However, both the 1Q16 result for ZBG002C and 3Q16 result for ZBG002D exceeded the PQLs and maximum concentration (1.30 mg/L) in background well ZBG015D. In 3Q16, the nitrate sample concentration increased to 2.97 mg/L for well ZB002D from 1.35 mg/L in 1Q16, but it is lower than the 3Q15 nitrate sample concentration (6.7 mg/L) for well ZBG002D (Figure 7). Figure 10 depicts the approximate area of the Z-Area nitrate groundwater plume in 3Q16.

Tritium

The 1Q16 maximum tritium concentration was 3.33 pCi/milliliter (pCi/mL) at background well ZBG0015D, and the 3Q16 maximum tritium concentration was 3.12 pCi/mL at background well ZBG0015D. Both the 1Q16 and 3Q16 concentrations are below the historic maximum (4.02

pCi/mL) for well ZBG015D. The older background well ZBG 1 has indicated steadily decreasing tritium concentration trends from 19.0 pCi/mL in 1987 to 1.44 pCi/mL in 3Q16. All of the SDF monitoring wells appear to be following this trend. Data from the background wells ZBG 1 and ZBG015D indicate the tritium in Z-Area is from an up-gradient source (Figure 11).

Field Measurements

In 2016, wells ZBG012D, ZBG013D, and ZBG014D continue to have the highest specific conductance (148-235 microSiemens per centimeter [$\mu\text{S}/\text{cm}$]), alkalinity (60-102 mg/L), and pH (6.2-8.4) measurements. These elevated field measurements are consistent for these wells and appear to be related to the geologic formation as calcium carbonate material was identified in the lithology cores during well installation. Wells ZBG012D, ZBG013D and ZBG014D monitor the groundwater near SDU 3 and SDU 5, which began receiving saltstone material in December 2013. Therefore, the elevated field measurements are the baseline groundwater conditions for these wells.

7.0 CONCLUSION

In 3Q16, groundwater at well ZBG002D showed decreases in nonvolatile beta activity (27.6 pCi/L), Tc-99 activity (58.6 pCi/L), nitrate concentration (2.97 mg/L), and specific conductance (79 $\mu\text{S}/\text{cm}$) relative to the maximum 2015 concentrations for nonvolatile beta activity (132 pCi/L), Tc-99 activity (230 pCi/L), nitrate concentration (6.8 mg/L), and specific conductance (211 $\mu\text{S}/\text{cm}$). Although the 1Q16 nonvolatile beta result for well ZBG002D (72.9 pCi/L) was less than 2015 activities, both nonvolatile beta thresholds (8 pCi/L and 30 pCi/L) were exceeded and initiated all contingent analyses. None of the results for the contingent analyses were above their detection limits. Tc-99 and nitrate groundwater concentrations at well ZBG002D remain below their respective GWPS.

Well ZBG002C was installed adjacent to ZBG002D in 2014 with a screen zone below the TCCZ to monitor groundwater in the LAZ. In 2016, samples collected in the LAZ at wells ZBG002C and ZBG 4 indicate contamination has migrated through the TCCZ and into the LAZ, consistent with monitoring results from previous years. The SDF groundwater monitoring well network is adequately monitoring contaminants above and below the TCCZ.

In 2014, data from well ZBG 2 initiated the development of a characterization plan for nonvolatile beta, Tc-99 and nitrates in the groundwater in Z-Area (SRNS 2015b). This characterization plan was implemented in July 2015 with cone penetrometer lithology pushes and the collection of direct push technology (DPT) groundwater samples. The DPT data collected as part of the characterization plan, in conjunction with the groundwater monitoring well data, provide the best extent of the nonvolatile beta, Tc-99, and nitrate contamination. No other contaminants have been identified to date.

In 2011 and 2012, surface water and sediment contamination (i.e. Pu-239, Pu-238, U-238, U-235, U-234, Th-232, Th-230, Th-228, Cs-137, I-129, Tc-99, tritium, nonvolatile beta, and gross alpha) was detected in Sedimentation Basin #4 (SRNS 2012) (Figure 2). In 2014, two groundwater monitoring wells (ZBG016C and ZBG016D) were installed downgradient of Sedimentation Basin #4 in the UAZ-UTRA and LAZ-UTRA (Figure 2). The data for the samples collected to date at well ZBG016C indicate there have been no impacts to the groundwater from Sedimentation Basin #4. The screen zone for well ZBG016D is positioned on top of the TCCZ to monitor for potentially contaminated perched water in the vadose zone. Well ZBG016D has been dry since installation, indicating there has not been any perched water at this location since installation.

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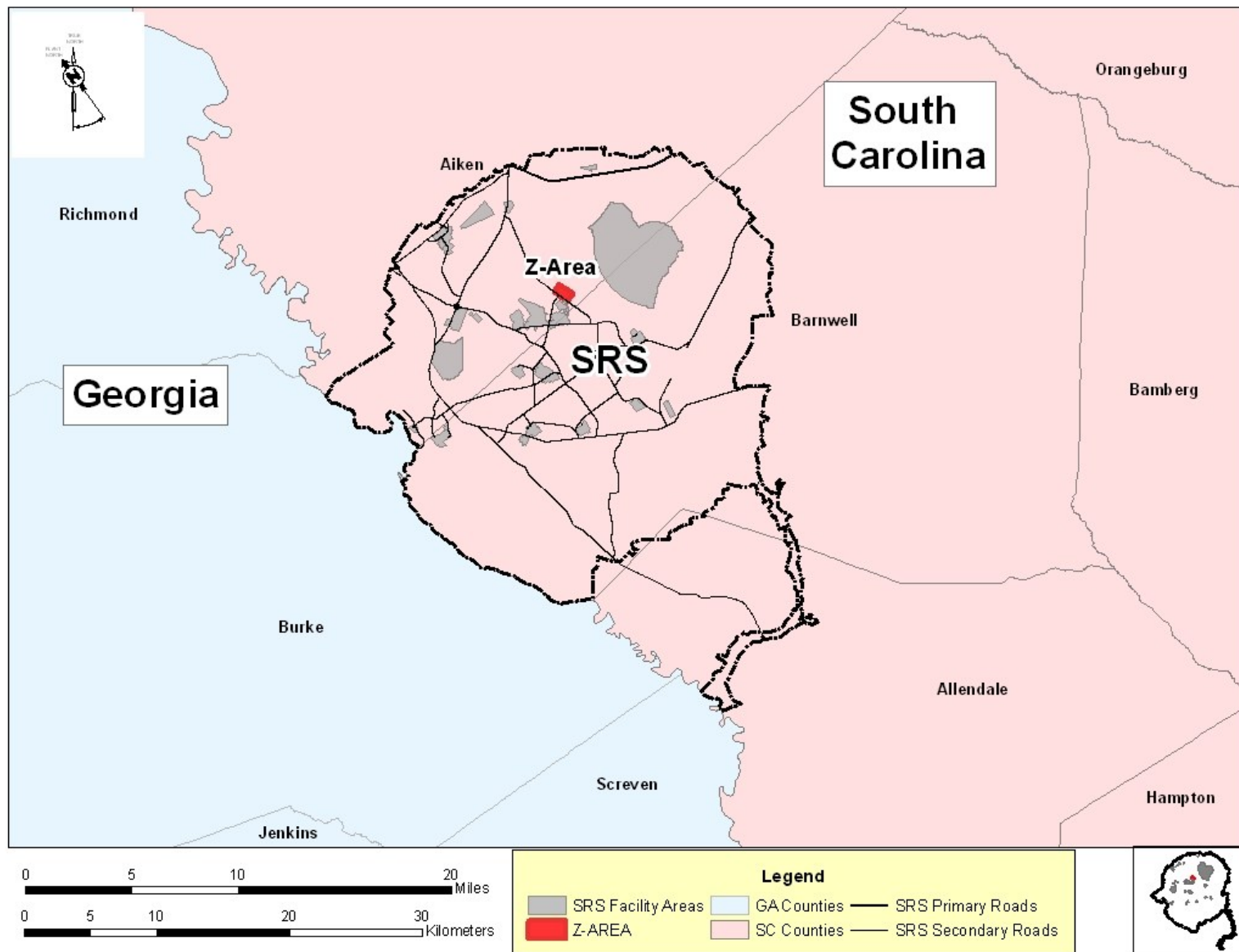


Figure 1. Z-Area Location within the Savannah River Site

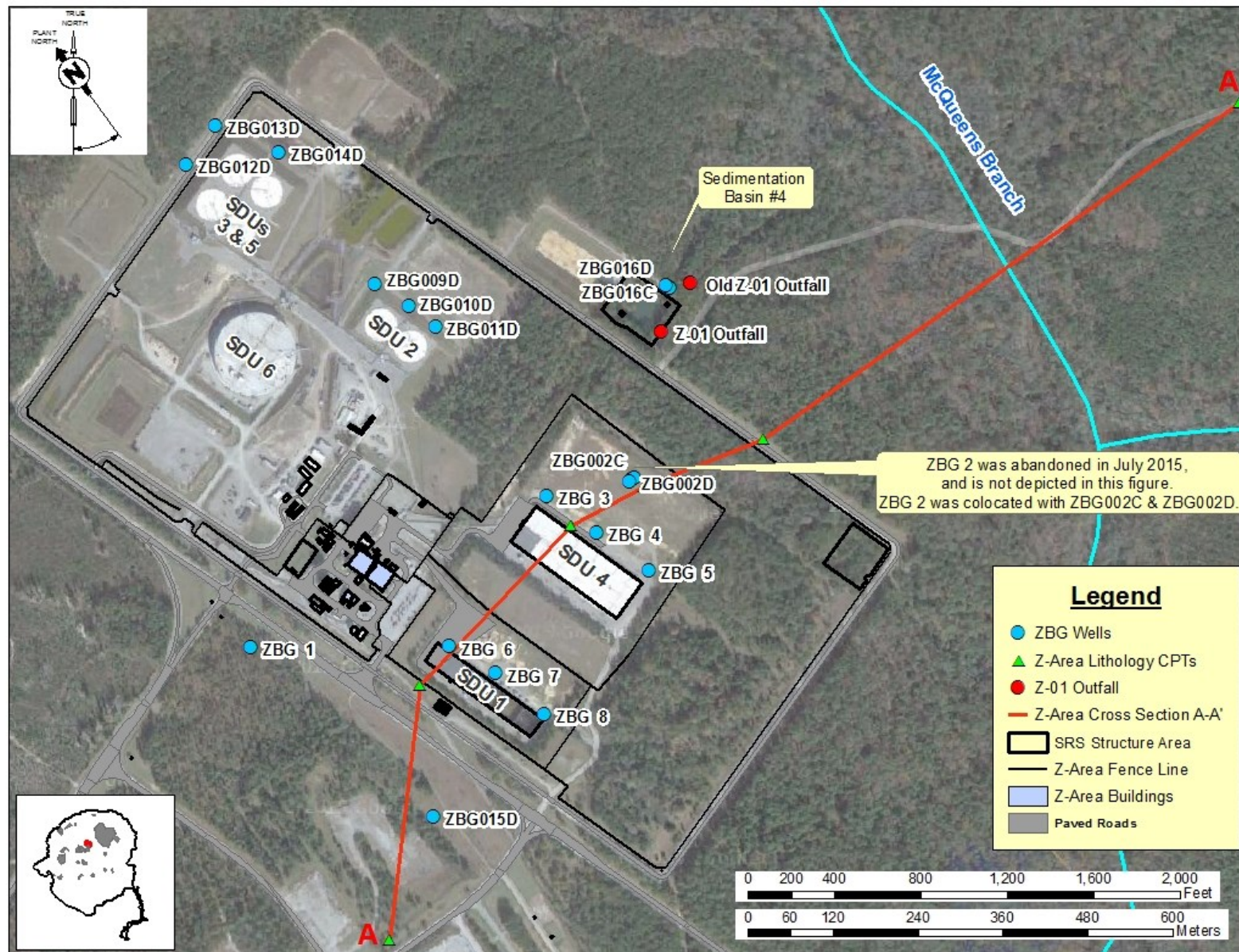


Figure 2. Monitoring Well Locations at the SDF

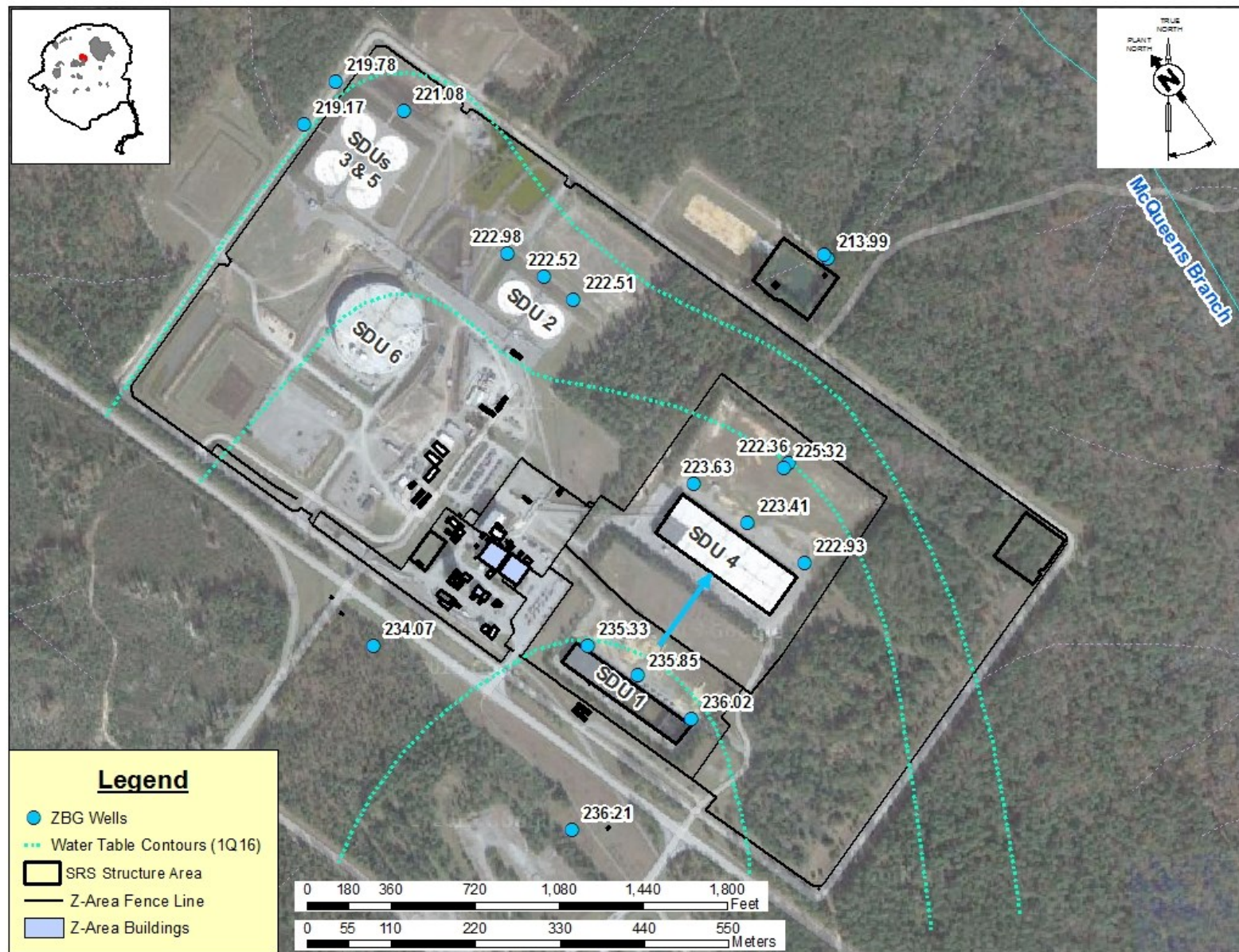


Figure 3. 1Q16 Water Table Elevations (ft-msl)

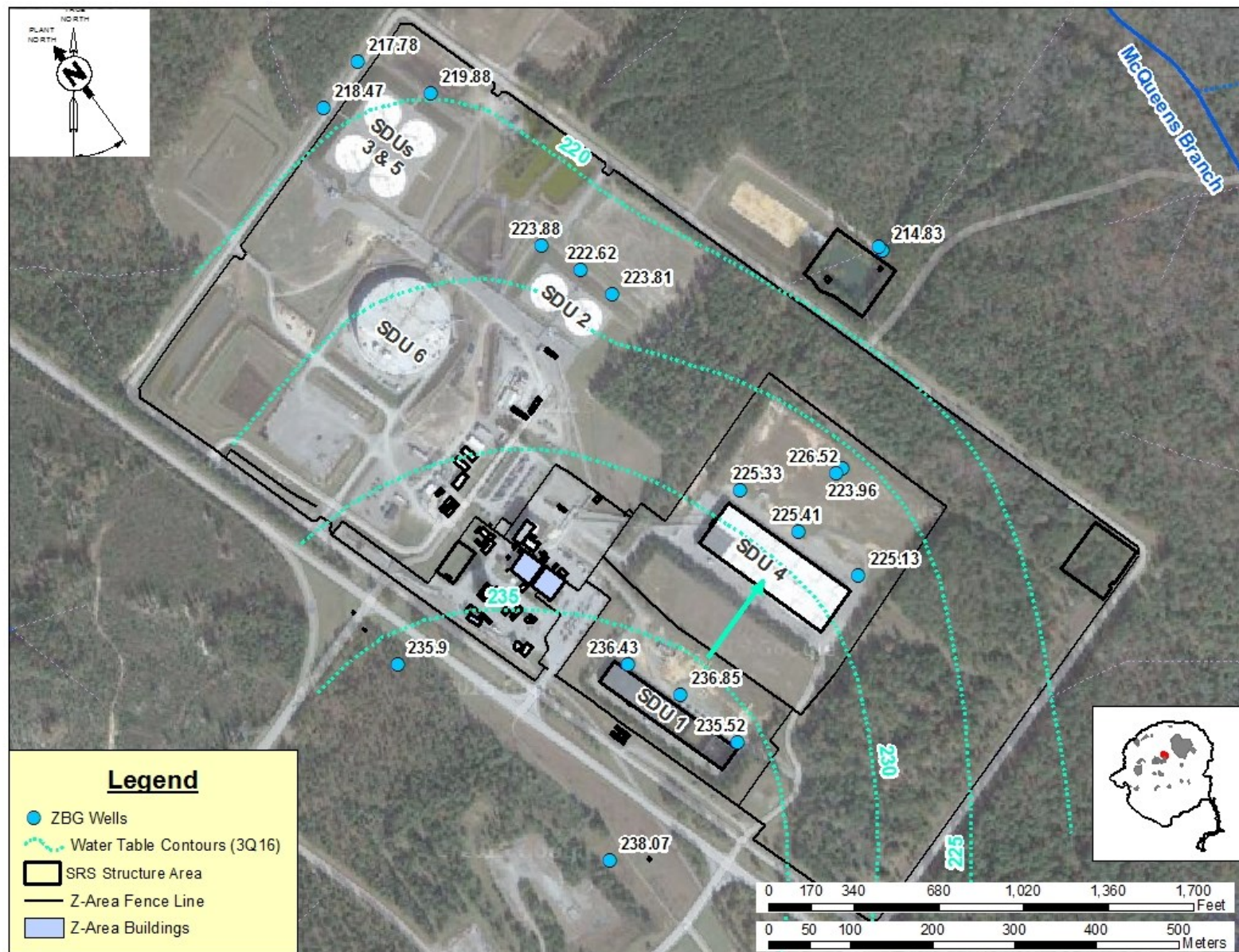


Figure 4. 3Q16 Water Table Elevations (ft-msl)

