



**A & M Engineering and
Environmental Services, Inc.**
Consulting · Design · Construction · Remediation

January 31, 2019

Ms. Hillary Young, P.E.
Chief Engineer
Land Protection Division
Oklahoma Department of Environmental Quality
707 North Robinson
P.O. Box 1677
Oklahoma City, Oklahoma 73101-1677

**RE: Annual Groundwater Monitoring and
Corrective Action Report for Calendar Year 2018
Grand River Dam Authority
Grand River Energy Center
Chouteau, Oklahoma
A&M Engineering Project No. 1986-002**

Dear Ms. Young:

On behalf of our Client, the Grand River Dam Authority (GRDA), A&M Engineering and Environmental Services, Inc. (A&M Engineering) is pleased to submit the attached Annual Groundwater Monitoring and Corrective Action Report (Calendar Year 2018) for the Coal Combustion Residuals (CCR) Landfill at the above referenced GRDA Facility. As required by OAC 252:517, a copy of this document will be posted on the GRDA CCR Webpage and maintained in the facility operating records.

If you have any questions on this matter, or if you require any additional information, please do not hesitate to call.

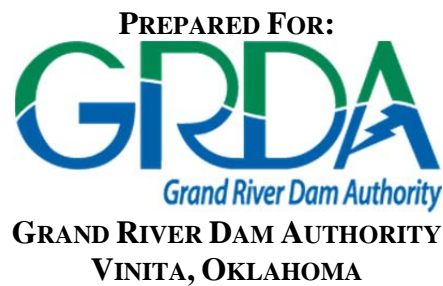
Sincerely,
A & M Engineering and Environmental Services, Inc.

Thomas A. Trebonik, P.G.
Senior Project Manager

Cc: Mike Bednar, GRDA
Travis Hinshaw, GRDA

**ANNUAL GROUNDWATER MONITORING
AND
CORRECTIVE ACTION REPORT
(CALENDAR YEAR 2018)**

**GRAND RIVER DAM AUTHORITY LANDFILL
GRAND RIVER ENERGY CENTER
MAYES COUNTY, OKLAHOMA
SOLID WASTE PERMIT NO. 3549012**



JANUARY 31, 2019

A&M PROJECT NO. 1986-035

PREPARED BY:

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**ANNUAL GROUNDWATER MONITORING
AND
CORRECTIVE ACTION REPORT
GRAND RIVER DAM AUTHORITY LANDFILL
GRAND RIVER ENERGY CENTER
MAYES COUNTY, OKLAHOMA**

1.0 INTRODUCTION

The Grand River Dam Authority (GRDA) owns and operates the Grand River Energy Center (GREC), an electric power generating facility, located approximately three (3) miles east of the City of Chouteau in Mayes County, Oklahoma. Two (2) coal fired boilers are operated at GREC which produce Coal Combustion Residuals (CCRs) consisting of fly ash and bottom ash. Fly ash comprises greater than 80% of CCRs generated at the facility and is largely sold for beneficial use purposes. Excess fly ash and bottom ash is disposed within an on-site permitted coal ash landfill, herein referred to as the GRDA Landfill. The GRDA Landfill is located entirely within the GREC complex.

On June 9, 2016, the Governor of the State of Oklahoma approved by Declaration a final rule for the Disposal of CCRs from Electric Utilities. The new rule regulates the disposal of CCRs under OAC 252:517 Sections 1 through 19. The rule applies both to new and existing CCR landfills and surface impoundments at coal burning electric utility sites.

OAC 252:517-9-1(e) requires existing CCR landfill facilities to:

“No Later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report.”

For the preceding calendar year, the annual report must:

- (i) Document the status of the groundwater monitoring and corrective action program for the CCR unit;



- (ii) Summarize key actions completed;
- (iii) Describe any problems encountered;
- (iv) Discuss actions to resolve problems; and
- (v) Project key activities for the upcoming year.

Additional information to be included in the annual report includes a map, image or diagram showing the CCR landfill and monitoring wells; identification of wells installed or decommissioned during the previous year with a discussion of why those activities occurred; the results of analysis of groundwater collected during the previous year; and summary information on the number of groundwater samples collected, dates of sampling, and whether the sampling was required by detection or assessment monitoring programs.

This Annual Groundwater Monitoring and Corrective Action Report has been prepared to satisfy the requirements of OAC 252:517-9-1(e).

2.0 LANDFILL INFORMATION

The GRDA Landfill is permitted by the Oklahoma Department of Environmental Quality (DEQ) as a Non-Hazardous Industrial Waste Landfill that is allowed to accept fly ash, bottom ash and spent powdered activated carbon used to control flue gas emissions, generated at the GREC (DEQ, 2015). The GRDA Landfill is situated south of the coal-fired boiler units within the GREC complex, as shown in **Figure 1**, and has been in operation since 1981. The total landfill permit area consists of approximately 116 acres, of which only 47 acres have been utilized for CCR disposal. The GRDA Landfill remains active to date.

In October 2017, a request to modify the existing landfill permit was submitted to DEQ. The modification requested a *reduction* in landfill permit area from 116 acres to 67 acres with plans to only utilize a total of 48 acres for CCR landfiling purposes. The request for permit modification and design drawings (submitted with accompanying revised Closure Plan, Quality



Assurance and Quality Control Plan, Run-on and Run-off Control Plan, and Post-Closure Plan) have been approved by DEQ.

The landfill is bordered by surface impoundments to the west and south. The surface impoundments to the south were created during construction of US Highway 412 by using the area for borrow material. These impoundments hold water continuously throughout the year and are connected in series. The impoundments are used for storm water and process wastewater treatment permitted separately by DEQ under industrial wastewater permit OK0035149. Discharge from the ponds is to the Neosho River. A discharge station which is continually monitored is located at the southeastern corner of the property, near the intersection of Highways 412 and 412B. The water level in these impoundments fluctuates from about 592 to 596 feet above mean sea level (MSL). **Figure 1** depicts the GRDA Landfill and its relative location to the surface impoundments.

3.0 SITE HYDROGEOLOGY

The landfill is underlain by an unconsolidated clay, silt, sand and gravel layers ranging in total thickness from 9 feet to about 25 feet. The unconsolidated section is underlain by Pennsylvanian sandstone/limestone bedrock.

The uppermost aquifer at the site is in the unconsolidated section and is monitored for changes in groundwater quality. Five monitoring wells are used: one (1) upgradient well and four (4) downgradient wells. The locations of the monitoring wells are shown on **Figure 1**. MW93-1 is the upgradient well, and MW93-2, MW93-3, MW03-1 and MW03-2 are the downgradient wells. The wells, installed in 1993 and 2003, are monitored routinely in accordance with the non-Hazardous Industrial Waste Landfill Permit issued by DEQ.

Historical groundwater flow maps covering the time period from July, 2012 to December, 2017 have been prepared and previously submitted to DEQ. Data provided shows the fluctuations of the groundwater levels at each monitoring well and provides an indication of the direction of



groundwater flow. The maps were compiled semi-annually and include the elevation of the groundwater at each well, interpolated contours of the top of groundwater elevation across the site, and the direction of groundwater flow. The groundwater in the uppermost aquifer flows from the west-northwest to the east-southeast, generally following the surface terrain. The groundwater velocity in the uppermost aquifer is calculated to be about 3.39×10^{-6} cm/sec or 3.5 feet/year.

3.1 STATUS OF GROUNDWATER MONITORING AND CORRECTIVE ACTION

A groundwater monitoring system currently composed of one upgradient and four downgradient monitoring wells has been in place at the facility since 2003. Groundwater monitoring for the GRDA Landfill is conducted on a semi-annual basis (generally in May/June and November/December of each calendar year) and a separate Semi-annual Groundwater Sampling and Statistical Analysis Report is prepared and submitted to DEQ. Sampling activities for the first Semi-annual Groundwater Sampling and Statistical Analysis Report were conducted at the end of February 2018 and the report submitted to DEQ in May 2018. Statistical evaluation of the analytical data resulted in two of the monitoring wells (MW93-3 and MW03-2) exhibiting statistical significance for specific conductance in both the inter-well and intra-well evaluations. In August 2018, DEQ issued a Notice of Deficiency (NOD) for the first Semi-annual Report requiring that the exceedances for specific conductance be addressed; requiring a statistical analysis or hydrogeological assessment of fluoride concentrations as observed in the background samples for this constituent; and commenting on observations made on historical data from the facility.

In response to the NOD letter, GRDA conducted additional confirmation sampling of monitoring wells MW93-3 and MW03-2 and again conducted statistical evaluation of the results of the laboratory analysis of the confirmation samples. The statistical evaluation of the results confirmed statistical significance for specific conductance in these two wells. The results of laboratory analysis and statistical evaluation conducted on the confirmation samples, as well as responses to all of the NODs and comments cited by DEQ in their letter of August 2018 were forwarded to DEQ in correspondence date October 15, 2018. A proposal for accelerated



sampling and analysis of monitoring wells MW93-3 and MW03-2 for specific conductance only was recommended and is currently under review by DEQ.

The most recent sampling and analysis event occurred in September 2018. The 2018 Second Semi-Annual Groundwater Sampling and Statistical Analysis Report was submitted to DEQ in December 2018 and is currently under review.

GREC is also currently required to conduct Quarterly Assessment Monitoring on the existing monitoring wells at the facility. The parameters for which Quarterly Assessment Monitoring is conducted include pH, Specific Conductance and E_h (currently reported as ORP). Additional field parameters collected during the Quarterly Monitoring include depth to water and temperature (in °C).

Two of the monitoring wells, currently have one additional constituent for which monitoring is also required. They include:

| | |
|--------|----------|
| MW93-3 | Sodium |
| MW03-2 | Chloride |

Groundwater samples from the monitoring wells are collected in accordance with the GRDA Groundwater Sampling and Analysis Program on file with DEQ and are analyzed by a third party State of Oklahoma Certified Laboratory. On occasion however, those constituents for which the GRDA Laboratory is approved for analysis may be analyzed at the facility.

Groundwater samples collected and analyzed during calendar year 2018 included, at a minimum, those constituents for Detection Monitoring as listed in Appendix A of OAC 252:517 (Boron, Calcium, Chloride, Fluoride, pH, Sulfate, and Total Dissolved Solids) as well as a variety of other general water quality parameters and metal constituents required by the DEQ issued



Landfill Permit. The most recent Semi-Annual Groundwater Sampling and Statistical Analysis Report includes historical data for select parameters from June 2004 through September 2018.

Statistical evaluation of the laboratory analytical results is performed on the groundwater data in accordance with the GRDA Groundwater Sampling and Analysis Program. The evaluation of the analytical data includes utilizing a tolerance or prediction interval procedure. Under this procedure, an interval for each constituent determined from laboratory analysis is established from the background data (gathered from the upgradient monitoring well) and the level of each constituent in the downgradient (compliance) wells is compared to the upper tolerance or prediction limit.

The Shapiro-Francia Test of Normality, Levene's Test for Equal Variance and Prediction Limit Interval tests for inter-well analyses is utilized in the statistical evaluation of the parameters. In the event an inter-well statistical evaluation indicates the presence of an elevated parameter in the downgradient wells compared to historical data of the upgradient or background wells, an Intra-well Prediction Limit Interval test is conducted on the specific well or wells of interest. These intra-well comparisons are then utilized to determine whether a significant increase had occurred within a specific well in question. This method of statistical evaluation is consistent with OAC 252:517-9-4(g)(3) and is the method historically used by the GREC Complex in statistical analysis of groundwater data.

3.2 SUMMARY OF KEY ACTIONS COMPLETED

In addition to conducting the Semi-annual, quarterly, and additional monitoring of two of the monitoring wells, key actions completed during the preceding year included the collection of additional groundwater samples from the monitoring wells to allow for laboratory analysis for OAC 252:517 Appendix B constituents. The additional sampling and analysis was conducted to gather a minimum of eight background samples required for statistical evaluations for the Appendix B constituents should evaluations become necessary. A proposed schedule was prepared and submitted to DEQ which allowed for the additional sampling and analysis. The



schedule was reviewed and GRDA given until the end of calendar year 2018 to gather the data. The final background samples were collected on December 20, 2018. The Appendix B constituents for which monitoring was conducted included:

| | |
|-----------|-----------------------------|
| Antimony | Lead |
| Arsenic | Lithium |
| Barium | Mercury |
| Beryllium | Molybdenum |
| Cadmium | Selenium |
| Chromium | Thallium |
| Cobalt | Radium 226 and 228 Combined |
| Fluoride | |

3.3 PROBLEMS ENCOUNTERED AND RESOLUTION OF PROBLEMS

During the preceding year, no major problems were encountered in conducting the semi-annual groundwater monitoring activities at the GRDA Landfill facility and no corrective actions were required to be implemented. However, during the second Semi-annual Groundwater Monitoring event, the natural variation in the groundwater level at monitoring well MW03-1 resulted in the inability to collect a sufficient sample for complete laboratory analysis. Only a sufficient amount of water to allow for recording of field parameters was able to be collected.

3.4 KEY ACTIVITIES FOR THE UPCOMING YEAR

Key activities for the upcoming year (calendar year 2019) include continued implementation of the Semi-annual Groundwater Monitoring activities and if approved by DEQ, implementation of assessment monitoring for specific conductance in monitoring wells MW93-3 and MW03-2. It is possible that additional assessment monitoring activities may be required by DEQ during the upcoming year. If so, any additional assessment monitoring required will be conducted in accordance with DEQ directives.

It is also anticipated that a request to modify the groundwater sampling and analysis program currently approved for the GREC landfill facility will be requested. It is currently anticipated that the request for modification will include limiting the list of constituents for which monitoring is required to only those parameters specified in Appendix A of the current CCR



regulations; thereby eliminating the variety of general water quality parameters and metal constituents currently analyzed for but not required by the applicable CCR regulations.

3.5 ADDITIONAL REQUIRED INFORMATION

A figure showing the location of the GRDA Coal Combustion Residuals landfill is included as **Figure 1**. The figure clearly shows the locations and identification numbers of the monitoring wells used for the GRDA Landfill. As previously stated, MW93-1 is the upgradient well and MW93-2, MW93-3, MW03-1 and MW03-2 are the downgradient wells for the CCR landfill.

There were no new monitoring wells installed or decommissioned at the GRDA facility during the preceding calendar year (2018). The wells initially installed in 1993 and 2003 have been continuously utilized for groundwater monitoring at the facility.

During the preceding year, groundwater samples were collected and analyzed from all five monitoring wells on two separate, semi-annual occasions: February 2018 and December 2018. Analysis of samples collected during these events included the required constituents for detection monitoring (as required by OAC 252:517 and the DEQ issued landfill permit) as well as boron and fluoride concentrations.

In addition, eight separate sampling and analysis events were conducted during calendar year 2018 to ensure a sufficient number of background groundwater samples to allow for statistical evaluation of groundwater concentrations of Appendix B constituents, if necessary. The separate sampling and analysis events were conducted on May 24th, June 19th, July 20th, August 22nd, September 19th, October 18th, November 20th, and December 20th all in calendar year 2018. **Appendix A** presents all of the monitoring data collected during calendar year 2018 for the upgradient and each downgradient monitoring well in use for the GRDA Landfill.

Tables 1 and **1a** present summaries of the groundwater data collected during the first and second semi-annual sampling events for calendar year 2018, respectively. **Tables 2** and **2a** present



historical summaries of select groundwater data (collected during the first and second semi-annual sampling events, respectively). **Tables 3** and **3a** present historical data related to additional monitoring of monitoring wells MW93-3 and MW03-2. The additional quarterly analysis conducted for MW93-3 (Sodium and Conductivity) and MW03-2 (Chloride) are required as a result of prior implementation of monitoring for these constituents in order to allow for assessment of whether an increasing trend in these constituents is occurring. Monitoring for these parameters has been ongoing since 2015. A summary table for calendar year 2018 which includes the number of groundwater samples that were collected for analysis, the dates the samples were collected and whether the individual sample collected was required by detection monitoring or assessment monitoring is included in **Table 4**.

During calendar year 2018, there was no transition between detection and assessment monitoring programs. Sampling and analysis of groundwater was conducted in accordance with the established detection monitoring requirements for the GRDA Landfill along with the additional monitoring required by DEQ. It is anticipated that detection monitoring with the additional monitoring required by DEQ will continue for calendar year 2019.

4.0 REFERENCES

Resources and references used in the preparation of this Annual Groundwater Monitoring and Corrective Action Report include:

Oklahoma State Department of Health (OSDH), Permit for a *Coal Ash Disposal Site*. January 13, 1981.

Oklahoma Department of Environmental Quality (DEQ), *Permit Modification to add an additional Solid Waste Stream, Grand River Dam Authority, Mayes County, Permit 3549012*. February 20, 2015.

Oklahoma Department of Environmental Quality (DEQ), *OAC 252:517*. September 15, 2016.

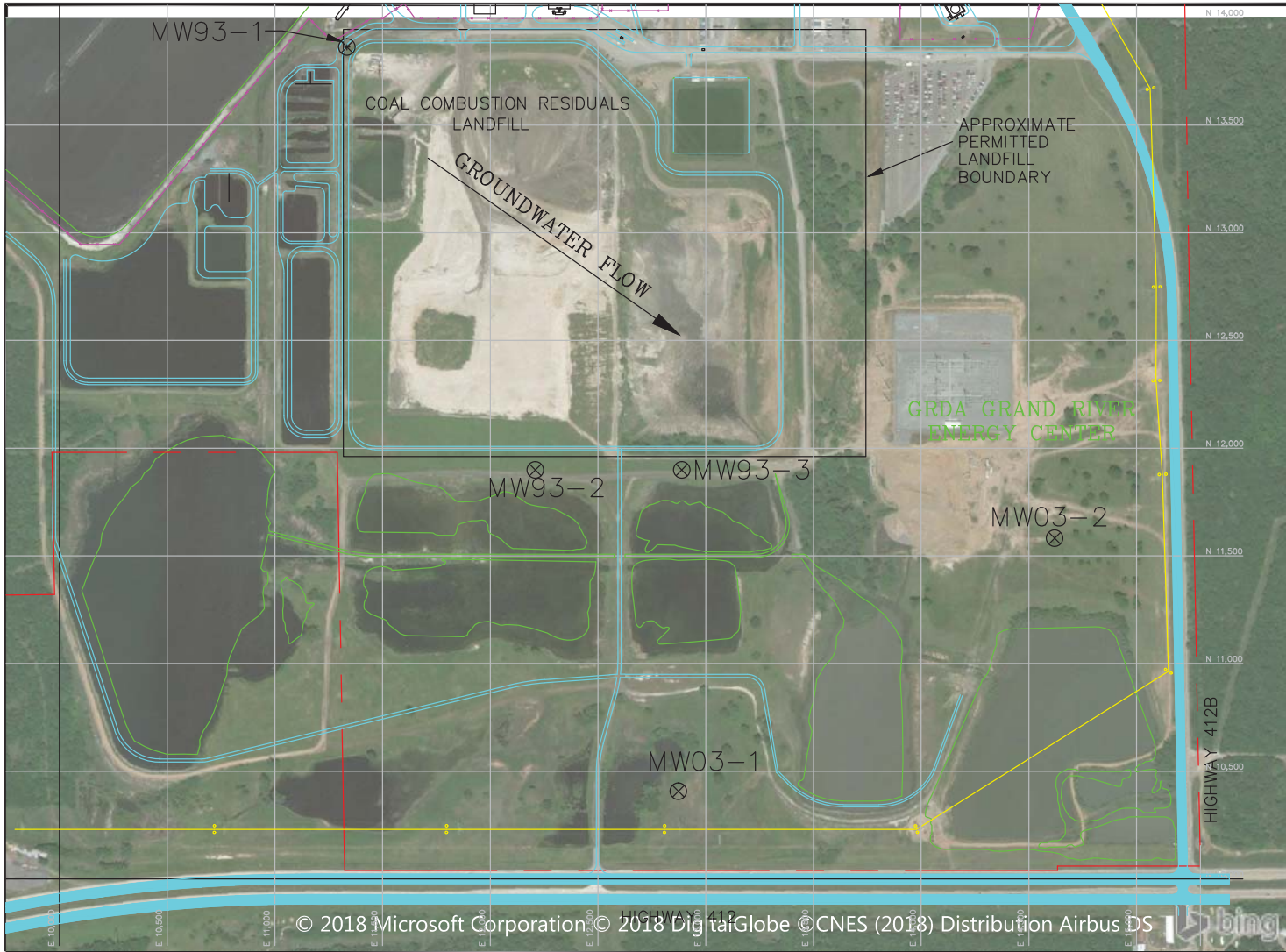


Grand River Dam Authority, *2018 First Semi-Annual Groundwater Sampling and Statistical Analysis Report*. May 2018.

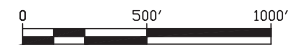
Grand River Dam Authority, *2018 Second Semi-Annual Groundwater Sampling and Statistical Analysis Report*. December 2018.



FIGURES



SCALE



LEGEND

⊗ MW93-1 GROUNDWATER MONITORING WELL

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DJR 4/13/06

GENERAL NOTES

1) AERIAL BACKGROUND FROM BING MAPS.

REVISIONS

| NO. | DESCRIPTION | BY | CHECKED | DATE | NO. | DESCRIPTION | BY | CHECKED | DATE |
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A & M ENGINEERING AND ENVIRONMENTAL SERVICES, INC.
ENGINEERING - ENVIRONMENTAL - CONSTRUCTION

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| DRAWN: OPC | CHECKED BY: TAT | MATERIALS BY: | ENGINEER: |
| DATE: 01/30/2018 | DATE: 01/30/2018 | DATE: | DATE: |

CCR LANDFILL AND WELL LOCATION MAP
GRAND RIVER DAM AUTHORITY LANDFILL
CHOUTEAU, OK

| | | | | |
|------------------|-----------------|--------------------------|--------------------------|------|
| APPROVED BY: TAT | SCALE: AS SHOWN | PROJECT NUMBER: 1986-002 | DRAWING NUMBER: FIGURE 1 | REV: |
| DATE: 01/30/2018 | | | | |

TABLES

Table 1
First Semi-Annual 2018 Analytical Results
February 27, 2018
Grand River Dam Authority (GRDA) Landfill
Chouteau, Oklahoma

| PARAMETER | Monitoring Well I.D. | | | | |
|----------------------------------|----------------------|------------------------|------------------------|------------------------|------------------------|
| | MW 93-1 (upgradient) | MW 93-2 (downgradient) | MW 93-3 (downgradient) | MW 03-1 (downgradient) | MW 03-2 (downgradient) |
| Stabilized Water Level (msl) | 609.33 | 599.92 | 595.50 | 595.57 | 592.82 |
| Temperature °C | 16.4 | 16.2 | 17.6 | 13.2 | 17.2 |
| pH (S.U.) | 6.47 | 9.04 | 6.49 | 6.81 | 6.47 |
| Specific Conductivity (umhos/cm) | 1,235 | 10.9 | 2,372 | 186.1 | 2,080 |
| ORP mv | 26.2 | -12.5 | 8.1 | -1.2 | 13.4 |
| Alkalinity (mg/L) | 384 | 282 | 368 | 72 | 196 |
| Chloride (mg/L) | 15.6 | 1,270 | 435 | 1.07 | 247 |
| Sulfate (mg/L) | 299 | 3,870 | 64.2 | 12.6 | 468 |
| Dissolved Arsenic (mg/L) | 0.006 | 0.024 | <0.005 | <0.005 | 0.008 |
| Dissolved Sodium (mg/L) | 59.6 | 2,220 | 272 | 16.8 | 104 |
| Hardness (mg/L) | 595 | 207 | 316 | NT | NT |
| Calcium (mg/L) | 211 | 74.7 | 91.8 | NT | NT |
| Dissolved Copper (mg/L) | <0.01 | 0.031 | 0.013 | NT | NT |
| Dissolved Iron (mg/L) | <0.075 | 0.031 | <0.075 | NT | NT |
| Nitrate-Nitrogen (mg/L) | <0.25 | <0.25 | 2.13 | NT | NT |
| Total Phosphorus (mg/L) | <0.025 | 0.302 | 0.044 | NT | NT |
| Total Residue (mg/L) | 858 | 8,240 | 1,250 | NT | NT |
| TDS (mg/L) | 830 | 7,560 | 1,190 | NT | NT |
| COD (mg/L) | 29.3 | 92.1 | 18.6 | NT | NT |
| TOC (mg/L) | 3.85 | 12.8 | 2.89 | NT | NT |
| Dissolved Potassium (mg/L) | <0.25 | 195 | 3.38 | NT | NT |
| Dissolved Barium (mg/L) | 0.023 | 0.055 | 0.246 | NT | NT |
| Fluoride (mg/L) | 0.16 | <0.10 | 0.210 | 0.100 | 0.120 |
| Boron (mg/L) | 0.33 | 0.064 | 0.089 | 0.05 | <0.05 |
| Dissolved Selenium (mg/L) | <0.005 | 0.026 | 0.006 | NT | NT |

NT = Not Tested

NS = Insufficient Sample for analysis

Table 1a
Second Semi-Annual 2018 Analytical Results
September 27, 2018
Grand River Dam Authority (GRDA) Landfill
Chouteau, Oklahoma

| PARAMETER | Monitoring Well I.D. | | | | |
|----------------------------------|----------------------|------------------------|------------------------|------------------------|------------------------|
| | MW 93-1 (upgradient) | MW 93-2 (downgradient) | MW 93-3 (downgradient) | MW 03-1 (downgradient) | MW 03-2 (downgradient) |
| Stabilized Water Level (msl) | 609.06 | 599.61 | 595.97 | 590.57 | 591.38 |
| Temperature °C | 22.4 | 24.7 | 24.4 | 24.1 | 24.3 |
| pH (S.U.) | 6.62 | 9.09 | 6.55 | 7.19 | 6.63 |
| Specific Conductivity (umhos/cm) | 1,520 | 15,700 | 2,110 | 573 | 2,880 |
| ORP mv | 462 | 348 | 500 | 488 | 513 |
| Alkalinity (mg/L) | 360 | 270 | 375 | NS | 185 |
| Chloride (mg/L) | 16.8 | 1,250 | 426 | NS | 283 |
| Sulfate (mg/L) | 305 | 3,680 | 75.8 | NS | 426 |
| Arsenic (mg/L) | <0.005 | 0.039 | <0.005 | NS | <0.005 |
| Sodium (mg/L) | 68.2 | 2,660 | 372 | NS | 128 |
| Hardness (mg/L) | 670 | 220 | 360 | NS | 980 |
| Calcium (mg/L) | 240 | 68.9 | 94.8 | NS | 352 |
| Copper (mg/L) | <0.01 | <0.01 | <0.01 | NS | <0.01 |
| Iron (mg/L) | <0.05 | 0.0614 | <0.05 | NS | <0.05 |
| Nitrate-Nitrogen (mg/L) | <0.400 | <0.4 | 0.834 | NS | 0.511 |
| Total Phosphorus (mg/L) | <0.250 | 0.403 | 0.068 | NS | <0.005 |
| Total Residue (mg/L) | 980 | 9,000 | 1,380 | NS | 1,740 |
| TDS (mg/L) | 1,050 | 8,890 | 1,420 | NS | 1,630 |
| COD (mg/L) | 7.41 | 81.1 | 12.5 | NS | 5.81 |
| TOC (mg/L) | 7 | 17.4 | 5.2 | NS | 3.6 |
| Potassium (mg/L) | 0.154 | 253 | 3.21 | NS | 0.882 |
| Barium (mg/L) | 0.0244 | 0.0667 | 0.213 | NS | 0.041 |
| Fluoride (mg/L) | 0.243 | 1.00 | 0.389 | NS | 0.210 |
| Boron (µg/L) | 386 | 2,010 | <100 | NS | <100 |
| Selenium (mg/L) | <0.005 | <0.005 | <0.005 | NS | <0.005 |