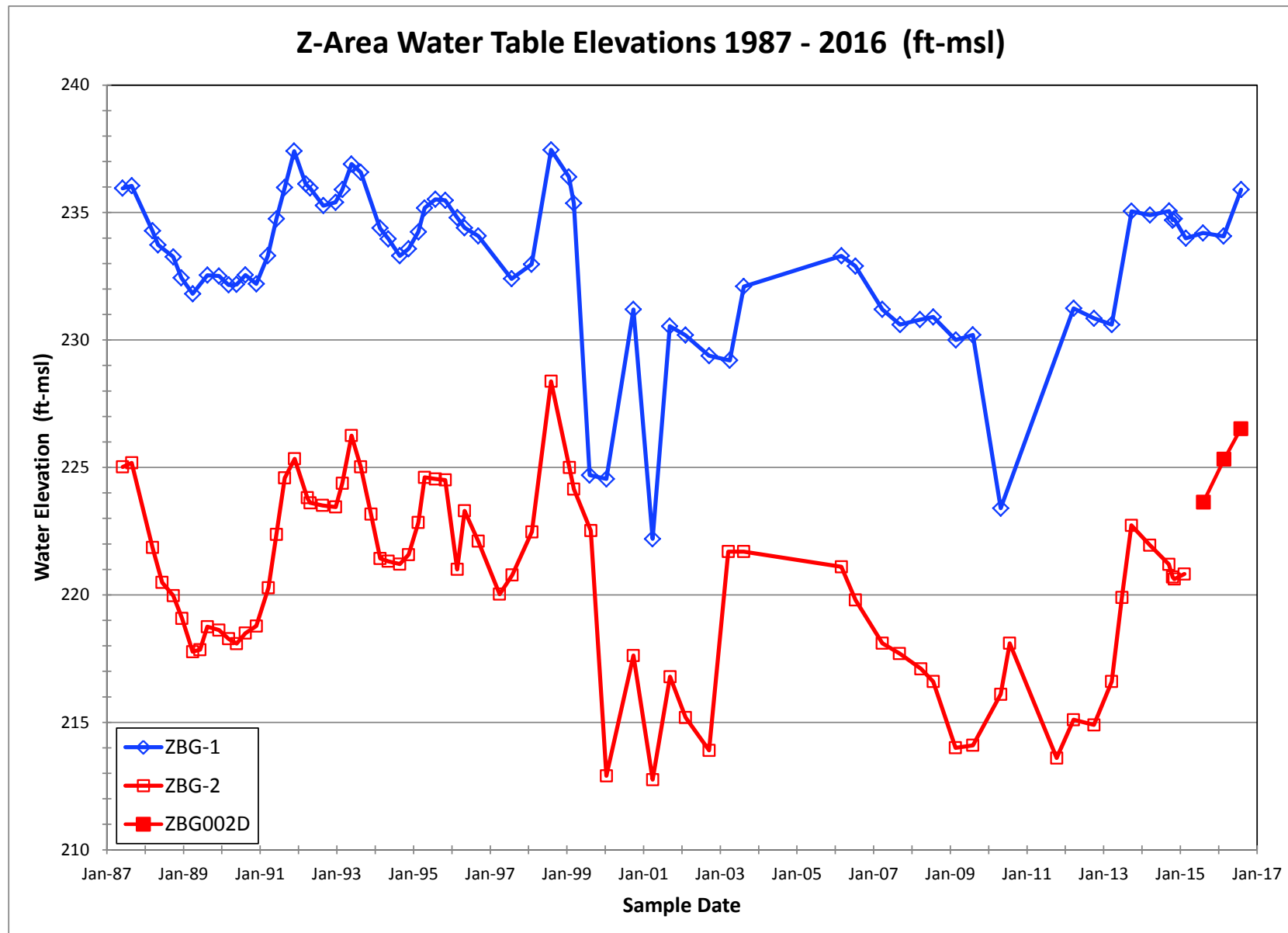


Figure 5. Z-Area Water Table Elevations (ft-msl)

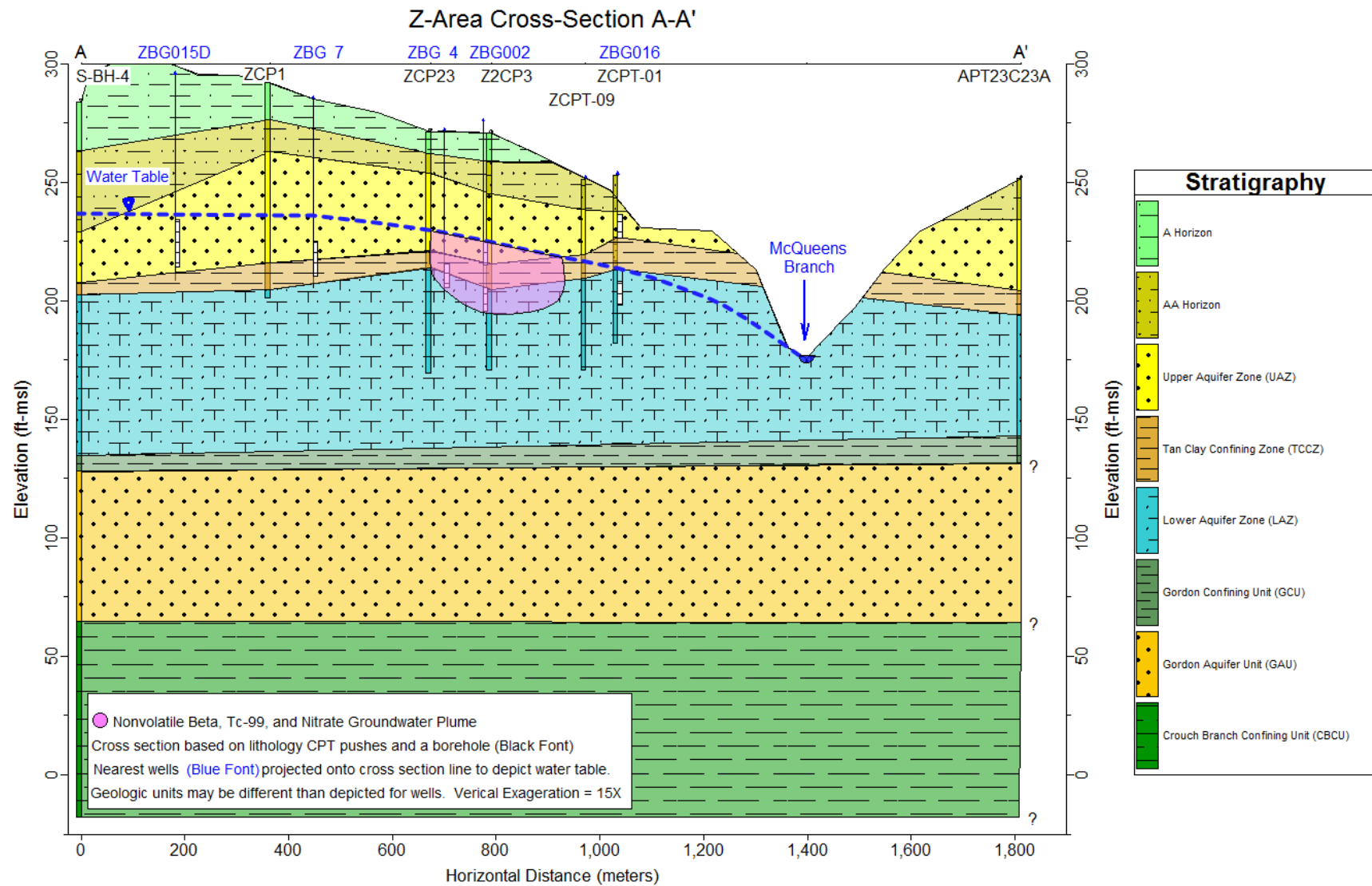


Figure 6. Z-Area Cross Section with 1Q16 Water Table

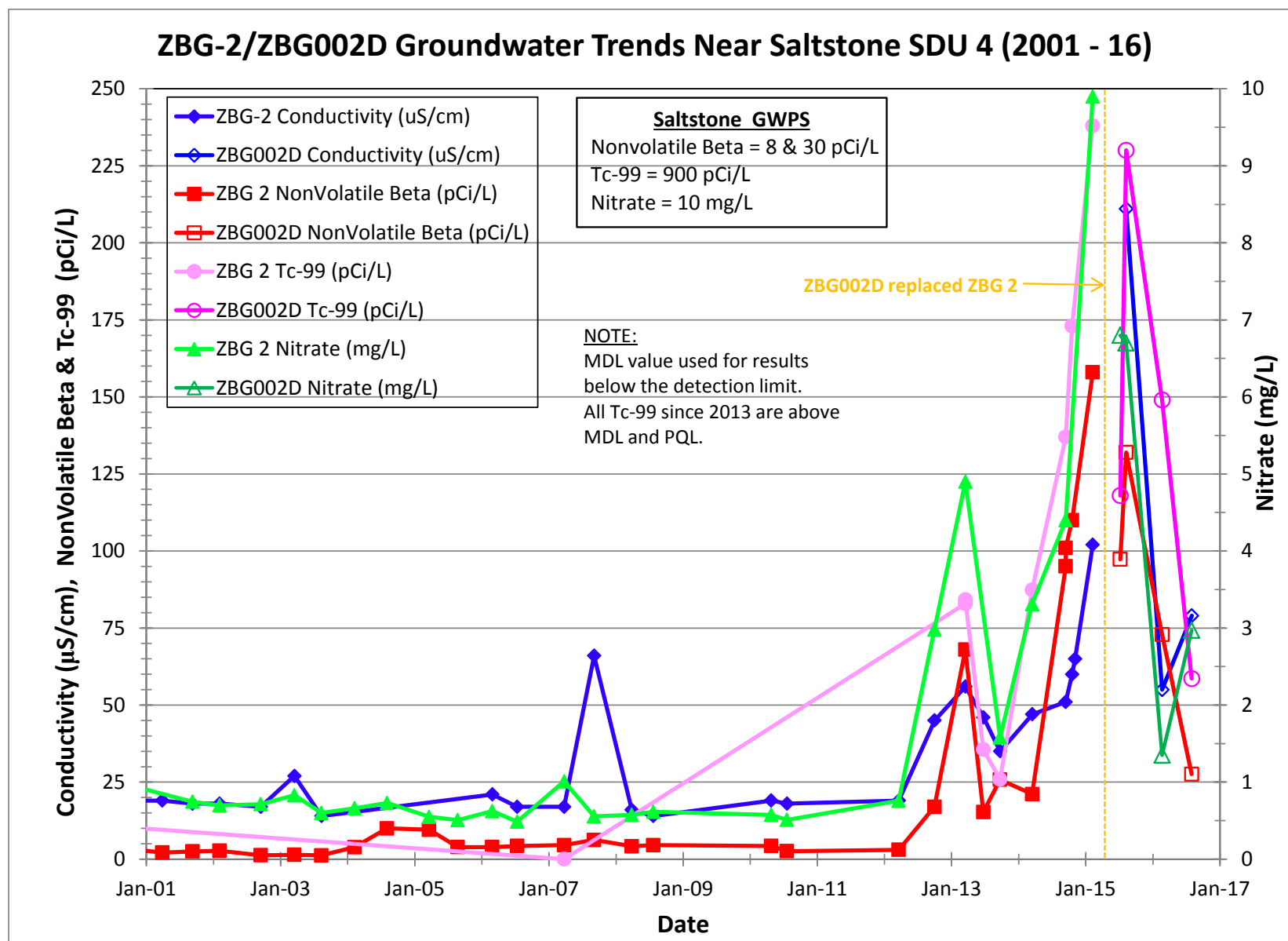


Figure 7. ZBG 2 / ZBG002D Tc-99 Groundwater Trends

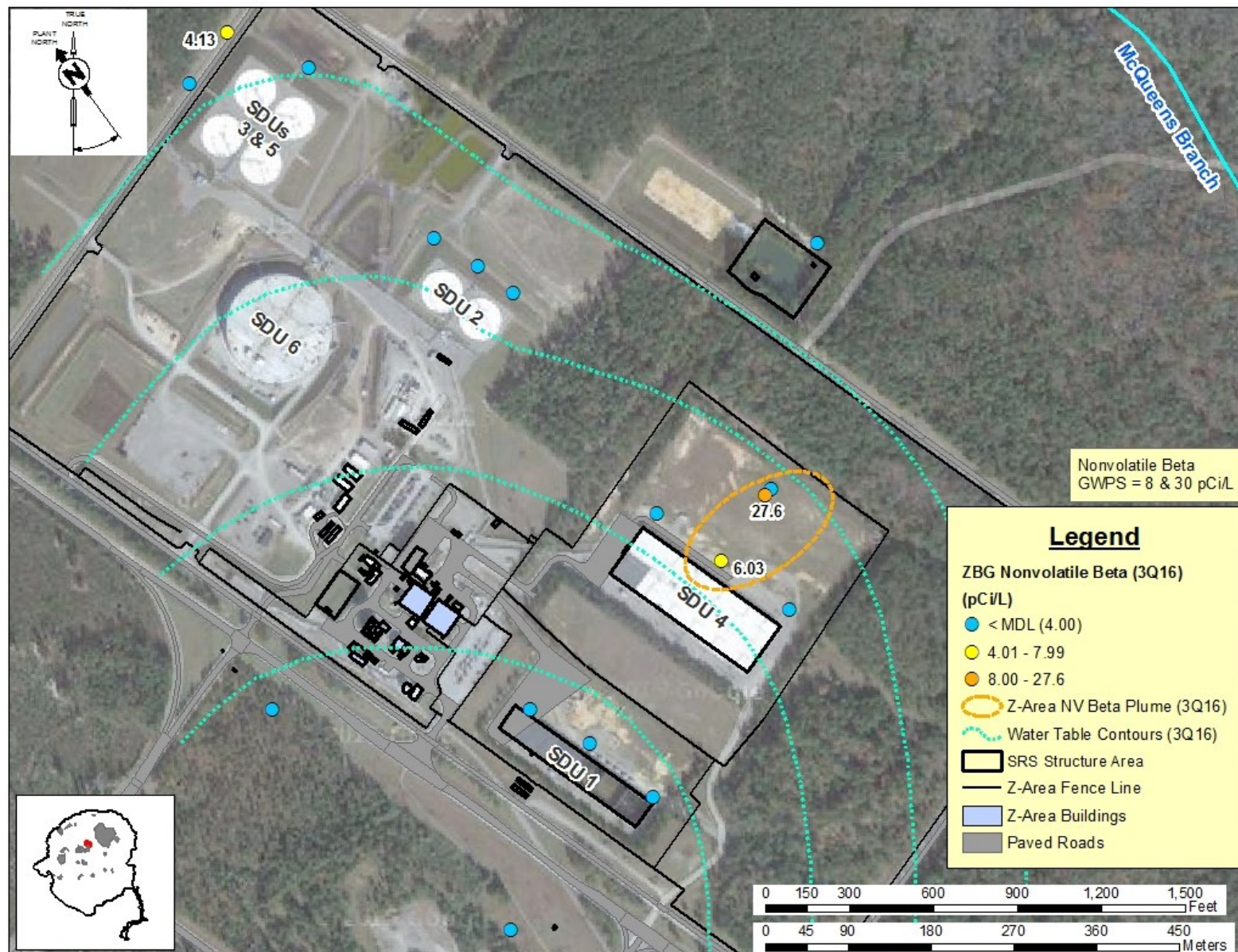


Figure 8. Approximate Nonvolatile Beta Groundwater Plume (3Q16)

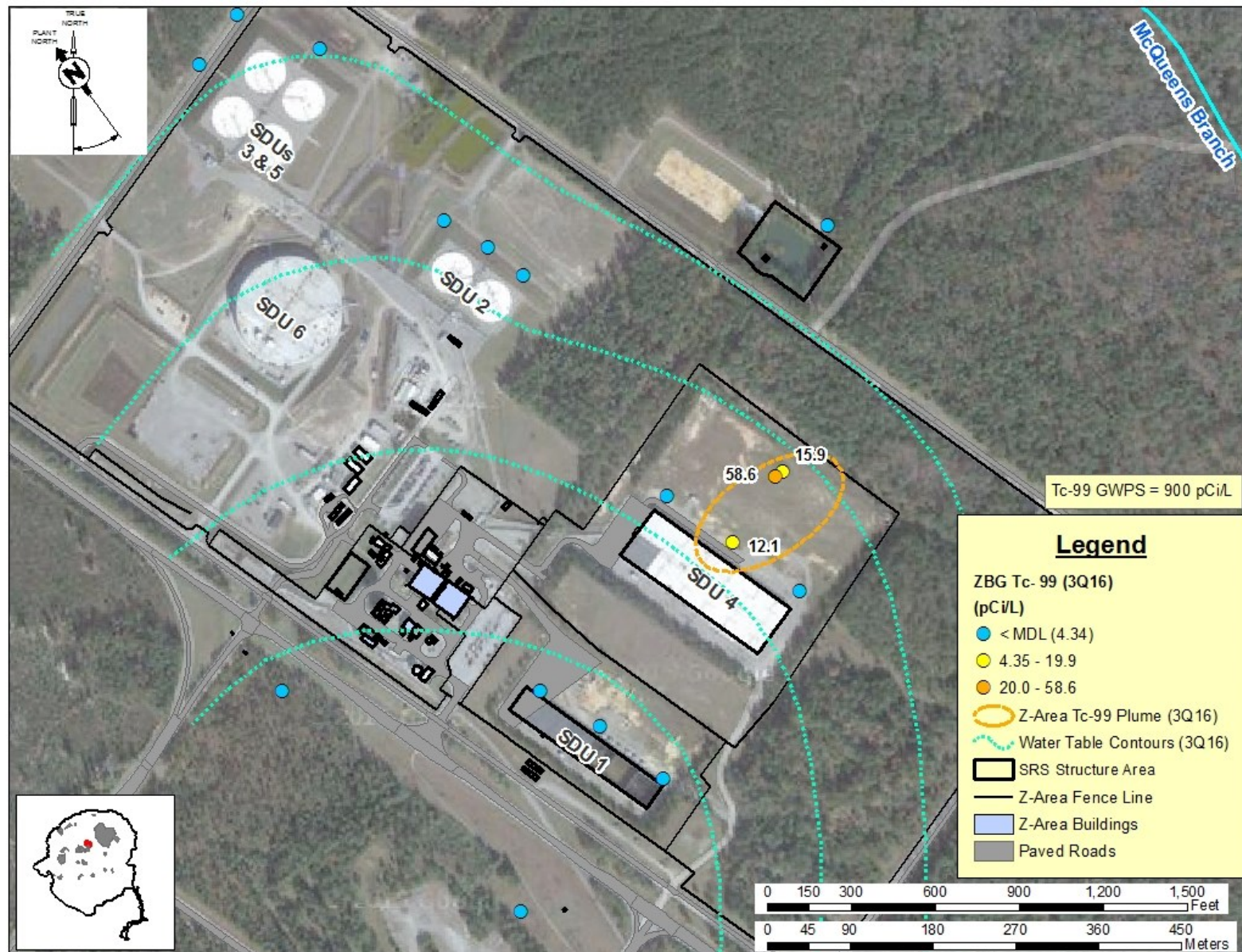


Figure 9. Approximate Tc-99 Groundwater Plume (3Q16)

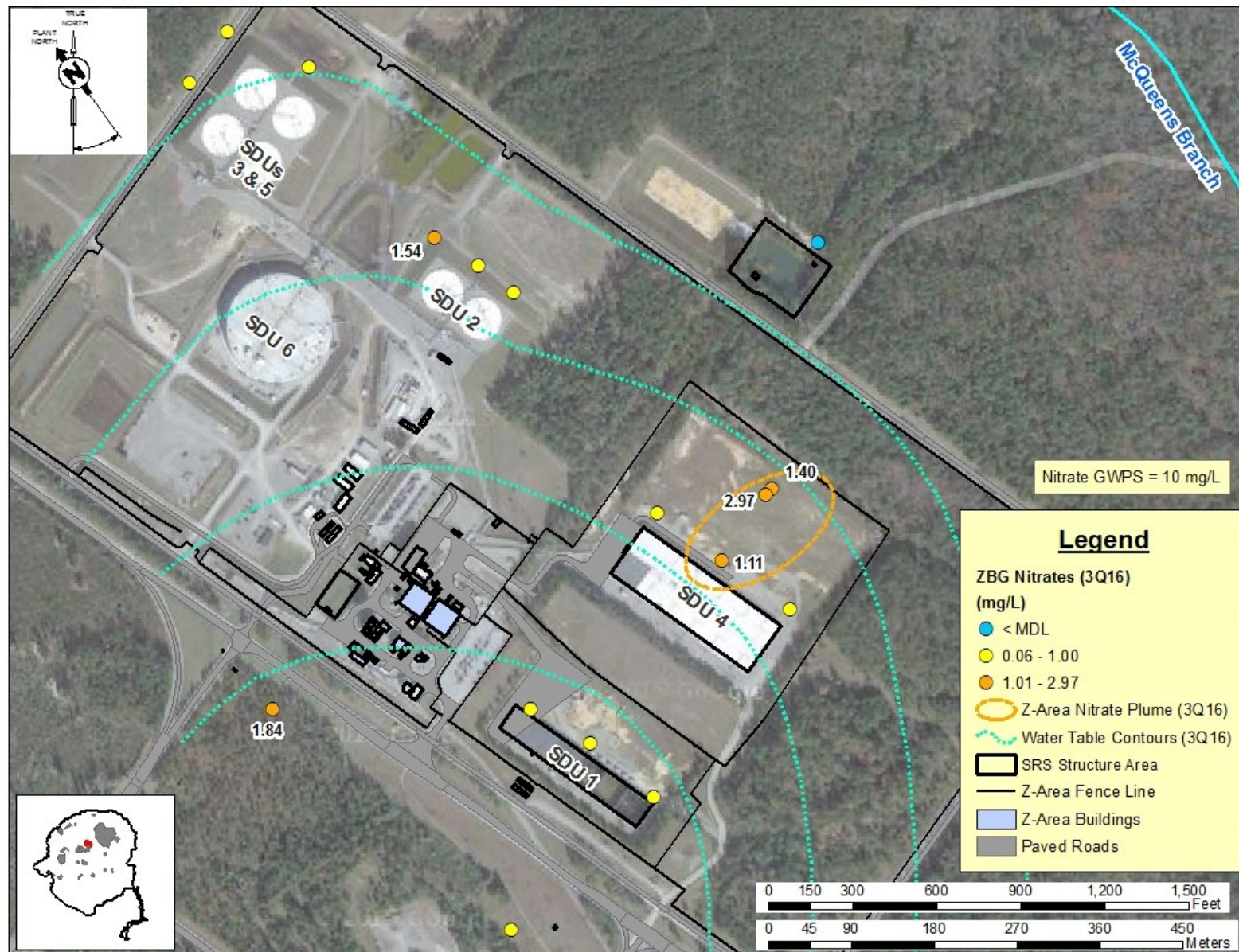


Figure 10. Approximate Nitrate Groundwater Plume (3Q16)

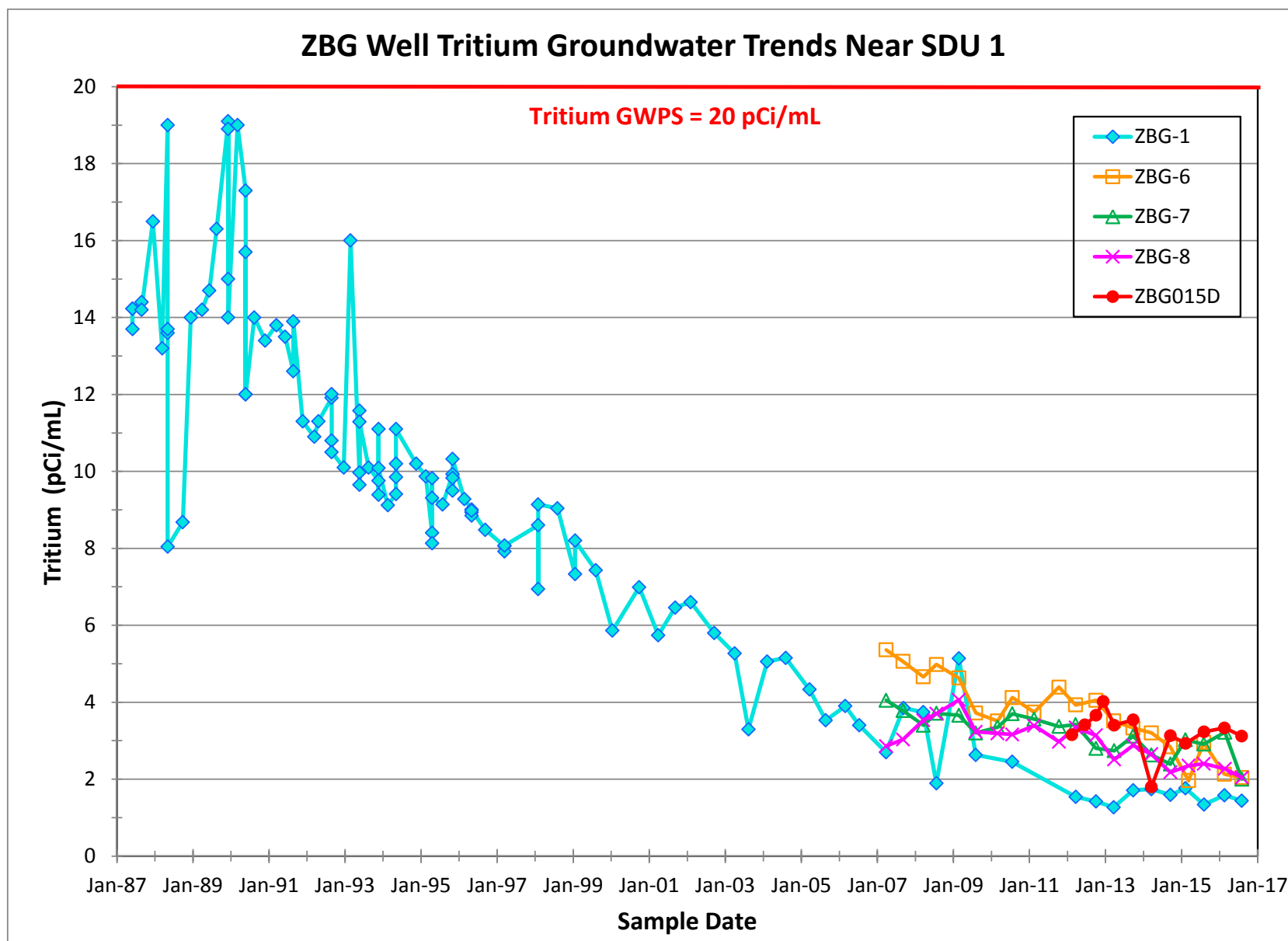


Figure 11. ZBG Well Tritium Groundwater Trends

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Table 1. List of Analytes and Parameters for the SDF

Semiannual Constituents	Groundwater Protection Standard	Units
pH	NA	pH
Specific Conductance	NA	μS/cm
Groundwater Elevations	NA	ft-msl
Nitrate (Nitrate/Nitrite)	10	mg/L
Gross Alpha	15	pCi/L
Gross Beta ^{1,2} (Nonvolatile Beta)	8 / 30	pCi/L
Gamma Spectroscopy-Emitters (Beta-Emitters)	4	mrem
Iodine-129 (I-129)	1	pCi/L
Technetium-99 (Tc-99)	900	pCi/L
Tritium	20	pCi/mL
Biennial Constituents	Groundwater Protection Standard	Units
Radium-226 (Ra-226)	5 (Ra-226 + Ra-228)	pCi/L
Radium-228 (Ra-228)	5 (Ra-226 + Ra-228)	pCi/L
Benzene	5	μg/L
Tetrachloroethylene	5	μg/L
Toluene	1000	μg/L
Trichloroethylene	5	μg/L
Contingent Analysis 1	Groundwater Protection Standard	Units
Strontium-90 (Sr-90)	8	pCi/L
Contingent Analyses 2	Groundwater Protection Standard	Units
Carbon-14 (C-14)	2000	pCi/L
Cobalt-60 (Co-60)	100	pCi/L
Cesium-137 (Cs-137)	200	pCi/L
Gross Beta (Re-analysis)	30	pCi/L
Niobium-94 (Nb-94)	707 ³	pCi/L
Nickel-59 (Ni-59)	300	pCi/L
Nickel-63 (Ni-63)	50	pCi/L
Plutonium-241 (Pu-241)	62.6 ³	pCi/L
Ruthenium-106 (Ru-106)	30	pCi/L
Antimony (Sb-125)	300	pCi/L
Technetium-99 (Tc-99)	900	pCi/L
¹ If Gross Beta is equal to or exceeds 8 pCi/L then Contingent Analysis 1 is analyzed for that sample.		
² If Gross Beta is equal to or exceeds 30 pCi/L then all Contingent Analyses 2 are analyzed for that well and the background well.		
³ Proposed Drinking Water Standard. NA = Not Applicable.		

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Table 2. Laboratory Results for Saltstone Wells (2016)

WELL	DATE	ANALYTE	MDL	PQL	QUALIFIER	RESULT	UNITS	SAMPLE TYPE	ANALYSIS CODE
ZBG 1	2/18/16	ACTINIUM-228	20.00	43.20	U	12.40	pCi/L	REG	REG
ZBG 1	8/2/16	ACTINIUM-228	17.50	56.50	U	0.51	pCi/L	REG	REG
ZBG 1	2/18/16	BISMUTH-214	9.79	31.00		50.80	pCi/L	REG	REG
ZBG 1	8/2/16	BISMUTH-214	9.13	32.70	R	12.80	pCi/L	REG	REG
ZBG 1	2/18/16	CESIUM-137	6.78	13.90	U	1.52	pCi/L	REG	REG
ZBG 1	8/2/16	CESIUM-137	6.15	14.10	U	-2.65	pCi/L	REG	REG
ZBG 1	2/18/16	COBALT-60	5.71	11.60	U	-0.17	pCi/L	REG	REG
ZBG 1	8/2/16	COBALT-60	5.16	11.00	U	-1.03	pCi/L	REG	REG
ZBG 1	2/18/16	GROSS ALPHA	2.71	5.31	U	-0.26	pCi/L	REG	REG
ZBG 1	8/2/16	GROSS ALPHA	2.04	6.95	J	3.52	pCi/L	REG	REG
ZBG 1	2/18/16	IODINE-129	0.70	1.64	U	-0.13	pCi/L	REG	REG
ZBG 1	8/2/16	IODINE-129	0.71	1.71	U	-0.11	pCi/L	REG	REG
ZBG 1	8/2/16	IODINE-129	0.72	1.54	U	0.20	pCi/L	REG	LD
ZBG 1	2/18/16	LEAD-212	9.00	23.80	U	0.95	pCi/L	REG	REG
ZBG 1	8/2/16	LEAD-212	7.84	24.30	J	12.20	pCi/L	REG	REG
ZBG 1	2/18/16	LEAD-214	11.10	38.70		59.30	pCi/L	REG	REG
ZBG 1	8/2/16	LEAD-214	10.40	33.00	U	3.21	pCi/L	REG	REG
ZBG 1	2/18/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	LD
ZBG 1	2/18/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	REG
ZBG 1	8/2/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	REG
ZBG 1	2/18/16	NITRATE-NITRITE AS NITROGEN	0.09	0.25		1.52	mg/L	REG	REG
ZBG 1	8/2/16	NITRATE-NITRITE AS NITROGEN	0.09	0.25		1.84	mg/L	REG	REG
ZBG 1	2/18/16	NONVOLATILE BETA	3.77	8.17	U	1.39	pCi/L	REG	REG
ZBG 1	8/2/16	NONVOLATILE BETA	4.09	9.60	U	1.62	pCi/L	REG	REG
ZBG 1	2/18/16	POTASSIUM-40	70.500	151.00	U	1.35	pCi/L	REG	REG
ZBG 1	8/2/16	POTASSIUM-40	68.100	154.00	U	5.67	pCi/L	REG	REG
ZBG 1	2/18/16	STRONTIUM-90	5.15	10.20	U	-1.11	pCi/L	REG	REG
ZBG 1	8/2/16	STRONTIUM-90	4.25	8.01	U	-1.57	pCi/L	REG	REG
ZBG 1	8/2/16	STRONTIUM-90	5.24	10.60	U	-1.10	pCi/L	REG	LD
ZBG 1	2/18/16	TECHNETIUM-99	14.20	30.70	U	-1.28	pCi/L	REG	REG
ZBG 1	2/18/16	TECHNETIUM-99	13.90	30.20	U	0.76	pCi/L	REG	LD