NT = Not Tested

NS = Insufficient Sample for analysis

**Table 2
Historical Monitoring Well Analytical Results
February 27, 2018
Grand River Dam Authority (GRDA) Landfill
Chouteau, Oklahoma**

| PARAMETER | WELL ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|--------------------|---------|----------|---------|---------|---------|----------|---------|---------|----------|---------|----------|---------|---------|---------|---------|---------|----------|---------|---------|--------|----------|---------|----------|---------|---------|---------|---------|---------|----------|--------|---------|---------|
| | MW 93-1 Upgradient | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6/24/04 | 9/15/04 | 12/15/04 | 3/16/05 | 6/15/05 | 9/21/05 | 12/21/05 | 3/15/06 | 6/21/06 | 12/20/06 | 6/12/07 | 12/17/07 | 6/11/08 | 12/3/08 | 6/17/09 | 12/9/09 | 6/17/10 | 12/22/10 | 6/29/11 | 12/7/11 | 6/6/12 | 12/12/12 | 6/19/13 | 12/11/13 | 6/11/14 | 12/3/14 | 6/17/15 | 12/1/15 | 6/22/16 | 12/20/16 | 6/6/17 | 11/7/17 | 2/27/18 |
| pH (S.U.) | 6.53 | 6.43 | 6.61 | 6.57 | 6.53 | 6.65 | 6.61 | 6.64 | 6.85 | 6.67 | 6.58 | 6.33 | 6.7 | 6.5 | 6.8 | 6.6 | 6.5 | 6.55 | 6.5 | 6.41 | 6.23 | 6.61 | 6.58 | 6.57 | 6.10 | 6.69 | 6.38 | 6.45 | 6.59 | 6.28 | 6.69 | 6.21 | 6.47 |
| Specific Conductivity (umhos/cm) | 1620 | 1618 | 1586 | 1521 | 1531 | 1441 | 1030 | 1318 | 1547 | 1370 | 1466 | 1327 | 1334 | 1352 | 1301 | 1218 | 1179 | 1270 | 1275 | 1236 | 1185 | 1227 | 1366 | 1329 | 1200 | 1230 | 1210 | 1230 | 1185 | 1186 | 1289 | 1458 | 1235 |
| Alkalinity (mg/L) | 348 | 332 | 327 | 340 | 330 | 347 | 340 | 320 | 314 | 300 | 310 | 330 | 370 | 344 | 350 | 370 | 380 | 370 | 366 | 370 | 384 | 330 | 360 | 358 | 342 | 368 | 380 | 383 | 390 | 395.4 | 398 | 394 | 384 |
| Chloride (mg/L) | 61 | 44 | 48 | 42 | 42 | 42 | 58 | 50 | 31 | 35 | 24 | 27 | 29 | 28 | 20 | 24 | 17 | 20 | 20.8 | 17.6 | 23.8 | 22.2 | 21.5 | 17.6 | 19.3 | 16.9 | 13 | 15.2 | 13 | 15.2 | 16.1 | 16.2 | 15.6 |
| Sodium (mg/L) | 94.7 | 71 | 92.3 | 86.3 | 77.4 | 92.8 | 81.9 | 99.7 | 82 | 85.1 | 74.9 | 81.8 | 56.5 | 75.2 | 67.4 | 76.9 | 55 | 70.5 | 55.4 | 69.1 | 55.6 | 58.9 | 70 | 72.9 | 56.5 | 69.4 | 69.7 | 57.5 | 66.9 | 54.8 | 58.4 | 45.2 | 59.6 |
| Sulfate (mg/L) | 500 | 475 | 558 | 880 | 22 | 467 | 475 | 375 | 420 | 330 | 260 | 300 | 375 | 340 | 650 | 160 | 290 | 304 | 306 | 255 | 275 | 301 | 409 | 306 | 316 | 292 | 286 | 299 | 250 | 275 | 265 | 281 | 299 |
| Arsenic (mg/L) | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | 0.0109 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 0.0068 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.0005 | <0.005 | <0.005 | <0.005 | 0.006 | |

| PARAMETER | WELL ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|----------------------|---------|----------|---------|---------|---------|----------|---------|---------|----------|---------|---------|----------|---------|---------|----------|---------|---------|---------|----------|---------|---------|--------|-------------|---------|----------|---------|---------|---------|----------------------|---------|----------|--------|---------|---------|
| | MW 93-2 Downgradient | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6/24/04 | 9/15/04 | 12/15/04 | 3/16/05 | 6/15/05 | 9/21/05 | 12/21/05 | 3/15/06 | 6/21/06 | 12/20/06 | 2/21/07 | 6/12/07 | 12/17/07 | 6/11/08 | 12/3/08 | 12/15/08 | 6/17/09 | 12/9/09 | 6/17/10 | 12/22/10 | 6/29/11 | 12/7/11 | 6/6/12 | 12/12/12 | 6/19/13 | 12/11/13 | 6/11/14 | 12/3/14 | 6/17/15 | 12/1/15 | 6/22/16 | 12/20/16 | 6/6/17 | 11/7/17 | 2/27/18 |
| pH (S.U.) | 9.24 | 9.32 | 9.26 | 9.23 | 9.10 | 9.25 | 9.31 | 9.47 | 9.4 | 9.18 | 9.20 | 9.10 | 9.30 | 9.4 | 9.7 | 9.6* | 9.8 | 9.8 | 9.6 | 9.5 | 9.4 | 9.5 | 9.68 | 10.02/9.51* | 9.4 | 9.46 | 8.55 | 8.95 | 9.13 | 9.37 | 9.28 | 9.72 | 9.29 | 8.86 | 9.04 |
| Specific Conductivity (umhos/cm) | 10494 | 10340 | 9940 | 9690 | 10010 | 9660 | 10000 | 8650 | 9830 | 8310 | 7660 | 9590 | 9100 | 9600 | 10520 | 9070* | 10690 | 10050 | 10020 | 11230 | 11110 | 10770 | 10490 | 11460 | 10500 | 10650 | 9940 | 10900 | 1270 | 10560 | 6710 | 11400 | 12590 | 10520 | 10900 |
| Alkalinity (mg/L) | 329 | 272 | 288 | 240 | 246 | 228 | 232 | 250 | 290 | 356 | 340 | 312 | 210 | 240 | 280 | 280 | 250 | 236 | 252 | 240 | 266 | 288 | 256 | 248 | 364 | 328 | 342 | 296 | 384 | 226 | 176 | 162 | 246 | 430 | 282 |
| Chloride (mg/L) | 1892 | 1435 | 1600 | 1325 | 1400 | 1412 | 1550 | 1375 | 1500 | 1250 | 1250 | 1350 | 1399 | 1210 | 1584 | 1584 | 750 | 875 | 1500 | 1600 | 1670 | 1510 | 1610 | 1750 | 1390 | 1410 | 1360 | 1520 | 47.7 | 1760 | 1300 | 1690 | 1580 | 1160 | 1270 |
| Sodium (mg/L) | 2180 | 1800 | 2480 | 2490 | 2030 | 2520 | 2300 | 2720 | 2450 | 2170 | 1900 | 1980 | 2244 | 2649 | 2120 | 2120 | 2220 | 240 | 2100 | 2460 | 2190 | 2500 | 2060 | 2730 | 2230 | 2290 | 1940 | 2730 | 270 | 3140 / 2780 / 1890** | 2700 | 2400 | 2310 | 2750 | 2220 |
| Sulfate (mg/L) | 2650 | 2700 | 2950 | 3200 | 2650 | 3200 | 3200 | 3000 | 2700 | 2500 | 2900 | 2400 | 3100 | 2350 | 3300 | 2400* | 2300 | 2200 | 2900 | 3460 | 2630 | 2520 | 2360 | 3240 | 2510 | 2460 | 2790 | 2940 | 114 | 3600 | 2620 | 3800 | 3630 | 4340 | 3870 |
| Arsenic (mg/L) | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | 0.0343 | 0.0603 | 0.0510 | 0.0330 | NT | 0.0525 | 0.0635 | 0.0179 | 0.0215 | 0.0610 | <0.005 | 0.0098 | 0.0562 | 0.0530 | 0.0353 | 0.0197 | 0.0274 | <0.005 | 0.03 | 0.047 | 0.06 | 0.038 | 0.028 | 0.024 | |

*MW-93-2 was resampled for pH on 1/9/2013.
**MW-93-2 was resampled for Sodium on 3/4/2016 and 5/25/2016

| PARAMETER | WELL ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|----------------------|---------|----------|---------|---------|---------|----------|---------|---------|----------|---------|----------|---------|---------|---------|---------|---------|----------|---------|---------|--------|----------|---------|----------|----------|---------|---------|--------|------------------|------------|----------|--------|---------|---------|
| | MW 93-3 Downgradient | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6/24/04 | 9/15/04 | 12/15/04 | 3/16/05 | 6/15/05 | 9/21/05 | 12/21/05 | 3/15/06 | 6/21/06 | 12/20/06 | 6/12/07 | 12/17/07 | 6/11/08 | 12/3/08 | 6/17/09 | 12/9/09 | 6/17/10 | 12/22/10 | 6/29/11 | 12/7/11 | 6/6/12 | 12/12/12 | 6/19/13 | 12/11/13 | 12/11/13 | 6/11/14 | 12/3/14 | 6/7/15 | 12/1/15 | 6/22/16 | 12/20/16 | 6/6/17 | 11/7/17 | 2/27/18 |
| pH (S.U.) | 6.80 | 6.70 | 6.88 | 6.69 | 6.81 | 6.85 | 6.70 | 7.07 | 6.84 | 6.93 | 6.89 | 6.8 | 6.8 | 6.8 | 7.2 | 6.9 | 6.7 | 6.82 | 6.7 | 6.77 | 6.42 | 6.85 | 6.49 | 7.07 | 7.07 | 6.08 | 6.80 | 6.4 | 6.6 | 6.43 | 6.27 | 6.65 | 6.46 | 6.49 |
| Specific Conductivity (umhos/cm) | 1129 | 1068 | 972 | 1134 | 1080 | 1155 | 1140 | 1035 | 1226 | 1087 | 1031 | 910 | 1023 | 1073 | 1073 | 1038 | 1108 | 1090 | 1178 | 930 | 1203 | 1010 | 1438 | 1252 | 1252 | 1500 | 1200 | 1480 | 1807 | 2494 | 2200 | 1743 | 2121 | 2372 |
| Alkalinity (mg/L) | 309 | 264 | 254 | 290 | 268 | 264 | 246 | 227 | 253 | 250 | 280 | 290 | 300 | 226 | 240 | 214 | 296 | 230 | 256 | 244 | 288 | 226 | 316 | 262 | 262 | 338 | 262 | 388 | 480 / 462 / 440* | 330 | 330.4 | 304 | 409 | 368 |
| Chloride (mg/L) | 160 | 139 | 122 | 180 | 150 | 215 | 180 | 221 | 210 | 210 | 110 | 131 | 144 | 152 | 120 | 175 | 150 | 170 | 170 | 98.9 | 194 | 168 | 194 | 173 | 173 | 254 | 194 | 168 | 280 | 518 | 475 | 113 | 402 | 435 |
| Sodium (mg/L) | 150 | 200 | 186 | 196 | 170 | 239 | 180 | 180 | 227 | 211 | 159 | 194 | 195 | 190 | 173 | 202 | 202 | 216 | 158 | 218 | 201 | 168 | 235 | 234 | 234 | 258 | 220 | 280 | 339 / 440 / 464* | 449 / 368* | 337 | 301 | 368 | 272 |
| Sulfate (mg/L) | 24 | 17 | 26 | 29 | 26 | 19 | 23 | 19 | 21 | 42 | 3 | 28 | 27 | 11 | 16 | 12 | 45 | 25.8 | 34.2 | 37.4 | 38.3 | 25.8 | 61.6 | 26.5 | 26.5 | 56.2 | 36.0 | 109 | 81 | 58.5 | 66.6 | 18.2 | 80.3 | 64.2 |
| Arsenic (mg/L) | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |

*MW-93-3 was resampled for Sodium and Alkalinity on 3/4/2016 and 5/25/2016, and Sodium on 10/11/2016.

Table 2 (continued)
Historical Monitoring Well Analytical Results
November 7, 2017
Grand River Dam Authority (GRDA) Landfill
Chouteau, Oklahoma

| PARAMETER | WELL ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|----------------------|---------|----------|---------|---------|---------|----------|---------|---------|----------|---------|----------|---------|---------|--------|---------|---------|----------|---------|---------|--------|----------|---------|----------|---------|---------|--------|---------|---------|----------|--------|---------|---------|
| | MW 03-1 Downgradient | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6/24/04 | 9/15/04 | 12/15/04 | 3/16/05 | 6/15/05 | 9/21/05 | 12/21/05 | 3/15/06 | 6/21/06 | 12/20/06 | 6/12/07 | 12/17/07 | 6/11/08 | 12/3/08 | 6/7/09 | 12/9/09 | 6/17/10 | 12/22/10 | 6/29/11 | 12/7/11 | 6/6/12 | 12/12/12 | 6/19/13 | 12/11/13 | 6/11/14 | 12/3/14 | 6/7/15 | 12/1/15 | 6/22/16 | 12/20/16 | 6/6/17 | 11/7/17 | 2/27/18 |
| pH (S.U.) | 7.27 | 6.78 | 7.32 | 7.30 | 7.28 | 7.88 | ** | ** | ** | 7 | 7 | 7 | 7.4 | 7.4 | 7.6 | 7.5 | 7.1 | 6.89 | 7.3 | 7.05 | 7.33 | DRY | 7.15 | 7.19 | 6.62 | 6.73 | 6.66 | 6.34 | 7.2 | 6.75 | 6.64 | 6.44 | 6.81 |
| Specific Conductivity (umhos/cm) | 497 | 687 | 514 | 422 | 465 | 517 | ** | ** | ** | 447 | 630 | 540 | 467 | 649 | 519 | 469 | 500 | 504 | 463 | 501 | 457 | DRY | 373 | 476 | 826 | 409 | 267 | 385 | 320 | NS | 198 | 444 | 186 |
| Alkalinity (mg/L) | 209 | 220 | 184 | 160 | 252 | 180 | ** | ** | ** | 204 | 200 | 190 | 200 | 206 | 204 | 216 | 232 | 216 | 210 | 222 | 216 | DRY | 144 | 212 | 222 | 194 | 134 | 150 | 130 | 211.6 | 56 | 217 | 72 |
| Chloride (mg/L) | 10 | 22 | 6 | 4 | 6 | 5 | ** | ** | ** | 5 | 4 | 3 | 11 | 11 | 4 | 32 | 5 | 8.7 | 4.86 | 5.88 | 9.36 | DRY | <5.0 | <5.0 | 44 | <5.0 | <5.00 | 0.777 | 0.628 | 0.786 | 0.887 | 1.13 | 1.07 |
| Sodium (mg/L) | 10.2 | 42 | 8.04 | 5.99 | 7.3 | 14.1 | ** | ** | ** | 8 | 8 | 10 | 5.71 | 7.01 | 7.34 | 6.77 | 9.31 | 7.11 | 7.04 | 8.87 | 7.94 | DRY | 10.3 | 9.78 | 55.9 | 9.80 | 9.7 | 12 | 8.59 | 7.94 | 6.56 | 17.6 | 16.8 |
| Sulfate (mg/L) | 42 | 76 | 62 | 22 | 23 | 17 | ** | ** | ** | 55 | 88 | 120 | 23 | 90 | 21 | 15 | 16 | 22.9 | 21.6 | 18.1 | 14.3 | DRY | 16.2 | 29.1 | 127 | 19.7 | 7.86 | 12.1 | 10.3 | 30.9 | 332 | 14.4 | 12.6 |
| Arsenic (mg/L) | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | DRY | 0.008 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.0005 | <0.05 | <0.005 | <0.005 | |

NS = Insufficient sample for analysis

| PARAMETER | WELL ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|----------------------|---------|----------|---------|---------|---------|----------|---------|---------|----------|---------|----------|---------|---------|--------|---------|---------|----------|---------|---------|--------|----------|---------|----------|---------|---------|--------|---------------------|--------------|----------|--------|---------|---------|
| | MW 03-2 Downgradient | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6/24/04 | 9/15/04 | 12/15/04 | 3/16/05 | 6/15/05 | 9/21/05 | 12/21/05 | 3/15/06 | 6/21/06 | 12/20/06 | 6/12/07 | 12/17/07 | 6/11/08 | 12/3/08 | 6/7/09 | 12/9/09 | 6/17/10 | 12/22/10 | 6/29/11 | 12/7/11 | 6/6/12 | 12/12/12 | 6/19/13 | 12/11/13 | 6/11/14 | 12/3/14 | 6/7/15 | 12/1/15 | 6/22/16 | 12/20/16 | 6/6/17 | 11/7/17 | 2/27/18 |
| pH (S.U.) | 6.84 | 7.17 | 6.86 | 6.80 | 6.87 | 6.87 | 6.83 | 6.88 | 6.78 | 6.88 | 6.87 | 6.7 | 6.9 | 6.8 | 7.3 | 6.8 | 6.8 | 7.2 | 6.7 | 6.69 | 6.73 | 6.82 | 6.88 | 6.72 | 7.00 | 7.14 | 6.45 | 6.39 | 6.75 | 6.36 | 6.73 | 6.22 | 6.47 |
| Specific Conductivity (umhos/cm) | 692 | 522 | 655 | 661 | 674 | 625 | 572 | 594 | 636 | 580 | 680 | 617 | 674 | 752 | 720 | 690 | 685 | 728 | 748 | 755 | 716 | 807 | 807 | 805 | 219 | 1540 | 965 | 967 | 1074 | 1454 | 1498 | 2042 | 2080 |
| Alkalinity (mg/L) | 235 | 200 | 222 | 220 | 252 | 224 | 230 | 220 | 228 | 220 | 228 | 200 | 200 | 210 | 200 | 208 | 216 | 230 | 224 | 236 | 230 | 242 | 232 | 230 | 92 | 76 | 220 | 214 | 204 | 199.4 | 192.0 | 192.0 | 196 |
| Chloride (mg/L) | 36 | 4 | 28 | 30 | 30 | 27 | 26 | 27 | 23 | 35 | 30 | 20 | 41 | 46 | 60 | 45 | 33 | 29 | 28.4 | 23.5 | 29.3 | 28.3 | 32.1 | 32.8 | <5.00 | 51.2 | 54.7 | 67.8 / 69.6 / 80.1* | 79.7 / 88.4* | 126 | 117 | 288 | 247 |
| Sodium (mg/L) | 47.4 | 8.7 | 51.3 | 47 | 42.8 | 52.6 | 46.5 | 50.4 | 44.9 | 50.5 | 47 | 50.2 | 33.8 | 54.4 | 48.2 | 47.3 | 52.9 | 51.7 | 51 | 60.1 | 52 | 61.3 | 57.3 | 54 | 9.78 | 68 | 66.3 | 63.8 | 76.8 | 80.2 | 96.8 | 17.6 | 104 |
| Sulfate (mg/L) | 72 | 32 | 54 | 78 | 23 | 80 | 72 | 30 | *** | 34 | 68 | 130 | 67 | 210 | 84 | 80 | 106 | 98.9 | 101 | 98.8 | 107 | 111 | 113 | 106 | 10.3 | 158 | 179 | 197 | 254 | 451 | 332 | 516 | 468 |
| Arsenic (mg/L) | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.0005 | <0.005 | <0.005 | <0.005 | 0.008 |

**Table 2a
Historical Monitoring Well Analytical Results
September 27, 2018
Grand River Dam Authority (GRDA) Landfill
Chouteau, Oklahoma**

| PARAMETER | WELL ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|--------------------|---------|----------|---------|---------|---------|----------|---------|---------|----------|---------|----------|---------|---------|---------|---------|---------|----------|---------|---------|--------|----------|---------|----------|---------|---------|---------|---------|---------|----------|--------|---------|---------|---------|
| | MW 93-1 Upgradient | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6/24/04 | 9/15/04 | 12/15/04 | 3/16/05 | 6/15/05 | 9/21/05 | 12/21/05 | 3/15/06 | 6/21/06 | 12/20/06 | 6/12/07 | 12/17/07 | 6/11/08 | 12/3/08 | 6/17/09 | 12/9/09 | 6/17/10 | 12/22/10 | 6/29/11 | 12/7/11 | 6/6/12 | 12/12/12 | 6/19/13 | 12/11/13 | 6/11/14 | 12/3/14 | 6/17/15 | 12/1/15 | 6/22/16 | 12/20/16 | 6/6/17 | 11/7/17 | 2/27/18 | 9/27/18 |
| pH (S.U.) | 6.53 | 6.43 | 6.61 | 6.57 | 6.53 | 6.65 | 6.61 | 6.64 | 6.85 | 6.67 | 6.58 | 6.33 | 6.7 | 6.5 | 6.8 | 6.6 | 6.5 | 6.55 | 6.5 | 6.41 | 6.23 | 6.61 | 6.58 | 6.57 | 6.10 | 6.69 | 6.38 | 6.45 | 6.59 | 6.28 | 6.69 | 6.21 | 6.47 | 6.62 |
| Specific Conductivity (umhos/cm) | 1620 | 1618 | 1586 | 1521 | 1531 | 1441 | 1030 | 1318 | 1547 | 1370 | 1466 | 1327 | 1334 | 1352 | 1301 | 1218 | 1179 | 1270 | 1275 | 1236 | 1185 | 1227 | 1366 | 1329 | 1200 | 1230 | 1210 | 1230 | 1185 | 1186 | 1289 | 1458 | 1235 | 1,520 |
| Alkalinity (mg/L) | 348 | 332 | 327 | 340 | 330 | 347 | 340 | 320 | 314 | 300 | 310 | 330 | 370 | 344 | 350 | 370 | 380 | 370 | 366 | 370 | 384 | 330 | 360 | 358 | 342 | 368 | 380 | 383 | 390 | 395.4 | 398 | 394 | 384 | 360 |
| Chloride (mg/L) | 61 | 44 | 48 | 42 | 42 | 42 | 58 | 50 | 31 | 35 | 24 | 27 | 29 | 28 | 20 | 24 | 17 | 20 | 20.8 | 17.6 | 23.8 | 22.2 | 21.5 | 17.6 | 19.3 | 16.9 | 13 | 15.2 | 13 | 15.2 | 16.1 | 16.2 | 15.6 | 16.8 |
| Sodium (mg/L) | 94.7 | 71 | 92.3 | 86.3 | 77.4 | 92.8 | 81.9 | 99.7 | 82 | 85.1 | 74.9 | 81.8 | 56.5 | 75.2 | 67.4 | 76.9 | 55 | 70.5 | 55.4 | 69.1 | 55.6 | 58.9 | 70 | 72.9 | 56.5 | 69.4 | 69.7 | 57.5 | 66.9 | 54.8 | 58.4 | 45.2 | 59.6 | 68.2 |
| Sulfate (mg/L) | 500 | 475 | 558 | 880 | 22 | 467 | 475 | 375 | 420 | 330 | 260 | 300 | 375 | 340 | 650 | 160 | 290 | 304 | 306 | 255 | 275 | 301 | 409 | 306 | 316 | 292 | 286 | 299 | 250 | 275 | 265 | 281 | 299 | 305 |
| Arsenic (mg/L) | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | 0.0109 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 0.0068 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.0005 | <0.005 | <0.005 | 0.006 | <0.005 | <0.005 | |

| PARAMETER | WELL ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|----------------------|---------|----------|---------|---------|---------|----------|---------|---------|----------|---------|---------|----------|---------|---------|----------|---------|---------|---------|----------|---------|---------|--------|-------------|---------|----------|---------|---------|---------|----------------------|---------|----------|--------|---------|---------|---------|
| | MW 93-2 Downgradient | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6/24/04 | 9/15/04 | 12/15/04 | 3/16/05 | 6/15/05 | 9/21/05 | 12/21/05 | 3/15/06 | 6/21/06 | 12/20/06 | 2/21/07 | 6/12/07 | 12/17/07 | 6/11/08 | 12/3/08 | 12/15/08 | 6/17/09 | 12/9/09 | 6/17/10 | 12/22/10 | 6/29/11 | 12/7/11 | 6/6/12 | 12/12/12 | 6/19/13 | 12/11/13 | 6/11/14 | 12/3/14 | 6/17/15 | 12/1/15 | 6/22/16 | 12/20/16 | 6/6/17 | 11/7/17 | 2/27/18 | 9/27/18 |
| pH (S.U.) | 9.24 | 9.32 | 9.26 | 9.23 | 9.10 | 9.25 | 9.31 | 9.47 | 9.4 | 9.18 | 9.20 | 9.10 | 9.30 | 9.4 | 9.7 | 9.6* | 9.8 | 9.8 | 9.6 | 9.5 | 9.4 | 9.5 | 9.68 | 10.02/9.51* | 9.4 | 9.46 | 8.55 | 8.95 | 9.13 | 9.37 | 9.28 | 9.72 | 9.29 | 8.86 | 9.04 | 9.09 |
| Specific Conductivity (umhos/cm) | 10494 | 10340 | 9940 | 9690 | 10010 | 9660 | 10000 | 8650 | 9830 | 8310 | 7660 | 9590 | 9100 | 9600 | 10520 | 9070* | 10690 | 10050 | 10020 | 11230 | 11110 | 10770 | 10490 | 11460 | 10500 | 10650 | 9940 | 10900 | 1270 | 10560 | 6710 | 11400 | 12590 | 10520 | 10900 | 15,700 |
| Alkalinity (mg/L) | 329 | 272 | 288 | 240 | 246 | 228 | 232 | 250 | 290 | 356 | 340 | 312 | 210 | 240 | 280 | 280 | 250 | 236 | 252 | 240 | 266 | 288 | 256 | 248 | 364 | 328 | 342 | 296 | 384 | 226 | 176 | 162 | 246 | 430 | 282 | 270 |
| Chloride (mg/L) | 1892 | 1435 | 1600 | 1325 | 1400 | 1412 | 1550 | 1375 | 1500 | 1250 | 1250 | 1350 | 1399 | 1210 | 1584 | 1584 | 750 | 875 | 1500 | 1600 | 1670 | 1510 | 1610 | 1750 | 1390 | 1410 | 1360 | 1520 | 47.7 | 1760 | 1300 | 1690 | 1580 | 1160 | 1270 | 1,250 |
| Sodium (mg/L) | 2180 | 1800 | 2480 | 2490 | 2030 | 2520 | 2300 | 2720 | 2450 | 2170 | 1900 | 1980 | 2244 | 2649 | 2120 | 2120 | 2220 | 240 | 2100 | 2460 | 2190 | 2500 | 2060 | 2730 | 2230 | 2290 | 1940 | 2730 | 270 | 3140 / 2780 / 1890** | 2700 | 2400 | 2310 | 2750 | 2220 | 2,660 |
| Sulfate (mg/L) | 2650 | 2700 | 2950 | 3200 | 2650 | 3200 | 3200 | 3000 | 2700 | 2500 | 2900 | 2400 | 3100 | 2350 | 3300 | 2400* | 2300 | 2200 | 2900 | 3460 | 2630 | 2520 | 2360 | 3240 | 2510 | 2460 | 2790 | 2940 | 114 | 3600 | 2620 | 3800 | 3630 | 4340 | 3870 | 3,680 |
| Arsenic (mg/L) | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | 0.0343 | 0.0603 | 0.0510 | 0.0330 | NT | 0.0525 | 0.0635 | 0.0179 | 0.0215 | 0.0610 | <0.005 | 0.0098 | 0.0562 | 0.0530 | 0.0353 | 0.0197 | 0.0274 | <0.005 | 0.03 | 0.047 | 0.06 | 0.038 | 0.028 | 0.024 | 0.039 | |

*MW-93-2 was resampled for pH on 1/9/2013.

**MW-93-2 was resampled for Sodium on 3/4/2016 and 5/25/2016

| PARAMETER | WELL ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|----------------------|---------|----------|---------|---------|---------|----------|---------|---------|----------|---------|----------|---------|---------|---------|---------|---------|----------|---------|---------|--------|----------|---------|----------|----------|---------|---------|--------|------------------|------------|----------|--------|---------|---------|---------|--------|
| | MW 93-3 Downgradient | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6/24/04 | 9/15/04 | 12/15/04 | 3/16/05 | 6/15/05 | 9/21/05 | 12/21/05 | 3/15/06 | 6/21/06 | 12/20/06 | 6/12/07 | 12/17/07 | 6/11/08 | 12/3/08 | 6/17/09 | 12/9/09 | 6/17/10 | 12/22/10 | 6/29/11 | 12/7/11 | 6/6/12 | 12/12/12 | 6/19/13 | 12/11/13 | 12/11/13 | 6/11/14 | 12/3/14 | 6/7/15 | 12/1/15 | 6/22/16 | 12/20/16 | 6/6/17 | 11/7/17 | 2/27/18 | 9/27/18 | |
| pH (S.U.) | 6.80 | 6.70 | 6.88 | 6.69 | 6.81 | 6.85 | 6.70 | 7.07 | 6.84 | 6.93 | 6.89 | 6.8 | 6.8 | 6.8 | 7.2 | 6.9 | 6.7 | 6.82 | 6.7 | 6.77 | 6.42 | 6.85 | 6.49 | 7.07 | 7.07 | 6.08 | 6.80 | 6.4 | 6.6 | 6.43 | 6.27 | 6.65 | 6.46 | 6.49 | 6.55 | |
| Specific Conductivity (umhos/cm) | 1129 | 1068 | 972 | 1134 | 1080 | 1155 | 1140 | 1035 | 1226 | 1087 | 1031 | 910 | 1023 | 1073 | 1073 | 1038 | 1108 | 1090 | 1178 | 930 | 1203 | 1010 | 1438 | 1252 | 1252 | 1500 | 1200 | 1480 | 1807 | 2494 | 2200 | 1743 | 2121 | 2372 | 2,110 | |
| Alkalinity (mg/L) | 309 | 264 | 254 | 290 | 268 | 264 | 246 | 227 | 253 | 250 | 280 | 290 | 300 | 226 | 240 | 214 | 296 | 230 | 256 | 244 | 288 | 226 | 316 | 262 | 262 | 338 | 262 | 388 | 480 / 462 / 440* | 330 | 330.4 | 304 | 409 | 368 | 375 | |
| Chloride (mg/L) | 160 | 139 | 122 | 180 | 150 | 215 | 180 | 221 | 210 | 210 | 110 | 131 | 144 | 152 | 120 | 175 | 150 | 170 | 170 | 98.9 | 194 | 168 | 194 | 173 | 173 | 254 | 194 | 168 | 280 | 518 | 475 | 113 | 402 | 435 | 426 | |
| Sodium (mg/L) | 150 | 200 | 186 | 196 | 170 | 239 | 180 | 180 | 227 | 211 | 159 | 194 | 195 | 190 | 173 | 202 | 202 | 216 | 158 | 218 | 201 | 168 | 235 | 234 | 234 | 258 | 220 | 280 | 339 / 440 / 464* | 449 / 368* | 337 | 301 | 368 | 272 | 372 | |
| Sulfate (mg/L) | 24 | 17 | 26 | 29 | 26 | 19 | 23 | 19 | 21 | 42 | 3 | 28 | 27 | 11 | 16 | 12 | 45 | 25.8 | 34.2 | 37.4 | 38.3 | 25.8 | 61.6 | 26.5 | 26.5 | 56.2 | 36.0 | 109 | 81 | 58.5 | 66.6 | 18.2 | 80.3 | 64.2 | 75.8 | |
| Arsenic (mg/L) | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.0005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |

*MW-93-3 was resampled for Sodium and Alkalinity on 3/4/2016 and 5/25/2016, and Sodium on 10/11/2016.

Table 2a (continued)
Historical Monitoring Well Analytical Results
September 27, 2017
Grand River Dam Authority (GRDA) Landfill
Chouteau, Oklahoma

| PARAMETER | WELL ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|----------------------|---------|----------|---------|---------|---------|----------|---------|---------|----------|---------|----------|---------|---------|--------|---------|---------|----------|---------|---------|--------|----------|---------|----------|---------|---------|--------|---------|---------|----------|--------|---------|---------|---------|
| | MW 03-1 Downgradient | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6/24/04 | 9/15/04 | 12/15/04 | 3/16/05 | 6/15/05 | 9/21/05 | 12/21/05 | 3/15/06 | 6/21/06 | 12/20/06 | 6/12/07 | 12/17/07 | 6/11/08 | 12/3/08 | 6/7/09 | 12/9/09 | 6/17/10 | 12/22/10 | 6/29/11 | 12/7/11 | 6/6/12 | 12/12/12 | 6/19/13 | 12/11/13 | 6/11/14 | 12/3/14 | 6/7/15 | 12/1/15 | 6/22/16 | 12/20/16 | 6/6/17 | 11/7/17 | 2/27/18 | 9/27/18 |
| pH (S.U.) | 7.27 | 6.78 | 7.32 | 7.30 | 7.28 | 7.88 | ** | ** | ** | 7 | 7 | 7 | 7.4 | 7.4 | 7.6 | 7.5 | 7.1 | 6.89 | 7.3 | 7.05 | 7.33 | DRY | 7.15 | 7.19 | 6.62 | 6.73 | 6.66 | 6.34 | 7.2 | 6.75 | 6.64 | 6.44 | 6.81 | 7.19 |
| Specific Conductivity (umhos/cm) | 497 | 687 | 514 | 422 | 465 | 517 | ** | ** | ** | 447 | 630 | 540 | 467 | 649 | 519 | 469 | 500 | 504 | 463 | 501 | 457 | DRY | 373 | 476 | 826 | 409 | 267 | 385 | 320 | NS | 198 | 444 | 186 | 573 |
| Alkalinity (mg/L) | 209 | 220 | 184 | 160 | 252 | 180 | ** | ** | ** | 204 | 200 | 190 | 200 | 206 | 204 | 216 | 232 | 216 | 210 | 222 | 216 | DRY | 144 | 212 | 222 | 194 | 134 | 150 | 130 | 211.6 | 56 | 217 | 72 | NS |
| Chloride (mg/L) | 10 | 22 | 6 | 4 | 6 | 5 | ** | ** | ** | 5 | 4 | 3 | 11 | 11 | 4 | 32 | 5 | 8.7 | 4.86 | 5.88 | 9.36 | DRY | <5.0 | <5.0 | 44 | <5.0 | <5.00 | 0.777 | 0.628 | 0.786 | 0.887 | 1.13 | 1.07 | NS |
| Sodium (mg/L) | 10.2 | 42 | 8.04 | 5.99 | 7.3 | 14.1 | ** | ** | ** | 8 | 8 | 10 | 5.71 | 7.01 | 7.34 | 6.77 | 9.31 | 7.11 | 7.04 | 8.87 | 7.94 | DRY | 10.3 | 9.78 | 55.9 | 9.80 | 9.7 | 12 | 8.59 | 7.94 | 6.56 | 17.6 | 16.8 | NS |
| Sulfate (mg/L) | 42 | 76 | 62 | 22 | 23 | 17 | ** | ** | ** | 55 | 88 | 120 | 23 | 90 | 21 | 15 | 16 | 22.9 | 21.6 | 18.1 | 14.3 | DRY | 16.2 | 29.1 | 127 | 19.7 | 7.86 | 12.1 | 10.3 | 30.9 | 332 | 14.4 | 12.6 | NS |
| Arsenic (mg/L) | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | DRY | 0.008 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.0005 | <0.05 | <0.005 | <0.005 | <0.005 | NS |

NS = Insufficient sample for analysis

| PARAMETER | WELL ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|----------------------|---------|----------|---------|---------|---------|----------|---------|---------|----------|---------|----------|---------|---------|--------|---------|---------|----------|---------|---------|--------|----------|---------|----------|---------|---------|--------|---------------------|--------------|----------|--------|---------|---------|---------|
| | MW 03-2 Downgradient | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6/24/04 | 9/15/04 | 12/15/04 | 3/16/05 | 6/15/05 | 9/21/05 | 12/21/05 | 3/15/06 | 6/21/06 | 12/20/06 | 6/12/07 | 12/17/07 | 6/11/08 | 12/3/08 | 6/7/09 | 12/9/09 | 6/17/10 | 12/22/10 | 6/29/11 | 12/7/11 | 6/6/12 | 12/12/12 | 6/19/13 | 12/11/13 | 6/11/14 | 12/3/14 | 6/7/15 | 12/1/15 | 6/22/16 | 12/20/16 | 6/6/17 | 11/7/17 | 2/27/18 | 9/27/18 |
| pH (S.U.) | 6.84 | 7.17 | 6.86 | 6.80 | 6.87 | 6.87 | 6.83 | 6.88 | 6.78 | 6.88 | 6.87 | 6.7 | 6.9 | 6.8 | 7.3 | 6.8 | 6.8 | 7.2 | 6.7 | 6.69 | 6.73 | 6.82 | 6.88 | 6.72 | 7.00 | 7.14 | 6.45 | 6.39 | 6.75 | 6.36 | 6.73 | 6.22 | 6.47 | 6.63 |
| Specific Conductivity (umhos/cm) | 692 | 522 | 655 | 661 | 674 | 625 | 572 | 594 | 636 | 580 | 680 | 617 | 674 | 752 | 720 | 690 | 685 | 728 | 748 | 755 | 716 | 807 | 807 | 805 | 219 | 1540 | 965 | 967 | 1074 | 1454 | 1498 | 2042 | 2080 | 2,880 |
| Alkalinity (mg/L) | 235 | 200 | 222 | 220 | 252 | 224 | 230 | 220 | 228 | 220 | 228 | 200 | 200 | 210 | 200 | 208 | 216 | 230 | 224 | 236 | 230 | 242 | 232 | 230 | 92 | 76 | 220 | 214 | 204 | 199.4 | 192.0 | 192.0 | 196 | 185 |
| Chloride (mg/L) | 36 | 4 | 28 | 30 | 30 | 27 | 26 | 27 | 23 | 35 | 30 | 20 | 41 | 46 | 60 | 45 | 33 | 29 | 28.4 | 23.5 | 29.3 | 28.3 | 32.1 | 32.8 | <5.00 | 51.2 | 54.7 | 67.8 / 69.6 / 80.1* | 79.7 / 88.4* | 126 | 117 | 288 | 247 | 283 |
| Sodium (mg/L) | 47.4 | 8.7 | 51.3 | 47 | 42.8 | 52.6 | 46.5 | 50.4 | 44.9 | 50.5 | 47 | 50.2 | 33.8 | 54.4 | 48.2 | 47.3 | 52.9 | 51.7 | 51 | 60.1 | 52 | 61.3 | 57.3 | 54 | 9.78 | 68 | 66.3 | 63.8 | 76.8 | 80.2 | 96.8 | 17.6 | 104 | 128 |
| Sulfate (mg/L) | 72 | 32 | 54 | 78 | 23 | 80 | 72 | 30 | *** | 34 | 68 | 130 | 67 | 210 | 84 | 80 | 106 | 98.9 | 101 | 98.8 | 107 | 111 | 113 | 106 | 10.3 | 158 | 179 | 197 | 254 | 451 | 332 | 516 | 468 | 426 |
| Arsenic (mg/L) | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.0005 | <0.005 | <0.005 | 0.008 | <0.005 | <0.005 |

*MW-03-2 was resampled for Chloride on 3/4/2016, 5/25/2016, and 10/11/2016.

Table 3
First Semi-Annual 2018 Additional Sampling Summary
Grand River Dam Authority (GRDA) Landfill
Chouteau, Oklahoma

| Sample Date | MW93-3 | | MW03-2 |
|-------------|------------------|-------------------------|--------------------|
| | Sodium (mg/L) | Conductivity (uS/cm) | Chloride (mg/L) |
| 12/1/2015 | 339* | 1807 | 67.8* |
| 3/4/2016 | 440* | N/A | 69.6* |
| 5/25/2016 | 464* | N/A | 80.1* |
| 6/22/2016 | 449* | 2494* | 79.7* |
| 10/11/2016 | 368* | 2005* | 88.4* |
| 12/20/2016 | 337 | 2200* | 126* |
| 3/8/2017 | 334* | 2404* | 146* |
| 6/6/2017 | 301* | 1743 | 117* |
| 11/7/2017 | 368 | 2121 | 288* |
| 2/27/2018 | 272 | 2372* | 247 |

* Indicates a verified intra-well statistical exceedance for the specified sampling event.

Table 3a
Second Semi-Annual 2018 Additional Sampling Summary
Grand River Dam Authority (GRDA) Landfill
Chouteau, Oklahoma

| Sample Date | MW93-3 | | MW03-2 |
|-------------|------------------|-------------------------|--------------------|
| | Sodium (mg/L) | Conductivity (uS/cm) | Chloride (mg/L) |
| 12/1/2015 | 339* | 1807 | 67.8* |
| 3/4/2016 | 440* | N/A | 69.6* |
| 5/25/2016 | 464* | N/A | 80.1* |
| 6/22/2016 | 449* | 2494* | 79.7* |
| 10/11/2016 | 368* | 2005* | 88.4* |
| 12/20/2016 | 337 | 2200* | 126* |
| 3/8/2017 | 334* | 2404* | 146* |
| 6/6/2017 | 301* | 1743 | 117* |
| 11/7/2017 | 368 | 2121 | 288* |
| 2/27/2018 | 272 | 2372* | 247 |
| 5/24/2018 | 366 | 2390 | 310 |
| 9/27/2018 | 372 | 2110 | 283 |
| 11/24/2018 | 394 | 2770 | 352 |

* Indicates a verified intra-well statistical exceedance for the specified sampling event.

Table 4: Sampling Summary Table (2018)
Grand River Dam Authority (GRDA) Landfill
Chouteau, Oklahoma

| Well ID | # of Samples Collected | 2018 Sampling Dates | Collected For: | | Comments: |
|--------------------------|------------------------|--|----------------------|-----------------------|--|
| | | | Detection Monitoring | Assessment Monitoring | |
| MW93-1 (upgradient) | 13 | February 27 May 24 June 19 July 19 & 27 August 22 September 19 October 18 November 20 & 27 December 20 | X | | Includes samples for Appendix B Constituents. |
| MW93-2 (downgradient) | 13 | February 27 May 24 June 19 July 19 & 27 August 22 September 19 October 18 November 20 & 27 December 20 | X | X | Includes samples for Appendix B Constituents. In assessment monitoring for pH only. |
| MW93-3 (downgradient) | 14 | February 27 May 24 June 19 July 19 & 27 August 22 September 6 & 19 October 18 November 20 & 27 December 20 | X | X | Includes samples for Appendix B Constituents. In assessment monitoring for sodium and conductivity only. Includes confirmation sample. |
| MW03-1 (downgradient) | 13 | February 27 May 24 June 19 July 19 & 27 August 22 September 19 October 18 November 20 & 27 December 20 | X | | Includes samples for Appendix B Constituents. |
| MW03-2 (downgradient) | 14 | February 27 May 24 June 19 July 19 & 27 August 22 September 6 & 19 October 18 November 20 & 27 December 20 | X | X | Includes samples for Appendix B Constituents. In assessment monitoring for chloride only. Includes confirmation sample. |

APPENDIX A
Monitoring Data Collected

Semi-annual Monitoring

GRDA GROUNDWATER SAMPLING

DATE: 02/27/18

Logbook Entry By: WSH

Reviewed By: _____

Final Review By: _____

| Well Number | Total Depth | TOC Elev. | Depth to Water Level | Stabilized Water Level |
|-------------|-------------|-----------|----------------------|------------------------|
| MW93-1 | 15.6' | 619.83 | 10.5 | 609.33 |
| MW93-2 | 22.2' | 607.62 | 7.7 | 599.92 |
| MW93-3 | 27.3' | 608.10 | 12.6 | 595.50 |
| MW03-1 | 12.3' | 602.87 | 7.3 | 595.57 |
| MW03-2 | 26.9' | 607.82 | 15.0 | 592.82 |
| F0-8 | | | | |

| Date Sampled | Time Sampled | Sampler |
|--------------|--------------|---------|
| 2/27/18 | 907 | MB |
| 2/27/18 | 923 | MB |
| 2/27/18 | 934 | MB |
| 2/27/18 | 958 | MB |
| 2/27/18 | 941 | MB |
| 2/27/18 | 1025 | MB |

| Date Sample Analyzed | Time Sample Analyzed | Analyst | Temp. ° C | pH | Specific Conductivity | ORP mv | Fluoride mg/L | Boron mg/L |
|----------------------|----------------------|---------|-----------|------|-----------------------|--------|---------------|------------|
| 2/27/18 | 907 | MB | 16.4 | 6.47 | 1235 | 26.2 | 0.160 | 0.330 |
| 2/27/18 | 923 | MB | 16.2 | 9.04 | 10.90 | -12.5 | < .10 | 0.064 |
| 2/27/18 | 934 | MB | 17.6 | 6.49 | 2,372 | 8.1 | 0.210 | 0.089 |
| 2/27/18 | 958 | MB | 13.2 | 6.81 | 186.1 | -1.2 | 0.100 | 0.050 |
| 2/27/18 | 941 | MB | 17.2 | 6.47 | 2,080 | 13.4 | 0.120 | < .05 |
| 2/27/18 | 1025 | MB | 12.00 | 7.10 | 740 | 15.6 | | |

| Well Number | Chloride mg/L | Nitrate-Nitrogen mg/L | Sulfate mg/L | Dissolved Arsenic mg/L | Dissolved Barium mg/L | Dissolved Calcium mg/L | Dissolved Copper mg/L | Dissolved Iron mg/L | Dissolved Potassium mg/L | Dissolved Selenium mg/L | Dissolved Sodium mg/L | Alkalinity mg/L | COD mg/L | Hardness mg/L | Total Phosphorus mg/L | TDS mg/L | TOC mg/L | Total Residue mg/L |
|-------------|---------------|-----------------------|--------------|------------------------|-----------------------|------------------------|-----------------------|---------------------|--------------------------|-------------------------|-----------------------|-----------------|----------|---------------|-----------------------|----------|----------|--------------------|
| MW93-1 | 15.6 | < .25 | 299 | 0.006 | 0.023 | 211.00 | < .010 | < .075 | < .25 | < .005 | 59.6 | 384 | 29.3 | 595 | < .025 | 830 | 3.85 | 858 |
| MW93-2 | 1270 | < .25 | 3870 | 0.024 | 0.055 | 74.70 | 0.031 | 0.088 | 195 | 0.026 | 2220 | 282 | 92.1 | 207 | 0.302 | 7560 | 12.8 | 8240 |
| MW93-3 | 435 | 2.13 | 64.2 | < .005 | 0.246 | 91.80 | 0.013 | < .075 | 3.38 | 0.006 | 272 | 368 | 18.6 | 316 | 0.044 | 1190 | 2.89 | 1250 |
| MW03-1 | 1.07 | | 12.6 | < .005 | | | | | | | 16.8 | 72 | | | | | | |
| MW03-2 | 247 | | 468 | 0.008 | | | | | | | 104 | 196 | | | | | | |

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



October 17, 2018

Ed Van Schaik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: 1986-030-001 2nd Semi Annual

Order No.: 1809461

Dear Ed Van Schaik:

Green Country Testing, Inc. received 5 sample(s) on 9/27/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

CC:
Accounts Payable

Original

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



Case Narrative

WO#: 1809461
Date: 10/17/2018

CLIENT: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

1809461
MET_Boron has been Sub Contracted.
1809461
MET_Boron has been Sub Contracted.
1809461
MET_Boron has been Sub Contracted.
1809461
MET_Boron has been Sub Contracted.
1809461
MET_Boron has been Sub Contracted.

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
 TEL: 918-828-9977 FAX: 918-828-7756
 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1809461

Date Reported: 10/17/2018

CLIENT: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

Lab Order: 1809461

Lab ID: 1809461-001

Collection Date: 9/27/2018 10:40:00 AM

Client Sample ID: MW-93-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

CHLORIDE IN WATER

4500CL-E, 2011

Analyst: **KP**

| | | | | | | |
|----------|------|------|--|------|---|----------------------|
| Chloride | 16.8 | 5.00 | | mg/L | 1 | 9/28/2018 4:05:00 PM |
|----------|------|------|--|------|---|----------------------|

NITRATE / NITRITE AS N IN WATER

A4500-NO3-F

Analyst: **KP**

| | | | | | | |
|----------------------|---------|-------|--|------|---|----------------------|
| Nitrate/Nitrite as N | < 0.400 | 0.400 | | mg/L | 1 | 10/3/2018 4:20:00 PM |
|----------------------|---------|-------|--|------|---|----------------------|

SULFATE IN WATER

4500SO4-E,2011

Analyst: **KP**

| | | | | | | |
|-----|-----|------|--|------|----|----------------------|
| SO4 | 305 | 50.0 | | mg/L | 10 | 10/1/2018 3:19:00 PM |
|-----|-----|------|--|------|----|----------------------|

METALS IN WATER BY ICP, TOTAL - N

E200.7, 1994 SW3010A

Analyst: **8727**

| | | | | | | |
|-------|-----|-----|--|------|---|-----------------------|
| Boron | 386 | 100 | | ug/L | 1 | 10/15/2018 8:40:00 PM |
|-------|-----|-----|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994 SW3010A

Analyst: **KR**

| | | | | | | |
|-----------|-----------|---------|--|------|---|----------------------|
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 10/3/2018 9:09:25 PM |
| Barium | 0.0244 | 0.0100 | | mg/L | 1 | 10/3/2018 9:09:25 PM |
| Calcium | 240 | 0.500 | | mg/L | 1 | 10/3/2018 9:09:25 PM |
| Copper | < 0.0100 | 0.0100 | | mg/L | 1 | 10/3/2018 9:09:25 PM |
| Iron | < 0.0500 | 0.0500 | | mg/L | 1 | 10/3/2018 9:09:25 PM |
| Potassium | 0.154 | 0.0500 | | mg/L | 1 | 10/3/2018 9:09:25 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 10/3/2018 9:09:25 PM |
| Sodium | 68.2 | 0.500 | | mg/L | 1 | 10/3/2018 9:09:25 PM |

ALKALINITY IN WATER

A2320B, 2011

Analyst: **CW**

| | | | | | | |
|------------------------------|-----|------|--|------------|---|-----------------------|
| Alkalinity, Total (As CaCO3) | 360 | 12.5 | | mg CaCO3/L | 1 | 10/4/2018 12:43:00 PM |
|------------------------------|-----|------|--|------------|---|-----------------------|

CHEMICAL OXYGEN DEMAND

A5220D, 2011

Analyst: **CW**

| | | | | | | |
|------------------------|------|------|--|------|---|----------------------|
| Chemical Oxygen Demand | 7.41 | 5.00 | | mg/L | 1 | 10/1/2018 1:43:00 PM |
|------------------------|------|------|--|------|---|----------------------|

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

Original

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
 TEL: 918-828-9977 FAX: 918-828-7756
 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: **1809461**

Date Reported: **10/17/2018**

CLIENT: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

Lab Order: 1809461

| | | | | | |
|--|---------|-------|------------|---------------------|-----------------------|
| HARDNESS | | | | A2340C, 2011 | Analyst: CW |
| Hardness, Calcium (As CaCO3) | 670 | 20.0 | mg CaCO3/L | 10 | 10/4/2018 9:27:00 AM |
| TOTAL PHOSPHORUS | | | | 4500P-E,2011 | Analyst: CW |
| Total Phosphorus | < 0.250 | 0.250 | mg/L | 5 | 10/2/2018 1:32:00 PM |
| TOTAL DISSOLVED SOLIDS | | | | A2540C, 2011 | Analyst: AK |
| Total Dissolved Solids (Residue, Filterable) | 1,050 | 10 | mg/L | 1 | 10/3/2018 12:05:00 PM |
| TOTAL ORGANIC CARBON IN WATER | | | | A5310B, 2011 | Analyst: KR |
| Total Organic Carbon | 7.0 | 3.0 | mg/L | 1 | 10/3/2018 2:28:00 PM |
| TOTAL SOLIDS IN WATER | | | | A2540B, 2011 | Analyst: AK |
| Total Solids | 980 | 6 | mg/L | 1 | 10/4/2018 |

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1809461

Date Reported: 10/17/2018

CLIENT: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

Lab Order: 1809461

Lab ID: 1809461-002

Collection Date: 9/27/2018 11:40:00 AM

Client Sample ID: MW-93-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|--|-----------|---------|------|-----------------------------|-----|-----------------------|
| CHLORIDE IN WATER | | | | 4500CL-E, 2011 | | Analyst: KP |
| Chloride | 1,250 | 50.0 | | mg/L | 10 | 9/28/2018 4:05:00 PM |
| NITRATE / NITRITE AS N IN WATER | | | | A4500-NO3-F | | Analyst: KP |
| Nitrate/Nitrite as N | < 0.400 | 0.400 | | mg/L | 1 | 10/3/2018 4:20:00 PM |
| SULFATE IN WATER | | | | 4500SO4-E,2011 | | Analyst: KP |
| SO4 | 3,680 | 500 | | mg/L | 100 | 10/1/2018 3:19:00 PM |
| METALS IN WATER BY ICP, TOTAL - N | | | | E200.7, 1994 SW3010A | | Analyst: 8727 |
| Boron | 2,010 | 100 | | ug/L | 1 | 10/15/2018 8:40:00 PM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 SW3010A | | Analyst: KR |
| Arsenic | 0.0389 | 0.00500 | | mg/L | 1 | 10/4/2018 1:40:30 AM |
| Barium | 0.0667 | 0.0100 | | mg/L | 1 | 10/4/2018 1:40:30 AM |
| Calcium | 68.9 | 0.500 | | mg/L | 1 | 10/4/2018 1:40:30 AM |
| Copper | < 0.0100 | 0.0100 | | mg/L | 1 | 10/4/2018 1:40:30 AM |
| Iron | 0.0614 | 0.0500 | | mg/L | 1 | 10/4/2018 1:40:30 AM |
| Potassium | 253 | 0.500 | | mg/L | 1 | 10/4/2018 1:40:30 AM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 10/4/2018 1:40:30 AM |
| Sodium | 2,660 | 5.00 | | mg/L | 1 | 10/4/2018 1:40:30 AM |
| ALKALINITY IN WATER | | | | A2320B, 2011 | | Analyst: CW |
| Alkalinity, Total (As CaCO3) | 270 | 12.5 | | mg CaCO3/L | 1 | 10/4/2018 12:43:00 PM |
| CHEMICAL OXYGEN DEMAND | | | | A5220D, 2011 | | Analyst: CW |
| Chemical Oxygen Demand | 81.1 | 5.00 | | mg/L | 1 | 10/1/2018 1:43:00 PM |

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1809461**

Date Reported: **10/17/2018**

CLIENT: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

Lab Order: 1809461

| | | | | | |
|--|-------|--------|------------|---------------------|-----------------------|
| HARDNESS | | | | A2340C, 2011 | Analyst: CW |
| Hardness, Calcium (As CaCO3) | 220 | 20.0 | mg CaCO3/L | 10 | 10/4/2018 9:27:00 AM |
| TOTAL PHOSPHORUS | | | | 4500P-E,2011 | Analyst: CW |
| Total Phosphorus | 0.403 | 0.0500 | mg/L | 1 | 10/2/2018 1:32:00 PM |
| TOTAL DISSOLVED SOLIDS | | | | A2540C, 2011 | Analyst: AK |
| Total Dissolved Solids (Residue, Filterable) | 8,890 | 10 | mg/L | 1 | 10/3/2018 12:05:00 PM |
| TOTAL ORGANIC CARBON IN WATER | | | | A5310B, 2011 | Analyst: KR |
| Total Organic Carbon | 17.4 | 3.0 | mg/L | 1 | 10/3/2018 2:28:00 PM |
| TOTAL SOLIDS IN WATER | | | | A2540B, 2011 | Analyst: AK |
| Total Solids | 9,000 | 6 | mg/L | 1 | 10/4/2018 |

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1809461

Date Reported: 10/17/2018

CLIENT: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

Lab Order: 1809461

Lab ID: 1809461-003

Collection Date: 9/27/2018 12:40:00 PM

Client Sample ID: MW-93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|--|-----------|---------|------|-----------------------------|----|-----------------------|
| CHLORIDE IN WATER | | | | 4500CL-E, 2011 | | Analyst: KP |
| Chloride | 426 | 50.0 | | mg/L | 10 | 9/28/2018 4:05:00 PM |
| NITRATE / NITRITE AS N IN WATER | | | | A4500-NO3-F | | Analyst: KP |
| Nitrate/Nitrite as N | 0.834 | 0.400 | | mg/L | 1 | 10/3/2018 4:20:00 PM |
| SULFATE IN WATER | | | | 4500SO4-E,2011 | | Analyst: KP |
| SO4 | 75.8 | 5.00 | | mg/L | 1 | 10/1/2018 3:19:00 PM |
| METALS IN WATER BY ICP, TOTAL - N | | | | E200.7, 1994 SW3010A | | Analyst: 8727 |
| Boron | < 100 | 100 | | ug/L | 1 | 10/15/2018 8:40:00 PM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 SW3010A | | Analyst: KR |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 10/3/2018 9:37:01 PM |
| Barium | 0.213 | 0.0100 | | mg/L | 1 | 10/3/2018 9:37:01 PM |
| Calcium | 94.8 | 0.0500 | | mg/L | 1 | 10/3/2018 9:37:01 PM |
| Copper | < 0.0100 | 0.0100 | | mg/L | 1 | 10/3/2018 9:37:01 PM |
| Iron | < 0.0500 | 0.0500 | | mg/L | 1 | 10/3/2018 9:37:01 PM |
| Potassium | 3.21 | 0.0500 | | mg/L | 1 | 10/3/2018 9:37:01 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 10/3/2018 9:37:01 PM |
| Sodium | 372 | 0.500 | | mg/L | 1 | 10/3/2018 9:37:01 PM |
| ALKALINITY IN WATER | | | | A2320B, 2011 | | Analyst: CW |
| Alkalinity, Total (As CaCO3) | 375 | 12.5 | | mg CaCO3/L | 1 | 10/4/2018 12:43:00 PM |
| CHEMICAL OXYGEN DEMAND | | | | A5220D, 2011 | | Analyst: CW |
| Chemical Oxygen Demand | 12.5 | 5.00 | | mg/L | 1 | 10/1/2018 1:43:00 PM |

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1809461**

Date Reported: **10/17/2018**

CLIENT: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

Lab Order: 1809461

| | | | | | |
|--|--------|--------|---------------------|----|-----------------------|
| HARDNESS | | | A2340C, 2011 | | Analyst: CW |
| Hardness, Calcium (As CaCO3) | 360 | 20.0 | mg CaCO3/L | 10 | 10/4/2018 9:27:00 AM |
| TOTAL PHOSPHORUS | | | 4500P-E,2011 | | Analyst: CW |
| Total Phosphorus | 0.0680 | 0.0500 | mg/L | 1 | 10/2/2018 1:32:00 PM |
| TOTAL DISSOLVED SOLIDS | | | A2540C, 2011 | | Analyst: AK |
| Total Dissolved Solids (Residue, Filterable) | 1,420 | 10 | mg/L | 1 | 10/3/2018 12:05:00 PM |
| TOTAL ORGANIC CARBON IN WATER | | | A5310B, 2011 | | Analyst: KR |
| Total Organic Carbon | 5.2 | 3.0 | mg/L | 1 | 10/3/2018 2:28:00 PM |
| TOTAL SOLIDS IN WATER | | | A2540B, 2011 | | Analyst: AK |
| Total Solids | 1,380 | 6 | mg/L | 1 | 10/4/2018 |

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1809461

Date Reported: 10/17/2018

CLIENT: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

Lab Order: 1809461

Lab ID: 1809461-004

Collection Date: 9/27/2018 1:35:00 PM

Client Sample ID: MW 03-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|--|-----------|---------|------|-----------------------------|----|-----------------------|
| CHLORIDE IN WATER | | | | 4500CL-E, 2011 | | Analyst: KP |
| Chloride | 283 | 5.00 | | mg/L | 1 | 9/28/2018 4:05:00 PM |
| NITRATE / NITRITE AS N IN WATER | | | | A4500-NO3-F | | Analyst: KP |
| Nitrate/Nitrite as N | 0.511 | 0.400 | | mg/L | 1 | 10/3/2018 4:20:00 PM |
| SULFATE IN WATER | | | | 4500SO4-E,2011 | | Analyst: KP |
| SO4 | 426 | 50.0 | | mg/L | 10 | 10/1/2018 3:19:00 PM |
| METALS IN WATER BY ICP, TOTAL - N | | | | E200.7, 1994 SW3010A | | Analyst: 8727 |
| Boron | < 100 | 100 | | ug/L | 1 | 10/15/2018 8:40:00 PM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 SW3010A | | Analyst: KR |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 10/3/2018 9:48:02 PM |
| Barium | 0.0410 | 0.0100 | | mg/L | 1 | 10/3/2018 9:48:02 PM |
| Calcium | 352 | 0.500 | | mg/L | 1 | 10/3/2018 9:48:02 PM |
| Copper | < 0.0100 | 0.0100 | | mg/L | 1 | 10/3/2018 9:48:02 PM |
| Iron | < 0.0500 | 0.0500 | | mg/L | 1 | 10/3/2018 9:48:02 PM |
| Potassium | 0.882 | 0.0500 | | mg/L | 1 | 10/3/2018 9:48:02 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 10/3/2018 9:48:02 PM |
| Sodium | 128 | 0.500 | | mg/L | 1 | 10/3/2018 9:48:02 PM |
| ALKALINITY IN WATER | | | | A2320B, 2011 | | Analyst: CW |
| Alkalinity, Total (As CaCO3) | 185 | 12.5 | | mg CaCO3/L | 1 | 10/4/2018 12:43:00 PM |
| CHEMICAL OXYGEN DEMAND | | | | A5220D, 2011 | | Analyst: CW |
| Chemical Oxygen Demand | 5.81 | 5.00 | | mg/L | 1 | 10/1/2018 1:43:00 PM |

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1809461**

Date Reported: **10/17/2018**

CLIENT: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

Lab Order: 1809461

| | | | | | |
|--|----------|--------|---------------------|----|-----------------------|
| HARDNESS | | | A2340C, 2011 | | Analyst: CW |
| Hardness, Calcium (As CaCO3) | 980 | 20.0 | mg CaCO3/L | 10 | 10/4/2018 9:27:00 AM |
| TOTAL PHOSPHORUS | | | 4500P-E,2011 | | Analyst: CW |
| Total Phosphorus | < 0.0500 | 0.0500 | mg/L | 1 | 10/2/2018 1:32:00 PM |
| TOTAL DISSOLVED SOLIDS | | | A2540C, 2011 | | Analyst: AK |
| Total Dissolved Solids (Residue, Filterable) | 1,630 | 10 | mg/L | 1 | 10/3/2018 12:05:00 PM |
| TOTAL ORGANIC CARBON IN WATER | | | A5310B, 2011 | | Analyst: KR |
| Total Organic Carbon | 3.6 | 3.0 | mg/L | 1 | 10/3/2018 2:28:00 PM |
| TOTAL SOLIDS IN WATER | | | A2540B, 2011 | | Analyst: AK |
| Total Solids | 1,740 | 6 | mg/L | 1 | 10/4/2018 |

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1809461

Date Reported: 10/17/2018

CLIENT: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

Lab Order: 1809461

Lab ID: 1809461-005

Collection Date: 9/27/2018 2:00:00 PM

Client Sample ID: Trip Blank

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|--|-----------|---------|------|-----------------------------|----|-----------------------|
| CHLORIDE IN WATER | | | | 4500CL-E, 2011 | | Analyst: KP |
| Chloride | < 5.00 | 5.00 | | mg/L | 1 | 9/28/2018 4:05:00 PM |
| NITRATE / NITRITE AS N IN WATER | | | | A4500-NO3-F | | Analyst: KP |
| Nitrate/Nitrite as N | < 0.400 | 0.400 | | mg/L | 1 | 10/3/2018 4:20:00 PM |
| SULFATE IN WATER | | | | 4500SO4-E,2011 | | Analyst: KP |
| SO4 | < 5.00 | 5.00 | | mg/L | 1 | 10/1/2018 3:19:00 PM |
| METALS IN WATER BY ICP, TOTAL - N | | | | E200.7, 1994 SW3010A | | Analyst: 8727 |
| Boron | < 100 | 100 | | ug/L | 1 | 10/15/2018 8:40:00 PM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 SW3010A | | Analyst: KR |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 10/3/2018 6:04:54 PM |
| Barium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/3/2018 6:04:54 PM |
| Calcium | < 0.0500 | 0.0500 | | mg/L | 1 | 10/3/2018 6:04:54 PM |
| Copper | < 0.0100 | 0.0100 | | mg/L | 1 | 10/3/2018 6:04:54 PM |
| Iron | < 0.0500 | 0.0500 | | mg/L | 1 | 10/3/2018 6:04:54 PM |
| Potassium | < 0.0500 | 0.0500 | | mg/L | 1 | 10/3/2018 6:04:54 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 10/3/2018 6:04:54 PM |
| Sodium | < 0.0500 | 0.0500 | | mg/L | 1 | 10/3/2018 6:04:54 PM |
| ALKALINITY IN WATER | | | | A2320B, 2011 | | Analyst: CW |
| Alkalinity, Total (As CaCO3) | < 12.5 | 12.5 | | mg CaCO3/L | 1 | 10/4/2018 12:43:00 PM |
| CHEMICAL OXYGEN DEMAND | | | | A5220D, 2011 | | Analyst: CW |
| Chemical Oxygen Demand | < 5.00 | 5.00 | | mg/L | 1 | 10/1/2018 1:43:00 PM |