WELL	DATE	ANALYTE	MDL	PQL	QUALIFIER	RESULT	UNITS	SAMPLE TYPE	ANALYSIS CODE
ZBG 1	8/2/16	TECHNETIUM-99	4.34	9.49	U	0.19	pCi/L	REG	REG
ZBG 1	2/18/16	THALLIUM-208	6.65	13.40	U	2.24	pCi/L	REG	REG
ZBG 1	8/2/16	THALLIUM-208	5.51	14.80	U	2.05	pCi/L	REG	REG
ZBG 1	2/18/16	TRITIUM	0.53	1.28		1.58	pCi/mL	REG	REG
ZBG 1	2/18/16	TRITIUM	0.53	1.29		1.60	pCi/mL	REG	LD
ZBG 1	8/2/16	TRITIUM	0.42	1.08		1.44	pCi/mL	REG	REG
ZBG 3	2/17/16	ACTINIUM-228	19.80	57.80	U	11.60	pCi/L	REG	REG
ZBG 3	8/1/16	ACTINIUM-228	13.20	40.40	U	7.05	pCi/L	REG	REG
ZBG 3	2/17/16	BISMUTH-214	8.93	33.10		80.30	pCi/L	REG	REG
ZBG 3	8/1/16	BISMUTH-214	7.35	25.20	R	8.01	pCi/L	REG	REG
ZBG 3	2/17/16	CESIUM-137	4.65	10.50	U	1.68	pCi/L	REG	REG
ZBG 3	8/1/16	CESIUM-137	3.41	7.77	U	-0.11	pCi/L	REG	REG
ZBG 3	2/17/16	COBALT-60	4.78	9.98	U	0.71	pCi/L	REG	REG
ZBG 3	8/1/16	COBALT-60	3.84	7.46	U	1.24	pCi/L	REG	REG
ZBG 3	2/17/16	GROSS ALPHA	2.19	5.68	U	1.61	pCi/L	REG	REG
ZBG 3	8/1/16	GROSS ALPHA	2.04	4.46	U	0.50	pCi/L	REG	REG
ZBG 3	2/17/16	IODINE-129	0.67	1.68	U	-0.62	pCi/L	REG	LD
ZBG 3	2/17/16	IODINE-129	0.71	1.54	U	0.07	pCi/L	REG	REG
ZBG 3	8/1/16	IODINE-129	0.75	1.65	U	-0.01	pCi/L	REG	REG
ZBG 3	2/17/16	LEAD-212	6.87	21.00	U	4.25	pCi/L	REG	REG
ZBG 3	8/1/16	LEAD-212	5.32	17.80	U	3.37	pCi/L	REG	REG
ZBG 3	2/17/16	LEAD-214	18.80	43.40		101.00	pCi/L	REG	REG
ZBG 3	8/1/16	LEAD-214	7.39	25.40	U	1.61	pCi/L	REG	REG
ZBG 3	2/17/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	REG
ZBG 3	8/1/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	REG
ZBG 3	2/17/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.98	mg/L	REG	REG
ZBG 3	8/1/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.97	mg/L	REG	REG
ZBG 3	2/17/16	NONVOLATILE BETA	4.37	9.20	U	0.27	pCi/L	REG	REG
ZBG 3	8/1/16	NONVOLATILE BETA	4.02	8.66	U	-0.54	pCi/L	REG	REG
ZBG 3	2/17/16	POTASSIUM-40	42.60	165.00	U	29.40	pCi/L	REG	REG
ZBG 3	8/1/16	POTASSIUM-40	47.40	112.00	U	-4.85	pCi/L	REG	REG
ZBG 3	2/17/16	TECHNETIUM-99	4.38	9.63	U	1.00	pCi/L	REG	REG
ZBG 3	8/1/16	TECHNETIUM-99	4.27	9.41	U	1.27	pCi/L	REG	REG

WELL	DATE	ANALYTE	MDL	PQL	QUALIFIER	RESULT	UNITS	SAMPLE TYPE	ANALYSIS CODE
ZBG 3	2/17/16	THALLIUM-208	4.39	12.40	U	0.15	pCi/L	REG	REG
ZBG 3	8/1/16	THALLIUM-208	4.19	12.10	U	-3.65	pCi/L	REG	REG
ZBG 3	2/17/16	TRITIUM	0.44	1.17		1.99	pCi/mL	REG	REG
ZBG 3	8/1/16	TRITIUM	0.48	1.27		2.10	pCi/mL	REG	REG
ZBG 4	2/17/16	ACTINIUM-228	23.90	59.70	U	9.21	pCi/L	REG	REG
ZBG 4	8/3/16	ACTINIUM-228	24.50	55.10	U	1.63	pCi/L	REG	REG
ZBG 4	2/17/16	BISMUTH-214	9.76	37.20		64.10	pCi/L	REG	REG
ZBG 4	8/3/16	BISMUTH-214	12.00	42.40	R	17.60	pCi/L	REG	REG
ZBG 4	2/17/16	CESIUM-137	5.17	11.20	U	-2.13	pCi/L	REG	REG
ZBG 4	8/3/16	CESIUM-137	5.62	11.90	U	-0.59	pCi/L	REG	REG
ZBG 4	2/17/16	COBALT-60	6.35	12.90	U	1.54	pCi/L	REG	REG
ZBG 4	8/3/16	COBALT-60	6.02	13.80	U	-1.10	pCi/L	REG	REG
ZBG 4	2/17/16	GROSS ALPHA	2.22	4.48	U	0.45	pCi/L	REG	REG
ZBG 4	8/3/16	GROSS ALPHA	2.22	2.89	U	-0.33	pCi/L	REG	REG
ZBG 4	2/17/16	IODINE-129	0.69	1.52	U	-0.21	pCi/L	REG	REG
ZBG 4	8/3/16	IODINE-129	0.80	1.72	U	0.51	pCi/L	REG	REG
ZBG 4	2/17/16	LEAD-212	10.40	25.90	U	-0.21	pCi/L	REG	REG
ZBG 4	8/3/16	LEAD-212	8.29	24.30	R	9.65	pCi/L	REG	REG
ZBG 4	2/17/16	LEAD-214	17.80	44.20		58.00	pCi/L	REG	REG
ZBG 4	8/3/16	LEAD-214	12.10	37.10	U	10.70	pCi/L	REG	REG
ZBG 4	2/17/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	REG
ZBG 4	8/3/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	REG
ZBG 4	2/17/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		1.19	mg/L	REG	REG
ZBG 4	8/3/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		1.11	mg/L	REG	REG
ZBG 4	2/17/16	NONVOLATILE BETA	4.20	10.90	J	6.29	pCi/L	REG	REG
ZBG 4	8/3/16	NONVOLATILE BETA	4.00	10.90	J	6.03	pCi/L	REG	REG
ZBG 4	2/17/16	POTASSIUM-40	57.20	151.00	R	92.10	pCi/L	REG	REG
ZBG 4	8/3/16	POTASSIUM-40	50.80	172.00	U	21.30	pCi/L	REG	REG
ZBG 4	2/17/16	TECHNETIUM-99	4.37	9.91	J	5.99	pCi/L	REG	REG
ZBG 4	8/3/16	TECHNETIUM-99	4.20	9.89		12.10	pCi/L	REG	REG
ZBG 4	2/17/16	THALLIUM-208	6.12	15.50	U	-3.08	pCi/L	REG	REG
ZBG 4	8/3/16	THALLIUM-208	7.07	16.70	U	2.42	pCi/L	REG	REG
ZBG 4	2/17/16	TRITIUM	0.44	1.09		1.25	pCi/mL	REG	REG

WELL	DATE	ANALYTE	MDL	PQL	QUALIFIER	RESULT	UNITS	SAMPLE TYPE	ANALYSIS CODE
ZBG 4	8/3/16	TRITIUM	0.46	1.18		1.64	pCi/mL	REG	REG
ZBG 5	2/17/16	ACTINIUM-228	21.80	50.00	U	0.71	pCi/L	REG	REG
ZBG 5	8/1/16	ACTINIUM-228	23.40	56.60	U	0.42	pCi/L	REG	REG
ZBG 5	2/17/16	BISMUTH-214	9.93	33.50	J	15.80	pCi/L	REG	REG
ZBG 5	8/1/16	BISMUTH-214	9.66	37.90	J	31.70	pCi/L	REG	REG
ZBG 5	2/17/16	CESIUM-137	4.84	12.70	U	-0.40	pCi/L	REG	REG
ZBG 5	8/1/16	CESIUM-137	4.56	10.10	U	-3.40	pCi/L	REG	REG
ZBG 5	2/17/16	COBALT-60	4.77	10.20	U	-0.57	pCi/L	REG	REG
ZBG 5	8/1/16	COBALT-60	5.59	11.30	U	1.72	pCi/L	REG	REG
ZBG 5	2/17/16	GROSS ALPHA	2.26	4.57	U	0.47	pCi/L	REG	REG
ZBG 5	8/1/16	GROSS ALPHA	2.10	4.05	U	0.13	pCi/L	REG	REG
ZBG 5	2/17/16	IODINE-129	0.70	1.53	U	0.02	pCi/L	REG	REG
ZBG 5	8/1/16	IODINE-129	0.74	1.88	J	0.75	pCi/L	REG	LD
ZBG 5	8/1/16	IODINE-129	0.75	1.67	U	-0.22	pCi/L	REG	REG
ZBG 5	2/17/16	LEAD-212	9.23	23.10	U	0.84	pCi/L	REG	REG
ZBG 5	8/1/16	LEAD-212	8.04	21.50	U	1.88	pCi/L	REG	REG
ZBG 5	2/17/16	LEAD-214	11.00	34.20	J	18.40	pCi/L	REG	REG
ZBG 5	8/1/16	LEAD-214	14.40	36.40	R	32.00	pCi/L	REG	REG
ZBG 5	2/17/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	REG
ZBG 5	8/1/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	REG
ZBG 5	2/17/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.32	mg/L	REG	REG
ZBG 5	2/17/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.32	mg/L	REG	LD
ZBG 5	8/1/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.31	mg/L	REG	REG
ZBG 5	2/17/16	NONVOLATILE BETA	4.22	8.40	U	-0.83	pCi/L	REG	REG
ZBG 5	8/1/16	NONVOLATILE BETA	4.02	9.69	U	2.29	pCi/L	REG	REG
ZBG 5	2/17/16	POTASSIUM-40	58.20	147.00	U	-30.80	pCi/L	REG	REG
ZBG 5	8/1/16	POTASSIUM-40	52.70	167.00	U	10.90	pCi/L	REG	REG
ZBG 5	2/17/16	TECHNETIUM-99	4.33	9.59	U	2.02	pCi/L	REG	REG
ZBG 5	8/1/16	TECHNETIUM-99	4.32	9.57	U	2.13	pCi/L	REG	REG
ZBG 5	2/17/16	THALLIUM-208	5.53	13.40	U	0.87	pCi/L	REG	REG
ZBG 5	8/1/16	THALLIUM-208	4.95	16.60	U	2.47	pCi/L	REG	REG
ZBG 5	2/17/16	TRITIUM	0.44	1.00	U	0.38	pCi/mL	REG	REG
ZBG 5	8/1/16	TRITIUM	0.48	1.08	U	0.30	pCi/mL	REG	REG

WELL	DATE	ANALYTE	MDL	PQL	QUALIFIER	RESULT	UNITS	SAMPLE TYPE	ANALYSIS CODE
ZBG 6	2/17/16	ACTINIUM-228	17.60	45.40	U	0.20	pCi/L	REG	REG
ZBG 6	8/3/16	ACTINIUM-228	20.60	57.20	R	20.80	pCi/L	REG	REG
ZBG 6	2/17/16	BISMUTH-214	8.03	31.40		37.70	pCi/L	REG	REG
ZBG 6	8/3/16	BISMUTH-214	7.52	36.90	J	28.80	pCi/L	REG	REG
ZBG 6	2/17/16	CESIUM-137	4.04	8.68	U	0.22	pCi/L	REG	REG
ZBG 6	8/3/16	CESIUM-137	4.28	9.04	U	-0.93	pCi/L	REG	REG
ZBG 6	2/17/16	COBALT-60	4.64	10.40	U	2.17	pCi/L	REG	REG
ZBG 6	8/3/16	COBALT-60	4.05	9.53	U	-1.48	pCi/L	REG	REG
ZBG 6	2/17/16	GROSS ALPHA	2.05	7.06	J	3.87	pCi/L	REG	REG
ZBG 6	2/17/16	GROSS ALPHA	2.06	7.08	J	3.89	pCi/L	REG	LD
ZBG 6	8/3/16	GROSS ALPHA	2.21	5.73	U	1.61	pCi/L	REG	REG
ZBG 6	2/17/16	IODINE-129	0.70	1.53	U	-0.12	pCi/L	REG	REG
ZBG 6	8/3/16	IODINE-129	0.74	1.62	U	-0.02	pCi/L	REG	REG
ZBG 6	2/17/16	LEAD-212	6.93	21.20	U	6.80	pCi/L	REG	REG
ZBG 6	8/3/16	LEAD-212	8.14	24.50	U	5.77	pCi/L	REG	REG
ZBG 6	2/17/16	LEAD-214	9.24	31.20		36.30	pCi/L	REG	REG
ZBG 6	8/3/16	LEAD-214	11.20	37.00	R	17.40	pCi/L	REG	REG
ZBG 6	2/17/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.39	mg/L	REG	REG
ZBG 6	8/3/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.45	mg/L	REG	REG
ZBG 6	8/3/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.45	mg/L	REG	LD
ZBG 6	2/17/16	NONVOLATILE BETA	4.03	8.40	U	0.13	pCi/L	REG	LD
ZBG 6	2/17/16	NONVOLATILE BETA	4.03	9.22	U	2.23	pCi/L	REG	REG
ZBG 6	8/3/16	NONVOLATILE BETA	4.28	10.70	U	3.60	pCi/L	REG	REG
ZBG 6	2/17/16	POTASSIUM-40	61.30	143.00	U	-12.70	pCi/L	REG	REG
ZBG 6	8/3/16	POTASSIUM-40	45.00	141.00	U	14.00	pCi/L	REG	REG
ZBG 6	2/17/16	TECHNETIUM-99	4.33	9.41	U	-0.87	pCi/L	REG	REG
ZBG 6	8/3/16	TECHNETIUM-99	4.22	9.33	U	1.77	pCi/L	REG	REG
ZBG 6	2/17/16	THALLIUM-208	4.51	11.20	U	-4.83	pCi/L	REG	REG
ZBG 6	8/3/16	THALLIUM-208	3.96	15.50	R	6.81	pCi/L	REG	REG
ZBG 6	2/17/16	TRITIUM	0.44	1.19		2.13	pCi/mL	REG	REG
ZBG 6	8/3/16	TRITIUM	0.46	1.23		2.04	pCi/mL	REG	REG
ZBG 7	2/22/16	ACTINIUM-228	21.90	72.10	U	7.00	pCi/L	REG	LD
ZBG 7	2/22/16	ACTINIUM-228	22.00	50.00	U	-9.15	pCi/L	REG	REG

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ZBG 7	8/3/16	ACTINIUM-228	18.30	47.90	U	-9.60	pCi/L	REG	REG
ZBG 7	2/22/16	ANTIMONY-125	12.40	26.80	U	-3.31	pCi/L	REG	LD
ZBG 7	2/22/16	BISMUTH-214	10.20	34.00	J	20.00	pCi/L	REG	REG
ZBG 7	2/22/16	BISMUTH-214	9.85	29.60	U	9.04	pCi/L	REG	LD
ZBG 7	8/3/16	BISMUTH-214	7.38	32.80		41.50	pCi/L	REG	REG
ZBG 7	2/22/16	CESIUM-137	5.70	12.80	U	-2.25	pCi/L	REG	REG
ZBG 7	2/22/16	CESIUM-137	4.86	10.30	U	0.93	pCi/L	REG	LD
ZBG 7	8/3/16	CESIUM-137	4.04	8.54	U	-0.68	pCi/L	REG	REG
ZBG 7	2/22/16	COBALT-60	5.28	11.70	U	0.18	pCi/L	REG	REG
ZBG 7	2/22/16	COBALT-60	5.81	12.90	U	5.75	pCi/L	REG	LD
ZBG 7	8/3/16	COBALT-60	5.85	11.50	U	2.93	pCi/L	REG	REG
ZBG 7	2/22/16	GROSS ALPHA	2.04	5.06	U	1.23	pCi/L	REG	REG
ZBG 7	8/3/16	GROSS ALPHA	2.20	5.71	U	1.61	pCi/L	REG	REG
ZBG 7	2/22/16	IODINE-129	0.73	1.58	U	0.07	pCi/L	REG	REG
ZBG 7	8/3/16	IODINE-129	0.76	1.81	U	0.05	pCi/L	REG	REG
ZBG 7	2/22/16	LEAD-212	10.40	27.20	U	2.13	pCi/L	REG	REG
ZBG 7	2/22/16	LEAD-212	9.30	24.80	U	3.84	pCi/L	REG	LD
ZBG 7	8/3/16	LEAD-212	9.09	25.80	U	8.05	pCi/L	REG	REG
ZBG 7	2/22/16	LEAD-214	17.90	45.10	J	35.30	pCi/L	REG	REG
ZBG 7	2/22/16	LEAD-214	12.10	29.60	U	5.72	pCi/L	REG	LD
ZBG 7	8/3/16	LEAD-214	13.10	31.10	R	19.70	pCi/L	REG	REG
ZBG 7	2/22/16	NIObIUM-94	4.34	9.32	U	-0.02	pCi/L	REG	LD
ZBG 7	2/22/16	NITRATE-NITRITE AS NITROGEN	0.09	0.25		0.93	mg/L	REG	REG
ZBG 7	2/22/16	NITRATE-NITRITE AS NITROGEN	0.09	0.25		0.92	mg/L	REG	LD
ZBG 7	8/3/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.90	mg/L	REG	REG
ZBG 7	2/22/16	NONVOLATILE BETA	3.97	8.42	U	0.52	pCi/L	REG	REG
ZBG 7	8/3/16	NONVOLATILE BETA	4.28	10.00	U	1.47	pCi/L	REG	REG
ZBG 7	2/22/16	POTASSIUM-40	68.50	152.00	U	-45.70	pCi/L	REG	LD
ZBG 7	2/22/16	POTASSIUM-40	66.70	184.00	U	22.70	pCi/L	REG	REG
ZBG 7	8/3/16	POTASSIUM-40	47.10	181.00	U	7.26	pCi/L	REG	REG
ZBG 7	2/22/16	RUTHENIUM-106	39.90	87.10	U	-10.40	pCi/L	REG	LD
ZBG 7	2/22/16	TECHNETIUM-99	4.50	9.89	U	0.62	pCi/L	REG	LD
ZBG 7	2/22/16	TECHNETIUM-99	4.49	9.70	U	-2.30	pCi/L	REG	REG