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1809461**

Date Reported: **10/17/2018**

CLIENT: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

Lab Order: 1809461

| | | | | | |
|--|----------|--------|---------------------|---|-----------------------|
| HARDNESS | | | A2340C, 2011 | | Analyst: CW |
| Hardness, Calcium (As CaCO3) | < 2.00 | 2.00 | mg CaCO3/L | 1 | 10/4/2018 9:27:00 AM |
| TOTAL PHOSPHORUS | | | 4500P-E,2011 | | Analyst: CW |
| Total Phosphorus | < 0.0500 | 0.0500 | mg/L | 1 | 10/2/2018 1:32:00 PM |
| TOTAL DISSOLVED SOLIDS | | | A2540C, 2011 | | Analyst: AK |
| Total Dissolved Solids (Residue, Filterable) | 17 | 10 | mg/L | 1 | 10/3/2018 12:05:00 PM |
| TOTAL ORGANIC CARBON IN WATER | | | A5310B, 2011 | | Analyst: KR |
| Total Organic Carbon | 3.5 | 3.0 | mg/L | 1 | 10/3/2018 2:28:00 PM |
| TOTAL SOLIDS IN WATER | | | A2540B, 2011 | | Analyst: AK |
| Total Solids | 11 | 6 | mg/L | 1 | 10/4/2018 |

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |



QC SUMMARY REPORT

WO#: **1809461**
 17-Oct-18

Client: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

TestNo: 4500CI-E, 2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33788 | SampType: MBLK | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 33788 | | | | | | |
| Client ID: PBW | Batch ID: R33788 | TestNo: 4500CI-E, 201 | | Analysis Date: 9/28/2018 | SeqNo: 364253 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Chloride < 5.00 5.00

| | | | | | | | | | | | |
|------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33788 | SampType: LCS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 33788 | | | | | | |
| Client ID: LCSW | Batch ID: R33788 | TestNo: 4500CI-E, 201 | | Analysis Date: 9/28/2018 | SeqNo: 364254 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Chloride 184 5.00 200.0 0 92.2 80 120

| | | | | | | | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809454-001AMS | SampType: MS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 33788 | | | | | | |
| Client ID: BatchQC | Batch ID: R33788 | TestNo: 4500CI-E, 201 | | Analysis Date: 9/28/2018 | SeqNo: 364257 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Chloride 112 5.00 120.0 0 93.0 58.5 126

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809454-001AMSD | SampType: MSD | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 33788 | | | | | | |
| Client ID: BatchQC | Batch ID: R33788 | TestNo: 4500CI-E, 201 | | Analysis Date: 9/28/2018 | SeqNo: 364258 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Chloride 112 5.00 120.0 0 93.0 58.5 126 111.6 0.00358 4.16

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809461**

17-Oct-18

Client: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

TestNo: 4500P-E,2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33826 | SampType: MBLK | TestCode: PHOS_T | Units: mg/L | Prep Date: | RunNo: 33826 | | | | | | |
| Client ID: PBW | Batch ID: R33826 | TestNo: 4500P-E,2011 | | Analysis Date: 10/2/2018 | SeqNo: 364696 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Phosphorus | < 0.0500 | 0.0500 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33826 | SampType: LCS | TestCode: PHOS_T | Units: mg/L | Prep Date: | RunNo: 33826 | | | | | | |
| Client ID: LCSW | Batch ID: R33826 | TestNo: 4500P-E,2011 | | Analysis Date: 10/2/2018 | SeqNo: 364697 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Phosphorus | 0.723 | 0.0500 | 0.8010 | 0 | 90.3 | 50.9 | 138 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809461-001DMS | SampType: MS | TestCode: PHOS_T | Units: mg/L | Prep Date: | RunNo: 33826 | | | | | | |
| Client ID: MW-93-1 | Batch ID: R33826 | TestNo: 4500P-E,2011 | | Analysis Date: 10/2/2018 | SeqNo: 364708 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Phosphorus | 0.480 | 0.250 | 0.5000 | 0 | 96.0 | 74 | 119 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809461-001DMSD | SampType: MSD | TestCode: PHOS_T | Units: mg/L | Prep Date: | RunNo: 33826 | | | | | | |
| Client ID: MW-93-1 | Batch ID: R33826 | TestNo: 4500P-E,2011 | | Analysis Date: 10/2/2018 | SeqNo: 364709 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Phosphorus | 0.480 | 0.250 | 0.5000 | 0 | 96.0 | 74 | 119 | 0.4800 | 0 | 6.76 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809461**
 17-Oct-18

Client: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

TestNo: 4500SO4-E,2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33807 | SampType: MBLK | TestCode: SO4 | Units: mg/L | Prep Date: | RunNo: 33807 | | | | | | |
| Client ID: PBW | Batch ID: R33807 | TestNo: 4500SO4-E,2 | | Analysis Date: 10/1/2018 | SeqNo: 364498 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| SO4 | < 5.00 | 5.00 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33807 | SampType: LCS | TestCode: SO4 | Units: mg/L | Prep Date: | RunNo: 33807 | | | | | | |
| Client ID: LCSW | Batch ID: R33807 | TestNo: 4500SO4-E,2 | | Analysis Date: 10/1/2018 | SeqNo: 364498 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| SO4 | 105 | 5.00 | 100.0 | 0 | 105 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809454-001AMS | SampType: MS | TestCode: SO4 | Units: mg/L | Prep Date: | RunNo: 33807 | | | | | | |
| Client ID: BatchQC | Batch ID: R33807 | TestNo: 4500SO4-E,2 | | Analysis Date: 10/1/2018 | SeqNo: 364501 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| SO4 | 1,060 | 50.0 | 120.0 | 955.6 | 85.8 | 66 | 117 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1809454-001AMSD | SampType: MSD | TestCode: SO4 | Units: mg/L | Prep Date: | RunNo: 33807 | | | | | | |
| Client ID: BatchQC | Batch ID: R33807 | TestNo: 4500SO4-E,2 | | Analysis Date: 10/1/2018 | SeqNo: 364502 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| SO4 | 1,060 | 50.0 | 120.0 | 955.6 | 83.3 | 66 | 117 | 1,058 | 0.279 | 7.6 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809461**
 17-Oct-18

Client: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

TestNo: A2320B, 2011

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33864 | SampType: MBLK | TestCode: ALK | Units: mg CaCO3/L | Prep Date: | RunNo: 33864 | | | | | | |
| Client ID: PBW | Batch ID: R33864 | TestNo: A2320B, 2011 | | Analysis Date: 10/4/2018 | SeqNo: 365238 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Alkalinity, Total (As CaCO3) | < 2.50 | 2.50 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33864 | SampType: LCS | TestCode: ALK | Units: mg CaCO3/L | Prep Date: | RunNo: 33864 | | | | | | |
| Client ID: LCSW | Batch ID: R33864 | TestNo: A2320B, 2011 | | Analysis Date: 10/4/2018 | SeqNo: 365239 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Alkalinity, Total (As CaCO3) | 100 | 2.50 | 100.0 | 0 | 100 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809454-001ADUP | SampType: DUP | TestCode: ALK | Units: mg CaCO3/L | Prep Date: | RunNo: 33864 | | | | | | |
| Client ID: BatchQC | Batch ID: R33864 | TestNo: A2320B, 2011 | | Analysis Date: 10/4/2018 | SeqNo: 365241 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Alkalinity, Total (As CaCO3) | 340 | 12.5 | | | | | | 345.0 | 1.46 | 6.17 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809461**
 17-Oct-18

Client: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

TestNo: A2340C, 2011

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33857 | SampType: MBLK | TestCode: HARD | Units: mg CaCO3/L | Prep Date: | RunNo: 33857 | | | | | | |
| Client ID: PBW | Batch ID: R33857 | TestNo: A2340C, 2011 | | Analysis Date: 10/4/2018 | SeqNo: 365094 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Hardness, Calcium (As CaCO3) | < 2.00 | 2.00 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33857 | SampType: LCS | TestCode: HARD | Units: mg CaCO3/L | Prep Date: | RunNo: 33857 | | | | | | |
| Client ID: LCSW | Batch ID: R33857 | TestNo: A2340C, 2011 | | Analysis Date: 10/4/2018 | SeqNo: 365095 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Hardness, Calcium (As CaCO3) | 102 | 2.00 | 100.0 | 0 | 102 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809461-001BMS | SampType: MS | TestCode: HARD | Units: mg CaCO3/L | Prep Date: | RunNo: 33857 | | | | | | |
| Client ID: MW-93-1 | Batch ID: R33857 | TestNo: A2340C, 2011 | | Analysis Date: 10/4/2018 | SeqNo: 365097 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Hardness, Calcium (As CaCO3) | 1,660 | 20.0 | 1,000 | 670.0 | 99.0 | 78.7 | 109 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809461-001BMSD | SampType: MSD | TestCode: HARD | Units: mg CaCO3/L | Prep Date: | RunNo: 33857 | | | | | | |
| Client ID: MW-93-1 | Batch ID: R33857 | TestNo: A2340C, 2011 | | Analysis Date: 10/4/2018 | SeqNo: 365098 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Hardness, Calcium (As CaCO3) | 1,680 | 20.0 | 1,000 | 670.0 | 101 | 78.7 | 109 | 1,660 | 1.20 | 3.44 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809461**
 17-Oct-18

Client: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

TestNo: A2540B, 2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33842 | SampType: MBLK | TestCode: TS | Units: mg/L | Prep Date: | RunNo: 33842 | | | | | | |
| Client ID: PBW | Batch ID: R33842 | TestNo: A2540B, 2011 | | Analysis Date: 10/4/2018 | SeqNo: 365114 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Solids | < 6 | 6 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33842 | SampType: LCS | TestCode: TS | Units: mg/L | Prep Date: | RunNo: 33842 | | | | | | |
| Client ID: LCSW | Batch ID: R33842 | TestNo: A2540B, 2011 | | Analysis Date: 10/4/2018 | SeqNo: 365115 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Solids | 1,110 | 6 | 1,100 | 0 | 101 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809461-001ADUP | SampType: DUP | TestCode: TS | Units: mg/L | Prep Date: | RunNo: 33842 | | | | | | |
| Client ID: MW-93-1 | Batch ID: R33842 | TestNo: A2540B, 2011 | | Analysis Date: 10/4/2018 | SeqNo: 365117 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Total Solids | 990 | 6 | | | | | | 980 | 1 | 4.06 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809461**
 17-Oct-18

Client: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

TestNo: A2540C, 2011

| | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: MB-R33840 | SampType: MBLK | TestCode: TDS | Units: mg/L | Prep Date: | RunNo: 33840 |
| Client ID: PBW | Batch ID: R33840 | TestNo: A2540C, 2011 | | Analysis Date: 10/3/2018 | SeqNo: 365071 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |

Total Dissolved Solids (Residue, Filterable) < 10 10

| | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: LCS-R33840 | SampType: LCS | TestCode: TDS | Units: mg/L | Prep Date: | RunNo: 33840 |
| Client ID: LCSW | Batch ID: R33840 | TestNo: A2540C, 2011 | | Analysis Date: 10/3/2018 | SeqNo: 365072 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |

Total Dissolved Solids (Residue, Filterable) 993 10 1,000 0 99 80 120

| | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: 1809427-001ADUP | SampType: DUP | TestCode: TDS | Units: mg/L | Prep Date: | RunNo: 33840 |
| Client ID: BatchQC | Batch ID: R33840 | TestNo: A2540C, 2011 | | Analysis Date: 10/3/2018 | SeqNo: 365074 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |

Total Dissolved Solids (Residue, Filterable) 41,600 20 42,080 1 4.82

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809461**
 17-Oct-18

Client: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

TestNo: A4500-NO3-F

| | | | | | | | | | | | |
|-----------------------------|-------------------------|----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33854 | SampType: MBLK | TestCode: NO3_2 | Units: mg/L | Prep Date: | RunNo: 33854 | | | | | | |
| Client ID: PBW | Batch ID: R33854 | TestNo: A4500-NO3-F | | Analysis Date: 10/3/2018 | SeqNo: 364964 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Nitrate/Nitrite as N | < 0.400 | 0.400 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33854 | SampType: LCS | TestCode: NO3_2 | Units: mg/L | Prep Date: | RunNo: 33854 | | | | | | |
| Client ID: LCSW | Batch ID: R33854 | TestNo: A4500-NO3-F | | Analysis Date: 10/3/2018 | SeqNo: 364965 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Nitrate/Nitrite as N | 3.78 | 0.400 | 3.770 | 0 | 100 | 90 | 110 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809461**

17-Oct-18

Client: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

TestNo: **A5220D, 2011**

| | | | | | | | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33804 | SampType: MBLK | TestCode: COD | Units: mg/L | Prep Date: | RunNo: 33804 | | | | | | |
| Client ID: PBW | Batch ID: R33804 | TestNo: A5220D, 2011 | | Analysis Date: 10/1/2018 | SeqNo: 364448 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chemical Oxygen Demand | < 5.00 | 5.00 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33804 | SampType: LCS | TestCode: COD | Units: mg/L | Prep Date: | RunNo: 33804 | | | | | | |
| Client ID: LCSW | Batch ID: R33804 | TestNo: A5220D, 2011 | | Analysis Date: 10/1/2018 | SeqNo: 364449 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chemical Oxygen Demand | 76.0 | 5.00 | 75.00 | 0 | 101 | 90 | 110 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809402-003AMS | SampType: MS | TestCode: COD | Units: mg/L | Prep Date: | RunNo: 33804 | | | | | | |
| Client ID: BatchQC | Batch ID: R33804 | TestNo: A5220D, 2011 | | Analysis Date: 10/1/2018 | SeqNo: 364451 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chemical Oxygen Demand | 118 | 5.00 | 75.00 | 48.88 | 92.3 | 75.4 | 117 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809402-003AMSD | SampType: MSD | TestCode: COD | Units: mg/L | Prep Date: | RunNo: 33804 | | | | | | |
| Client ID: BatchQC | Batch ID: R33804 | TestNo: A5220D, 2011 | | Analysis Date: 10/1/2018 | SeqNo: 364452 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chemical Oxygen Demand | 121 | 5.00 | 75.00 | 48.88 | 96.2 | 75.4 | 117 | 118.1 | 2.43 | 7.07 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809461**

17-Oct-18

Client: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

TestNo: **A5310B, 2011**

| | | | | | | | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33873 | SampType: MBLK | TestCode: TOC | Units: mg/L | Prep Date: | RunNo: 33873 | | | | | | |
| Client ID: PBW | Batch ID: R33873 | TestNo: A5310B, 2011 | | Analysis Date: 10/3/2018 | SeqNo: 365284 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Total Organic Carbon < 3.0 3.0

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33873 | SampType: LCS | TestCode: TOC | Units: mg/L | Prep Date: | RunNo: 33873 | | | | | | |
| Client ID: LCSW | Batch ID: R33873 | TestNo: A5310B, 2011 | | Analysis Date: 10/3/2018 | SeqNo: 365285 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Total Organic Carbon 24.2 3.0 25.0 0 96.7 85 115

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809448-001BMS | SampType: MS | TestCode: TOC | Units: mg/L | Prep Date: | RunNo: 33873 | | | | | | |
| Client ID: BatchQC | Batch ID: R33873 | TestNo: A5310B, 2011 | | Analysis Date: 10/3/2018 | SeqNo: 365287 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Total Organic Carbon 29.9 3.0 20.0 7.6 112 29.2 182

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809448-001BMSD | SampType: MSD | TestCode: TOC | Units: mg/L | Prep Date: | RunNo: 33873 | | | | | | |
| Client ID: BatchQC | Batch ID: R33873 | TestNo: A5310B, 2011 | | Analysis Date: 10/3/2018 | SeqNo: 365288 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Total Organic Carbon 29.5 3.0 20.0 7.6 110 29.2 182 29.9 1.2 7.49

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809461**

17-Oct-18

Client: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

TestNo: **E200.7, 1994**

| Sample ID: MB-9441 | SampType: MBLK | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/28/2018 | RunNo: 33858 | | | | | | |
|---------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: PBW | Batch ID: 9441 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 10/3/2018 | SeqNo: 365018 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Arsenic | < 0.00500 | 0.00500 | | | | | | | | | |
| Barium | < 0.0100 | 0.0100 | | | | | | | | | |
| Calcium | < 0.0500 | 0.0500 | | | | | | | | | |
| Copper | < 0.0100 | 0.0100 | | | | | | | | | |
| Iron | < 0.0500 | 0.0500 | | | | | | | | | |
| Potassium | < 0.0500 | 0.0500 | | | | | | | | | |
| Selenium | < 0.00500 | 0.00500 | | | | | | | | | |
| Sodium | < 0.0500 | 0.0500 | | | | | | | | | |

| Sample ID: LCS-9441 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/28/2018 | RunNo: 33858 | | | | | | |
|----------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9441 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 10/3/2018 | SeqNo: 365018 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Arsenic | 2.07 | 0.00500 | 2.000 | 0 | 103 | 85 | 115 | | | | |
| Barium | 2.05 | 0.0100 | 2.000 | 0 | 103 | 85 | 115 | | | | |
| Calcium | 2.02 | 0.0500 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Copper | 2.10 | 0.0100 | 2.000 | 0 | 105 | 85 | 115 | | | | |
| Iron | 2.07 | 0.0500 | 2.000 | 0 | 104 | 85 | 115 | | | | |
| Potassium | 20.5 | 0.0500 | 20.00 | 0 | 103 | 85 | 115 | | | | |
| Selenium | 2.10 | 0.00500 | 2.000 | 0 | 105 | 85 | 115 | | | | |
| Sodium | 2.01 | 0.0500 | 2.000 | 0 | 100 | 85 | 115 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809461**

17-Oct-18

Client: A & M Engineering
Project: 1986-030-001 2nd Semi Annual

TestNo: **E200.7, 1994**

| Sample ID: 1809461-005BMS | SampType: MS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/28/2018 | RunNo: 33858 | | | | | | |
|----------------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: Trip Blank | Batch ID: 9441 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 10/3/2018 | SeqNo: 365021 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Arsenic | 2.05 | 0.00500 | 2.000 | 0 | 102 | 80.3 | 117 | | | | |
| Barium | 2.05 | 0.0100 | 2.000 | 0 | 102 | 88.4 | 109 | | | | |
| Calcium | 2.00 | 0.0500 | 2.000 | 0 | 100 | 21.9 | 163 | | | | |
| Copper | 2.08 | 0.0100 | 2.000 | 0 | 104 | 81.3 | 116 | | | | |
| Iron | 2.04 | 0.0500 | 2.000 | 0 | 102 | 72.1 | 125 | | | | |
| Potassium | 20.5 | 0.0500 | 20.00 | 0 | 102 | 87.1 | 111 | | | | |
| Selenium | 2.08 | 0.00500 | 2.000 | 0 | 104 | 78.5 | 115 | | | | |
| Sodium | 2.04 | 0.0500 | 2.000 | 0 | 102 | 48.4 | 144 | | | | |

| Sample ID: 1809461-005BMSD | SampType: MSD | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/28/2018 | RunNo: 33858 | | | | | | |
|-----------------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Client ID: Trip Blank | Batch ID: 9441 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 10/3/2018 | SeqNo: 365022 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Arsenic | 2.04 | 0.00500 | 2.000 | 0 | 102 | 80.3 | 117 | 2.048 | 0.342 | 3.26 | |
| Barium | 2.06 | 0.0100 | 2.000 | 0 | 103 | 88.4 | 109 | 2.049 | 0.341 | 3.25 | |
| Calcium | 2.02 | 0.0500 | 2.000 | 0 | 101 | 21.9 | 163 | 2.004 | 0.993 | 2.28 | |
| Copper | 2.08 | 0.0100 | 2.000 | 0 | 104 | 81.3 | 116 | 2.085 | 0.481 | 3.36 | |
| Iron | 2.05 | 0.0500 | 2.000 | 0 | 103 | 72.1 | 125 | 2.044 | 0.391 | 5.07 | |
| Potassium | 20.6 | 0.0500 | 20.00 | 0 | 103 | 87.1 | 111 | 20.47 | 0.390 | 3 | |
| Selenium | 2.07 | 0.00500 | 2.000 | 0 | 103 | 78.5 | 115 | 2.078 | 0.531 | 3.4 | |
| Sodium | 2.04 | 0.0500 | 2.000 | 0 | 102 | 48.4 | 144 | 2.038 | 0.147 | 2.93 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



Chain of Custody Record

Laboratory Number: **1809461**

| | | | | | | | |
|---|--|----------------------|--|------------------------------|--------------------------|--|--|
| Client Information: | | Billing Information: | | PO Number: | Project Name/Number: | | Page 2 of 2 |
| Company Name: ATM Engineering | | | | | 1986-030-001 | | |
| Contact Name: Ed Van Schaik | | | | Quote Number: | 2nd Semi-Annual | | Turn Time |
| Address: | | | | | Sampler's Signature | | <input type="checkbox"/> 1 Day |
| City, State Zip: | | | | Required QC Level | Ed Van Schaik | | <input type="checkbox"/> 2 Day |
| Phone Number: 918-665-6575 Ext: 227 | | Ext: | | 5th | | | <input checked="" type="checkbox"/> Standard |
| Fax Number: | | | | Bill Monthly | Shipping Method: | | <input type="checkbox"/> Other |
| E-mail Address: | | | | <input type="checkbox"/> Yes | UPS / FedEx / Airborne | | (Rush turn times will incur a surcharge.) |
| | | | | <input type="checkbox"/> No | DHL / Hand / Mail | | |

| Which Regulations Apply: | | Matrix Code: | | Container | | Pres. | Requested Tests | | | | | | | | Comments | |
|--|---------|--|----------------|-----------|---------|--------------------------------------|---|---------|----------|--------|------|------------|-----------|----------|----------|--------|
| <input type="checkbox"/> RCRA <input type="checkbox"/> POTW <input type="checkbox"/> NPDES <input type="checkbox"/> USDA/FDA <input type="checkbox"/> RECAP/RISC | | <input type="checkbox"/> Drinking Water <input type="checkbox"/> Distribution <input type="checkbox"/> Special <input type="checkbox"/> State <input type="checkbox"/> Other | | SO = Soil | O = Oil | | Boron | Calcium | Chloride | Copper | Iron | Phosphorus | Potassium | Selenium | | Sodium |
| Sample ID/Description | Date | Time | Grab/Composite | Matrix | Number | Type P=Plastic G=Glass; V=Vial | HCl, HNO ₃ , H ₂ SO ₄ , NaOH, Na ₂ SO ₄ | | | | | | | | | |
| MW 93-1 | 9-27-18 | 1040 | G | AQ | 5 | P, G | | X | X | X | X | X | X | X | X | |
| MW 93-2 | 9-27-18 | 1140 | G | AQ | 5 | P, G | | X | X | X | X | X | X | X | X | |
| MW 93-3 | 9-27-18 | 1240 | G | AQ | 5 | P, G | | X | X | X | X | X | X | X | X | |
| MW 03-1 | 9-27-18 | NS | G | AQ | 5 | P, G | | X | X | X | X | X | X | X | X | Dry |
| MW 03-2 | 9-27-18 | 1335 | G | AQ | 5 | P, G | | X | X | X | X | X | X | X | X | |
| TRIP Blank | 9-27-18 | 1400 | G | AQ | 4 | P, G | | X | X | X | X | X | X | X | X | |

GREENCOUNTRYTESTING
CHAIN OF CUSTODY
ATTACHMENT
OF 2 PAGES

| | Relinquished by | Date/Time | Received by | Date/Time | Field Notes: |
|---|----------------------|---------------------|-------------------|---------------------|--|
| 1 | Ed Van Schaik | 9-27-18 1515 | Star Jones | 9-27-18 1515 | |
| 2 | | | | | |
| 3 | | | | | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 4 | | | | | Temp: 14.6°C |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

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Tulsa, OK 74145
918-828-9977
Fax: 918-828-7756

Confirmation Sampling

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



September 07, 2018

Ed Van Schaik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: GRDA

Order No.: 1809084

Dear Ed Van Schaik:

Green Country Testing, Inc. received 2 sample(s) on 9/7/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

CC:
Accounts Payable

Original

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
 TEL: 918-828-9977 FAX: 918-828-7756
 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1809084

Date Reported: 9/7/2018

CLIENT: A & M Engineering

Lab Order: 1809084

Project: GRDA

Lab ID: 1809084-001

Collection Date: 9/6/2018 11:25:00 AM

Client Sample ID: MW 03-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

SPECIFIC CONDUCTANCE

E120.1, 1982

Analyst: **BWD**

| | | | | | | |
|-----------------------|-------|------|--|----------|----|---------------------|
| Specific Conductivity | 2,620 | 10.0 | | µmhos/cm | 10 | 9/7/2018 1:00:00 PM |
|-----------------------|-------|------|--|----------|----|---------------------|

Lab ID: 1809084-002

Collection Date: 9/6/2018 12:25:00 PM

Client Sample ID: MW 93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

SPECIFIC CONDUCTANCE

E120.1, 1982

Analyst: **BWD**

| | | | | | | |
|-----------------------|-------|------|--|----------|----|---------------------|
| Specific Conductivity | 2,380 | 10.0 | | µmhos/cm | 10 | 9/7/2018 1:00:00 PM |
|-----------------------|-------|------|--|----------|----|---------------------|

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: **1809084**
07-Sep-18

Client: A & M Engineering
Project: GRDA

TestNo: E120.1, 1982

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------------------|----------------------|---------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33464 | SampType: LCS | TestCode: COND | Units: µmhos/cm | Prep Date: | RunNo: 33464 | | | | | | |
| Client ID: LCSW | Batch ID: R33464 | TestNo: E120.1, 1982 | Analysis Date: 9/7/2018 | SeqNo: 360757 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Specific Conductivity | 103 | 1.00 | 100.0 | 0 | 103 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------------------|----------------------|---------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1808473-001ADUP | SampType: DUP | TestCode: COND | Units: µmhos/cm | Prep Date: | RunNo: 33464 | | | | | | |
| Client ID: BatchQC | Batch ID: R33464 | TestNo: E120.1, 1982 | Analysis Date: 9/7/2018 | SeqNo: 360759 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Specific Conductivity | 1,190 | 2.00 | | | | | | 1,180 | 0.507 | 3.45 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



Chain of Custody Record

Laboratory Number: **1809084**

| | | | | | | |
|---------------------|-------------------------------------|----------------------|------|------------------------------|----------------------------|---|
| Client Information: | | Billing Information: | | PO Number: | Project Name/Number: | Page 1 of 1 Turn Time <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other (Rush turn times will incur a surcharge.) |
| Company Name: | A+M Engineering | | | 1986-030-003 | GRDA | |
| Contact Name: | Ed Van Schaik | | | Quote Number: | | |
| Address: | | | | Required QC Level | Ed Van Schaik | |
| City, State Zip: | | | | Std. | Shipping Method: | |
| Phone Number: | 918-665-6575 Ext: 227 | | Ext: | Bill Monthly | UPS / FedEx / Air | |
| Fax Number: | | | | <input type="checkbox"/> Yes | (Hand) / GCT / Mail | |
| E-mail Address: | | | | <input type="checkbox"/> No | | |

| Which Regulations Apply: | | Matrix Code: | | Container | | Pres. | Requested Tests | | | | | | | | | | Comments | | | |
|-------------------------------------|---|------------------|------------------|-----------|---------------------------------------|---|-----------------|--|--|--|--|--|--|--|--|--|---|--|--|--|
| <input type="checkbox"/> RCRA | <input type="checkbox"/> Drinking Water | AQ = Aqueous | SO = Soil | Number | Type P=Plastic, G=Glass, V=Vial | HCl, HNO ₃ , H ₂ SO ₄ , NaOH, Na ₂ S ₂ O ₃ | | | | | | | | | | | 5256 GREENCOUNTRYTESTING CHAIN OF CUSTODY ATTACHMENT OF 1 PAGES | | | |
| <input type="checkbox"/> POTW | <input type="checkbox"/> Distribution | DW = Drinking | O = Oil | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> NPDES | <input type="checkbox"/> Special | WW = Waste | SL = Sludge | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> USDA/FDA | <input type="checkbox"/> State | MW = Monit. Well | F = Food | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> RECAP/RISC | <input type="checkbox"/> Other | LQ = Liquid | SW = Swab | | | | | | | | | | | | | | | | | |
| | | | SOL = Solid | | | | | | | | | | | | | | | | | |
| Sample ID/Description | Date | Time | Grab / Composite | Matrix | | | | | | | | | | | | | | | | |
| MW 03-2 | 9-6-18 | 1125 | G | AQ | 1 | P | | | | | | | | | | | | | | |
| MW 93-3 | 9-6-18 | 1225 | G | AQ | 1 | P | | | | | | | | | | | | | | |

| | Relinquished by | Date/Time | Received by | Date/Time | Field Notes: |
|---|----------------------|--------------------|--------------------|--------------------|--|
| 1 | Ed Van Schaik | 9-7-18 0921 | <i>[Signature]</i> | 9/7/18 9:21 | |
| 2 | | | | | |
| 3 | | | | | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 4 | | | | | Temp: 3.6 |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

6825 E. 38th Street
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Quarterly Monitoring

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



June 06, 2018

Tom Trebonik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: GRDA Quarterly

Order No.: 1805446

Dear Tom Trebonik:

Green Country Testing, Inc. received 5 sample(s) on 5/25/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

Original

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



Case Narrative

WO#: 1805446
Date: 6/6/2018

CLIENT: A & M Engineering
Project: GRDA Quarterly

1805446 - REDOX has been Sub Contracted.

Eh was calculated from ORP and Temperature in a formulat provided by the client.