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ZBG 7	8/3/16	TECHNETIUM-99	4.17	9.09	U	-0.26	pCi/L	REG	REG
ZBG 7	2/22/16	THALLIUM-208	5.65	12.70	U	1.56	pCi/L	REG	LD
ZBG 7	2/22/16	THALLIUM-208	6.42	14.80	U	0.32	pCi/L	REG	REG
ZBG 7	8/3/16	THALLIUM-208	5.05	13.60	U	-2.55	pCi/L	REG	REG
ZBG 7	2/22/16	TRITIUM	0.44	1.28		3.22	pCi/mL	REG	REG
ZBG 7	8/3/16	TRITIUM	0.46	1.21		2.00	pCi/mL	REG	REG
ZBG 8	2/22/16	ACTINIUM-228	21.60	64.60	U	4.27	pCi/L	REG	REG
ZBG 8	8/3/16	ACTINIUM-228	21.10	54.50	U	-9.76	pCi/L	REG	REG
ZBG 8	2/22/16	BISMUTH-214	12.50	43.90		65.00	pCi/L	REG	REG
ZBG 8	8/3/16	BISMUTH-214	10.20	35.20	U	8.96	pCi/L	REG	REG
ZBG 8	2/22/16	CESIUM-137	5.82	13.00	U	3.11	pCi/L	REG	REG
ZBG 8	8/3/16	CESIUM-137	4.84	10.60	U	-2.87	pCi/L	REG	REG
ZBG 8	2/22/16	COBALT-60	7.79	15.60	U	3.35	pCi/L	REG	REG
ZBG 8	8/3/16	COBALT-60	4.95	10.20	U	0.14	pCi/L	REG	REG
ZBG 8	2/22/16	GROSS ALPHA	2.03	6.56	J	3.10	pCi/L	REG	REG
ZBG 8	8/3/16	GROSS ALPHA	2.21	4.97	U	0.84	pCi/L	REG	REG
ZBG 8	2/22/16	IODINE-129	0.76	2.76	J	0.85	pCi/L	REG	REG
ZBG 8	8/3/16	IODINE-129	0.78	1.70	U	0.16	pCi/L	REG	REG
ZBG 8	2/22/16	LEAD-212	9.97	27.40	U	3.60	pCi/L	REG	REG
ZBG 8	8/3/16	LEAD-212	8.90	25.20	U	4.71	pCi/L	REG	REG
ZBG 8	2/22/16	LEAD-214	13.10	41.30		80.00	pCi/L	REG	REG
ZBG 8	8/3/16	LEAD-214	9.83	32.20	U	9.01	pCi/L	REG	REG
ZBG 8	2/22/16	NITRATE-NITRITE AS NITROGEN	0.09	0.25		0.82	mg/L	REG	REG
ZBG 8	8/3/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.88	mg/L	REG	REG
ZBG 8	2/22/16	NONVOLATILE BETA	4.01	8.47	U	0.41	pCi/L	REG	REG
ZBG 8	8/3/16	NONVOLATILE BETA	4.17	9.38	U	0.26	pCi/L	REG	REG
ZBG 8	2/22/16	POTASSIUM-40	71.30	159.00	U	48.10	pCi/L	REG	REG
ZBG 8	8/3/16	POTASSIUM-40	56.20	156.00	U	10.00	pCi/L	REG	REG
ZBG 8	2/22/16	TECHNETIUM-99	4.50	9.74	U	-1.75	pCi/L	REG	REG
ZBG 8	8/3/16	TECHNETIUM-99	4.19	9.21	U	0.64	pCi/L	REG	REG
ZBG 8	2/22/16	THALLIUM-208	6.92	19.20	U	0.40	pCi/L	REG	REG
ZBG 8	8/3/16	THALLIUM-208	4.82	13.80	U	3.17	pCi/L	REG	REG
ZBG 8	2/22/16	TRITIUM	0.44	1.20		2.27	pCi/mL	REG	REG

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ZBG 8	8/3/16	TRITIUM	0.46	1.22		2.04	pCi/mL	REG	REG
ZBG002C	2/22/16	ACTINIUM-228	21.00	53.40	U	0.68	pCi/L	REG	REG
ZBG002C	8/1/16	ACTINIUM-228	21.80	50.20	U	2.47	pCi/L	REG	REG
ZBG002C	2/22/16	BISMUTH-214	9.73	30.50		44.40	pCi/L	REG	REG
ZBG002C	8/1/16	BISMUTH-214	10.90	32.70	J	25.60	pCi/L	REG	REG
ZBG002C	2/22/16	CESIUM-137	5.26	10.90	U	1.62	pCi/L	REG	REG
ZBG002C	8/1/16	CESIUM-137	5.45	11.30	U	0.64	pCi/L	REG	REG
ZBG002C	2/22/16	COBALT-60	5.73	13.30	U	-4.10	pCi/L	REG	REG
ZBG002C	8/1/16	COBALT-60	5.82	12.10	U	-0.42	pCi/L	REG	REG
ZBG002C	2/22/16	GROSS ALPHA	2.05	4.23	U	0.49	pCi/L	REG	REG
ZBG002C	8/1/16	GROSS ALPHA	2.05	4.48	U	0.50	pCi/L	REG	REG
ZBG002C	2/22/16	IODINE-129	0.72	1.61	U	-0.37	pCi/L	REG	REG
ZBG002C	8/1/16	IODINE-129	0.73	2.49	U	0.24	pCi/L	REG	REG
ZBG002C	2/22/16	LEAD-212	8.68	21.70	U	-2.93	pCi/L	REG	REG
ZBG002C	8/1/16	LEAD-212	8.22	24.60	U	6.53	pCi/L	REG	REG
ZBG002C	2/22/16	LEAD-214	9.77	28.20		52.50	pCi/L	REG	REG
ZBG002C	8/1/16	LEAD-214	13.40	36.60	U	3.90	pCi/L	REG	REG
ZBG002C	2/22/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	REG
ZBG002C	8/1/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	REG
ZBG002C	2/22/16	NITRATE-NITRITE AS NITROGEN	0.09	0.25		2.03	mg/L	REG	REG
ZBG002C	8/1/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		1.40	mg/L	REG	REG
ZBG002C	2/22/16	NONVOLATILE BETA	3.95	10.30	J	5.94	pCi/L	REG	REG
ZBG002C	8/1/16	NONVOLATILE BETA	4.02	10.10	U	3.67	pCi/L	REG	REG
ZBG002C	2/22/16	POTASSIUM-40	66.40	145.00	U	0.70	pCi/L	REG	REG
ZBG002C	8/1/16	POTASSIUM-40	58.10	148.00	U	9.11	pCi/L	REG	REG
ZBG002C	2/22/16	TECHNETIUM-99	4.50	10.70		16.70	pCi/L	REG	REG
ZBG002C	8/1/16	TECHNETIUM-99	4.26	10.20		15.90	pCi/L	REG	REG
ZBG002C	2/22/16	THALLIUM-208	5.28	12.20	U	-2.08	pCi/L	REG	REG
ZBG002C	8/1/16	THALLIUM-208	4.54	16.10	U	2.67	pCi/L	REG	REG
ZBG002C	2/22/16	TRITIUM	0.44	1.13		1.45	pCi/mL	REG	REG
ZBG002C	8/1/16	TRITIUM	0.47	1.18		1.40	pCi/mL	REG	REG
ZBG002D	2/22/16	ACTINIUM-228	16.10	38.30	U	12.00	pCi/L	REG	REG
ZBG002D	8/1/16	ACTINIUM-228	18.50	36.30	U	13.00	pCi/L	REG	REG

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ZBG002D	2/22/16	ANTIMONY-125	9.84	21.10	U	-0.11	pCi/L	REG	REG
ZBG002D	8/1/16	ANTIMONY-125	10.80	22.70	U	0.79	pCi/L	REG	REG
ZBG002D	2/22/16	BISMUTH-214	6.90	27.30		78.90	pCi/L	REG	REG
ZBG002D	8/1/16	BISMUTH-214	8.10	27.80	J	23.10	pCi/L	REG	REG
ZBG002D	2/22/16	CARBON-14	33.90	73.10	U	0.88	pCi/L	REG	LD
ZBG002D	2/22/16	CARBON-14	33.70	73.10	U	7.38	pCi/L	REG	REG
ZBG002D	8/1/16	CARBON-14	38.80	83.80	U	-0.17	pCi/L	REG	REG
ZBG002D	8/1/16	CARBON-14	38.70	82.90	U	-9.88	pCi/L	REG	LD
ZBG002D	2/22/16	CESIUM-137	3.65	7.89	U	-1.40	pCi/L	REG	REG
ZBG002D	8/1/16	CESIUM-137	4.34	8.94	U	1.77	pCi/L	REG	REG
ZBG002D	2/22/16	COBALT-60	3.69	7.85	U	-0.78	pCi/L	REG	REG
ZBG002D	8/1/16	COBALT-60	4.86	9.94	U	0.73	pCi/L	REG	REG
ZBG002D	2/22/16	GROSS ALPHA	2.58	7.30	J	4.93	pCi/L	REG	REG
ZBG002D	2/22/16	GROSS ALPHA	2.24	6.04	J	3.39	pCi/L	REG	RERUN
ZBG002D	2/22/16	GROSS ALPHA	2.84	7.10	J	3.22	pCi/L	REG	LD
ZBG002D	8/1/16	GROSS ALPHA	2.15	4.11	U	0.12	pCi/L	REG	REG
ZBG002D	2/22/16	IODINE-129	0.77	1.68	U	0.10	pCi/L	REG	REG
ZBG002D	8/1/16	IODINE-129	0.73	1.77	U	0.49	pCi/L	REG	REG
ZBG002D	2/22/16	LEAD-212	6.57	15.50	U	2.51	pCi/L	REG	REG
ZBG002D	8/1/16	LEAD-212	8.45	25.60	U	0.38	pCi/L	REG	REG
ZBG002D	2/22/16	LEAD-214	8.23	31.40		79.90	pCi/L	REG	REG
ZBG002D	8/1/16	LEAD-214	12.40	36.20	R	21.80	pCi/L	REG	REG
ZBG002D	2/22/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	REG
ZBG002D	8/1/16	MERCURY	0.02	0.20	U	0.20	ug/L	REG	REG
ZBG002D	2/22/16	NICKEL-59	16.30	34.60	U	5.45	pCi/L	REG	REG
ZBG002D	8/1/16	NICKEL-59	18.40	41.00	U	9.54	pCi/L	REG	REG
ZBG002D	8/1/16	NICKEL-59	17.80	35.40	U	-1.88	pCi/L	REG	LD
ZBG002D	2/22/16	NICKEL-63	24.30	53.50	U	15.80	pCi/L	REG	REG
ZBG002D	8/1/16	NICKEL-63	30.20	63.40	U	-18.40	pCi/L	REG	REG
ZBG002D	8/1/16	NICKEL-63	31.80	67.80	U	-7.61	pCi/L	REG	LD
ZBG002D	2/22/16	NIOBIUM-94	3.63	7.65	U	-0.01	pCi/L	REG	REG
ZBG002D	8/1/16	NIOBIUM-94	3.94	8.58	U	-0.76	pCi/L	REG	REG
ZBG002D	2/22/16	NITRATE-NITRITE AS NITROGEN	0.09	0.25		1.35	mg/L	REG	REG

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ZBG002D	8/1/16	NITRATE-NITRITE AS NITROGEN	0.09	0.25		2.97	mg/L	REG	REG
ZBG002D	2/22/16	NONVOLATILE BETA	3.59	14.30		72.90	pCi/L	REG	RERUN
ZBG002D	2/22/16	NONVOLATILE BETA	2.73	14.00		85.50	pCi/L	REG	LD
ZBG002D	2/22/16	NONVOLATILE BETA	2.80	8.48		13.00	pCi/L	REG	REG
ZBG002D	8/1/16	NONVOLATILE BETA	4.02	15.30		27.60	pCi/L	REG	REG
ZBG002D	2/22/16	PLUTONIUM-241	14.60	31.50	U	-3.02	pCi/L	REG	REG
ZBG002D	2/22/16	PLUTONIUM-241	11.60	24.90	U	-2.91	pCi/L	REG	LD
ZBG002D	8/1/16	PLUTONIUM-241	10.90	23.50	U	0.47	pCi/L	REG	LD
ZBG002D	8/1/16	PLUTONIUM-241	9.26	20.30	U	5.34	pCi/L	REG	REG
ZBG002D	2/22/16	POTASSIUM-40	51.60	111.00	U	-8.32	pCi/L	REG	REG
ZBG002D	8/1/16	POTASSIUM-40	39.30	184.00	R	59.30	pCi/L	REG	REG
ZBG002D	2/22/16	RADIUM-226	0.79	2.18	J	1.76	pCi/L	REG	LD
ZBG002D	2/22/16	RADIUM-226	0.63	1.67	J	1.14	pCi/L	REG	REG
ZBG002D	8/1/16	RADIUM-226	0.47	1.20	J	0.73	pCi/L	REG	REG
ZBG002D	2/22/16	RADIUM-228	0.54	1.18	U	0.23	pCi/L	REG	REG
ZBG002D	8/1/16	RADIUM-228	0.76	1.77	J	0.78	pCi/L	REG	REG
ZBG002D	8/1/16	RADIUM-228	0.97	2.06	U	0.25	pCi/L	REG	LD
ZBG002D	2/22/16	RUTHENIUM-106	34.30	71.90	U	0.70	pCi/L	REG	REG
ZBG002D	8/1/16	RUTHENIUM-106	39.30	83.10	U	5.02	pCi/L	REG	REG
ZBG002D	2/22/16	STRONTIUM-90	5.65	12.30	U	2.44	pCi/L	REG	REG
ZBG002D	2/22/16	STRONTIUM-90	6.08	13.00	U	2.02	pCi/L	REG	LD
ZBG002D	8/1/16	STRONTIUM-90	5.77	12.00	U	0.22	pCi/L	REG	REG
ZBG002D	2/22/16	TECHNETIUM-99	23.40	59.80		152.00	pCi/L	REG	LD
ZBG002D	2/22/16	TECHNETIUM-99	22.10	56.70		149.00	pCi/L	REG	RERUN
ZBG002D	2/22/16	TECHNETIUM-99	15.30	34.00	J	19.70	pCi/L	REG	REG
ZBG002D	8/1/16	TECHNETIUM-99	4.25	12.10		58.60	pCi/L	REG	REG
ZBG002D	2/22/16	THALLIUM-208	3.83	9.27	U	1.30	pCi/L	REG	REG
ZBG002D	8/1/16	THALLIUM-208	4.24	16.80	U	2.43	pCi/L	REG	REG
ZBG002D	2/22/16	TRITIUM	0.44	1.16		1.82	pCi/mL	REG	REG
ZBG002D	8/1/16	TRITIUM	0.47	1.14	J	0.99	pCi/mL	REG	REG
ZBG009D	2/18/16	ACTINIUM-228	23.10	62.70	U	-6.43	pCi/L	REG	REG
ZBG009D	8/2/16	ACTINIUM-228	18.70	48.70	U	-7.62	pCi/L	REG	REG
ZBG009D	2/18/16	BISMUTH-214	10.30	30.90	J	22.60	pCi/L	REG	REG

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ZBG009D	8/2/16	BISMUTH-214	8.59	29.80	J	22.20	pCi/L	REG	REG
ZBG009D	2/18/16	CESIUM-137	5.48	11.40	U	2.93	pCi/L	REG	REG
ZBG009D	8/2/16	CESIUM-137	4.62	9.62	U	0.36	pCi/L	REG	REG
ZBG009D	2/18/16	COBALT-60	4.70	12.50	U	3.21	pCi/L	REG	REG
ZBG009D	8/2/16	COBALT-60	4.29	8.83	U	0.71	pCi/L	REG	REG
ZBG009D	2/18/16	GROSS ALPHA	2.05	2.50	U	-0.26	pCi/L	REG	REG
ZBG009D	8/2/16	GROSS ALPHA	2.04	3.92	U	0.12	pCi/L	REG	REG
ZBG009D	2/18/16	IODINE-129	0.73	1.75	U	0.34	pCi/L	REG	REG
ZBG009D	2/18/16	IODINE-129	0.69	1.62	U	-0.06	pCi/L	REG	LD
ZBG009D	8/2/16	IODINE-129	0.69	1.52	U	-0.16	pCi/L	REG	REG
ZBG009D	2/18/16	LEAD-212	8.75	22.00	U	-0.60	pCi/L	REG	REG
ZBG009D	8/2/16	LEAD-212	7.92	20.60	U	-3.61	pCi/L	REG	REG
ZBG009D	2/18/16	LEAD-214	9.50	32.10	J	26.30	pCi/L	REG	REG
ZBG009D	8/2/16	LEAD-214	9.38	32.00	U	3.52	pCi/L	REG	REG
ZBG009D	2/18/16	NITRATE-NITRITE AS NITROGEN	0.09	0.25		1.53	mg/L	REG	REG
ZBG009D	8/2/16	NITRATE-NITRITE AS NITROGEN	0.03	0.10		1.54	mg/L	REG	REG
ZBG009D	2/18/16	NONVOLATILE BETA	3.93	8.39	U	0.60	pCi/L	REG	REG
ZBG009D	8/2/16	NONVOLATILE BETA	4.01	9.01	U	0.41	pCi/L	REG	REG
ZBG009D	2/18/16	POTASSIUM-40	57.40	200.00	U	25.70	pCi/L	REG	REG
ZBG009D	8/2/16	POTASSIUM-40	52.20	141.00	U	-34.30	pCi/L	REG	REG
ZBG009D	2/18/16	TECHNETIUM-99	4.33	9.56	U	1.56	pCi/L	REG	REG
ZBG009D	8/2/16	TECHNETIUM-99	4.33	9.51	U	0.86	pCi/L	REG	REG
ZBG009D	2/18/16	THALLIUM-208	6.15	15.40	U	-0.62	pCi/L	REG	REG
ZBG009D	8/2/16	THALLIUM-208	4.18	13.90	U	1.01	pCi/L	REG	REG
ZBG009D	2/18/16	TRITIUM	0.53	1.35		2.56	pCi/mL	REG	REG
ZBG009D	8/2/16	TRITIUM	0.42	1.16		2.23	pCi/mL	REG	REG
ZBG010D	2/18/16	ACTINIUM-228	24.70	57.90	U	-3.41	pCi/L	REG	REG
ZBG010D	8/2/16	ACTINIUM-228	19.10	52.50	U	9.21	pCi/L	REG	REG
ZBG010D	2/18/16	BISMUTH-214	11.50	37.30		45.40	pCi/L	REG	REG
ZBG010D	8/2/16	BISMUTH-214	7.99	28.20	U	6.16	pCi/L	REG	REG
ZBG010D	2/18/16	CESIUM-137	5.47	12.40	U	0.53	pCi/L	REG	REG
ZBG010D	8/2/16	CESIUM-137	4.59	10.10	U	1.93	pCi/L	REG	REG
ZBG010D	2/18/16	COBALT-60	5.74	12.50	U	-2.91	pCi/L	REG	REG