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Analytical Report

(continuous)

WO#: **1805446**

Date Reported: **6/6/2018**

CLIENT: A & M Engineering

Lab Order: 1805446

Project: GRDA Quarterly

Lab ID: 1805446-001

Collection Date: 5/24/2018 11:10:00 AM

Client Sample ID: MW93-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|-----------------------------|--------|-------|------|----------|----|----------------------|
| EH - N | | | | | | Analyst: 8316 |
| Eh | 254 | 1.00 | | mV | 1 | 5/31/2018 3:09:00 PM |
| REDOX - N | | | | | | Analyst: 8316 |
| REDOX | 46.8 | 1.00 | | mV | 1 | 5/31/2018 3:09:00 PM |
| SPECIFIC CONDUCTANCE | | | | | | Analyst: BWD |
| Specific Conductivity | 1,290 | 2.00 | | µmhos/cm | 2 | 5/31/2018 9:00:00 AM |
| PH | | | | | | Analyst: AK |
| pH | 6.87 | 0.100 | H | pH Units | 1 | 5/25/2018 5:14:00 PM |

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

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Analytical Report

(continuous)

WO#: **1805446**

Date Reported: **6/6/2018**

CLIENT: A & M Engineering

Lab Order: 1805446

Project: GRDA Quarterly

Lab ID: 1805446-002

Collection Date: 5/24/2018 12:10:00 PM

Client Sample ID: MW93-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|-----------------------------|--------|-------|------|----------|----|----------------------|
| EH - N | | | | | | Analyst: 8316 |
| Eh | 257 | 1.00 | | mV | 1 | 5/31/2018 3:09:00 PM |
| REDOX - N | | | | | | Analyst: 8316 |
| REDOX | 49.1 | 1.00 | | mV | 1 | 5/31/2018 3:09:00 PM |
| SPECIFIC CONDUCTANCE | | | | | | Analyst: BWD |
| Specific Conductivity | 13,700 | 20.0 | | µmhos/cm | 20 | 5/31/2018 9:00:00 AM |
| PH | | | | | | Analyst: AK |
| pH | 8.92 | 0.100 | H | pH Units | 1 | 5/25/2018 5:14:00 PM |

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

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Analytical Report

(continuous)

WO#: 1805446

Date Reported: 6/6/2018

CLIENT: A & M Engineering

Lab Order: 1805446

Project: GRDA Quarterly

Lab ID: 1805446-003

Collection Date: 5/24/2018 1:05:00 PM

Client Sample ID: MW93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **KR**

| | | | | | | |
|--------|-----|-------|--|------|----|---------------------|
| Sodium | 366 | 0.500 | | mg/L | 10 | 6/4/2018 9:01:59 PM |
|--------|-----|-------|--|------|----|---------------------|

EH - N

REDOX

Analyst: **8316**

| | | | | | | |
|----|-----|------|--|----|---|----------------------|
| Eh | 268 | 1.00 | | mV | 1 | 5/31/2018 3:09:00 PM |
|----|-----|------|--|----|---|----------------------|

REDOX - N

REDOX

Analyst: **8316**

| | | | | | | |
|-------|------|------|--|----|---|----------------------|
| REDOX | 60.1 | 1.00 | | mV | 1 | 5/31/2018 3:09:00 PM |
|-------|------|------|--|----|---|----------------------|

SPECIFIC CONDUCTANCE

E120.1, 1982

Analyst: **BWD**

| | | | | | | |
|-----------------------|-------|------|--|----------|---|----------------------|
| Specific Conductivity | 2,390 | 4.00 | | µmhos/cm | 4 | 5/31/2018 9:00:00 AM |
|-----------------------|-------|------|--|----------|---|----------------------|

PH

4500H+B,2011

Analyst: **AK**

| | | | | | | |
|----|------|-------|---|----------|---|----------------------|
| pH | 6.64 | 0.100 | H | pH Units | 1 | 5/25/2018 5:14:00 PM |
|----|------|-------|---|----------|---|----------------------|

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

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Analytical Report

(continuous)

WO#: **1805446**

Date Reported: **6/6/2018**

CLIENT: A & M Engineering

Lab Order: 1805446

Project: GRDA Quarterly

Lab ID: 1805446-004

Collection Date: 5/24/2018 2:20:00 PM

Client Sample ID: MW03-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|-----------------------------|--------|-------|------|----------|----|----------------------|
| EH - N | | | | | | Analyst: 8316 |
| Eh | 269 | 1.00 | | mV | 1 | 5/31/2018 3:09:00 PM |
| REDOX - N | | | | | | Analyst: 8316 |
| REDOX | 60.8 | 1.00 | | mV | 1 | 5/31/2018 3:09:00 PM |
| SPECIFIC CONDUCTANCE | | | | | | Analyst: BWD |
| Specific Conductivity | 159 | 1.00 | | µmhos/cm | 1 | 5/31/2018 9:00:00 AM |
| PH | | | | | | Analyst: AK |
| pH | 7.03 | 0.100 | H | pH Units | 1 | 5/25/2018 5:57:00 PM |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

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Analytical Report

(continuous)

WO#: 1805446

Date Reported: 6/6/2018

CLIENT: A & M Engineering

Lab Order: 1805446

Project: GRDA Quarterly

Lab ID: 1805446-005

Collection Date: 5/24/2018 3:25:00 PM

Client Sample ID: MW03-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

CHLORIDE IN WATER

4500CL-E, 2011

Analyst: **KP**

| | | | | | | |
|----------|-----|------|--|------|----|----------------------|
| Chloride | 310 | 50.0 | | mg/L | 10 | 5/27/2018 3:27:00 PM |
|----------|-----|------|--|------|----|----------------------|

EH - N

REDOX

Analyst: **8316**

| | | | | | | |
|----|-----|------|--|----|---|----------------------|
| Eh | 266 | 1.00 | | mV | 1 | 5/31/2018 3:09:00 PM |
|----|-----|------|--|----|---|----------------------|

REDOX - N

REDOX

Analyst: **8316**

| | | | | | | |
|-------|------|------|--|----|---|----------------------|
| REDOX | 55.2 | 1.00 | | mV | 1 | 5/31/2018 3:09:00 PM |
|-------|------|------|--|----|---|----------------------|

SPECIFIC CONDUCTANCE

E120.1, 1982

Analyst: **BWD**

| | | | | | | |
|-----------------------|-------|------|--|----------|----|----------------------|
| Specific Conductivity | 2,450 | 10.0 | | µmhos/cm | 10 | 5/31/2018 9:00:00 AM |
|-----------------------|-------|------|--|----------|----|----------------------|

PH

4500H+B,2011

Analyst: **AK**

| | | | | | | |
|----|------|-------|---|----------|---|----------------------|
| pH | 6.67 | 0.100 | H | pH Units | 1 | 5/25/2018 5:57:00 PM |
|----|------|-------|---|----------|---|----------------------|

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1805446

06-Jun-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: 4500CI-E, 2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R31984 | SampType: MBLK | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 31984 | | | | | | |
| Client ID: PBW | Batch ID: R31984 | TestNo: 4500CI-E, 201 | | Analysis Date: 5/27/2018 | SeqNo: 345796 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chloride | < 5.00 | 5.00 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R31984 | SampType: LCS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 31984 | | | | | | |
| Client ID: LCSW | Batch ID: R31984 | TestNo: 4500CI-E, 201 | | Analysis Date: 5/27/2018 | SeqNo: 345797 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chloride | 205 | 5.00 | 200.0 | 0 | 102 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1805416-003AMS | SampType: MS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 31984 | | | | | | |
| Client ID: BatchQC | Batch ID: R31984 | TestNo: 4500CI-E, 201 | | Analysis Date: 5/27/2018 | SeqNo: 345804 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chloride | 578 | 50.0 | 120.0 | 503.3 | 62.0 | 57.8 | 132 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1805416-003AMSD | SampType: MSD | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 31984 | | | | | | |
| Client ID: BatchQC | Batch ID: R31984 | TestNo: 4500CI-E, 201 | | Analysis Date: 5/27/2018 | SeqNo: 345805 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chloride | 579 | 50.0 | 120.0 | 503.3 | 62.7 | 57.8 | 132 | 577.7 | 0.156 | 7.95 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1805446**
06-Jun-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: 4500H+B,2011

| | | | | | | |
|------------------------------|-------------------------|----------------------------|------------------------|-------------|---------------------------------|---|
| Sample ID: LCS-R31982 | SampType: LCS | TestCode: PH | Units: pH Units | | Prep Date: | RunNo: 31982 |
| Client ID: LCSW | Batch ID: R31982 | TestNo: 4500H+B,201 | | | Analysis Date: 5/25/2018 | SeqNo: 345780 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| pH | 9.02 | 0.100 | 9.000 | 0 | 100 | 80 120 |

| | | | | | | |
|-----------------------------------|-------------------------|----------------------------|------------------------|-------------|---------------------------------|---|
| Sample ID: 1805419-001ADUP | SampType: DUP | TestCode: PH | Units: pH Units | | Prep Date: | RunNo: 31982 |
| Client ID: BatchQC | Batch ID: R31982 | TestNo: 4500H+B,201 | | | Analysis Date: 5/25/2018 | SeqNo: 345782 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| pH | 7.76 | 0.100 | | | | 7.790 0.386 1.4 H |

| | | | | | | |
|------------------------------|-------------------------|----------------------------|------------------------|-------------|---------------------------------|---|
| Sample ID: LCS-R31983 | SampType: LCS | TestCode: PH | Units: pH Units | | Prep Date: | RunNo: 31983 |
| Client ID: LCSW | Batch ID: R31983 | TestNo: 4500H+B,201 | | | Analysis Date: 5/25/2018 | SeqNo: 345792 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| pH | 6.06 | 0.100 | 6.000 | 0 | 101 | 80 120 |

| | | | | | | |
|-----------------------------------|-------------------------|----------------------------|------------------------|-------------|---------------------------------|---|
| Sample ID: 1805446-004ADUP | SampType: DUP | TestCode: PH | Units: pH Units | | Prep Date: | RunNo: 31983 |
| Client ID: MW03-1 | Batch ID: R31983 | TestNo: 4500H+B,201 | | | Analysis Date: 5/25/2018 | SeqNo: 345794 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| pH | 7.09 | 0.100 | | | | 7.030 0.850 1.4 H |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1805446**
06-Jun-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: E120.1, 1982

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R32046 | SampType: LCS | TestCode: COND | Units: µmhos/cm | Prep Date: | RunNo: 32046 | | | | | | |
| Client ID: LCSW | Batch ID: R32046 | TestNo: E120.1, 1982 | | Analysis Date: 5/31/2018 | SeqNo: 346391 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Specific Conductivity 103 1.00 100.0 0 103 80 120

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1805416-006ADUP | SampType: DUP | TestCode: COND | Units: µmhos/cm | Prep Date: | RunNo: 32046 | | | | | | |
| Client ID: BatchQC | Batch ID: R32046 | TestNo: E120.1, 1982 | | Analysis Date: 5/31/2018 | SeqNo: 346402 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Specific Conductivity 28,100 100 28,200 0.355 2.47

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1805446-002ADUP | SampType: DUP | TestCode: COND | Units: µmhos/cm | Prep Date: | RunNo: 32046 | | | | | | |
| Client ID: MW93-2 | Batch ID: R32046 | TestNo: E120.1, 1982 | | Analysis Date: 5/31/2018 | SeqNo: 346411 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Specific Conductivity 13,900 20.0 13,660 1.74 2.47

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1805446-005ADUP | SampType: DUP | TestCode: COND | Units: µmhos/cm | Prep Date: | RunNo: 32046 | | | | | | |
| Client ID: MW03-2 | Batch ID: R32046 | TestNo: E120.1, 1982 | | Analysis Date: 5/31/2018 | SeqNo: 346415 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Specific Conductivity 2,460 10.0 2,450 0.407 2.47

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: 1805446
 06-Jun-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: E200.7, 1994

| | | | | | |
|---------------------------|-------------------------|-----------------------------|--------------------|--------------------------------|--|
| Sample ID: MB-9024 | SampType: MBLK | TestCode: MET_WW_T | Units: mg/L | Prep Date: 5/31/2018 | RunNo: 32098 |
| Client ID: PBW | Batch ID: R32098 | TestNo: E200.7, 1994 | | Analysis Date: 6/4/2018 | SeqNo: 346984 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Sodium | < 0.0500 | 0.0500 | | | |

| | | | | | |
|----------------------------|-------------------------|-----------------------------|--------------------|--------------------------------|--|
| Sample ID: LCS-9024 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 5/31/2018 | RunNo: 32098 |
| Client ID: LCSW | Batch ID: R32098 | TestNo: E200.7, 1994 | | Analysis Date: 6/4/2018 | SeqNo: 346985 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Sodium | 2.03 | 0.0500 | 2.000 | 0 | 102 85 115 |

| | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|--------------------------------|--|
| Sample ID: 1805428-002AMS | SampType: MS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 5/31/2018 | RunNo: 32098 |
| Client ID: BatchQC | Batch ID: R32098 | TestNo: E200.7, 1994 | | Analysis Date: 6/4/2018 | SeqNo: 346987 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Sodium | 11.6 | 0.0500 | 2.000 | 9.768 | 90.6 30.4 168 |

| | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|--------------------------------|--|
| Sample ID: 1805428-002AMSD | SampType: MSD | TestCode: MET_WW_T | Units: mg/L | Prep Date: 5/31/2018 | RunNo: 32098 |
| Client ID: BatchQC | Batch ID: R32098 | TestNo: E200.7, 1994 | | Analysis Date: 6/4/2018 | SeqNo: 346988 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Sodium | 11.6 | 0.0500 | 2.000 | 9.768 | 91.6 30.4 168 11.58 0.173 4.52 |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp

Green Country Testing, Inc.
6825 E 38th Street
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TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



October 04, 2018

Tom Trebonik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: GRDA Quarterly

Order No.: 1809340

Dear Tom Trebonik:

Green Country Testing, Inc. received 5 sample(s) on 9/20/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

Green Country Testing, Inc.
6825 E 38th Street
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Website: www.greencountrytesting.com



Case Narrative

WO#: 1809340
Date: 10/4/2018

CLIENT: A & M Engineering
Project: GRDA Quarterly

Report was amended on 10/4/18 due to reporting errors on -002a for pH and -001a to -003a for conductivity analysis. Nothing else was changed at this time SY 10/4/18.

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Analytical Report

(continuous)

WO#: 1809340

Date Reported: 10/4/2018

CLIENT: A & M Engineering

Lab Order: 1809340

Project: GRDA Quarterly

Lab ID: 1809340-001

Collection Date: 9/19/2018 5:20:00 PM

Client Sample ID: MW93-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|-----------------------------|--------|-------|------|----------|----|-----------------------|
| EH - N | | | | | | Analyst: BWD |
| Eh | 672 | 1.00 | | mV | 1 | 9/20/2018 12:20:00 PM |
| REDOX - N | | | | | | Analyst: BWD |
| REDOX | 462 | 0 | | mV | 1 | 9/20/2018 12:20:00 PM |
| SPECIFIC CONDUCTANCE | | | | | | Analyst: AK |
| Specific Conductivity | 1,520 | 2.00 | | µmhos/cm | 2 | 10/4/2018 11:30:00 AM |
| PH | | | | | | Analyst: AK |
| pH | 6.62 | 0.100 | | pH Units | 1 | 9/20/2018 3:21:00 PM |

Qualifiers:

| | |
|----|---|
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| R | RPD outside accepted recovery limits |
| W | Sample container temperature is out of limit as specified at testcode |

| | |
|----|--|
| M | Manual Integration used to determine area response |
| PL | Permit Limit |
| RL | Reporting Detection Limit |

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Analytical Report

(continuous)

WO#: 1809340

Date Reported: 10/4/2018

CLIENT: A & M Engineering

Lab Order: 1809340

Project: GRDA Quarterly

Lab ID: 1809340-002

Collection Date: 9/19/2018 3:00:00 PM

Client Sample ID: MW93-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|-----------------------------|--------|-------|------|----------|----|-----------------------|
| EH - N | | | | | | Analyst: BWD |
| Eh | 558 | 1.00 | | mV | 1 | 9/20/2018 12:20:00 PM |
| REDOX - N | | | | | | Analyst: BWD |
| REDOX | 348 | 0 | | mV | 1 | 9/20/2018 12:20:00 PM |
| SPECIFIC CONDUCTANCE | | | | | | Analyst: AK |
| Specific Conductivity | 15,700 | 50.0 | | µmhos/cm | 50 | 10/4/2018 11:30:00 AM |
| PH | | | | | | Analyst: AK |
| pH | 9.09 | 0.100 | H | pH Units | 1 | 9/20/2018 3:21:00 PM |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 R RPD outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 PL Permit Limit
 RL Reporting Detection Limit

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Analytical Report

(continuous)

WO#: 1809340

Date Reported: 10/4/2018

CLIENT: A & M Engineering

Lab Order: 1809340

Project: GRDA Quarterly

Lab ID: 1809340-003

Collection Date: 9/19/2018 1:35:00 PM

Client Sample ID: MW93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994 SW3010A Analyst: **KR**

| | | | | | | |
|--------|-----|-------|--|------|----|----------------------|
| Sodium | 361 | 0.500 | | mg/L | 10 | 9/25/2018 3:43:18 PM |
|--------|-----|-------|--|------|----|----------------------|

EH - N

REDOX Analyst: **BWD**

| | | | | | | |
|----|-----|------|--|----|---|-----------------------|
| Eh | 711 | 1.00 | | mV | 1 | 9/20/2018 12:20:00 PM |
|----|-----|------|--|----|---|-----------------------|

REDOX - N

REDOX Analyst: **BWD**

| | | | | | | |
|-------|-----|---|--|----|---|-----------------------|
| REDOX | 500 | 0 | | mV | 1 | 9/20/2018 12:20:00 PM |
|-------|-----|---|--|----|---|-----------------------|

SPECIFIC CONDUCTANCE

E120.1, 1982 Analyst: **AK**

| | | | | | | |
|-----------------------|-------|------|--|----------|---|-----------------------|
| Specific Conductivity | 2,110 | 5.00 | | µmhos/cm | 5 | 10/4/2018 11:30:00 AM |
|-----------------------|-------|------|--|----------|---|-----------------------|

PH

4500H+B,2011 Analyst: **AK**

| | | | | | | |
|----|------|-------|---|----------|---|----------------------|
| pH | 6.55 | 0.100 | H | pH Units | 1 | 9/20/2018 3:21:00 PM |
|----|------|-------|---|----------|---|----------------------|

Qualifiers:

| | |
|----|---|
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| R | RPD outside accepted recovery limits |
| W | Sample container temperature is out of limit as specified at testcode |

| | |
|----|--|
| M | Manual Integration used to determine area response |
| PL | Permit Limit |
| RL | Reporting Detection Limit |

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Analytical Report

(continuous)

WO#: 1809340

Date Reported: 10/4/2018

CLIENT: A & M Engineering

Lab Order: 1809340

Project: GRDA Quarterly

Lab ID: 1809340-004

Collection Date: 9/19/2018 10:30:00 AM

Client Sample ID: MW03-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

EH - N **REDOX** Analyst: **BWD**

| | | | | | | |
|----|-----|------|--|----|---|-----------------------|
| Eh | 700 | 1.00 | | mV | 1 | 9/20/2018 12:20:00 PM |
|----|-----|------|--|----|---|-----------------------|

REDOX - N **REDOX** Analyst: **BWD**

| | | | | | | |
|-------|-----|---|--|----|---|-----------------------|
| REDOX | 488 | 0 | | mV | 1 | 9/20/2018 12:20:00 PM |
|-------|-----|---|--|----|---|-----------------------|

SPECIFIC CONDUCTANCE **E120.1, 1982** Analyst: **AK**

| | | | | | | |
|-----------------------|-----|------|--|----------|---|----------------------|
| Specific Conductivity | 573 | 1.00 | | µmhos/cm | 1 | 9/20/2018 3:04:00 PM |
|-----------------------|-----|------|--|----------|---|----------------------|

PH **4500H+B,2011** Analyst: **AK**

| | | | | | | |
|----|------|-------|---|----------|---|----------------------|
| pH | 7.19 | 0.100 | H | pH Units | 1 | 9/20/2018 3:21:00 PM |
|----|------|-------|---|----------|---|----------------------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

Revision v1

Page 5 of 11

Green Country Testing, Inc.
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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1809340

Date Reported: 10/4/2018

CLIENT: A & M Engineering

Lab Order: 1809340

Project: GRDA Quarterly

Lab ID: 1809340-005

Collection Date: 9/19/2018 11:55:00 AM

Client Sample ID: MW03-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

CHLORIDE IN WATER

4500CL-E, 2011

Analyst: **KP**

| | | | | | | |
|----------|-----|------|--|------|----|----------------------|
| Chloride | 298 | 50.0 | | mg/L | 10 | 9/25/2018 1:32:00 PM |
|----------|-----|------|--|------|----|----------------------|

EH - N

REDOX

Analyst: **BWD**

| | | | | | | |
|----|-----|------|--|----|---|-----------------------|
| Eh | 725 | 1.00 | | mV | 1 | 9/20/2018 12:20:00 PM |
|----|-----|------|--|----|---|-----------------------|

REDOX - N

REDOX

Analyst: **BWD**

| | | | | | | |
|-------|-----|---|--|----|---|-----------------------|
| REDOX | 513 | 0 | | mV | 1 | 9/20/2018 12:20:00 PM |
|-------|-----|---|--|----|---|-----------------------|

SPECIFIC CONDUCTANCE

E120.1, 1982

Analyst: **AK**

| | | | | | | |
|-----------------------|-------|------|--|----------|----|----------------------|
| Specific Conductivity | 2,880 | 10.0 | | µmhos/cm | 10 | 9/20/2018 3:04:00 PM |
|-----------------------|-------|------|--|----------|----|----------------------|

PH

4500H+B,2011

Analyst: **AK**

| | | | | | | |
|----|------|-------|---|----------|---|----------------------|
| pH | 6.63 | 0.100 | H | pH Units | 1 | 9/20/2018 3:21:00 PM |
|----|------|-------|---|----------|---|----------------------|

Qualifiers:

| | |
|----|---|
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| R | RPD outside accepted recovery limits |
| W | Sample container temperature is out of limit as specified at testcode |

| | |
|----|--|
| M | Manual Integration used to determine area response |
| PL | Permit Limit |
| RL | Reporting Detection Limit |



QC SUMMARY REPORT

WO#: **1809340**
04-Oct-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: 4500CI-E, 2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33720 | SampType: MBLK | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 33720 | | | | | | |
| Client ID: PBW | Batch ID: R33720 | TestNo: 4500CI-E, 201 | | Analysis Date: 9/25/2018 | SeqNo: 363576 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Chloride < 5.00 5.00

| | | | | | | | | | | | |
|------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33720 | SampType: LCS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 33720 | | | | | | |
| Client ID: LCSW | Batch ID: R33720 | TestNo: 4500CI-E, 201 | | Analysis Date: 9/25/2018 | SeqNo: 363577 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Chloride 188 5.00 200.0 0 94.0 80 120

| | | | | | | | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809323-001AMS | SampType: MS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 33720 | | | | | | |
| Client ID: BatchQC | Batch ID: R33720 | TestNo: 4500CI-E, 201 | | Analysis Date: 9/25/2018 | SeqNo: 363579 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Chloride 120 5.00 120.0 0 100 58.5 126

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809323-001AMSD | SampType: MSD | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 33720 | | | | | | |
| Client ID: BatchQC | Batch ID: R33720 | TestNo: 4500CI-E, 201 | | Analysis Date: 9/25/2018 | SeqNo: 363580 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Chloride 119 5.00 120.0 0 99.5 58.5 126 120.0 0.534 4.16

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



QC SUMMARY REPORT

WO#: **1809340**
04-Oct-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: 4500CI-E, 2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33720 | SampType: MBLK | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 33720 | | | | | | |
| Client ID: PBW | Batch ID: R33720 | TestNo: 4500CI-E, 201 | | Analysis Date: 9/25/2018 | SeqNo: 363594 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Chloride < 5.00 5.00

| | | | | | | | | | | | |
|------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33720 | SampType: LCS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 33720 | | | | | | |
| Client ID: LCSW | Batch ID: R33720 | TestNo: 4500CI-E, 201 | | Analysis Date: 9/25/2018 | SeqNo: 363595 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Chloride 189 5.00 200.0 0 94.3 80 120

| | | | | | | | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809389-005AMS | SampType: MS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 33720 | | | | | | |
| Client ID: BatchQC | Batch ID: R33720 | TestNo: 4500CI-E, 201 | | Analysis Date: 9/25/2018 | SeqNo: 363601 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Chloride 93.0 5.00 120.0 0 77.5 58.5 126

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809389-005AMSD | SampType: MSD | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 33720 | | | | | | |
| Client ID: BatchQC | Batch ID: R33720 | TestNo: 4500CI-E, 201 | | Analysis Date: 9/25/2018 | SeqNo: 363602 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

Chloride 113 5.00 120.0 0 94.4 58.5 126 92.98 19.7 4.16 R

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



QC SUMMARY REPORT

WO#: **1809340**
04-Oct-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: 4500H+B,2011

| | | | | | | | | | | | |
|------------------------------|-------------------------|----------------------------|---------------------------------|----------------------|---------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33674 | SampType: LCS | TestCode: PH | Units: pH Units | Prep Date: | RunNo: 33674 | | | | | | |
| Client ID: LCSW | Batch ID: R33674 | TestNo: 4500H+B,201 | Analysis Date: 9/20/2018 | SeqNo: 363096 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| pH | 9.00 | 0.100 | 9.000 | 0 | 100 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|----------------------------|---------------------------------|----------------------|---------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1809340-001ADUP | SampType: DUP | TestCode: PH | Units: pH Units | Prep Date: | RunNo: 33674 | | | | | | |
| Client ID: MW93-1 | Batch ID: R33674 | TestNo: 4500H+B,201 | Analysis Date: 9/20/2018 | SeqNo: 363098 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| pH | 6.64 | 0.100 | | | | | | 6.620 | 0.302 | 1.4 | |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



QC SUMMARY REPORT

WO#: **1809340**
04-Oct-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: E120.1, 1982

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33672 | SampType: LCS | TestCode: COND | Units: µmhos/cm | Prep Date: | RunNo: 33672 | | | | | | |
| Client ID: LCSW | Batch ID: R33672 | TestNo: E120.1, 1982 | | Analysis Date: 9/20/2018 | SeqNo: 363065 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Specific Conductivity | 100 | 1.00 | 100.0 | 0 | 100 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|------------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33862 | SampType: LCS | TestCode: COND | Units: µmhos/cm | Prep Date: | RunNo: 33862 | | | | | | |
| Client ID: LCSW | Batch ID: R33862 | TestNo: E120.1, 1982 | | Analysis Date: 10/4/2018 | SeqNo: 365162 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Specific Conductivity | 105 | 1.00 | 100.0 | 0 | 105 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|------------------------|---------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1809364-001ADUP | SampType: DUP | TestCode: COND | Units: µmhos/cm | Prep Date: | RunNo: 33862 | | | | | | |
| Client ID: BatchQC | Batch ID: R33862 | TestNo: E120.1, 1982 | | Analysis Date: 10/4/2018 | SeqNo: 365167 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Specific Conductivity | 50,400 | 100 | | | | | | 50,200 | 0.398 | 3.45 | |

Qualifiers: H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



QC SUMMARY REPORT

WO#: **1809340**
04-Oct-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: E200.7, 1994

| | | | | | | | | | | | |
|---------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-9419 | SampType: MBLK | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/21/2018 | RunNo: 33737 | | | | | | |
| Client ID: PBW | Batch ID: 9419 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 9/25/2018 | SeqNo: 363719 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Sodium | < 0.0500 | 0.0500 | | | | | | | | | |

| | | | | | | | | | | | |
|----------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-9419 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/21/2018 | RunNo: 33737 | | | | | | |
| Client ID: LCSW | Batch ID: 9419 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 9/25/2018 | SeqNo: 363720 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Sodium | 1.99 | 0.0500 | 2.000 | 0 | 99.4 | 85 | 115 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809313-001CMS | SampType: MS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/21/2018 | RunNo: 33737 | | | | | | |
| Client ID: BatchQC | Batch ID: 9419 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 9/25/2018 | SeqNo: 363722 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Sodium | 14.4 | 0.0500 | 2.000 | 12.82 | 80.5 | 48.4 | 144 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809313-001CMSD | SampType: MSD | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/21/2018 | RunNo: 33737 | | | | | | |
| Client ID: BatchQC | Batch ID: 9419 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 9/25/2018 | SeqNo: 363723 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Sodium | 14.6 | 0.0500 | 2.000 | 12.82 | 90.5 | 48.4 | 144 | 14.43 | 1.38 | 2.93 | |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



Chain of Custody Record

Laboratory Number: **709340**

| | | | | |
|---|----------------------|---|---|---|
| Company Name: A+M Engineering | Billing Information: | PO Number: 1986-030-002 | Project Name/Number: GRDA Quarterly | Page 1 of 1 |
| Contact Name: Tom Trebanik/Ed Van Schaik | | Quote Number: | Sampler's Signature: Ed Van Schaik | |
| Address: | | Required QC Level: Std | Shipping Method: Hand | (Rush turn times will incur a surcharge.) |
| City, State Zip: | | Bill Monthly: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | UPS / FedEx / Airborne DHL / Sherry / Hand / Mail | |
| Phone Number: 918-665-6575 Ext: | Ext: | | | |
| Fax Number: | | | | |
| E-mail Address: | | | | |

| Which Regulations Apply: | Matrix Code: | Container | | Pres. | Requested Tests | | | | Comments | |
|---|---|-----------|---------------------------------------|--------|---|----|----------------|-----|--|-----------------|
| | | Number | Type P=Plastic, G=Glass, V=Vial | | HCl, HNO ₃ , H ₂ SO ₄ , NaOH, Na ₂ S ₂ O ₃ | pH | Specific Cond. | ORP | | Sodium Chloride |
| <input type="checkbox"/> RCRA <input type="checkbox"/> Drinking Water <input type="checkbox"/> POTW <input type="checkbox"/> Distribution <input type="checkbox"/> NPDES <input type="checkbox"/> Special <input type="checkbox"/> USDA/FDA <input type="checkbox"/> State <input type="checkbox"/> RECAP/RISC <input type="checkbox"/> Other | SO = Soil AQ = Aqueous DW = Drinking WW = Waste MW = Monit. Well LQ = Liquid O = Oil SL = Sludge F = Food SW = Swab SOL = Solid | | | | | | | | GREENCOUNTRY TESTING CHAIN OF CUSTODY ATTACHMENT 1 OF 1 PAGES | |
| Sample ID/Description | Date | Time | Grab/Composite | Matrix | | | | | | |
| MW 93-1 | 9-19-18 | 1720 | G | AQ | 1 | P | X | X | | X |
| MW 93-2 | 9-19-18 | 1500 | G | AQ | 1 | P | X | X | | X |
| MW 93-3 | 9-19-18 | 1335 | G | AQ | 2 | P | X | X | | X |
| MW 03-1 | 9-19-18 | 1030 | G | AQ | 1 | P | X | X | | X |
| MW 03-2 | 9-19-18 | 1155 | G | AQ | 1 | P | X | X | X | |

| | | | | | |
|---|---------------------------------------|--------------------------------|---------------------------------|--------------------------------|--|
| | Relinquished by: Ed Van Schaik | Date/Time: 9-20-18 0944 | Received by: [Signature] | Date/Time: 9/20/18 9:44 | Field Notes: |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 4 | | | | | Temp: 3.1 |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

6825 E. 38th Street
Tulsa, OK 74145
918-828-9977
Fax: 918-828-7756

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



December 13, 2018

Tom Trebonik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: GRDA Quarterly

Order No.: 1811346

Dear Tom Trebonik:

Green Country Testing, Inc. received 5 sample(s) on 11/28/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

Original

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
 TEL: 918-828-9977 FAX: 918-828-7756
 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1811346

Date Reported: 12/13/2018

CLIENT: A & M Engineering

Lab Order: 1811346

Project: GRDA Quarterly

Lab ID: 1811346-001

Collection Date: 11/27/2018 3:30:00 PM

Client Sample ID: MW93-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|-----------------------------|--------|-------|------|----------|----|-----------------------|
| EH - N | | | | | | Analyst: BWD |
| Eh | 634 | 1.00 | | mV | 1 | 11/29/2018 7:30:00 AM |
| REDOX - N | | | | | | Analyst: BWD |
| REDOX | 425 | 0 | | mV | 1 | 11/29/2018 7:30:00 AM |
| SPECIFIC CONDUCTANCE | | | | | | Analyst: AK |
| Specific Conductivity | 1,730 | 10.0 | | µmhos/cm | 10 | 12/3/2018 2:59:00 PM |
| PH | | | | | | Analyst: AK |
| pH | 6.70 | 0.100 | | pH Units | 1 | 11/28/2018 3:20:00 PM |

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1811346

Date Reported: 12/13/2018

CLIENT: A & M Engineering

Lab Order: 1811346

Project: GRDA Quarterly

Lab ID: 1811346-002

Collection Date: 11/27/2018 2:40:00 PM

Client Sample ID: MW93-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|-----------------------------|--------|-------|------|----------|----|-----------------------|
| EH - N | | | | | | Analyst: BWD |
| Eh | 464 | 1.00 | | mV | 1 | 11/29/2018 7:30:00 AM |
| REDOX - N | | | | | | Analyst: BWD |
| REDOX | 255 | 0 | | mV | 1 | 11/29/2018 7:30:00 AM |
| SPECIFIC CONDUCTANCE | | | | | | Analyst: AK |
| Specific Conductivity | 14,900 | 20.0 | | µmhos/cm | 20 | 12/3/2018 2:59:00 PM |
| PH | | | | | | Analyst: AK |
| pH | 8.91 | 0.100 | H | pH Units | 1 | 11/28/2018 3:20:00 PM |

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1811346

Date Reported: 12/13/2018

CLIENT: A & M Engineering

Lab Order: 1811346

Project: GRDA Quarterly

Lab ID: 1811346-003

Collection Date: 11/27/2018 1:50:00 PM

Client Sample ID: MW93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994 SW3010A Analyst: **KR**

| | | | | | | |
|--------|-----|-------|--|------|----|----------------------|
| Sodium | 394 | 0.500 | | mg/L | 10 | 12/4/2018 4:17:47 PM |
|--------|-----|-------|--|------|----|----------------------|

EH - N

REDOX Analyst: **BWD**

| | | | | | | |
|----|-----|------|--|----|---|-----------------------|
| Eh | 610 | 1.00 | | mV | 1 | 11/29/2018 7:30:00 AM |
|----|-----|------|--|----|---|-----------------------|

REDOX - N

REDOX Analyst: **BWD**

| | | | | | | |
|-------|-----|---|--|----|---|-----------------------|
| REDOX | 401 | 0 | | mV | 1 | 11/29/2018 7:30:00 AM |
|-------|-----|---|--|----|---|-----------------------|

SPECIFIC CONDUCTANCE

E120.1, 1982 Analyst: **AK**

| | | | | | | |
|-----------------------|-------|------|--|----------|----|----------------------|
| Specific Conductivity | 2,770 | 10.0 | | µmhos/cm | 10 | 12/3/2018 2:59:00 PM |
|-----------------------|-------|------|--|----------|----|----------------------|

PH

4500H+B,2011 Analyst: **AK**

| | | | | | | |
|----|------|-------|---|----------|---|-----------------------|
| pH | 6.74 | 0.100 | H | pH Units | 1 | 11/28/2018 3:20:00 PM |
|----|------|-------|---|----------|---|-----------------------|

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

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Analytical Report

(continuous)

WO#: 1811346

Date Reported: 12/13/2018

CLIENT: A & M Engineering

Lab Order: 1811346

Project: GRDA Quarterly

Lab ID: 1811346-004

Collection Date: 11/27/2018 11:30:00 AM

Client Sample ID: MW03-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|-----------------------------|--------|-------|------|----------|----|-----------------------|
| EH - N | | | | | | Analyst: BWD |
| Eh | 596 | 1.00 | | mV | 1 | 11/29/2018 7:30:00 AM |
| REDOX - N | | | | | | Analyst: BWD |
| REDOX | 387 | 0 | | mV | 1 | 11/29/2018 7:30:00 AM |
| SPECIFIC CONDUCTANCE | | | | | | Analyst: AK |
| Specific Conductivity | 293 | 1.00 | | µmhos/cm | 1 | 12/3/2018 2:59:00 PM |
| PH | | | | | | Analyst: AK |
| pH | 7.10 | 0.100 | H | pH Units | 1 | 11/28/2018 3:20:00 PM |

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

Green Country Testing, Inc.
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Analytical Report

(continuous)

WO#: 1811346

Date Reported: 12/13/2018

CLIENT: A & M Engineering
Project: GRDA Quarterly

Lab Order: 1811346

Lab ID: 1811346-005

Collection Date: 11/27/2018 1:00:00 PM

Client Sample ID: MW03-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

CHLORIDE IN WATER

4500CL-E, 2011

Analyst: **BG**

| | | | | | | |
|----------|-----|------|--|------|----|-----------------------|
| Chloride | 352 | 50.0 | | mg/L | 10 | 11/28/2018 4:29:00 PM |
|----------|-----|------|--|------|----|-----------------------|

EH - N

REDOX

Analyst: **BWD**

| | | | | | | |
|----|-----|------|--|----|---|-----------------------|
| Eh | 614 | 1.00 | | mV | 1 | 11/29/2018 7:30:00 AM |
|----|-----|------|--|----|---|-----------------------|

REDOX - N

REDOX

Analyst: **BWD**

| | | | | | | |
|-------|-----|---|--|----|---|-----------------------|
| REDOX | 405 | 0 | | mV | 1 | 11/29/2018 7:30:00 AM |
|-------|-----|---|--|----|---|-----------------------|

SPECIFIC CONDUCTANCE

E120.1, 1982

Analyst: **AK**

| | | | | | | |
|-----------------------|-------|------|--|----------|----|----------------------|
| Specific Conductivity | 2,990 | 10.0 | | µmhos/cm | 10 | 12/3/2018 2:59:00 PM |
|-----------------------|-------|------|--|----------|----|----------------------|

PH

4500H+B,2011

Analyst: **AK**

| | | | | | | |
|----|------|-------|---|----------|---|-----------------------|
| pH | 6.56 | 0.100 | H | pH Units | 1 | 11/28/2018 3:20:00 PM |
|----|------|-------|---|----------|---|-----------------------|

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1811346
 13-Dec-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: 4500CI-E, 2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R34579 | SampType: MBLK | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 34579 | | | | | | |
| Client ID: PBW | Batch ID: R34579 | TestNo: 4500CI-E, 201 | | Analysis Date: 11/28/2018 | SeqNo: 373110 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chloride | < 5.00 | 5.00 | | | | | | | | | |

| | | | | | | | | | | | |
|-------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS 1 | SampType: LCS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 34579 | | | | | | |
| Client ID: LCSW | Batch ID: R34579 | TestNo: 4500CI-E, 201 | | Analysis Date: 11/28/2018 | SeqNo: 373111 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chloride | 184 | 5.00 | 200.0 | 0 | 91.9 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|-------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS 2 | SampType: LCS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 34579 | | | | | | |
| Client ID: LCSW | Batch ID: R34579 | TestNo: 4500CI-E, 201 | | Analysis Date: 11/28/2018 | SeqNo: 373113 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chloride | 184 | 5.00 | 200.0 | 0 | 91.8 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|-------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS 3 | SampType: LCS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 34579 | | | | | | |
| Client ID: LCSW | Batch ID: R34579 | TestNo: 4500CI-E, 201 | | Analysis Date: 11/28/2018 | SeqNo: 373114 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chloride | 181 | 5.00 | 200.0 | 0 | 90.3 | 80 | 120 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: 1811346
 13-Dec-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: 4500CI-E, 2011

| | | | | | | | | | | | |
|-------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS 4 | SampType: LCS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 34579 | | | | | | |
| Client ID: LCSW | Batch ID: R34579 | TestNo: 4500CI-E, 201 | | Analysis Date: 11/28/2018 | SeqNo: 373115 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chloride | 184 | 5.00 | 200.0 | 0 | 91.8 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1811296-001AMS | SampType: MS | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 34579 | | | | | | |
| Client ID: BatchQC | Batch ID: R34579 | TestNo: 4500CI-E, 201 | | Analysis Date: 11/28/2018 | SeqNo: 373120 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chloride | 110 | 5.00 | 120.0 | 0 | 91.9 | 58.5 | 126 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1811296-001AMSD | SampType: MSD | TestCode: CHLOR | Units: mg/L | Prep Date: | RunNo: 34579 | | | | | | |
| Client ID: BatchQC | Batch ID: R34579 | TestNo: 4500CI-E, 201 | | Analysis Date: 11/28/2018 | SeqNo: 373121 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Chloride | 110 | 5.00 | 120.0 | 0 | 91.4 | 58.5 | 126 | 110.3 | 0.547 | 4.16 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: 1811346
 13-Dec-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: 4500H+B,2011

| | | | | | | | | | | | |
|------------------------------|-------------------------|----------------------------|----------------------------------|----------------------|---------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R34590 | SampType: LCS | TestCode: PH | Units: pH Units | Prep Date: | RunNo: 34590 | | | | | | |
| Client ID: LCSW | Batch ID: R34590 | TestNo: 4500H+B,201 | Analysis Date: 11/28/2018 | SeqNo: 373194 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| pH | 6.03 | 0.100 | 6.000 | 0 | 101 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|----------------------------|----------------------------------|----------------------|---------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1811346-001ADUP | SampType: DUP | TestCode: PH | Units: pH Units | Prep Date: | RunNo: 34590 | | | | | | |
| Client ID: MW93-1 | Batch ID: R34590 | TestNo: 4500H+B,201 | Analysis Date: 11/28/2018 | SeqNo: 373196 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| pH | 6.71 | 0.100 | | | | | | 6.700 | 0.149 | 1.4 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: 1811346
 13-Dec-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: E120.1, 1982

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|---------------------------------|----------------------|---------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R34635 | SampType: LCS | TestCode: COND | Units: µmhos/cm | Prep Date: | RunNo: 34635 | | | | | | |
| Client ID: LCSW | Batch ID: R34635 | TestNo: E120.1, 1982 | Analysis Date: 12/3/2018 | SeqNo: 373729 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Specific Conductivity | 104 | 1.00 | 100.0 | 0 | 104 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|---------------------------------|----------------------|---------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1811346-001ADUP | SampType: DUP | TestCode: COND | Units: µmhos/cm | Prep Date: | RunNo: 34635 | | | | | | |
| Client ID: MW93-1 | Batch ID: R34635 | TestNo: E120.1, 1982 | Analysis Date: 12/3/2018 | SeqNo: 373731 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Specific Conductivity | 1,740 | 10.0 | | | | | | 1,734 | 0.115 | 3.45 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: 1811346
 13-Dec-18

Client: A & M Engineering
Project: GRDA Quarterly

TestNo: E200.7, 1994

| | | | | | |
|---------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: MB-9654 | SampType: MBLK | TestCode: MET_WW_T | Units: mg/L | Prep Date: 11/30/2018 | RunNo: 34656 |
| Client ID: PBW | Batch ID: 9654 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 12/4/2018 | SeqNo: 373913 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Sodium | < 0.0500 | 0.0500 | | | |

| | | | | | |
|----------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: LCS-9654 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 11/30/2018 | RunNo: 34656 |
| Client ID: LCSW | Batch ID: 9654 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 12/4/2018 | SeqNo: 373914 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Sodium | 2.04 | 0.0500 | 2.000 | 0 | 102 85 115 |

| | | | | | |
|----------------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: 1811359-001AMS | SampType: MS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 11/30/2018 | RunNo: 34656 |
| Client ID: BatchQC | Batch ID: 9654 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 12/4/2018 | SeqNo: 373916 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Sodium | 30.5 | 0.0500 | 2.000 | 28.69 | 92.0 48.4 144 |

| | | | | | |
|-----------------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: 1811359-001AMSD | SampType: MSD | TestCode: MET_WW_T | Units: mg/L | Prep Date: 11/30/2018 | RunNo: 34656 |
| Client ID: BatchQC | Batch ID: 9654 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 12/4/2018 | SeqNo: 373917 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Sodium | 30.4 | 0.0500 | 2.000 | 28.69 | 84.5 48.4 144 30.53 0.493 2.93 |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



Chain of Custody Record

Laboratory Number: 811344

| | | | |
|---|----------------------|---|---|
| Company Name: <u>A+M Engineering</u> | Billing Information: | PO Number: <u>1986-030-003</u> | Project Name/Number: <u>GRDA Quarterly</u> |
| Contact Name: <u>Tom Trebicki / Ed Van Schaik</u> | | Quote Number: | Page <u>1</u> of <u>1</u> |
| Address: | | Required QC Level: <u>Std</u> | Turn Time <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other |
| City, State Zip: | | Bill Monthly <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Sampler's Signature: <u>Ed Van Schaik</u> |
| Phone Number: <u>918-665-6575</u> Ext: <u>227</u> | Ext: | Shipping Method: <input checked="" type="checkbox"/> Hand / GCT / Mail <input type="checkbox"/> UPS / FedEx / Air | (Rush turn times will incur a surcharge.) |
| Fax Number: | | | |
| E-mail Address: | | | |

| Which Regulations Apply: | | Matrix Code: | | Container | | Pres. | Requested Tests | | | | Comments | |
|-------------------------------------|---|------------------|------------------|-----------|---------------------------------------|---|-----------------|----------------|-----|-----------------|----------|--|
| <input type="checkbox"/> RCRA | <input type="checkbox"/> Drinking Water | AQ = Aqueous | SO = Soil | Number | Type P=Plastic, G=Glass, V=Vial | HCl, HNO ₃ , H ₂ SO ₄ , NaOH, Na ₂ SO ₄ | PH | Specific Cond. | DRP | Sodium Chloride | | |
| <input type="checkbox"/> POTW | <input type="checkbox"/> Distribution | DW = Drinking | O = Oil | | | | | | | | | |
| <input type="checkbox"/> NPDES | <input type="checkbox"/> Special | WW = Waste | SL = Sludge | | | | | | | | | |
| <input type="checkbox"/> USDA/FDA | <input type="checkbox"/> State | MW = Monit. Well | F = Food | | | | | | | | | |
| <input type="checkbox"/> RECAP/RISC | <input type="checkbox"/> Other | LQ = Liquid | SW = Swab | | | | | | | | | |
| | | | SOL = Solid | | | | | | | | | |
| Sample ID/Description | Date | Time | Grab / Composite | Matrix | | | | | | | | |
| MW 93-1 | 11-27-18 | 1530 | G | AQ | 1 | P | X | X | X | | | |
| MW 93-2 | 11-27-18 | 1440 | G | AQ | 1 | P | X | X | X | | | |
| MW 93-3 | 11-27-18 | 1350 | G | AQ | 2 | P | X | X | X | X | | |
| MW 03-1 | 11-27-18 | 1130 | G | AQ | 1 | P | X | X | X | | | |
| MW 03-2 | 11-27-18 | 1300 | G | AQ | 1 | P | X | X | X | X | | |

5430
GREENCOUNTRYTESTING
CHAIN OF CUSTODY
ATTACHMENT
OF PAGES

| | Relinquished by | Date/Time | Received by | Date/Time | Field Notes: |
|---|----------------------|----------------------|--------------------|----------------------|--|
| 1 | <u>Ed Van Schaik</u> | <u>11-28-18 0950</u> | <u>[Signature]</u> | <u>11/28/18 0950</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Temp: <u>3</u> |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

6825 E. 38th Street
Tulsa, OK 74145
918-828-9977
Fax: 918-828-7756

Monthly Monitoring for Appendix B Constituents

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



June 29, 2018

Tom Trebonik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: GRDA Monthly Assessment

Order No.: 1805445

Dear Tom Trebonik:

Green Country Testing, Inc. received 6 sample(s) on 5/25/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

Original

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



Case Narrative

WO#: 1805445
Date: 6/29/2018

CLIENT: A & M Engineering
Project: GRDA Monthly Assessment

180544 - Lithium, Radium-226 and Radium-228 has been Sub Contracted.

Green Country Testing, Inc.
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Analytical Report

(continuous)

WO#: 1805445

Date Reported: 6/29/2018

CLIENT: A & M Engineering

Lab Order: 1805445

Project: GRDA Monthly Assessment

Lab ID: 1805445-001

Collection Date: 5/24/2018 11:05:00 AM

Client Sample ID: MW93-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **JF**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 5/31/2018 2:31:00 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|---------------------|
| Lithium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/6/2018 6:53:00 PM |
|---------|----------|--------|--|------|---|---------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|---------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:34:03 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 9:34:03 PM |
| Barium | 0.0246 | 0.0100 | | mg/L | 1 | 6/4/2018 9:34:03 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:34:03 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 6/4/2018 9:34:03 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:34:03 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:34:03 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 9:34:03 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:34:03 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 9:34:03 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:34:03 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|------|--|-------|---|----------------------|
| Total Radium by Calculation | 0.666+/-0.716 | 1.31 | | pCi/L | 1 | 6/28/2018 2:25:00 PM |
|-----------------------------|---------------|------|--|-------|---|----------------------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|----------------------|
| Radium-226 | 0.209+/-0.319 | 0.513 | | pCi/L | 1 | 6/22/2028 1:27:00 PM |
|------------|---------------|-------|--|-------|---|----------------------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|----------------------|
| Radium-228 | 0.457+/-0.397 | 0.801 | | pCi/L | 1 | 6/26/2018 3:16:00 PM |
|------------|---------------|-------|--|-------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

Green Country Testing, Inc.
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 Tulsa, OK 74145
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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: **1805445**

Date Reported: **6/29/2018**

CLIENT: A & M Engineering

Lab Order: 1805445

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 5/29/2018 10:51:00 AM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1805445

Date Reported: 6/29/2018

CLIENT: A & M Engineering

Lab Order: 1805445

Project: GRDA Monthly Assessment

Lab ID: 1805445-002

Collection Date: 5/24/2018 12:10:00 PM

Client Sample ID: MW93-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **JF**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 5/31/2018 2:31:00 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|--------|--------|--|------|---|---------------------|
| Lithium | 0.0302 | 0.0100 | | mg/L | 1 | 6/6/2018 6:53:00 PM |
|---------|--------|--------|--|------|---|---------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|---------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:39:24 PM |
| Arsenic | 0.0292 | 0.00500 | | mg/L | 1 | 6/4/2018 9:39:24 PM |
| Barium | 0.0604 | 0.0100 | | mg/L | 1 | 6/4/2018 9:39:24 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:39:24 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 6/4/2018 9:39:24 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:39:24 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:39:24 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 9:39:24 PM |
| Molybdenum | 1.40 | 0.0100 | | mg/L | 1 | 6/4/2018 9:39:24 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 9:39:24 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:39:24 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|------|--|-------|---|----------------------|
| Total Radium by Calculation | 1.44+/-0.860 | 1.39 | | pCi/L | 1 | 6/28/2018 2:25:00 PM |
|-----------------------------|--------------|------|--|-------|---|----------------------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|----------------------|
| Radium-226 | 0.252+/-0.304 | 0.463 | | pCi/L | 1 | 6/22/2018 1:27:00 PM |
|------------|---------------|-------|--|-------|---|----------------------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|--------------|-------|--|-------|---|----------------------|
| Radium-228 | 1.19+/-0.556 | 0.928 | | pCi/L | 1 | 6/26/2018 3:16:00 PM |
|------------|--------------|-------|--|-------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1805445**

Date Reported: **6/29/2018**

CLIENT: A & M Engineering

Lab Order: 1805445

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|-------|-------|------|---|-----------------------|
| Fluoride | 0.937 | 0.200 | mg/L | 1 | 5/29/2018 10:51:00 AM |
|----------|-------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1805445

Date Reported: 6/29/2018

CLIENT: A & M Engineering

Lab Order: 1805445

Project: GRDA Monthly Assessment

Lab ID: 1805445-003

Collection Date: 5/24/2018 1:00:00 PM

Client Sample ID: MW93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **JF**

| | | | | | | |
|---------|----------|-----------|--|------|---|----------------------|
| Mercury | 0.000787 | 0.0000500 | | mg/L | 1 | 5/31/2018 2:31:00 PM |
|---------|----------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|-----|--------|--|------|---|---------------------|
| Lithium | 178 | 0.0100 | | mg/L | 1 | 6/6/2018 6:53:00 PM |
|---------|-----|--------|--|------|---|---------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|---------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:50:04 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 9:50:04 PM |
| Barium | 0.214 | 0.0100 | | mg/L | 1 | 6/4/2018 9:50:04 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:50:04 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 6/4/2018 9:50:04 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:50:04 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:50:04 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 9:50:04 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:50:04 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 9:50:04 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:50:04 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|------|--|-------|---|----------------------|
| Total Radium by Calculation | 0.422+/-0.726 | 1.49 | | pCi/L | 1 | 6/28/2018 2:25:00 PM |
|-----------------------------|---------------|------|--|-------|---|----------------------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|----------------------|
| Radium-226 | 0.121+/-0.290 | 0.560 | | pCi/L | 1 | 6/22/2028 1:27:00 PM |
|------------|---------------|-------|--|-------|---|----------------------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|----------------------|
| Radium-228 | 0.321+/-0.436 | 0.931 | | pCi/L | 1 | 6/26/2018 3:16:00 PM |
|------------|---------------|-------|--|-------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: **1805445**

Date Reported: **6/29/2018**

CLIENT: A & M Engineering

Lab Order: 1805445

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|-------|-------|------|---|-----------------------|
| Fluoride | 0.230 | 0.200 | mg/L | 1 | 5/29/2018 10:51:00 AM |
|----------|-------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1805445

Date Reported: 6/29/2018

CLIENT: A & M Engineering

Lab Order: 1805445

Project: GRDA Monthly Assessment

Lab ID: 1805445-004

Collection Date: 5/24/2018 2:15:00 PM

Client Sample ID: MW03-01

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **JF**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 5/31/2018 2:31:00 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|---------------------|
| Lithium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/6/2018 6:53:00 PM |
|---------|----------|--------|--|------|---|---------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|---------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:55:27 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 9:55:27 PM |
| Barium | 0.0519 | 0.0100 | | mg/L | 1 | 6/4/2018 9:55:27 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:55:27 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 6/4/2018 9:55:27 PM |
| Calcium | 22.2 | 0.0500 | | mg/L | 1 | 6/4/2018 9:55:27 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:55:27 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:55:27 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 9:55:27 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:55:27 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 9:55:27 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 9:55:27 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|------|--|-------|---|----------------------|
| Total Radium by Calculation | 1.19+/-0.845 | 1.38 | | pCi/L | 1 | 6/28/2018 2:25:00 PM |
|-----------------------------|--------------|------|--|-------|---|----------------------|

RADIUM - N

E903.1

Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|----------------------|
| Radium-226 | 0.358+/-0.374 | 0.527 | | pCi/L | 1 | 6/22/2018 1:27:00 PM |
|------------|---------------|-------|--|-------|---|----------------------|

RADIUM - N

E904.0

Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|----------------------|
| Radium-228 | 0.835+/-0.471 | 0.848 | | pCi/L | 1 | 6/26/2018 3:16:00 PM |
|------------|---------------|-------|--|-------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1805445**

Date Reported: **6/29/2018**

CLIENT: A & M Engineering

Lab Order: 1805445

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 5/29/2018 10:51:00 AM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1805445

Date Reported: 6/29/2018

CLIENT: A & M Engineering

Lab Order: 1805445

Project: GRDA Monthly Assessment

Lab ID: 1805445-005

Collection Date: 5/24/2018 3:20:00 PM

Client Sample ID: MW03-02

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **JF**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 5/31/2018 2:31:00 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|--------|--------|--|------|---|---------------------|
| Lithium | 0.0173 | 0.0100 | | mg/L | 1 | 6/6/2018 6:53:00 PM |
|---------|--------|--------|--|------|---|---------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 10:00:45 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 10:00:45 PM |
| Barium | 0.0519 | 0.0100 | | mg/L | 1 | 6/4/2018 10:00:45 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 10:00:45 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 6/4/2018 10:00:45 PM |
| Calcium | 197 | 0.0500 | | mg/L | 1 | 6/4/2018 10:00:45 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 10:00:45 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 10:00:45 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 10:00:45 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 10:00:45 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 10:00:45 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 10:00:45 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|------|--|-------|---|----------------------|
| Total Radium by Calculation | 1.24+/-0.832 | 1.43 | | pCi/L | 1 | 6/28/2018 2:25:00 PM |
|-----------------------------|--------------|------|--|-------|---|----------------------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|----------------------|
| Radium-226 | 0.201+/-0.349 | 0.623 | | pCi/L | 1 | 6/22/2018 1:27:00 PM |
|------------|---------------|-------|--|-------|---|----------------------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|--------------|-------|--|-------|---|----------------------|
| Radium-228 | 1.04+/-0.483 | 0.811 | | pCi/L | 1 | 6/26/2018 3:16:00 PM |
|------------|--------------|-------|--|-------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1805445**

Date Reported: **6/29/2018**

CLIENT: A & M Engineering

Lab Order: 1805445

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 5/29/2018 10:51:00 AM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1805445

Date Reported: 6/29/2018

CLIENT: A & M Engineering

Lab Order: 1805445

Project: GRDA Monthly Assessment

Lab ID: 1805445-006

Collection Date: 5/24/2018 4:15:00 PM

Client Sample ID: Duplicate

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **JF**

| | | | | | | |
|---------|----------|-----------|--|------|---|----------------------|
| Mercury | 0.000475 | 0.0000500 | | mg/L | 1 | 5/31/2018 2:31:00 PM |
|---------|----------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|--------|--------|--|------|---|---------------------|
| Lithium | 0.0148 | 0.0100 | | mg/L | 1 | 6/6/2018 6:53:00 PM |
|---------|--------|--------|--|------|---|---------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 10:06:04 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 10:06:04 PM |
| Barium | 0.0422 | 0.0100 | | mg/L | 1 | 6/4/2018 10:06:04 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 10:06:04 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 6/4/2018 10:06:04 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 10:06:04 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 10:06:04 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 10:06:04 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 10:06:04 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 6/4/2018 10:06:04 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/4/2018 10:06:04 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|------|--|-------|---|----------------------|
| Total Radium by Calculation | 0.954+/-0.923 | 1.68 | | pCi/L | 1 | 6/28/2018 2:25:00 PM |
|-----------------------------|---------------|------|--|-------|---|----------------------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|----------------------|
| Radium-226 | 0.335+/-0.396 | 0.622 | | pCi/L | 1 | 6/22/2018 1:27:00 PM |
|------------|---------------|-------|--|-------|---|----------------------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|---------------|------|--|-------|---|----------------------|
| Radium-228 | 0.619+/-0.527 | 1.06 | | pCi/L | 1 | 6/26/2018 3:16:00 PM |
|------------|---------------|------|--|-------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1805445**

Date Reported: **6/29/2018**

CLIENT: A & M Engineering

Lab Order: 1805445

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 5/29/2018 10:51:00 AM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |