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ZBG010D	8/2/16	COBALT-60	4.31	9.53	U	-2.33	pCi/L	REG	REG
ZBG010D	2/18/16	GROSS ALPHA	2.03	5.41	U	1.60	pCi/L	REG	REG
ZBG010D	8/2/16	GROSS ALPHA	2.02	4.85	U	0.87	pCi/L	REG	REG
ZBG010D	2/18/16	IODINE-129	0.72	1.54	U	0.26	pCi/L	REG	REG
ZBG010D	8/2/16	IODINE-129	0.67	1.58	U	0.10	pCi/L	REG	LD
ZBG010D	8/2/16	IODINE-129	0.71	1.53	U	0.22	pCi/L	REG	REG
ZBG010D	2/18/16	LEAD-212	8.08	23.50	U	6.46	pCi/L	REG	REG
ZBG010D	8/2/16	LEAD-212	7.87	22.70	U	3.01	pCi/L	REG	REG
ZBG010D	2/18/16	LEAD-214	11.70	37.30		66.10	pCi/L	REG	REG
ZBG010D	8/2/16	LEAD-214	9.66	20.70	R	11.40	pCi/L	REG	REG
ZBG010D	2/18/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.56	mg/L	REG	REG
ZBG010D	8/2/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.32	mg/L	REG	REG
ZBG010D	2/18/16	NONVOLATILE BETA	3.97	8.33	U	0.26	pCi/L	REG	REG
ZBG010D	8/2/16	NONVOLATILE BETA	4.02	8.75	U	-0.33	pCi/L	REG	REG
ZBG010D	2/18/16	POTASSIUM-40	52.90	173.00	U	21.50	pCi/L	REG	REG
ZBG010D	8/2/16	POTASSIUM-40	61.70	182.00	U	-24.90	pCi/L	REG	REG
ZBG010D	2/18/16	TECHNETIUM-99	4.36	9.61	U	1.32	pCi/L	REG	REG
ZBG010D	8/2/16	TECHNETIUM-99	4.33	9.53	U	0.89	pCi/L	REG	REG
ZBG010D	2/18/16	THALLIUM-208	5.14	16.10	U	4.63	pCi/L	REG	REG
ZBG010D	8/2/16	THALLIUM-208	4.98	13.80	U	-2.91	pCi/L	REG	REG
ZBG010D	2/18/16	TRITIUM	0.53	1.30		1.77	pCi/mL	REG	REG
ZBG010D	8/2/16	TRITIUM	0.42	1.09		1.56	pCi/mL	REG	REG
ZBG011D	2/18/16	ACTINIUM-228	17.70	53.30	U	4.61	pCi/L	REG	REG
ZBG011D	8/2/16	ACTINIUM-228	18.20	55.00	U	-9.81	pCi/L	REG	REG
ZBG011D	2/18/16	BISMUTH-214	10.90	26.50	R	13.40	pCi/L	REG	REG
ZBG011D	8/2/16	BISMUTH-214	10.70	35.10	U	0.31	pCi/L	REG	REG
ZBG011D	2/18/16	CESIUM-137	4.99	10.40	U	1.29	pCi/L	REG	REG
ZBG011D	8/2/16	CESIUM-137	4.72	10.10	U	0.24	pCi/L	REG	REG
ZBG011D	2/18/16	COBALT-60	4.56	11.00	U	-1.80	pCi/L	REG	REG
ZBG011D	8/2/16	COBALT-60	4.80	11.00	U	0.30	pCi/L	REG	REG
ZBG011D	2/18/16	GROSS ALPHA	2.11	4.84	U	0.89	pCi/L	REG	REG
ZBG011D	8/2/16	GROSS ALPHA	2.07	4.51	U	0.51	pCi/L	REG	REG
ZBG011D	2/18/16	IODINE-129	0.68	1.48	U	-0.01	pCi/L	REG	REG

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ZBG011D	8/2/16	IODINE-129	0.70	1.59	U	0.14	pCi/L	REG	REG
ZBG011D	2/18/16	LEAD-212	8.33	23.30	U	-9.45	pCi/L	REG	REG
ZBG011D	8/2/16	LEAD-212	7.61	20.10	U	-0.23	pCi/L	REG	REG
ZBG011D	2/18/16	LEAD-214	11.10	33.50	U	7.20	pCi/L	REG	REG
ZBG011D	8/2/16	LEAD-214	8.43	26.70	U	5.96	pCi/L	REG	REG
ZBG011D	2/18/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.21	mg/L	REG	REG
ZBG011D	8/2/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.18	mg/L	REG	REG
ZBG011D	2/18/16	NONVOLATILE BETA	3.97	8.45	U	0.54	pCi/L	REG	REG
ZBG011D	8/2/16	NONVOLATILE BETA	4.02	9.84	U	2.73	pCi/L	REG	REG
ZBG011D	2/18/16	POTASSIUM-40	69.60	177.00	U	-28.10	pCi/L	REG	REG
ZBG011D	8/2/16	POTASSIUM-40	60.50	161.00	U	-28.00	pCi/L	REG	REG
ZBG011D	2/18/16	TECHNETIUM-99	4.36	9.56	U	0.28	pCi/L	REG	REG
ZBG011D	8/2/16	TECHNETIUM-99	4.33	9.56	U	1.52	pCi/L	REG	REG
ZBG011D	2/18/16	THALLIUM-208	4.23	13.40	U	1.82	pCi/L	REG	REG
ZBG011D	8/2/16	THALLIUM-208	4.23	13.40	U	2.10	pCi/L	REG	REG
ZBG011D	2/18/16	TRITIUM	0.52	1.19	J	0.62	pCi/mL	REG	REG
ZBG011D	8/2/16	TRITIUM	0.42	0.96	U	0.39	pCi/mL	REG	REG
ZBG012D	2/18/16	ACTINIUM-228	20.70	53.70	U	11.40	pCi/L	REG	REG
ZBG012D	8/2/16	ACTINIUM-228	21.90	61.30	U	-0.39	pCi/L	REG	REG
ZBG012D	2/18/16	BISMUTH-214	10.40	28.00	U	7.14	pCi/L	REG	REG
ZBG012D	8/2/16	BISMUTH-214	9.62	37.00	R	12.10	pCi/L	REG	REG
ZBG012D	2/18/16	CESIUM-137	5.27	11.20	U	0.77	pCi/L	REG	REG
ZBG012D	8/2/16	CESIUM-137	4.57	9.57	U	-0.62	pCi/L	REG	REG
ZBG012D	2/18/16	COBALT-60	4.73	9.91	U	0.35	pCi/L	REG	REG
ZBG012D	8/2/16	COBALT-60	5.39	11.30	U	-0.20	pCi/L	REG	REG
ZBG012D	2/18/16	GROSS ALPHA	2.20	5.46	U	1.33	pCi/L	REG	REG
ZBG012D	8/2/16	GROSS ALPHA	2.15	4.68	U	0.53	pCi/L	REG	REG
ZBG012D	2/18/16	IODINE-129	0.69	1.65	U	-0.05	pCi/L	REG	REG
ZBG012D	8/2/16	IODINE-129	0.74	1.59	U	0.11	pCi/L	REG	REG
ZBG012D	2/18/16	LEAD-212	9.45	25.20	U	-6.13	pCi/L	REG	REG
ZBG012D	8/2/16	LEAD-212	8.34	20.90	U	-0.40	pCi/L	REG	REG
ZBG012D	2/18/16	LEAD-214	12.80	37.40	U	7.72	pCi/L	REG	REG
ZBG012D	8/2/16	LEAD-214	8.82	29.20	U	16.10	pCi/L	REG	REG

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ZBG012D	2/18/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05	J	0.03	mg/L	REG	REG
ZBG012D	8/2/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.37	mg/L	REG	REG
ZBG012D	2/18/16	NONVOLATILE BETA	4.00	8.96	U	1.69	pCi/L	REG	REG
ZBG012D	8/2/16	NONVOLATILE BETA	4.04	9.88	U	2.74	pCi/L	REG	REG
ZBG012D	2/18/16	POTASSIUM-40	48.10	151.00	U	36.30	pCi/L	REG	REG
ZBG012D	8/2/16	POTASSIUM-40	64.00	156.00	U	-4.99	pCi/L	REG	REG
ZBG012D	2/18/16	TECHNETIUM-99	4.36	9.57	U	0.69	pCi/L	REG	REG
ZBG012D	8/2/16	TECHNETIUM-99	4.33	9.42	U	-0.82	pCi/L	REG	REG
ZBG012D	2/18/16	THALLIUM-208	4.88	14.40	U	4.48	pCi/L	REG	REG
ZBG012D	8/2/16	THALLIUM-208	5.82	14.10	U	-1.25	pCi/L	REG	REG
ZBG012D	2/18/16	TRITIUM	0.52	1.26		1.42	pCi/mL	REG	REG
ZBG012D	8/2/16	TRITIUM	0.43	1.09		1.49	pCi/mL	REG	REG
ZBG013D	2/18/16	ACTINIUM-228	19.60	62.00	U	12.90	pCi/L	REG	REG
ZBG013D	8/2/16	ACTINIUM-228	24.70	83.30	U	3.85	pCi/L	REG	REG
ZBG013D	2/18/16	BISMUTH-214	13.00	35.60	U	9.77	pCi/L	REG	REG
ZBG013D	8/2/16	BISMUTH-214	10.40	39.80	U	5.13	pCi/L	REG	REG
ZBG013D	2/18/16	CESIUM-137	5.10	10.90	U	-0.93	pCi/L	REG	REG
ZBG013D	8/2/16	CESIUM-137	5.75	11.90	U	3.04	pCi/L	REG	REG
ZBG013D	2/18/16	COBALT-60	6.09	13.10	U	-1.40	pCi/L	REG	REG
ZBG013D	8/2/16	COBALT-60	5.04	11.20	U	-3.34	pCi/L	REG	REG
ZBG013D	2/18/16	GROSS ALPHA	2.18	5.80	U	1.72	pCi/L	REG	REG
ZBG013D	8/2/16	GROSS ALPHA	2.15	5.16	U	0.92	pCi/L	REG	REG
ZBG013D	2/18/16	IODINE-129	0.71	1.62	U	-0.01	pCi/L	REG	REG
ZBG013D	8/2/16	IODINE-129	0.78	1.79	U	0.09	pCi/L	REG	REG
ZBG013D	8/2/16	IODINE-129	0.77	1.84	U	0.52	pCi/L	REG	LD
ZBG013D	2/18/16	LEAD-212	9.63	22.80	U	-7.22	pCi/L	REG	REG
ZBG013D	8/2/16	LEAD-212	9.41	24.30	U	-3.61	pCi/L	REG	REG
ZBG013D	2/18/16	LEAD-214	12.20	29.50	U	-0.05	pCi/L	REG	REG
ZBG013D	8/2/16	LEAD-214	12.60	36.40	U	7.46	pCi/L	REG	REG
ZBG013D	2/18/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.14	mg/L	REG	REG
ZBG013D	8/2/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.25	mg/L	REG	REG
ZBG013D	2/18/16	NONVOLATILE BETA	4.00	9.14	U	2.14	pCi/L	REG	REG
ZBG013D	8/2/16	NONVOLATILE BETA	4.05	10.30	J	4.13	pCi/L	REG	REG

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ZBG013D	2/18/16	POTASSIUM-40	69.40	166.00	U	-13.30	pCi/L	REG	REG
ZBG013D	8/2/16	POTASSIUM-40	72.20	178.00	U	-56.60	pCi/L	REG	REG
ZBG013D	2/18/16	TECHNETIUM-99	4.37	9.51	U	-0.69	pCi/L	REG	REG
ZBG013D	8/2/16	TECHNETIUM-99	4.33	9.41	U	-1.05	pCi/L	REG	REG
ZBG013D	2/18/16	THALLIUM-208	4.84	14.70	U	0.21	pCi/L	REG	REG
ZBG013D	8/2/16	THALLIUM-208	6.54	17.60	U	-5.50	pCi/L	REG	REG
ZBG013D	2/18/16	TRITIUM	0.53	1.19	U	0.40	pCi/mL	REG	REG
ZBG013D	8/2/16	TRITIUM	0.43	0.95	U	0.30	pCi/mL	REG	REG
ZBG014D	2/18/16	ACTINIUM-228	18.70	55.30	U	-11.10	pCi/L	REG	REG
ZBG014D	8/2/16	ACTINIUM-228	20.10	48.10	U	-14.00	pCi/L	REG	LD
ZBG014D	8/2/16	ACTINIUM-228	21.50	54.10	U	-4.69	pCi/L	REG	REG
ZBG014D	8/2/16	ANTIMONY-125	13.10	30.70	U	-4.85	pCi/L	REG	LD
ZBG014D	2/18/16	BISMUTH-214	10.60	28.20	R	10.60	pCi/L	REG	REG
ZBG014D	8/2/16	BISMUTH-214	12.90	35.10	U	2.38	pCi/L	REG	LD
ZBG014D	8/2/16	BISMUTH-214	10.90	38.50	J	19.40	pCi/L	REG	REG
ZBG014D	2/18/16	CESIUM-137	4.77	10.10	U	0.23	pCi/L	REG	REG
ZBG014D	8/2/16	CESIUM-137	5.22	10.70	U	1.66	pCi/L	REG	REG
ZBG014D	8/2/16	CESIUM-137	4.62	14.40	R	7.07	pCi/L	REG	LD
ZBG014D	2/18/16	COBALT-60	5.52	12.80	U	-0.99	pCi/L	REG	REG
ZBG014D	8/2/16	COBALT-60	5.04	10.60	U	-0.65	pCi/L	REG	REG
ZBG014D	8/2/16	COBALT-60	4.94	10.30	U	-0.69	pCi/L	REG	LD
ZBG014D	2/18/16	GROSS ALPHA	2.18	2.65	U	-0.28	pCi/L	REG	REG
ZBG014D	8/2/16	GROSS ALPHA	2.17	3.37	U	-0.27	pCi/L	REG	REG
ZBG014D	2/18/16	IODINE-129	0.71	1.64	U	0.15	pCi/L	REG	REG
ZBG014D	8/2/16	IODINE-129	0.74	1.63	U	-0.20	pCi/L	REG	REG
ZBG014D	2/18/16	LEAD-212	9.13	22.90	U	6.04	pCi/L	REG	REG
ZBG014D	8/2/16	LEAD-212	7.70	24.10	U	2.43	pCi/L	REG	LD
ZBG014D	8/2/16	LEAD-212	8.85	24.40	U	4.05	pCi/L	REG	REG
ZBG014D	2/18/16	LEAD-214	11.10	32.90	U	4.55	pCi/L	REG	REG
ZBG014D	8/2/16	LEAD-214	10.70	32.30	U	9.48	pCi/L	REG	REG
ZBG014D	8/2/16	LEAD-214	11.30	26.90	U	-4.22	pCi/L	REG	LD
ZBG014D	8/2/16	NIOBIUM-94	4.74	9.80	U	0.90	pCi/L	REG	LD
ZBG014D	2/18/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.43	mg/L	REG	REG

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ZBG014D	8/2/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.44	mg/L	REG	REG
ZBG014D	2/18/16	NONVOLATILE BETA	3.95	8.63	U	1.08	pCi/L	REG	REG
ZBG014D	8/2/16	NONVOLATILE BETA	4.02	8.69	U	-0.50	pCi/L	REG	REG
ZBG014D	2/18/16	POTASSIUM-40	72.10	177.00	U	-25.60	pCi/L	REG	REG
ZBG014D	8/2/16	POTASSIUM-40	73.20	161.00	U	-10.50	pCi/L	REG	REG
ZBG014D	8/2/16	POTASSIUM-40	69.40	159.00	U	-18.90	pCi/L	REG	LD
ZBG014D	8/2/16	RUTHENIUM-106	46.30	98.30	U	-10.40	pCi/L	REG	LD
ZBG014D	2/18/16	TECHNETIUM-99	4.33	9.37	U	-1.56	pCi/L	REG	REG
ZBG014D	8/2/16	TECHNETIUM-99	4.28	9.35	U	-0.30	pCi/L	REG	REG
ZBG014D	2/18/16	THALLIUM-208	5.28	13.30	U	0.52	pCi/L	REG	REG
ZBG014D	8/2/16	THALLIUM-208	6.24	14.60	U	1.21	pCi/L	REG	LD
ZBG014D	8/2/16	THALLIUM-208	4.82	13.80	U	2.71	pCi/L	REG	REG
ZBG014D	2/18/16	TRITIUM	0.52	1.21	J	0.85	pCi/mL	REG	REG
ZBG014D	8/2/16	TRITIUM	0.42	1.01	J	0.83	pCi/mL	REG	REG
ZBG015D	2/18/16	ACTINIUM-228	21.40	44.80	U	0.35	pCi/L	REG	REG
ZBG015D	8/2/16	ACTINIUM-228	19.70	55.10	U	18.20	pCi/L	REG	REG
ZBG015D	2/18/16	ANTIMONY-125	13.30	28.10	U	1.15	pCi/L	REG	REG
ZBG015D	8/2/16	ANTIMONY-125	10.70	22.70	U	1.61	pCi/L	REG	REG
ZBG015D	2/18/16	BISMUTH-214	9.20	28.20	J	14.60	pCi/L	REG	REG
ZBG015D	8/2/16	BISMUTH-214	8.22	34.60	J	19.90	pCi/L	REG	REG
ZBG015D	2/18/16	CARBON-14	33.60	72.40	U	0.37	pCi/L	REG	REG
ZBG015D	8/2/16	CARBON-14	39.50	84.50	U	-13.10	pCi/L	REG	REG
ZBG015D	2/18/16	CESIUM-137	4.96	10.20	U	0.29	pCi/L	REG	REG
ZBG015D	8/2/16	CESIUM-137	4.05	8.75	U	-2.17	pCi/L	REG	REG
ZBG015D	2/18/16	COBALT-60	5.23	10.80	U	-0.59	pCi/L	REG	REG
ZBG015D	8/2/16	COBALT-60	4.31	9.27	U	-1.09	pCi/L	REG	REG
ZBG015D	2/18/16	GROSS ALPHA	2.58	4.98	U	-0.40	pCi/L	REG	REG
ZBG015D	8/2/16	GROSS ALPHA	2.05	5.61	U	1.63	pCi/L	REG	REG
ZBG015D	2/18/16	IODINE-129	0.68	2.07	U	0.32	pCi/L	REG	REG
ZBG015D	8/2/16	IODINE-129	0.72	1.64	U	0.45	pCi/L	REG	REG
ZBG015D	2/18/16	LEAD-212	10.20	23.20	U	3.82	pCi/L	REG	REG
ZBG015D	8/2/16	LEAD-212	6.36	19.30	U	2.66	pCi/L	REG	REG
ZBG015D	2/18/16	LEAD-214	9.45	26.80	J	15.80	pCi/L	REG	REG