QC SUMMARY REPORT

WO#: 1805445
 29-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: 4500 F-C, 2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R31995 | SampType: MBLK | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 31995 | | | | | | |
| Client ID: PBW | Batch ID: R31995 | TestNo: 4500 F-C, 201 | | Analysis Date: 5/29/2018 | SeqNo: 345909 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | < 0.200 | 0.200 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R31995 | SampType: LCS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 31995 | | | | | | |
| Client ID: LCSW | Batch ID: R31995 | TestNo: 4500 F-C, 201 | | Analysis Date: 5/29/2018 | SeqNo: 345910 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 2.35 | 0.200 | 2.000 | 0 | 118 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1805445-001BMS | SampType: MS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 31995 | | | | | | |
| Client ID: MW93-1 | Batch ID: R31995 | TestNo: 4500 F-C, 201 | | Analysis Date: 5/29/2018 | SeqNo: 345912 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 5.96 | 0.200 | 5.000 | 0 | 119 | 75.3 | 119 | | | | S |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1805445-001BMSD | SampType: MSD | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 31995 | | | | | | |
| Client ID: MW93-1 | Batch ID: R31995 | TestNo: 4500 F-C, 201 | | Analysis Date: 5/29/2018 | SeqNo: 345913 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 5.82 | 0.200 | 5.000 | 0 | 116 | 75.3 | 119 | 5.960 | 2.38 | 6.71 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1805445
 29-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: MB-9024 | SampType: MBLK | TestCode: MET_WW_T | Units: mg/L | Prep Date: 5/31/2018 | RunNo: 32098 | | | | | | |
|---------------------------|-------------------------|-----------------------------|--------------------|--------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: PBW | Batch ID: R32098 | TestNo: E200.7, 1994 | | Analysis Date: 6/4/2018 | SeqNo: 346984 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | < 0.0100 | 0.0100 | | | | | | | | | |
| Arsenic | < 0.00500 | 0.00500 | | | | | | | | | |
| Barium | < 0.0100 | 0.0100 | | | | | | | | | |
| Beryllium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cadmium | < 0.00100 | 0.00100 | | | | | | | | | |
| Calcium | < 0.0500 | 0.0500 | | | | | | | | | |
| Chromium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cobalt | < 0.0100 | 0.0100 | | | | | | | | | |
| Lead | < 0.00500 | 0.00500 | | | | | | | | | |
| Molybdenum | < 0.0100 | 0.0100 | | | | | | | | | |
| Selenium | < 0.00500 | 0.00500 | | | | | | | | | |
| Thallium | < 0.0100 | 0.0100 | | | | | | | | | |

| Sample ID: LCS-9024 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 5/31/2018 | RunNo: 32098 | | | | | | |
|----------------------------|-------------------------|-----------------------------|--------------------|--------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: R32098 | TestNo: E200.7, 1994 | | Analysis Date: 6/4/2018 | SeqNo: 346985 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 2.19 | 0.0100 | 2.000 | 0 | 109 | 85 | 115 | | | | |
| Arsenic | 2.06 | 0.00500 | 2.000 | 0 | 103 | 85 | 115 | | | | |
| Barium | 2.02 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Beryllium | 2.04 | 0.0100 | 2.000 | 0 | 102 | 85 | 115 | | | | |
| Cadmium | 2.08 | 0.00100 | 2.000 | 0 | 104 | 85 | 115 | | | | |
| Calcium | 2.12 | 0.0500 | 2.000 | 0 | 106 | 85 | 115 | | | | |
| Chromium | 1.99 | 0.0100 | 2.000 | 0 | 99.5 | 85 | 115 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1805445
 29-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: LCS-9024 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 5/31/2018 | RunNo: 32098 | | | | | | |
|----------------------------|-------------------------|-----------------------------|--------------------------------|-----------------------------|---------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: R32098 | TestNo: E200.7, 1994 | Analysis Date: 6/4/2018 | SeqNo: 346985 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Cobalt | 2.05 | 0.0100 | 2.000 | 0 | 103 | 85 | 115 | | | | |
| Lead | 2.10 | 0.00500 | 2.000 | 0 | 105 | 85 | 115 | | | | |
| Molybdenum | 2.00 | 0.0100 | 2.000 | 0 | 100 | 85 | 115 | | | | |
| Selenium | 2.12 | 0.00500 | 2.000 | 0 | 106 | 85 | 115 | | | | |
| Thallium | 2.19 | 0.0100 | 2.000 | 0 | 110 | 85 | 115 | | | | |

| Sample ID: 1805428-002AMS | SampType: MS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 5/31/2018 | RunNo: 32098 | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------------------|-----------------------------|---------------------|----------|-----------|-------------|------|----------|------|
| Client ID: BatchQC | Batch ID: R32098 | TestNo: E200.7, 1994 | Analysis Date: 6/4/2018 | SeqNo: 346987 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 2.15 | 0.0100 | 2.000 | 0 | 108 | 83.5 | 116 | | | | |
| Arsenic | 2.06 | 0.00500 | 2.000 | 0 | 103 | 85.9 | 113 | | | | |
| Barium | 2.06 | 0.0100 | 2.000 | 0.06481 | 99.7 | 86.8 | 113 | | | | |
| Beryllium | 2.04 | 0.0100 | 2.000 | 0 | 102 | 89 | 113 | | | | |
| Cadmium | 2.05 | 0.00100 | 2.000 | 0 | 103 | 87.1 | 113 | | | | |
| Calcium | 47.8 | 0.0500 | 2.000 | 46.71 | 56.0 | 31.3 | 170 | | | | |
| Chromium | 1.99 | 0.0100 | 2.000 | 0 | 99.4 | 89.1 | 111 | | | | |
| Cobalt | 1.99 | 0.0100 | 2.000 | 0 | 99.4 | 86 | 113 | | | | |
| Lead | 2.02 | 0.00500 | 2.000 | 0 | 101 | 88.9 | 112 | | | | |
| Molybdenum | 1.99 | 0.0100 | 2.000 | 0 | 99.3 | 88.9 | 113 | | | | |
| Selenium | 2.09 | 0.00500 | 2.000 | 0 | 105 | 79.8 | 114 | | | | |
| Thallium | 2.08 | 0.0100 | 2.000 | 0 | 104 | 87.9 | 113 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1805445
 29-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: 1805428-002AMSD | SampType: MSD | TestCode: MET_WW_T | Units: mg/L | Prep Date: 5/31/2018 | RunNo: 32098 | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------------------|-----------------------------|---------------------|----------|-----------|-------------|--------|----------|------|
| Client ID: BatchQC | Batch ID: R32098 | TestNo: E200.7, 1994 | Analysis Date: 6/4/2018 | SeqNo: 346988 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 2.15 | 0.0100 | 2.000 | 0 | 107 | 83.5 | 116 | 2.152 | 0.186 | 3.85 | |
| Arsenic | 2.05 | 0.00500 | 2.000 | 0 | 103 | 85.9 | 113 | 2.058 | 0.195 | 3.91 | |
| Barium | 2.03 | 0.0100 | 2.000 | 0.06481 | 98.3 | 86.8 | 113 | 2.058 | 1.37 | 4.14 | |
| Beryllium | 2.03 | 0.0100 | 2.000 | 0 | 102 | 89 | 113 | 2.042 | 0.393 | 4.63 | |
| Cadmium | 2.04 | 0.00100 | 2.000 | 0 | 102 | 87.1 | 113 | 2.051 | 0.293 | 3.73 | |
| Calcium | 47.8 | 0.0500 | 2.000 | 46.71 | 54.0 | 31.3 | 170 | 47.83 | 0.0837 | 4.24 | |
| Chromium | 1.97 | 0.0100 | 2.000 | 0 | 98.6 | 89.1 | 111 | 1.987 | 0.758 | 4.41 | |
| Cobalt | 1.98 | 0.0100 | 2.000 | 0 | 99.1 | 86 | 113 | 1.987 | 0.252 | 4.63 | |
| Lead | 2.02 | 0.00500 | 2.000 | 0 | 101 | 88.9 | 112 | 2.023 | 0.148 | 3.79 | |
| Molybdenum | 1.98 | 0.0100 | 2.000 | 0 | 99.1 | 88.9 | 113 | 1.986 | 0.252 | 3.96 | |
| Selenium | 2.09 | 0.00500 | 2.000 | 0 | 105 | 79.8 | 114 | 2.092 | 0.0956 | 3.82 | |
| Thallium | 2.08 | 0.0100 | 2.000 | 0 | 104 | 87.9 | 113 | 2.079 | 0 | 3.41 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1805445
 29-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R32069 | SampType: LCS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32069 | | | | | | |
| Client ID: LCSW | Batch ID: R32069 | TestNo: E245.1, 1994 | | Analysis Date: 5/31/2018 | SeqNo: 346704 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

| | | | | | | | | | | | |
|---------|----------|----------|----------|---|------|----|-----|--|--|--|--|
| Mercury | 0.000969 | 0.000100 | 0.001000 | 0 | 96.9 | 85 | 115 | | | | |
|---------|----------|----------|----------|---|------|----|-----|--|--|--|--|

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1805438-001CMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32069 | | | | | | |
| Client ID: BatchQC | Batch ID: R32069 | TestNo: E245.1, 1994 | | Analysis Date: 5/31/2018 | SeqNo: 346706 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

| | | | | | | | | | | | |
|---------|----------|-----------|----------|---|------|------|-----|--|--|--|--|
| Mercury | 0.000917 | 0.0000500 | 0.001000 | 0 | 91.7 | 67.3 | 132 | | | | |
|---------|----------|-----------|----------|---|------|------|-----|--|--|--|--|

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1805438-001CMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32069 | | | | | | |
| Client ID: BatchQC | Batch ID: R32069 | TestNo: E245.1, 1994 | | Analysis Date: 5/31/2018 | SeqNo: 346707 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

| | | | | | | | | | | | |
|---------|----------|-----------|----------|---|------|------|-----|-----------|--------|------|--|
| Mercury | 0.000918 | 0.0000500 | 0.001000 | 0 | 91.8 | 67.3 | 132 | 0.0009171 | 0.0763 | 5.88 | |
|---------|----------|-----------|----------|---|------|------|-----|-----------|--------|------|--|

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1805502-001BMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32069 | | | | | | |
| Client ID: BatchQC | Batch ID: R32069 | TestNo: E245.1, 1994 | | Analysis Date: 5/31/2018 | SeqNo: 346709 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |

| | | | | | | | | | | | |
|---------|----------|-----------|----------|---|------|------|-----|--|--|--|--|
| Mercury | 0.000792 | 0.0000500 | 0.001000 | 0 | 79.2 | 67.3 | 132 | | | | |
|---------|----------|-----------|----------|---|------|------|-----|--|--|--|--|

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1805445
 29-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| Sample ID: 1805502-001BMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32069 | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|---------------------------------|----------------------|---------------------|----------|-----------|-------------|------|----------|------|
| Client ID: BatchQC | Batch ID: R32069 | TestNo: E245.1, 1994 | Analysis Date: 5/31/2018 | SeqNo: 346710 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000781 | 0.0000500 | 0.001000 | 0 | 78.1 | 67.3 | 132 | 0.0007917 | 1.40 | 5.88 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
 TEL: 918-828-9977 FAX: 918-828-7756
 Website: www.greencountrytesting.com



QC SUMMARY REPORT

WO#: 1805445
 29-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E903.1

| | | | | | | | | | | | |
|-----------------------------|-------------------------|-----------------------------|---------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R32435 | SampType: MBLK | TestCode: Radium-226 | Units: pCi/L | Prep Date: | RunNo: 32435 | | | | | | |
| Client ID: PBW | Batch ID: R32435 | TestNo: E903.1 | | Analysis Date: 6/22/2028 | SeqNo: 350467 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Radium-226 | 0.063+/-0.286 | 0.462 | | | | | | | | | |

Qualifiers:

| | | | | | |
|----|---|----|--|----|---|
| H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response | ND | Not Detected at the Reporting Limit |
| PL | Permit Limit | RL | Reporting Detection Limit | S | Spike Recovery outside accepted recovery limits |
| W | Sample container temperature is out of limit as specified at testcode | | | | |



QC SUMMARY REPORT

WO#: 1805445
 29-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E904.0

| | | | | | | | | | | | |
|-----------------------------|-------------------------|-----------------------------|---------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R32435 | SampType: MBLK | TestCode: Radium-228 | Units: pCi/L | Prep Date: | RunNo: 32435 | | | | | | |
| Client ID: PBW | Batch ID: R32435 | TestNo: E904.0 | | Analysis Date: 6/26/2018 | SeqNo: 350571 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Radium-228 | 0.335+/-0.375 | 0.786 | | | | | | | | | |

Qualifiers:

| | | | | | |
|----|---|----|--|----|---|
| H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response | ND | Not Detected at the Reporting Limit |
| PL | Permit Limit | RL | Reporting Detection Limit | S | Spike Recovery outside accepted recovery limits |
| W | Sample container temperature is out of limit as specified at testcode | | | | |



Chain of Custody Record

Laboratory Number: **1005445**
Green Country Testing

| | | | |
|---|---|---|---|
| Company Name: A+M Engineering | PO Number: 1986-030 | Project Name/Number: GRDA Monthly Assessment | Page 1 of 2 |
| Contact Name: Tom Trebanik / Ed Van Schaik | Quote Number: | Sampler's Signature: Ed Van Schaik | |
| Address: | Required QC Level: Std | Shipping Method: UPS / FedEx / Airborne | (Rush turn times will incur a surcharge.) |
| City, State Zip: | Bill Monthly: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | GCT / Hand / Mail | |
| Phone Number: 918-665-6575 Ext: | | | |
| Fax Number: | | | |
| E-mail Address: | | | |

| | | |
|---|------------------|-------------|
| Which Regulations Apply: | Matrix Code: | SO = Soil |
| <input type="checkbox"/> RCRA | AQ = Aqueous | O = Oil |
| <input type="checkbox"/> POTW | DW = Drinking | SL = Sludge |
| <input type="checkbox"/> NPDES | WW = Waste | F = Food |
| <input type="checkbox"/> USDA/FDA | MW = Monit. Well | SW = Swab |
| <input type="checkbox"/> RECAP/RISC | LQ = Liquid | SOL = Solid |
| <input type="checkbox"/> Drinking Water | | |
| <input type="checkbox"/> Distribution | | |
| <input type="checkbox"/> Special | | |
| <input type="checkbox"/> State | | |
| <input type="checkbox"/> Other | | |

| Sample ID | Date | Time | Matrix | Regulation | Priority | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Fluoride | Lead | Lithium |
|-----------|---------|------|--------|------------|----------|----------|---------|--------|-----------|---------|----------|--------|----------|------|---------|
| MW 93-1 | 5-24-18 | 1105 | G | AQ | 4 | X | X | X | X | X | X | X | X | X | X |
| MW 93-2 | 5-24-18 | 1210 | G | AQ | 4 | X | X | X | X | X | X | X | X | X | X |
| MW 93-3 | 5-24-18 | 1300 | G | AQ | 4 | X | X | X | X | X | X | X | X | X | X |
| MW 03-1 | 5-24-18 | 1415 | G | AQ | 4 | X | X | X | X | X | X | X | X | X | X |
| MW 03-2 | 5-24-18 | 1520 | G | AQ | 4 | X | X | X | X | X | X | X | X | X | X |
| Duplicate | 5-24-18 | 1615 | G | AQ | 4 | X | X | X | X | X | X | X | X | X | X |

5001
5005
5006

GREENCOUNTRYTESTING
CHAIN OF CUSTODY
ATTACHMENT
1 OF 2 PAGES

| | | | | |
|---------------------------------|---------------------------|-------------------------------|---------------------------|--|
| Signature: Ed Van Schaik | Date: 5/25/18 0940 | Signature: [Signature] | Date: 5/25/18 0940 | Field Notes: |
| | | | | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | | | | Temp: 2 |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.



Chain of Custody Record

Laboratory Number: **1805445** *Lab Use Only*

| | | | | | | |
|--|--|----------------------|--|---|--|---------------------------|
| Client Information: | | Billing Information: | | PO Number: 1986-030 | Project Name/Number: GRDA | Page 2 of 2 |
| Company Name: A+M Engineering | | | | Quote Number: | Monthly Assessment | |
| Contact Name: Tom Trebilcock / Ed Van Schaik | | | | Required QC Level: Std | Sampler's Signature: Ed Van Schaik | |
| Address: | | | | Bill Monthly: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Shipping Method: UPS / FedEx / Airborne GCT / Hand / Mail | |
| City, State Zip: | | | | | | |
| Phone Number: 918-665-6575 Ext: | | | | | | |
| Fax Number: | | | | | | |
| E-mail Address: | | | | | | |

| Which Regulations Apply: | | Matrix Code: | | Container | | Pres | | Requested Tests | | | | | Comments | |
|-------------------------------------|---|------------------|-------------|-----------|------|------|------|-----------------|------------|----------|----------|------------|----------|---|
| <input type="checkbox"/> RCRA | <input type="checkbox"/> Drinking Water | AQ = Aqueous | SO = Soil | Number | Type | ICE | INSO | Mercury | Molybdenum | Selenium | Thallium | Radium 226 | | Calcium |
| <input type="checkbox"/> POTW | <input type="checkbox"/> Distribution | DW = Drinking | O = Oil | | | | | | | | | | | GREENCOUNTRYTESTING CHAIN OF CUSTODY ATTACHMENT 2 OF 2 PAGES |
| <input type="checkbox"/> NPDES | <input type="checkbox"/> Special | WW = Waste | SL = Sludge | | | | | | | | | | | |
| <input type="checkbox"/> USDA/FDA | <input type="checkbox"/> State | MW = Monit. Well | F = Food | | | | | | | | | | | |
| <input type="checkbox"/> RECAP/RISC | <input type="checkbox"/> Other | SW = Swab | SOL = Solid | | | | | | | | | | | |
| | | LQ = Liquid | | | | | | | | | | | | |
| Sample ID/Description | Date | Time | Matrix | Number | Type | ICE | INSO | Mercury | Molybdenum | Selenium | Thallium | Radium 226 | Calcium | |
| MW 93-1 | 5-24-18 | 1105 | G | AQ | 4 | P | | X | X | X | X | X | | |
| MW 93-2 | 5-24-18 | 1210 | G | AQ | 4 | P | | X | X | X | X | X | | |
| MW 93-3 | 5-24-18 | 1300 | G | AQ | 4 | P | | X | X | X | X | X | | |
| MW 03-1 | 5-24-18 | 1415 | G | AQ | 4 | P | | X | X | X | X | X | X | |
| MW 03-2 | 5-24-18 | 1520 | G | AQ | 4 | P | | X | X | X | X | X | X | |
| Duplicate | 5-24-18 | 1615 | G | AQ | 4 | P | | X | X | X | X | X | | |

| | | | | |
|--|-----------------------------------|------------------------------------|-----------------------------------|--|
| Relinquished by: Ed Van Schaik | Date/Time: 5/25/18 0940 | Received by: <i>[Signature]</i> | Date/Time: 5/25/18 0940 | Field Notes: |
| | | | | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | | | | Temp: 2. |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

6825 E. 38th Street
Tulsa, OK 74145
918-828-9977
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Green Country Testing, Inc.
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June 27, 2018

Tom Trebonik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: GRDA Monthly Assessment

Order No.: 1806285

Dear Tom Trebonik:

Green Country Testing, Inc. received 6 sample(s) on 6/20/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
 TEL: 918-828-9977 FAX: 918-828-7756
 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1806285

Date Reported: 6/27/2018

CLIENT: A & M Engineering

Lab Order: 1806285

Project: GRDA Monthly Assessment

Lab ID: 1806285-001

Collection Date: 6/19/2018 10:30:00 AM

Client Sample ID: MW93-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 6/22/2018 3:44:52 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 4:39:39 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 4:39:39 PM |
| Barium | 0.0239 | 0.0100 | | mg/L | 1 | 6/26/2018 4:39:39 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 4:39:39 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 6/26/2018 4:39:39 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 4:39:39 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 4:39:39 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 4:39:39 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 4:39:39 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 4:39:39 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 4:39:39 PM |

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|---------|-------|--|------|---|----------------------|
| Fluoride | < 0.200 | 0.200 | | mg/L | 1 | 6/20/2018 1:22:00 PM |
|----------|---------|-------|--|------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

Green Country Testing, Inc.
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 Tulsa, OK 74145
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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1806285

Date Reported: 6/27/2018

CLIENT: A & M Engineering

Lab Order: 1806285

Project: GRDA Monthly Assessment

Lab ID: 1806285-002

Collection Date: 6/19/2018 11:50:00 AM

Client Sample ID: MW93-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 6/22/2018 3:44:52 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:01:03 PM |
| Arsenic | 0.0274 | 0.00500 | | mg/L | 1 | 6/26/2018 5:01:03 PM |
| Barium | 0.0538 | 0.0100 | | mg/L | 1 | 6/26/2018 5:01:03 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:01:03 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 6/26/2018 5:01:03 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:01:03 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:01:03 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 5:01:03 PM |
| Molybdenum | 1.18 | 0.0100 | | mg/L | 1 | 6/26/2018 5:01:03 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 5:01:03 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:01:03 PM |

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|-------|-------|--|------|---|----------------------|
| Fluoride | 0.991 | 0.200 | | mg/L | 1 | 6/20/2018 1:22:00 PM |
|----------|-------|-------|--|------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

Revision v1

Page 2 of 12

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1806285

Date Reported: 6/27/2018

CLIENT: A & M Engineering

Lab Order: 1806285

Project: GRDA Monthly Assessment

Lab ID: 1806285-003

Collection Date: 6/19/2018 1:10:00 PM

Client Sample ID: MW93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|----------|-----------|--|------|---|----------------------|
| Mercury | 0.000367 | 0.0000500 | | mg/L | 1 | 6/22/2018 3:44:52 PM |
|---------|----------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:11:49 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 5:11:49 PM |
| Barium | 0.201 | 0.0100 | | mg/L | 1 | 6/26/2018 5:11:49 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:11:49 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 6/26/2018 5:11:49 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:11:49 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:11:49 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 5:11:49 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:11:49 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 5:11:49 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:11:49 PM |

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|-------|-------|--|------|---|----------------------|
| Fluoride | 0.223 | 0.200 | | mg/L | 1 | 6/20/2018 1:22:00 PM |
|----------|-------|-------|--|------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

Green Country Testing, Inc.
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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1806285

Date Reported: 6/27/2018

CLIENT: A & M Engineering

Lab Order: 1806285

Project: GRDA Monthly Assessment

Lab ID: 1806285-004

Collection Date: 6/19/2018 2:25:00 PM

Client Sample ID: MW03-01

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 6/22/2018 3:44:52 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 4:44:58 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 4:44:58 PM |
| Barium | 0.0752 | 0.0100 | | mg/L | 1 | 6/26/2018 4:44:58 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 4:44:58 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 6/26/2018 4:44:58 PM |
| Calcium | 43.6 | 0.0500 | | mg/L | 1 | 6/26/2018 4:44:58 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 4:44:58 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 4:44:58 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 4:44:58 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 4:44:58 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 4:44:58 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 4:44:58 PM |

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|---------|-------|--|------|---|----------------------|
| Fluoride | < 0.200 | 0.200 | | mg/L | 1 | 6/20/2018 1:22:00 PM |
|----------|---------|-------|--|------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1806285

Date Reported: 6/27/2018

CLIENT: A & M Engineering

Lab Order: 1806285

Project: GRDA Monthly Assessment

Lab ID: 1806285-005

Collection Date: 6/19/2018 3:40:00 PM

Client Sample ID: MW03-02

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|----------|-----------|--|------|---|----------------------|
| Mercury | 0.000224 | 0.0000500 | | mg/L | 1 | 6/22/2018 3:44:52 PM |
|---------|----------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:17:16 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 5:17:16 PM |
| Barium | 0.0391 | 0.0100 | | mg/L | 1 | 6/26/2018 5:17:16 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:17:16 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 6/26/2018 5:17:16 PM |
| Calcium | 291 | 0.0500 | | mg/L | 1 | 6/26/2018 5:17:16 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:17:16 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:17:16 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 5:17:16 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:17:16 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 5:17:16 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:17:16 PM |

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|---------|-------|--|------|---|----------------------|
| Fluoride | < 0.200 | 0.200 | | mg/L | 1 | 6/20/2018 1:22:00 PM |
|----------|---------|-------|--|------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1806285

Date Reported: 6/27/2018

CLIENT: A & M Engineering

Lab Order: 1806285

Project: GRDA Monthly Assessment

Lab ID: 1806285-006

Collection Date: 6/19/2018 4:35:00 PM

Client Sample ID: Duplicate

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 6/22/2018 3:44:52 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:22:34 PM |
| Arsenic | 0.0262 | 0.00500 | | mg/L | 1 | 6/26/2018 5:22:34 PM |
| Barium | 0.0536 | 0.0100 | | mg/L | 1 | 6/26/2018 5:22:34 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:22:34 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 6/26/2018 5:22:34 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:22:34 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:22:34 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 5:22:34 PM |
| Molybdenum | 1.17 | 0.0100 | | mg/L | 1 | 6/26/2018 5:22:34 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 6/26/2018 5:22:34 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 6/26/2018 5:22:34 PM |

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | | |
|----------|-------|-------|--|------|---|----------------------|
| Fluoride | 0.904 | 0.200 | | mg/L | 1 | 6/20/2018 1:22:00 PM |
|----------|-------|-------|--|------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |



QC SUMMARY REPORT

WO#: 1806285
 27-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: 4500 F-C, 2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R32340 | SampType: MBLK | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 32340 | | | | | | |
| Client ID: PBW | Batch ID: R32340 | TestNo: 4500 F-C, 201 | | Analysis Date: 6/20/2018 | SeqNo: 349647 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | < 0.200 | 0.200 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R32340 | SampType: LCS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 32340 | | | | | | |
| Client ID: LCSW | Batch ID: R32340 | TestNo: 4500 F-C, 201 | | Analysis Date: 6/20/2018 | SeqNo: 349648 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 2.19 | 0.200 | 2.000 | 0 | 110 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1806285-001BMS | SampType: MS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 32340 | | | | | | |
| Client ID: MW93-1 | Batch ID: R32340 | TestNo: 4500 F-C, 201 | | Analysis Date: 6/20/2018 | SeqNo: 349650 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 5.94 | 0.200 | 5.000 | 0 | 119 | 72.7 | 139 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1806285-001BMSD | SampType: MSD | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 32340 | | | | | | |
| Client ID: MW93-1 | Batch ID: R32340 | TestNo: 4500 F-C, 201 | | Analysis Date: 6/20/2018 | SeqNo: 349651 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 5.67 | 0.200 | 5.000 | 0 | 113 | 72.7 | 139 | 5.940 | 4.65 | 7.08 | |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 RL Reporting Detection Limit

ND Not Detected at the Reporting Limit
 S Spike Recovery outside accepted recovery limits



QC SUMMARY REPORT

WO#: 1806285
 27-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: MB-9098 | SampType: MBLK | TestCode: MET_WW_T | Units: mg/L | Prep Date: 6/22/2018 | RunNo: 32407 | | | | | | |
|---------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: PBW | Batch ID: R32407 | TestNo: E200.7, 1994 | | Analysis Date: 6/26/2018 | SeqNo: 350173 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | < 0.0100 | 0.0100 | | | | | | | | | |
| Arsenic | < 0.00500 | 0.00500 | | | | | | | | | |
| Barium | < 0.0100 | 0.0100 | | | | | | | | | |
| Beryllium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cadmium | < 0.00100 | 0.00100 | | | | | | | | | |
| Calcium | < 0.0500 | 0.0500 | | | | | | | | | |
| Chromium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cobalt | < 0.0100 | 0.0100 | | | | | | | | | |
| Lead | < 0.00500 | 0.00500 | | | | | | | | | |
| Molybdenum | < 0.0100 | 0.0100 | | | | | | | | | |
| Selenium | < 0.00500 | 0.00500 | | | | | | | | | |
| Thallium | < 0.0100 | 0.0100 | | | | | | | | | |

| Sample ID: LCS-9098 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 6/22/2018 | RunNo: 32407 | | | | | | |
|----------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: R32407 | TestNo: E200.7, 1994 | | Analysis Date: 6/26/2018 | SeqNo: 350174 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 2.00 | 0.0100 | 2.000 | 0 | 100 | 85 | 115 | | | | |
| Arsenic | 1.96 | 0.00500 | 2.000 | 0 | 98.2 | 85 | 115 | | | | |
| Barium | 1.95 | 0.0100 | 2.000 | 0 | 97.4 | 85 | 115 | | | | |
| Beryllium | 2.00 | 0.0100 | 2.000 | 0 | 99.8 | 85 | 115 | | | | |
| Cadmium | 2.01 | 0.00100 | 2.000 | 0 | 100 | 85 | 115 | | | | |
| Calcium | 2.07 | 0.0500 | 2.000 | 0 | 104 | 85 | 115 | | | | |
| Chromium | 1.99 | 0.0100 | 2.000 | 0 | 99.6 | 85 | 115 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1806285
 27-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: LCS-9098 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 6/22/2018 | RunNo: 32407 | | | | | | |
|----------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: R32407 | TestNo: E200.7, 1994 | | Analysis Date: 6/26/2018 | SeqNo: 350174 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Cobalt | 2.02 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Lead | 2.07 | 0.00500 | 2.000 | 0 | 103 | 85 | 115 | | | | |
| Molybdenum | 2.01 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Selenium | 1.98 | 0.00500 | 2.000 | 0 | 99.1 | 85 | 115 | | | | |
| Thallium | 2.12 | 0.0100 | 2.000 | 0 | 106 | 85 | 115 | | | | |

| Sample ID: 1806310-001AMS | SampType: MS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 6/22/2018 | RunNo: 32407 | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: BatchQC | Batch ID: R32407 | TestNo: E200.7, 1994 | | Analysis Date: 6/26/2018 | SeqNo: 350176 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 1.99 | 0.0100 | 2.000 | 0 | 99.3 | 80.5 | 118 | | | | |
| Arsenic | 1.99 | 0.00500 | 2.000 | 0 | 99.6 | 80.3 | 117 | | | | |
| Barium | 1.96 | 0.0100 | 2.000 | 0.01118 | 97.7 | 88.4 | 109 | | | | |
| Beryllium | 2.03 | 0.0100 | 2.000 | 0 | 102 | 80.3 | 117 | | | | |
| Cadmium | 2.00 | 0.00100 | 2.000 | 0 | 100 | 80.9 | 117 | | | | |
| Calcium | 26.2 | 0.0500 | 2.000 | 23.70 | 123 | 21.9 | 163 | | | | |
| Chromium | 1.98 | 0.0100 | 2.000 | 0 | 99.0 | 80.5 | 117 | | | | |
| Cobalt | 1.98 | 0.0100 | 2.000 | 0 | 99.0 | 81.5 | 116 | | | | |
| Lead | 2.00 | 0.00500 | 2.000 | 0 | 100 | 80.2 | 118 | | | | |
| Molybdenum | 2.01 | 0.0100 | 2.000 | 0 | 101 | 81.7 | 118 | | | | |
| Selenium | 2.00 | 0.00500 | 2.000 | 0 | 100 | 78.5 | 115 | | | | |
| Thallium | 2.00 | 0.0100 | 2.000 | 0 | 100 | 79.9 | 120 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1806285
 27-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: 1806310-001AMSD | SampType: MSD | TestCode: MET_WW_T | Units: mg/L | Prep Date: 6/22/2018 | RunNo: 32407 | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Client ID: BatchQC | Batch ID: R32407 | TestNo: E200.7, 1994 | | Analysis Date: 6/26/2018 | SeqNo: 350177 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 1.98 | 0.0100 | 2.000 | 0 | 99.1 | 80.5 | 118 | 1.986 | 0.252 | 3.45 | |
| Arsenic | 1.99 | 0.00500 | 2.000 | 0 | 99.3 | 80.3 | 117 | 1.992 | 0.302 | 3.26 | |
| Barium | 1.96 | 0.0100 | 2.000 | 0.01118 | 97.2 | 88.4 | 109 | 1.965 | 0.459 | 3.25 | |
| Beryllium | 2.02 | 0.0100 | 2.000 | 0 | 101 | 80.3 | 117 | 2.031 | 0.395 | 3.52 | |
| Cadmium | 1.99 | 0.00100 | 2.000 | 0 | 99.7 | 80.9 | 117 | 1.999 | 0.250 | 3.22 | |
| Calcium | 25.8 | 0.0500 | 2.000 | 23.70 | 108 | 21.9 | 163 | 26.16 | 1.19 | 2.28 | |
| Chromium | 2.02 | 0.0100 | 2.000 | 0 | 101 | 80.5 | 117 | 1.979 | 1.80 | 3.37 | |
| Cobalt | 1.98 | 0.0100 | 2.000 | 0 | 98.8 | 81.5 | 116 | 1.980 | 0.253 | 3.38 | |
| Lead | 2.00 | 0.00500 | 2.000 | 0 | 99.8 | 80.2 | 118 | 2.002 | 0.300 | 3.09 | |
| Molybdenum | 2.00 | 0.0100 | 2.000 | 0 | 100 | 81.7 | 118 | 2.010 | 0.249 | 3.32 | |
| Selenium | 1.99 | 0.00500 | 2.000 | 0 | 99.4 | 78.5 | 115 | 1.999 | 0.502 | 3.4 | |
| Thallium | 2.00 | 0.0100 | 2.000 | 0 | 100 | 79.9 | 120 | 2.005 | 0.250 | 3.26 | |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 RL Reporting Detection Limit

ND Not Detected at the Reporting Limit
 S Spike Recovery outside accepted recovery limits



QC SUMMARY REPORT

WO#: 1806285
 27-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R32377 | SampType: MBLK | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32377 | | | | | | |
| Client ID: PBW | Batch ID: R32377 | TestNo: E245.1, 1994 | | Analysis Date: 6/22/2018 | SeqNo: 349934 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | < 0.0000500 | 0.0000500 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R32377 | SampType: LCS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32377 | | | | | | |
| Client ID: LCSW | Batch ID: R32377 | TestNo: E245.1, 1994 | | Analysis Date: 6/22/2018 | SeqNo: 349935 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000979 | 0.0000500 | 0.001000 | 0 | 97.9 | 85 | 115 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1806225-001CMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32377 | | | | | | |
| Client ID: BatchQC | Batch ID: R32377 | TestNo: E245.1, 1994 | | Analysis Date: 6/22/2018 | SeqNo: 349937 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000987 | 0.0000500 | 0.001000 | 0.00005690 | 93.0 | 77.8 | 119 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1806225-001CMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32377 | | | | | | |
| Client ID: BatchQC | Batch ID: R32377 | TestNo: E245.1, 1994 | | Analysis Date: 6/22/2018 | SeqNo: 349938 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000991 | 0.0000500 | 0.001000 | 0.00005690 | 93.4 | 77.8 | 119 | 0.0009870 | 0.364 | 1.89 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1806285
 27-Jun-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1806285-001AMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32377 | | | | | | |
| Client ID: MW93-1 | Batch ID: R32377 | TestNo: E245.1, 1994 | | Analysis Date: 6/22/2018 | SeqNo: 349943 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000674 | 0.0000500 | 0.001000 | 0 | 67.4 | 77.8 | 119 | | | | S |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1806285-001AMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32377 | | | | | | |
| Client ID: MW93-1 | Batch ID: R32377 | TestNo: E245.1, 1994 | | Analysis Date: 6/22/2018 | SeqNo: 349944 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000668 | 0.0000500 | 0.001000 | 0 | 66.8 | 77.8 | 119 | 0.0006740 | 0.969 | 1.89 | S |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



August 17, 2018

Tom Trebonik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: GRDA Monthly Assessment

Order No.: 1807297

Dear Tom Trebonik:

Green Country Testing, Inc. received 6 sample(s) on 7/20/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

Original

Green Country Testing, Inc.
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Case Narrative

WO#: 1807297
Date: 8/17/2018

CLIENT: A & M Engineering
Project: GRDA Monthly Assessment

1807297
met_ww_odd has been Sub Contracted.
1807297
Radium-226 has been Sub Contracted.
1807297
Radium-228 has been Sub Contracted.
1807297
met_ww_odd has been Sub Contracted.
1807297
Radium-226 has been Sub Contracted.
1807297
Radium-228 has been Sub Contracted.
1807297
met_ww_odd has been Sub Contracted.
1807297
Radium-226 has been Sub Contracted.
1807297
Radium-228 has been Sub Contracted.
1807297
met_ww_odd has been Sub Contracted.
1807297
Radium-226 has been Sub Contracted.
1807297
Radium-228 has been Sub Contracted.
1807297
met_ww_odd has been Sub Contracted.
1807297
Radium-226 has been Sub Contracted.
1807297
Radium-228 has been Sub Contracted.
1807297
met_ww_odd has been Sub Contracted.
1807297

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Case Narrative

WO#: 1807297
Date: 8/17/2018

CLIENT: A & M Engineering
Project: GRDA Monthly Assessment

Radium-226 has been Sub Contracted.
1807297
Radium-228 has been Sub Contracted.