WELL	DATE	ANALYTE	MDL	PQL	QUALIFIER	RESULT	UNITS	SAMPLE TYPE	ANALYSIS CODE
ZBG015D	8/2/16	LEAD-214	11.80	30.90	R	20.60	pCi/L	REG	REG
ZBG015D	2/18/16	MERCURY	0.02	0.20	J	0.04	ug/L	REG	REG
ZBG015D	8/2/16	MERCURY	0.02	0.20	J	0.03	ug/L	REG	REG
ZBG015D	2/18/16	NICKEL-59	20.40	47.80	U	-44.80	pCi/L	REG	REG
ZBG015D	8/2/16	NICKEL-59	9.28	18.40	U	1.63	pCi/L	REG	REG
ZBG015D	2/18/16	NICKEL-63	29.30	64.50	U	18.60	pCi/L	REG	REG
ZBG015D	8/2/16	NICKEL-63	30.90	65.10	U	-15.30	pCi/L	REG	REG
ZBG015D	2/18/16	NIOBIUM-94	4.85	10.40	U	0.80	pCi/L	REG	REG
ZBG015D	8/2/16	NIOBIUM-94	3.98	8.42	U	0.24	pCi/L	REG	REG
ZBG015D	2/18/16	NITRATE-NITRITE AS NITROGEN	0.09	0.25		0.73	mg/L	REG	REG
ZBG015D	8/2/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05		0.69	mg/L	REG	REG
ZBG015D	2/18/16	NONVOLATILE BETA	3.76	8.00	U	0.50	pCi/L	REG	REG
ZBG015D	8/2/16	NONVOLATILE BETA	4.04	9.55	U	1.73	pCi/L	REG	REG
ZBG015D	2/18/16	PLUTONIUM-241	10.50	22.70	U	-0.51	pCi/L	REG	REG
ZBG015D	8/2/16	PLUTONIUM-241	9.64	20.80	U	-0.08	pCi/L	REG	REG
ZBG015D	2/18/16	POTASSIUM-40	65.50	135.00	U	-20.70	pCi/L	REG	REG
ZBG015D	8/2/16	POTASSIUM-40	60.60	154.00	U	-20.90	pCi/L	REG	REG
ZBG015D	2/18/16	RADIUM-226	0.54	1.36	J	0.77	pCi/L	REG	REG
ZBG015D	8/2/16	RADIUM-226	0.35	1.04	J	1.10	pCi/L	REG	REG
ZBG015D	2/18/16	RADIUM-228	0.54	1.17	U	0.20	pCi/L	REG	REG
ZBG015D	2/18/16	RADIUM-228	0.68	1.53	U	0.49	pCi/L	REG	LD
ZBG015D	8/2/16	RADIUM-228	0.42	0.92	U	0.17	pCi/L	REG	REG
ZBG015D	2/18/16	RUTHENIUM-106	45.60	90.60	U	19.30	pCi/L	REG	REG
ZBG015D	8/2/16	RUTHENIUM-106	35.30	77.30	U	-5.88	pCi/L	REG	REG
ZBG015D	2/18/16	STRONTIUM-90	6.43	11.90	U	-2.51	pCi/L	REG	REG
ZBG015D	8/2/16	STRONTIUM-90	4.68	9.42	U	-0.06	pCi/L	REG	REG
ZBG015D	2/18/16	TECHNETIUM-99	14.00	30.20	U	-4.87	pCi/L	REG	REG
ZBG015D	8/2/16	TECHNETIUM-99	4.34	9.52	U	0.47	pCi/L	REG	REG
ZBG015D	2/18/16	THALLIUM-208	5.41	11.80	U	-0.31	pCi/L	REG	REG
ZBG015D	8/2/16	THALLIUM-208	3.81	15.00	U	0.73	pCi/L	REG	REG
ZBG015D	2/18/16	TRITIUM	0.53	1.40		3.33	pCi/mL	REG	REG
ZBG015D	8/2/16	TRITIUM	0.42	1.23		3.12	pCi/mL	REG	REG
ZBG016C	2/18/16	ACTINIUM-228	20.20	45.00	U	-2.47	pCi/L	REG	REG

WELL	DATE	ANALYTE	MDL	PQL	QUALIFIER	RESULT	UNITS	SAMPLE TYPE	ANALYSIS CODE
ZBG016C	8/2/16	ACTINIUM-228	24.90	51.90	U	0.88	pCi/L	REG	REG
ZBG016C	2/18/16	BISMUTH-214	11.00	29.60	J	21.50	pCi/L	REG	REG
ZBG016C	8/2/16	BISMUTH-214	15.80	40.40	U	12.80	pCi/L	REG	REG
ZBG016C	2/18/16	CESIUM-137	4.90	14.80	U	1.77	pCi/L	REG	REG
ZBG016C	8/2/16	CESIUM-137	5.80	12.10	U	0.45	pCi/L	REG	REG
ZBG016C	2/18/16	COBALT-60	5.85	11.70	U	2.45	pCi/L	REG	REG
ZBG016C	8/2/16	COBALT-60	6.28	13.10	U	-0.94	pCi/L	REG	REG
ZBG016C	2/18/16	GROSS ALPHA	2.04	5.07	U	1.24	pCi/L	REG	REG
ZBG016C	8/2/16	GROSS ALPHA	2.04	3.17	U	-0.25	pCi/L	REG	REG
ZBG016C	2/18/16	IODINE-129	0.78	1.72	U	-0.13	pCi/L	REG	REG
ZBG016C	2/18/16	IODINE-129	0.74	1.62	U	-0.16	pCi/L	REG	LD
ZBG016C	8/2/16	IODINE-129	0.79	1.80	U	0.50	pCi/L	REG	REG
ZBG016C	2/18/16	LEAD-212	7.42	20.30	J	13.30	pCi/L	REG	REG
ZBG016C	8/2/16	LEAD-212	8.07	27.10	R	8.43	pCi/L	REG	REG
ZBG016C	2/18/16	LEAD-214	10.50	33.90	J	19.90	pCi/L	REG	REG
ZBG016C	8/2/16	LEAD-214	10.60	34.20	U	6.22	pCi/L	REG	REG
ZBG016C	2/18/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05	U	0.05	mg/L	REG	REG
ZBG016C	8/2/16	NITRATE-NITRITE AS NITROGEN	0.02	0.05	U	0.05	mg/L	REG	REG
ZBG016C	2/18/16	NONVOLATILE BETA	3.97	8.89	U	1.69	pCi/L	REG	REG
ZBG016C	8/2/16	NONVOLATILE BETA	4.00	9.17	U	0.90	pCi/L	REG	REG
ZBG016C	2/18/16	POTASSIUM-40	62.00	141.00	U	-32.90	pCi/L	REG	REG
ZBG016C	8/2/16	POTASSIUM-40	77.60	175.00	U	-17.60	pCi/L	REG	REG
ZBG016C	2/18/16	TECHNETIUM-99	4.39	9.62	U	0.23	pCi/L	REG	REG
ZBG016C	8/2/16	TECHNETIUM-99	4.34	9.55	U	1.05	pCi/L	REG	REG
ZBG016C	2/18/16	THALLIUM-208	4.89	14.70	U	0.74	pCi/L	REG	REG
ZBG016C	8/2/16	THALLIUM-208	6.59	16.20	U	-1.48	pCi/L	REG	REG
ZBG016C	2/18/16	TRITIUM	0.53	1.28		1.54	pCi/mL	REG	REG
ZBG016C	8/2/16	TRITIUM	0.42	1.04		1.10	pCi/mL	REG	REG

Table 2 Notes:

FD	Field Duplicate Sample
LD	Laboratory Duplicate QC Analysis
MDL	Method Detection Limit
µg/L	micrograms per liter
mg/L	milligrams per liter
pCi/L	picoCuries per liter
pCi/mL	picoCuries per milliliter
PQL	Practical Quantitation Limit
QUALIFIER	United States Environmental Protection Agency (USEPA) Functional Guideline Codes applied by labs.
REG	Regular Sample; Regular Laboratory Analysis of Sample
RERUN	Requested Reanalysis of Original Sample

USEPA Functional Guideline Codes

- J The detected analyte was positively identified but the result is approximate.
- NJ The detected analyte was only tentatively identified and the result is approximate. All usable TIC results receive this code.
- U The analyte was analyzed for, but not detected. The sample detection and quantitation limits (MDL & PQL) are valid unless blank contamination is indicated.
- UJ The analyte was analyzed for, but not detected. The MDL & PQL are approximate, and may be inaccurate or imprecise.
- R The sample result is rejected as unusable due to serious deficiencies in meeting quality control criteria. The analyte may be present or absent.
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Table 3. Field Measurements for Saltstone Wells (2016)

WELL	DATE	ANALYTE	VALUE	UNITS
ZBG 1	2/18/16	AIR TEMPERATURE	9.50	°C
ZBG 1	8/2/16	AIR TEMPERATURE	34.20	°C
ZBG 1	2/18/16	FLOW RATE	1.00	gpm
ZBG 1	8/2/16	FLOW RATE	1.00	gpm
ZBG 1	2/18/16	PH	5.00	pH
ZBG 1	8/2/16	PH	4.30	pH
ZBG 1	2/18/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 1	8/2/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 1	2/18/16	SPECIFIC CONDUCTANCE	29.00	µS/cm
ZBG 1	8/2/16	SPECIFIC CONDUCTANCE	29.00	µS/cm
ZBG 1	2/18/16	TOTAL ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 1	8/2/16	TOTAL ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 1	2/18/16	TURBIDITY	0.30	NTU
ZBG 1	8/2/16	TURBIDITY	0.20	NTU
ZBG 1	2/18/16	VOLUME PURGED	19.00	gal
ZBG 1	8/2/16	VOLUME PURGED	21.00	gal
ZBG 1	2/18/16	WATER TEMPERATURE	19.90	°C
ZBG 1	8/2/16	WATER TEMPERATURE	20.20	°C
ZBG 3	2/17/16	AIR TEMPERATURE	9.90	°C
ZBG 3	8/1/16	AIR TEMPERATURE	27.60	°C
ZBG 3	2/17/16	FLOW RATE	0.20	gpm
ZBG 3	8/1/16	FLOW RATE	0.20	gpm
ZBG 3	2/17/16	PH	5.00	pH
ZBG 3	8/1/16	PH	5.00	pH
ZBG 3	2/17/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 3	8/1/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 3	2/17/16	SPECIFIC CONDUCTANCE	21.00	µS/cm
ZBG 3	8/1/16	SPECIFIC CONDUCTANCE	21.00	µS/cm
ZBG 3	2/17/16	TOTAL ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 3	8/1/16	TOTAL ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 3	2/17/16	TURBIDITY	12.10	NTU
ZBG 3	8/1/16	TURBIDITY	10.00	NTU
ZBG 3	2/17/16	VOLUME PURGED	4.00	gal
ZBG 3	8/1/16	VOLUME PURGED	4.00	gal
ZBG 3	2/17/16	WATER TEMPERATURE	19.90	°C
ZBG 3	8/1/16	WATER TEMPERATURE	21.10	°C
ZBG 4	2/17/16	AIR TEMPERATURE	10.50	°C
ZBG 4	8/3/16	AIR TEMPERATURE	23.50	°C
ZBG 4	2/17/16	FLOW RATE	0.20	gpm
ZBG 4	8/3/16	FLOW RATE	0.20	gpm
ZBG 4	2/17/16	PH	5.70	pH
ZBG 4	8/3/16	PH	5.20	pH
ZBG 4	2/17/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 4	8/3/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 4	2/17/16	SPECIFIC CONDUCTANCE	26.00	µS/cm
ZBG 4	8/3/16	SPECIFIC CONDUCTANCE	26.00	µS/cm

WELL	DATE	ANALYTE	VALUE	UNITS
ZBG 4	2/17/16	TOTAL ALKALINITY (AS CaCO ₃)	4.00	mg/L
ZBG 4	8/3/16	TOTAL ALKALINITY (AS CaCO ₃)	2.00	mg/L
ZBG 4	2/17/16	TURBIDITY	8.70	NTU
ZBG 4	8/3/16	TURBIDITY	4.10	NTU
ZBG 4	2/17/16	VOLUME PURGED	3.00	gal
ZBG 4	8/3/16	VOLUME PURGED	2.00	gal
ZBG 4	2/17/16	WATER TEMPERATURE	19.90	°C
ZBG 4	8/3/16	WATER TEMPERATURE	20.90	°C
ZBG 5	2/17/16	AIR TEMPERATURE	5.00	°C
ZBG 5	8/1/16	AIR TEMPERATURE	30.10	°C
ZBG 5	2/17/16	FLOW RATE	0.20	gpm
ZBG 5	8/1/16	FLOW RATE	0.20	gpm
ZBG 5	2/17/16	PH	6.80	pH
ZBG 5	8/1/16	PH	6.30	pH
ZBG 5	2/17/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 5	8/1/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 5	2/17/16	SPECIFIC CONDUCTANCE	82.00	µS/cm
ZBG 5	8/1/16	SPECIFIC CONDUCTANCE	64.00	µS/cm
ZBG 5	2/17/16	TOTAL ALKALINITY (AS CaCO ₃)	33.00	mg/L
ZBG 5	8/1/16	TOTAL ALKALINITY (AS CaCO ₃)	25.00	mg/L
ZBG 5	2/17/16	TURBIDITY	2.80	NTU
ZBG 5	8/1/16	TURBIDITY	1.00	NTU
ZBG 5	2/17/16	VOLUME PURGED	2.00	gal
ZBG 5	8/1/16	VOLUME PURGED	2.00	gal
ZBG 5	2/17/16	WATER TEMPERATURE	19.80	°C
ZBG 5	8/1/16	WATER TEMPERATURE	21.10	°C
ZBG 6	2/17/16	AIR TEMPERATURE	24.90	°C
ZBG 6	8/3/16	AIR TEMPERATURE	26.60	°C
ZBG 6	2/17/16	FLOW RATE	0.20	gpm
ZBG 6	8/3/16	FLOW RATE	0.20	gpm
ZBG 6	2/17/16	PH	5.00	pH
ZBG 6	8/3/16	PH	4.80	pH
ZBG 6	2/17/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 6	8/3/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 6	2/17/16	SPECIFIC CONDUCTANCE	19.00	µS/cm
ZBG 6	8/3/16	SPECIFIC CONDUCTANCE	21.00	µS/cm
ZBG 6	2/17/16	TOTAL ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 6	8/3/16	TOTAL ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG 6	2/17/16	TURBIDITY	0.30	NTU
ZBG 6	8/3/16	TURBIDITY	0.20	NTU
ZBG 6	2/17/16	VOLUME PURGED	2.00	gal
ZBG 6	8/3/16	VOLUME PURGED	2.00	gal
ZBG 6	2/17/16	WATER TEMPERATURE	20.00	°C
ZBG 6	8/3/16	WATER TEMPERATURE	20.90	°C
ZBG 7	2/22/16	AIR TEMPERATURE	18.60	°C
ZBG 7	8/3/16	AIR TEMPERATURE	27.20	°C
ZBG 7	2/22/16	FLOW RATE	0.20	gpm

WELL	DATE	ANALYTE	VALUE	UNITS
ZBG 7	8/3/16	FLOW RATE	0.20	gpm
ZBG 7	2/22/16	PH	5.20	pH
ZBG 7	8/3/16	PH	5.30	pH
ZBG 7	2/22/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG 7	8/3/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG 7	2/22/16	SPECIFIC CONDUCTANCE	18.00	µS/cm
ZBG 7	8/3/16	SPECIFIC CONDUCTANCE	19.00	µS/cm
ZBG 7	2/22/16	TOTAL ALKALINITY (AS CaCO3)	2.00	mg/L
ZBG 7	8/3/16	TOTAL ALKALINITY (AS CaCO3)	2.00	mg/L
ZBG 7	2/22/16	TURBIDITY	0.40	NTU
ZBG 7	8/3/16	TURBIDITY	0.20	NTU
ZBG 7	2/22/16	VOLUME PURGED	1.00	gal
ZBG 7	8/3/16	VOLUME PURGED	1.00	gal
ZBG 7	2/22/16	WATER TEMPERATURE	19.90	°C
ZBG 7	8/3/16	WATER TEMPERATURE	20.50	°C
ZBG 8	2/22/16	AIR TEMPERATURE	17.80	°C
ZBG 8	8/3/16	AIR TEMPERATURE	24.80	°C
ZBG 8	2/22/16	FLOW RATE	0.20	gpm
ZBG 8	8/3/16	FLOW RATE	0.20	gpm
ZBG 8	2/22/16	PH	5.00	pH
ZBG 8	8/3/16	PH	4.80	pH
ZBG 8	2/22/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG 8	8/3/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG 8	2/22/16	SPECIFIC CONDUCTANCE	18.00	µS/cm
ZBG 8	8/3/16	SPECIFIC CONDUCTANCE	19.00	µS/cm
ZBG 8	2/22/16	TOTAL ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG 8	8/3/16	TOTAL ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG 8	2/22/16	TURBIDITY	0.70	NTU
ZBG 8	8/3/16	TURBIDITY	0.20	NTU
ZBG 8	2/22/16	VOLUME PURGED	1.00	gal
ZBG 8	8/3/16	VOLUME PURGED	1.00	gal
ZBG 8	2/22/16	WATER TEMPERATURE	19.60	°C
ZBG 8	8/3/16	WATER TEMPERATURE	20.50	°C
ZBG002C	2/22/16	AIR TEMPERATURE	16.70	°C
ZBG002C	8/1/16	AIR TEMPERATURE	28.10	°C
ZBG002C	2/22/16	FLOW RATE	0.20	gpm
ZBG002C	8/1/16	FLOW RATE	0.20	gpm
ZBG002C	2/22/16	PH	6.00	pH
ZBG002C	8/1/16	PH	6.00	pH
ZBG002C	2/22/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG002C	8/1/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG002C	2/22/16	SPECIFIC CONDUCTANCE	41.00	µS/cm
ZBG002C	8/1/16	SPECIFIC CONDUCTANCE	39.00	µS/cm
ZBG002C	2/22/16	TOTAL ALKALINITY (AS CaCO3)	7.00	mg/L
ZBG002C	8/1/16	TOTAL ALKALINITY (AS CaCO3)	6.00	mg/L
ZBG002C	2/22/16	TURBIDITY	2.00	NTU
ZBG002C	8/1/16	TURBIDITY	1.00	NTU

WELL	DATE	ANALYTE	VALUE	UNITS
ZBG002C	2/22/16	VOLUME PURGED	2.00	gal
ZBG002C	8/1/16	VOLUME PURGED	2.00	gal
ZBG002C	2/22/16	WATER TEMPERATURE	19.80	°C
ZBG002C	8/1/16	WATER TEMPERATURE	20.60	°C
ZBG002D	2/22/16	AIR TEMPERATURE	16.40	°C
ZBG002D	8/1/16	AIR TEMPERATURE	25.00	°C
ZBG002D	2/22/16	FLOW RATE	0.10	gpm
ZBG002D	8/1/16	FLOW RATE	0.10	gpm
ZBG002D	2/22/16	PH	5.60	pH
ZBG002D	8/1/16	PH	5.80	pH
ZBG002D	2/22/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG002D	8/1/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG002D	2/22/16	SPECIFIC CONDUCTANCE	55.00	µS/cm
ZBG002D	8/1/16	SPECIFIC CONDUCTANCE	79.00	µS/cm
ZBG002D	2/22/16	TOTAL ALKALINITY (AS CaCO3)	14.00	mg/L
ZBG002D	8/1/16	TOTAL ALKALINITY (AS CaCO3)	11.00	mg/L
ZBG002D	2/22/16	TURBIDITY	13.90	NTU
ZBG002D	8/1/16	TURBIDITY	10.80	NTU
ZBG002D	2/22/16	VOLUME PURGED	3.00	gal
ZBG002D	8/1/16	VOLUME PURGED	2.00	gal
ZBG002D	2/22/16	WATER TEMPERATURE	19.70	°C
ZBG002D	8/1/16	WATER TEMPERATURE	21.00	°C
ZBG009D	2/18/16	AIR TEMPERATURE	8.70	°C
ZBG009D	8/2/16	AIR TEMPERATURE	28.20	°C
ZBG009D	2/18/16	FLOW RATE	0.20	gpm
ZBG009D	8/2/16	FLOW RATE	0.20	gpm
ZBG009D	2/18/16	PH	5.50	pH
ZBG009D	8/2/16	PH	5.20	pH
ZBG009D	2/18/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG009D	8/2/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG009D	2/18/16	SPECIFIC CONDUCTANCE	31.00	µS/cm
ZBG009D	8/2/16	SPECIFIC CONDUCTANCE	30.00	µS/cm
ZBG009D	2/18/16	TOTAL ALKALINITY (AS CaCO3)	3.00	mg/L
ZBG009D	8/2/16	TOTAL ALKALINITY (AS CaCO3)	2.00	mg/L
ZBG009D	2/18/16	TURBIDITY	9.10	NTU
ZBG009D	8/2/16	TURBIDITY	1.70	NTU
ZBG009D	2/18/16	VOLUME PURGED	4.00	gal
ZBG009D	8/2/16	VOLUME PURGED	3.00	gal
ZBG009D	2/18/16	WATER TEMPERATURE	19.10	°C
ZBG009D	8/2/16	WATER TEMPERATURE	20.10	°C
ZBG010D	2/18/16	AIR TEMPERATURE	11.80	°C
ZBG010D	8/2/16	AIR TEMPERATURE	25.60	°C
ZBG010D	2/18/16	FLOW RATE	0.20	gpm
ZBG010D	8/2/16	FLOW RATE	0.20	gpm
ZBG010D	2/18/16	PH	5.80	pH
ZBG010D	8/2/16	PH	5.50	pH
ZBG010D	2/18/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L

WELL	DATE	ANALYTE	VALUE	UNITS
ZBG010D	8/2/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG010D	2/18/16	SPECIFIC CONDUCTANCE	19.00	µS/cm
ZBG010D	8/2/16	SPECIFIC CONDUCTANCE	19.00	µS/cm
ZBG010D	2/18/16	TOTAL ALKALINITY (AS CaCO3)	3.00	mg/L
ZBG010D	8/2/16	TOTAL ALKALINITY (AS CaCO3)	3.00	mg/L
ZBG010D	2/18/16	TURBIDITY	0.70	NTU
ZBG010D	8/2/16	TURBIDITY	0.20	NTU
ZBG010D	2/18/16	VOLUME PURGED	2.00	gal
ZBG010D	8/2/16	VOLUME PURGED	1.00	gal
ZBG010D	2/18/16	WATER TEMPERATURE	18.80	°C
ZBG010D	8/2/16	WATER TEMPERATURE	20.30	°C
ZBG011D	2/18/16	AIR TEMPERATURE	8.40	°C
ZBG011D	8/2/16	AIR TEMPERATURE	24.40	°C
ZBG011D	2/18/16	FLOW RATE	0.20	gpm
ZBG011D	8/2/16	FLOW RATE	0.20	gpm
ZBG011D	2/18/16	PH	5.90	pH
ZBG011D	8/2/16	PH	5.50	pH
ZBG011D	2/18/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG011D	8/2/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG011D	2/18/16	SPECIFIC CONDUCTANCE	50.00	µS/cm
ZBG011D	8/2/16	SPECIFIC CONDUCTANCE	46.00	µS/cm
ZBG011D	2/18/16	TOTAL ALKALINITY (AS CaCO3)	5.00	mg/L
ZBG011D	8/2/16	TOTAL ALKALINITY (AS CaCO3)	6.00	mg/L
ZBG011D	2/18/16	TURBIDITY	0.30	NTU
ZBG011D	8/2/16	TURBIDITY	0.70	NTU
ZBG011D	2/18/16	VOLUME PURGED	1.00	gal
ZBG011D	8/2/16	VOLUME PURGED	2.00	gal
ZBG011D	2/18/16	WATER TEMPERATURE	19.00	°C
ZBG011D	8/2/16	WATER TEMPERATURE	20.00	°C
ZBG012D	2/18/16	AIR TEMPERATURE	5.00	°C
ZBG012D	8/2/16	AIR TEMPERATURE	26.00	°C
ZBG012D	2/18/16	FLOW RATE	0.20	gpm
ZBG012D	8/2/16	FLOW RATE	0.20	gpm
ZBG012D	2/18/16	PH	7.80	pH
ZBG012D	8/2/16	PH	6.20	pH
ZBG012D	2/18/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG012D	8/2/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO3)	0.00	mg/L
ZBG012D	2/18/16	SPECIFIC CONDUCTANCE	235.00	µS/cm
ZBG012D	8/2/16	SPECIFIC CONDUCTANCE	169.00	µS/cm
ZBG012D	2/18/16	TOTAL ALKALINITY (AS CaCO3)	102.00	mg/L
ZBG012D	8/2/16	TOTAL ALKALINITY (AS CaCO3)	74.00	mg/L
ZBG012D	2/18/16	TURBIDITY	1.00	NTU
ZBG012D	8/2/16	TURBIDITY	0.70	NTU
ZBG012D	2/18/16	VOLUME PURGED	1.00	gal
ZBG012D	8/2/16	VOLUME PURGED	3.00	gal
ZBG012D	2/18/16	WATER TEMPERATURE	18.30	°C
ZBG012D	8/2/16	WATER TEMPERATURE	19.80	°C

WELL	DATE	ANALYTE	VALUE	UNITS
ZBG013D	2/18/16	AIR TEMPERATURE	10.50	°C
ZBG013D	8/2/16	AIR TEMPERATURE	28.20	°C
ZBG013D	2/18/16	FLOW RATE	0.20	gpm
ZBG013D	8/2/16	FLOW RATE	0.20	gpm
ZBG013D	2/18/16	PH	8.00	pH
ZBG013D	8/2/16	PH	7.50	pH
ZBG013D	2/18/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG013D	8/2/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG013D	2/18/16	SPECIFIC CONDUCTANCE	202.00	µS/cm
ZBG013D	8/2/16	SPECIFIC CONDUCTANCE	172.00	µS/cm
ZBG013D	2/18/16	TOTAL ALKALINITY (AS CaCO ₃)	76.00	mg/L
ZBG013D	8/2/16	TOTAL ALKALINITY (AS CaCO ₃)	83.00	mg/L
ZBG013D	2/18/16	TURBIDITY	0.10	NTU
ZBG013D	8/2/16	TURBIDITY	0.20	NTU
ZBG013D	2/18/16	VOLUME PURGED	1.00	gal
ZBG013D	8/2/16	VOLUME PURGED	3.00	gal
ZBG013D	2/18/16	WATER TEMPERATURE	18.90	°C
ZBG013D	8/2/16	WATER TEMPERATURE	20.20	°C
ZBG014D	2/18/16	AIR TEMPERATURE	11.40	°C
ZBG014D	8/2/16	AIR TEMPERATURE	28.50	°C
ZBG014D	2/18/16	FLOW RATE	0.20	gpm
ZBG014D	8/2/16	FLOW RATE	0.20	gpm
ZBG014D	2/18/16	PH	8.40	pH
ZBG014D	8/2/16	PH	7.50	pH
ZBG014D	2/18/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG014D	8/2/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG014D	2/18/16	SPECIFIC CONDUCTANCE	148.00	µS/cm
ZBG014D	8/2/16	SPECIFIC CONDUCTANCE	149.00	µS/cm
ZBG014D	2/18/16	TOTAL ALKALINITY (AS CaCO ₃)	63.00	mg/L
ZBG014D	8/2/16	TOTAL ALKALINITY (AS CaCO ₃)	60.00	mg/L
ZBG014D	2/18/16	TURBIDITY	0.40	NTU
ZBG014D	8/2/16	TURBIDITY	0.20	NTU
ZBG014D	2/18/16	VOLUME PURGED	2.00	gal
ZBG014D	8/2/16	VOLUME PURGED	3.00	gal
ZBG014D	2/18/16	WATER TEMPERATURE	18.90	°C
ZBG014D	8/2/16	WATER TEMPERATURE	19.80	°C
ZBG015D	2/18/16	AIR TEMPERATURE	11.50	°C
ZBG015D	8/2/16	AIR TEMPERATURE	34.90	°C
ZBG015D	2/18/16	FLOW RATE	0.20	gpm
ZBG015D	8/2/16	FLOW RATE	0.20	gpm
ZBG015D	2/18/16	PH	5.30	pH
ZBG015D	8/2/16	PH	4.50	pH
ZBG015D	2/18/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG015D	8/2/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG015D	2/18/16	SPECIFIC CONDUCTANCE	28.00	µS/cm
ZBG015D	8/2/16	SPECIFIC CONDUCTANCE	37.00	µS/cm
ZBG015D	2/18/16	TOTAL ALKALINITY (AS CaCO ₃)	2.00	mg/L

WELL	DATE	ANALYTE	VALUE	UNITS
ZBG015D	8/2/16	TOTAL ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG015D	2/18/16	TURBIDITY	0.60	NTU
ZBG015D	8/2/16	TURBIDITY	0.30	NTU
ZBG015D	2/18/16	VOLUME PURGED	2.00	gal
ZBG015D	8/2/16	VOLUME PURGED	5.00	gal
ZBG015D	2/18/16	WATER TEMPERATURE	19.00	°C
ZBG015D	8/2/16	WATER TEMPERATURE	20.10	°C
ZBG016C	2/18/16	AIR TEMPERATURE	17.10	°C
ZBG016C	8/2/16	AIR TEMPERATURE	26.60	°C
ZBG016C	2/18/16	FLOW RATE	0.20	gpm
ZBG016C	8/2/16	FLOW RATE	0.20	gpm
ZBG016C	2/18/16	PH	5.50	pH
ZBG016C	8/2/16	PH	5.10	pH
ZBG016C	2/18/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG016C	8/2/16	PHENOLPHTHALEIN ALKALINITY (AS CaCO ₃)	0.00	mg/L
ZBG016C	2/18/16	SPECIFIC CONDUCTANCE	26.00	µS/cm
ZBG016C	8/2/16	SPECIFIC CONDUCTANCE	29.00	µS/cm
ZBG016C	2/18/16	TOTAL ALKALINITY (AS CaCO ₃)	3.00	mg/L
ZBG016C	8/2/16	TOTAL ALKALINITY (AS CaCO ₃)	6.00	mg/L
ZBG016C	2/18/16	TURBIDITY	0.60	NTU
ZBG016C	8/2/16	TURBIDITY	0.40	NTU
ZBG016C	2/18/16	VOLUME PURGED	2.00	gal
ZBG016C	8/2/16	VOLUME PURGED	3.00	gal
ZBG016C	2/18/16	WATER TEMPERATURE	19.60	°C
ZBG016C	8/2/16	WATER TEMPERATURE	19.00	°C
ZBG016D	2/18/16	AIR TEMPERATURE	17.50	°C
ZBG016D	2/18/16	VOLUME PURGED	0.00	gal

Table 3 Notes:

°C = Degrees Celsius

gpm = gallons per minute

µS/cm = microSiemens per centimeter

mg/L = milligrams per liter

NTU = Nephelometric Turbidity Units

gal = gallons

Table 4. Water Elevations for Saltstone Wells (2016)

WELL	REFERENCE ELEVATION (ft-msl)	DATE	DRY	WATER DEPTH (ft-TOC)	WATER ELEVATION (ft-msl)	SCREEN ZONE ELEVATION (ft-msl)	AQUIFER
ZBG 1	291.40	2/18/16	N	57.3	234.07	220 - 240.1	UAZ-UTRA
ZBG 3	272.63	2/17/16	N	49.0	223.63	204 - 214	LAZ-UTRA
ZBG 4	274.11	2/17/16	N	50.7	223.41	205.44 - 215.44	LAZ-UTRA
ZBG 5	272.33	2/17/16	N	49.4	222.93	203.77 - 213.77	LAZ-UTRA
ZBG 6	288.03	2/17/16	N	52.7	235.33	211 - 226	UAZ-UTRA
ZBG 7	287.35	2/22/16	N	51.5	235.85	210.24 - 225.24	UAZ-UTRA
ZBG 8	288.42	2/22/16	N	52.4	236.02	213.02 - 228.02	UAZ-UTRA
ZBG002C	278.56	2/22/16	N	56.2	222.36	195.83 - 205.83	LAZ-UTRA
ZBG002D	278.52	2/22/16	N	53.2	225.32	215.13 - 225.13	UAZ-UTRA
ZBG009D	275.58	2/18/16	N	52.6	222.98	197.7 - 212.7	LAZ-UTRA
ZBG010D	277.32	2/18/16	N	54.8	222.52	199.5 - 214.5	LAZ-UTRA
ZBG011D	280.71	2/18/16	N	58.2	222.51	202.8 - 217.8	LAZ-UTRA
ZBG012D	261.97	2/18/16	N	42.8	219.17	178.7 - 193.7	LAZ-UTRA
ZBG013D	262.48	2/18/16	N	42.7	219.78	179.7 - 194.7	LAZ-UTRA
ZBG014D	267.58	2/18/16	N	46.5	221.08	175.05 - 190.05	LAZ-UTRA
ZBG015D	297.97	2/18/16	N	61.8	236.21	214.31 - 234.31	UAZ-UTRA
ZBG016C	255.53	2/18/16	N	41.5	213.99	197.69 - 207.69	LAZ-UTRA
ZBG016D	256.10	2/18/16	Y	ND	ND	226.25 - 236.25	UAZ-UTRA
ZBG 1	291.40	08/02/16	N	55.5	235.90	220 - 240.1	UAZ-UTRA
ZBG 3	272.63	08/01/16	N	47.3	225.33	204 - 214	LAZ-UTRA
ZBG 4	274.11	08/03/16	N	48.7	225.41	205.44 - 215.44	LAZ-UTRA
ZBG 5	272.33	08/01/16	N	47.2	225.13	203.77 - 213.77	LAZ-UTRA
ZBG 6	288.03	08/03/16	N	51.6	236.43	211 - 226	UAZ-UTRA
ZBG 7	287.35	08/03/16	N	50.5	236.85	210.24 - 225.24	UAZ-UTRA
ZBG 8	288.42	08/03/16	N	52.9	235.52	213.02 - 228.02	UAZ-UTRA
ZBG002C	278.56	08/01/16	N	54.6	223.96	195.83 - 205.83	LAZ-UTRA
ZBG002D	278.52	08/01/16	N	52.0	226.52	215.13 - 225.13	UAZ-UTRA
ZBG009D	275.58	08/02/16	N	51.7	223.88	197.7 - 212.7	LAZ-UTRA
ZBG010D	277.32	08/02/16	N	54.7	222.62	199.5 - 214.5	LAZ-UTRA
ZBG011D	280.71	08/02/16	N	56.9	223.81	202.8 - 217.8	LAZ-UTRA
ZBG012D	261.97	08/02/16	N	43.5	218.47	178.7 - 193.7	LAZ-UTRA
ZBG013D	262.48	08/02/16	N	44.7	217.78	179.7 - 194.7	LAZ-UTRA
ZBG014D	267.58	08/02/16	N	47.7	219.88	175.05 - 190.05	LAZ-UTRA
ZBG015D	297.97	08/02/16	N	59.9	238.07	214.31 - 234.31	UAZ-UTRA
ZBG016C	255.53	08/02/16	N	40.7	214.83	197.69 - 207.69	LAZ-UTRA
ZBG016D	256.10	08/02/16	Y	ND	ND	226.25 - 236.25	UAZ-UTRA

Table 4 Notes:

ft-TOC = feet – Top of Casing (Reference Elevation)

ft-msl = feet above mean sea level

N = No

ND = No Data

Y = Yes