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Analytical Report

(continuous)

WO#: 1807297

Date Reported: 8/17/2018

CLIENT: A & M Engineering

Lab Order: 1807297

Project: GRDA Monthly Assessment

Lab ID: 1807297-001

Collection Date: 7/19/2018 10:35:00 AM

Client Sample ID: MW93-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 7/24/2018 2:45:14 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 7/26/2018 2:30:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:26:27 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:26:27 PM |
| Barium | 0.0202 | 0.0100 | | mg/L | 1 | 7/23/2018 9:26:27 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:26:27 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 7/23/2018 9:26:27 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:26:27 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:26:27 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:26:27 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:26:27 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:26:27 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:26:27 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|-------|--|-------|---|----------------------|
| Total Radium by Calculation | 0.117+/-0.804 | 0.945 | | pCi/L | 1 | 8/1/2018 10:15:00 AM |
|-----------------------------|---------------|-------|--|-------|---|----------------------|

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|---------|-------|--|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | | mg/L | 1 | 7/23/2018 12:21:00 PM |
|----------|---------|-------|--|------|---|-----------------------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

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Analytical Report

(continuous)

WO#: 1807297

Date Reported: 8/17/2018

CLIENT: A & M Engineering

Lab Order: 1807297

Project: GRDA Monthly Assessment

Lab ID: 1807297-002

Collection Date: 7/19/2018 11:50:00 AM

Client Sample ID: MW93-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 7/24/2018 2:45:14 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 7/26/2018 2:33:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

SW3010A

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:32:18 PM |
| Arsenic | 0.0367 | 0.00500 | | mg/L | 1 | 7/23/2018 9:32:18 PM |
| Barium | 0.0583 | 0.0100 | | mg/L | 1 | 7/23/2018 9:32:18 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:32:18 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 7/23/2018 9:32:18 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:32:18 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:32:18 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:32:18 PM |
| Molybdenum | 1.05 | 0.0100 | | mg/L | 1 | 7/23/2018 9:32:18 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:32:18 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:32:18 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|-------------|------|--|-------|---|----------------------|
| Total Radium by Calculation | 5.74+/-1.27 | 1.29 | | pCi/L | 1 | 8/1/2018 10:15:00 AM |
|-----------------------------|-------------|------|--|-------|---|----------------------|

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | | |
|----------|-------|-------|--|------|---|-----------------------|
| Fluoride | 0.906 | 0.200 | | mg/L | 1 | 7/23/2018 12:21:00 PM |
|----------|-------|-------|--|------|---|-----------------------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

Original

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Analytical Report

(continuous)

WO#: 1807297

Date Reported: 8/17/2018

CLIENT: A & M Engineering

Lab Order: 1807297

Project: GRDA Monthly Assessment

Lab ID: 1807297-003

Collection Date: 7/19/2018 1:20:00 PM

Client Sample ID: MW93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **KR**

| | | | | | | |
|---------|----------|-----------|--|------|---|----------------------|
| Mercury | 0.000330 | 0.0000500 | | mg/L | 1 | 7/24/2018 2:45:14 PM |
|---------|----------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 7/26/2018 2:36:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

SW3010A

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:37:36 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:37:36 PM |
| Barium | 0.259 | 0.0100 | | mg/L | 1 | 7/23/2018 9:37:36 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:37:36 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 7/23/2018 9:37:36 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:37:36 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:37:36 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:37:36 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:37:36 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:37:36 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:37:36 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|------|--|-------|---|----------------------|
| Total Radium by Calculation | 0.519+/-1.03 | 1.07 | | pCi/L | 1 | 8/1/2018 10:15:00 AM |
|-----------------------------|--------------|------|--|-------|---|----------------------|

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | | |
|----------|-------|-------|--|------|---|-----------------------|
| Fluoride | 0.210 | 0.200 | | mg/L | 1 | 7/23/2018 12:21:00 PM |
|----------|-------|-------|--|------|---|-----------------------|

Qualifiers:

| | |
|----|---|
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| R | RPD outside accepted recovery limits |
| W | Sample container temperature is out of limit as specified at testcode |

| | |
|----|--|
| M | Manual Integration used to determine area response |
| PL | Permit Limit |
| RL | Reporting Detection Limit |

Original

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Analytical Report

(continuous)

WO#: 1807297

Date Reported: 8/17/2018

CLIENT: A & M Engineering

Lab Order: 1807297

Project: GRDA Monthly Assessment

Lab ID: 1807297-004

Collection Date: 7/19/2018 2:35:00 PM

Client Sample ID: MW03-01

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 7/24/2018 2:45:14 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 7/26/2018 2:39:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:43:20 PM |
| Arsenic | 0.0445 | 0.00500 | | mg/L | 1 | 7/23/2018 9:43:20 PM |
| Barium | 0.671 | 0.0100 | | mg/L | 1 | 7/23/2018 9:43:20 PM |
| Beryllium | 0.0201 | 0.0100 | | mg/L | 1 | 7/23/2018 9:43:20 PM |
| Cadmium | 0.00486 | 0.00100 | | mg/L | 1 | 7/23/2018 9:43:20 PM |
| Calcium | 154 | 0.0500 | | mg/L | 1 | 7/23/2018 9:43:20 PM |
| Chromium | 0.0808 | 0.0100 | | mg/L | 1 | 7/23/2018 9:43:20 PM |
| Cobalt | 0.0321 | 0.0100 | | mg/L | 1 | 7/23/2018 9:43:20 PM |
| Lead | 0.124 | 0.00500 | | mg/L | 1 | 7/23/2018 9:43:20 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:43:20 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:43:20 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:43:20 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|------|--|-------|---|----------------------|
| Total Radium by Calculation | 0.457+/-0.875 | 1.14 | | pCi/L | 1 | 8/1/2018 10:15:00 AM |
|-----------------------------|---------------|------|--|-------|---|----------------------|

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|---------|-------|--|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | | mg/L | 1 | 7/23/2018 12:21:00 PM |
|----------|---------|-------|--|------|---|-----------------------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

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Analytical Report

(continuous)

WO#: 1807297

Date Reported: 8/17/2018

CLIENT: A & M Engineering

Lab Order: 1807297

Project: GRDA Monthly Assessment

Lab ID: 1807297-005

Collection Date: 7/19/2018 3:45:00 PM

Client Sample ID: MW03-02

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|----------|-----------|--|------|---|----------------------|
| Mercury | 0.000239 | 0.0000500 | | mg/L | 1 | 7/24/2018 2:45:14 PM |
|---------|----------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 7/26/2018 2:42:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:48:53 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:48:53 PM |
| Barium | 0.0440 | 0.0100 | | mg/L | 1 | 7/23/2018 9:48:53 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:48:53 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 7/23/2018 9:48:53 PM |
| Calcium | 338 | 0.500 | | mg/L | 1 | 7/23/2018 9:48:53 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:48:53 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:48:53 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:48:53 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:48:53 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:48:53 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:48:53 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|-------|--|-------|---|----------------------|
| Total Radium by Calculation | 2.55+/-0.733 | 0.850 | | pCi/L | 1 | 8/1/2018 10:15:00 AM |
|-----------------------------|--------------|-------|--|-------|---|----------------------|

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|---------|-------|--|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | | mg/L | 1 | 7/23/2018 12:21:00 PM |
|----------|---------|-------|--|------|---|-----------------------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

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Analytical Report

(continuous)

WO#: 1807297

Date Reported: 8/17/2018

CLIENT: A & M Engineering

Lab Order: 1807297

Project: GRDA Monthly Assessment

Lab ID: 1807297-006

Collection Date: 7/19/2018 4:15:00 PM

Client Sample ID: Duplicate

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 7/24/2018 2:45:14 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|-------|--------|--|------|---|----------------------|
| Lithium | 0.157 | 0.0150 | | mg/L | 1 | 7/26/2018 2:45:00 PM |
|---------|-------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:54:57 PM |
| Arsenic | 0.0353 | 0.00500 | | mg/L | 1 | 7/23/2018 9:54:57 PM |
| Barium | 0.0580 | 0.0100 | | mg/L | 1 | 7/23/2018 9:54:57 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:54:57 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 7/23/2018 9:54:57 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:54:57 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:54:57 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:54:57 PM |
| Molybdenum | 1.01 | 0.0100 | | mg/L | 1 | 7/23/2018 9:54:57 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 7/23/2018 9:54:57 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 7/23/2018 9:54:57 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|-------|--|-------|---|----------------------|
| Total Radium by Calculation | 1.80+/-0.786 | 0.977 | | pCi/L | 1 | 8/1/2018 10:15:00 AM |
|-----------------------------|--------------|-------|--|-------|---|----------------------|

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|-------|-------|--|------|---|-----------------------|
| Fluoride | 0.831 | 0.200 | | mg/L | 1 | 7/23/2018 12:21:00 PM |
|----------|-------|-------|--|------|---|-----------------------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |



QC SUMMARY REPORT

WO#: 1807297

17-Aug-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: 4500 F-C, 2011

| | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|---------------------------------|--|
| Sample ID: MB-R32740 | SampType: MBLK | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 32740 |
| Client ID: PBW | Batch ID: R32740 | TestNo: 4500 F-C, 201 | | Analysis Date: 7/23/2018 | SeqNo: 353672 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Fluoride | < 0.200 | 0.200 | | | |

| | | | | | |
|------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|--|
| Sample ID: LCS-R32740 | SampType: LCS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 32740 |
| Client ID: LCSW | Batch ID: R32740 | TestNo: 4500 F-C, 201 | | Analysis Date: 7/23/2018 | SeqNo: 353673 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Fluoride | 2.28 | 0.200 | 2.000 | 0 | 114 80 120 |

| | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|--|
| Sample ID: 1807297-001BMS | SampType: MS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 32740 |
| Client ID: MW93-1 | Batch ID: R32740 | TestNo: 4500 F-C, 201 | | Analysis Date: 7/23/2018 | SeqNo: 353676 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Fluoride | 5.86 | 0.200 | 5.000 | 0 | 117 72.7 139 |

| | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|--|
| Sample ID: 1807297-001BMSD | SampType: MSD | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 32740 |
| Client ID: MW93-1 | Batch ID: R32740 | TestNo: 4500 F-C, 201 | | Analysis Date: 7/23/2018 | SeqNo: 353677 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Fluoride | 5.77 | 0.200 | 5.000 | 0 | 115 72.7 139 5.860 1.55 7.08 |

Qualifiers: H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



QC SUMMARY REPORT

WO#: 1807297

17-Aug-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: MB-9192 | SampType: MBLK | TestCode: MET_WW_T | Units: mg/L | Prep Date: 7/23/2018 | RunNo: 32762 | | | | | | |
|---------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: PBW | Batch ID: 9192 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 7/23/2018 | SeqNo: 353993 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | < 0.0100 | 0.0100 | | | | | | | | | |
| Arsenic | < 0.00500 | 0.00500 | | | | | | | | | |
| Barium | < 0.0100 | 0.0100 | | | | | | | | | |
| Beryllium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cadmium | < 0.00100 | 0.00100 | | | | | | | | | |
| Calcium | < 0.0500 | 0.0500 | | | | | | | | | |
| Chromium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cobalt | < 0.0100 | 0.0100 | | | | | | | | | |
| Lead | < 0.00500 | 0.00500 | | | | | | | | | |
| Molybdenum | < 0.0100 | 0.0100 | | | | | | | | | |
| Selenium | < 0.00500 | 0.00500 | | | | | | | | | |
| Thallium | < 0.0100 | 0.0100 | | | | | | | | | |

| Sample ID: LCS-9192 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 7/23/2018 | RunNo: 32762 | | | | | | |
|----------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9192 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 7/23/2018 | SeqNo: 353994 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 2.02 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Arsenic | 1.96 | 0.00500 | 2.000 | 0 | 98.0 | 85 | 115 | | | | |
| Barium | 1.99 | 0.0100 | 2.000 | 0 | 99.4 | 85 | 115 | | | | |
| Beryllium | 1.96 | 0.0100 | 2.000 | 0 | 97.9 | 85 | 115 | | | | |
| Cadmium | 1.99 | 0.00100 | 2.000 | 0 | 99.6 | 85 | 115 | | | | |
| Calcium | 2.02 | 0.0500 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Chromium | 2.02 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



QC SUMMARY REPORT

WO#: 1807297

17-Aug-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: LCS-9192 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 7/23/2018 | RunNo: 32762 | | | | | | |
|----------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9192 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 7/23/2018 | SeqNo: 353994 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Cobalt | 2.03 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Lead | 1.98 | 0.00500 | 2.000 | 0 | 99.2 | 85 | 115 | | | | |
| Molybdenum | 2.03 | 0.0100 | 2.000 | 0 | 102 | 85 | 115 | | | | |
| Selenium | 1.89 | 0.00500 | 2.000 | 0 | 94.6 | 85 | 115 | | | | |
| Thallium | 2.09 | 0.0100 | 2.000 | 0 | 105 | 85 | 115 | | | | |

| Sample ID: 1807301-001CMS | SampType: MS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 7/23/2018 | RunNo: 32762 | | | | | | |
|----------------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: BatchQC | Batch ID: 9192 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 7/23/2018 | SeqNo: 353996 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 2.03 | 0.0100 | 2.000 | 0 | 101 | 80.5 | 118 | | | | |
| Arsenic | 1.99 | 0.00500 | 2.000 | 0 | 99.6 | 80.3 | 117 | | | | |
| Barium | 2.08 | 0.0100 | 2.000 | 0.04054 | 102 | 88.4 | 109 | | | | |
| Beryllium | 2.01 | 0.0100 | 2.000 | 0 | 101 | 80.3 | 117 | | | | |
| Cadmium | 2.00 | 0.00100 | 2.000 | 0 | 100 | 80.9 | 117 | | | | |
| Calcium | 37.1 | 0.0500 | 2.000 | 34.41 | 136 | 21.9 | 163 | | | | |
| Chromium | 2.02 | 0.0100 | 2.000 | 0 | 101 | 80.5 | 117 | | | | |
| Cobalt | 1.99 | 0.0100 | 2.000 | 0 | 99.6 | 81.5 | 116 | | | | |
| Lead | 1.92 | 0.00500 | 2.000 | 0 | 96.0 | 80.2 | 118 | | | | |
| Molybdenum | 2.04 | 0.0100 | 2.000 | 0 | 102 | 81.7 | 118 | | | | |
| Selenium | 1.91 | 0.00500 | 2.000 | 0 | 95.4 | 78.5 | 115 | | | | |
| Thallium | 2.01 | 0.0100 | 2.000 | 0 | 100 | 79.9 | 120 | | | | |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



QC SUMMARY REPORT

WO#: 1807297

17-Aug-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: 1807301-001CMSD | SampType: MSD | TestCode: MET_WW_T | Units: mg/L | Prep Date: 7/23/2018 | RunNo: 32762 | | | | | | |
|-----------------------------------|-----------------------|-------------------------------------|---------------------------------|-----------------------------|---------------------|----------|-----------|-------------|-------|----------|------|
| Client ID: BatchQC | Batch ID: 9192 | TestNo: E200.7, 1994 SW3010A | Analysis Date: 7/23/2018 | SeqNo: 353997 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 2.05 | 0.0100 | 2.000 | 0 | 103 | 80.5 | 118 | 2.027 | 1.23 | 3.45 | |
| Arsenic | 2.01 | 0.00500 | 2.000 | 0 | 101 | 80.3 | 117 | 1.992 | 0.999 | 3.26 | |
| Barium | 2.05 | 0.0100 | 2.000 | 0.04054 | 100 | 88.4 | 109 | 2.077 | 1.41 | 3.25 | |
| Beryllium | 1.98 | 0.0100 | 2.000 | 0 | 99.1 | 80.3 | 117 | 2.014 | 1.65 | 3.52 | |
| Cadmium | 2.03 | 0.00100 | 2.000 | 0 | 101 | 80.9 | 117 | 2.003 | 1.14 | 3.22 | |
| Calcium | 36.5 | 0.0500 | 2.000 | 34.41 | 106 | 21.9 | 163 | 37.12 | 1.60 | 2.28 | |
| Chromium | 2.04 | 0.0100 | 2.000 | 0 | 102 | 80.5 | 117 | 2.022 | 0.837 | 3.37 | |
| Cobalt | 2.02 | 0.0100 | 2.000 | 0 | 101 | 81.5 | 116 | 1.993 | 1.20 | 3.38 | |
| Lead | 1.94 | 0.00500 | 2.000 | 0 | 97.2 | 80.2 | 118 | 1.921 | 1.19 | 3.09 | |
| Molybdenum | 2.06 | 0.0100 | 2.000 | 0 | 103 | 81.7 | 118 | 2.036 | 1.17 | 3.32 | |
| Selenium | 1.93 | 0.00500 | 2.000 | 0 | 96.7 | 78.5 | 115 | 1.908 | 1.35 | 3.4 | |
| Thallium | 2.03 | 0.0100 | 2.000 | 0 | 101 | 79.9 | 120 | 2.006 | 1.04 | 3.26 | |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



QC SUMMARY REPORT

WO#: 1807297

17-Aug-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: MB-R32867 | SampType: MBLK | TestCode: met_ww_odd | Units: mg/L | Prep Date: | RunNo: 32867 |
| Client ID: PBW | Batch ID: R32867 | TestNo: E200.7, 1994 | | Analysis Date: 7/26/2018 | SeqNo: 354877 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Lithium | < 0.0150 | 0.0150 | | | |

| | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: LCS-R32867 | SampType: LCS | TestCode: met_ww_odd | Units: mg/L | Prep Date: | RunNo: 32867 |
| Client ID: LCSW | Batch ID: R32867 | TestNo: E200.7, 1994 | | Analysis Date: 7/26/2018 | SeqNo: 354878 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Lithium | 97.7 | 0.0150 | 100.0 | 0 | 97.7 85 115 |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



QC SUMMARY REPORT

WO#: 1807297

17-Aug-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R32774 | SampType: MBLK | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32774 | | | | | | |
| Client ID: PBW | Batch ID: R32774 | TestNo: E245.1, 1994 | | Analysis Date: 7/24/2018 | SeqNo: 354105 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | < 0.0000500 | 0.0000500 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R32774 | SampType: LCS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32774 | | | | | | |
| Client ID: LCSW | Batch ID: R32774 | TestNo: E245.1, 1994 | | Analysis Date: 7/24/2018 | SeqNo: 354106 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000991 | 0.0000500 | 0.001000 | 0 | 99.1 | 85 | 115 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1807294-003AMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32774 | | | | | | |
| Client ID: BatchQC | Batch ID: R32774 | TestNo: E245.1, 1994 | | Analysis Date: 7/24/2018 | SeqNo: 354108 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000978 | 0.0000500 | 0.001000 | 0 | 97.8 | 77.8 | 119 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|--------|----------|------|
| Sample ID: 1807294-003AMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32774 | | | | | | |
| Client ID: BatchQC | Batch ID: R32774 | TestNo: E245.1, 1994 | | Analysis Date: 7/24/2018 | SeqNo: 354109 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000978 | 0.0000500 | 0.001000 | 0 | 97.8 | 77.8 | 119 | 0.0009780 | 0.0511 | 1.89 | |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



QC SUMMARY REPORT

WO#: 1807297

17-Aug-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1807297-005AMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32774 | | | | | | |
| Client ID: MW03-02 | Batch ID: R32774 | TestNo: E245.1, 1994 | | Analysis Date: 7/24/2018 | SeqNo: 354115 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00124 | 0.0000500 | 0.001000 | 0.0002391 | 99.7 | 77.8 | 119 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1807297-005AMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 32774 | | | | | | |
| Client ID: MW03-02 | Batch ID: R32774 | TestNo: E245.1, 1994 | | Analysis Date: 7/24/2018 | SeqNo: 354116 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00121 | 0.0000500 | 0.001000 | 0.0002391 | 96.6 | 77.8 | 119 | 0.001236 | 2.54 | 1.89 | R |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



Chain of Custody Record

Laboratory Number: **807897**

| | | | | | |
|---|--|----------------------|--|------------------------------|---------------------------|
| Client Information: | | Billing Information: | | PO Number: | Project Name/Number: |
| Company Name: A+M Engineering | | | | 1986-030-003 | GRDA |
| Contact Name: Tom Trebonik / Ed Van Schaik | | | | Quote Number: | Monthly Assessment |
| Address: | | | | Required QC Level: | Sampler's Signature: |
| City, State Zip: | | | | Std. | Ed Van Schaik |
| Phone Number: 918-665-6575 Ext: 227 | | Ext: | | Bill Monthly: | Shipping Method: |
| Fax Number: | | | | <input type="checkbox"/> Yes | UPS / FedEx / Airborne |
| E-mail Address: | | | | <input type="checkbox"/> No | GCT / Hand / Mail |

Page **1** of **2**
 Turn Time
 1 Day
 2 Day
 Standard
 Other
 (Rush turn times will incur a surcharge.)

| Which Regulations Apply: | | Matrix Code: | | Container | | Requested Tests | | | | | | | | | | Comments | |
|-------------------------------------|---|------------------|-------------|-----------|------|-----------------|----------|---------|--------|-----------|---------|----------|--------|----------|------|----------|---|
| <input type="checkbox"/> RCRA | <input type="checkbox"/> Drinking Water | AQ = Aqueous | SO = Soil | Number | Type | Pres | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Fluoride | Lead | Lithium | GREENCOUNTRYTESTING CHAIN OF CUSTODY ATTACHMENT 1 OF 2 PAGES <i>MW 03-1 went dry after metals collected - Radium samples collected next day</i> |
| <input type="checkbox"/> POTW | <input type="checkbox"/> Distribution | DW = Drinking | O = Oil | | | | | | | | | | | | | | |
| <input type="checkbox"/> NPDES | <input type="checkbox"/> Special | WW = Waste | SL = Sludge | | | | | | | | | | | | | | |
| <input type="checkbox"/> USDA/FDA | <input type="checkbox"/> State | MW = Monit. Well | F = Food | | | | | | | | | | | | | | |
| <input type="checkbox"/> RECAP/RISC | <input type="checkbox"/> Other | LQ = Liquid | SW = Swab | | | | | | | | | | | | | | |
| | | | SOL = Solid | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| MW 93-1 | 7-19-18 | 1035 | G | AQ | 4 | P | X | X | X | X | X | X | X | X | X | X | |
| MW 93-2 | 7-19-18 | 1150 | G | AQ | 4 | P | X | X | X | X | X | X | X | X | X | X | |
| MW 93-3 | 7-19-18 | 1320 | G | AQ | 4 | P | X | X | X | X | X | X | X | X | X | X | |
| MW 03-1 | 7-19-18 | 1435 | G | AQ | 2 | P | X | X | X | X | X | X | X | X | X | X | |
| MW 03-2 | 7-19-18 | 1545 | G | AQ | 4 | P | X | X | X | X | X | X | X | X | X | X | |
| Duplicate | 7-19-18 | 1615 | G | AQ | 4 | P | X | X | X | X | X | X | X | X | X | X | |

| | | | | |
|----------------------|---------------------|------------------------|---------------------|--|
| Relinquished by: | Date/Time: | Received by: | Date/Time: | Field Notes: |
| Ed Van Schaik | 7-20-18 1228 | John Fitzgerald | 7/20/18 1228 | |
| | | | | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | | | | Temp: 3C |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

6825 E. 38th Street
 Tulsa, OK 74145
 918-828-9977
 Fax: 918-828-7756



Chain of Custody Record

Laboratory Number: **1807297**

| | | | | | |
|---|--|----------------------|--|------------------------------|------------------------------|
| Client Information: | | Billing Information: | | PO Number: | Project Name/Number: |
| Company Name: A+M Engineering | | | | 1986-030-003 | GRDA |
| Contact Name: Tom Trebonik / Ed Van Schaik | | | | Quote Number: | Monthly Assessment |
| Address: | | | | Required QC Level: | Sampler's Signature: |
| City, State Zip: | | | | Std. | Ed Van Schaik |
| Phone Number: 918-665-6575 Ext: 227 | | Ext: | | Bill Monthly: | Shipping Method: |
| Fax Number: | | | | <input type="checkbox"/> Yes | UPS / FedEx / Airborne |
| E-mail Address: | | | | <input type="checkbox"/> No | GCT / Hand / Mail |

Page **2** of **2**

Turn Time

1 Day

2 Day

Standard

Other

(Rush turn times will incur a surcharge.)

| Sample ID/Description | Date | Time | Matrix | Container | Pres. | Requested Tests | Comments | | | | | | |
|-----------------------|---------|------|--------|-----------|-------|-----------------|----------|------------|----------|----------|-----------------------|---------|---|
| | | | | | | | Number | Type | | | | | |
| MW 93-1 | 7-19-18 | 1035 | G | AQ | 4 | P | Mercury | Molybdenum | Selenium | Thallium | Radium 226 + 228 Comb | Calcium | GREENCOUNTRYTESTING CHAIN OF CUSTODY ATTACHMENT 2 OF 2 PAGES MW 03-1 was dry after metals were collected. |
| MW 93-2 | 7-19-18 | 1150 | G | AQ | 4 | P | X | X | X | X | X | | |
| MW 93-3 | 7-19-18 | 1320 | G | AQ | 4 | P | X | X | X | X | X | | |
| MW 03-1 | 7-19-18 | 1435 | G | AQ | 2 | P | X | X | X | X | | X | |
| MW 03-2 | 7-19-18 | 1545 | G | AQ | 4 | P | X | X | X | X | X | X | |
| Duplicate | 7-19-18 | 1615 | G | AQ | 4 | P | X | X | X | X | X | | |
| MW 03-1 | 7-20-18 | 1030 | G | AQ | 2 | P | | | | | X | | Radium samples collected 7-20-18 |

| Relinquished by | Date/Time | Received by | Date/Time | Field Notes: |
|----------------------|---------------------|--------------------|---------------------|--|
| Ed Van Schaik | 7-20-18 1228 | <i>[Signature]</i> | 7/20/18 1228 | |
| | | | | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | | | | Temp: 5c |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

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 Tulsa, OK 74145
 918-828-9977
 Fax: 918-828-7756

Green Country Testing, Inc.
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Website: www.greencountrytesting.com



September 25, 2018

Tom Trebonik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: GRDA Monthly Assessment

Order No.: 1808367

Dear Tom Trebonik:

Green Country Testing, Inc. received 6 sample(s) on 8/23/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

Original

Green Country Testing, Inc.
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Case Narrative

WO#: 1808367
Date: 9/25/2018

CLIENT: A & M Engineering
Project: GRDA Monthly Assessment

1808367 - Lithium has been Sub Contracted.
1808367 - Radium-226/228 has been Sub Contracted.

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Analytical Report

(continuous)

WO#: 1808367

Date Reported: 9/25/2018

CLIENT: A & M Engineering

Lab Order: 1808367

Project: GRDA Monthly Assessment

Lab ID: 1808367-001

Collection Date: 8/22/2018 11:00:00 AM

Client Sample ID: MW93-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 8/27/2018 3:55:38 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **9915**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 8/28/2018 2:57:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:18:45 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:18:45 PM |
| Barium | 0.0152 | 0.0100 | | mg/L | 1 | 8/27/2018 4:18:45 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:18:45 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 8/27/2018 4:18:45 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:18:45 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:18:45 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:18:45 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:18:45 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:18:45 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:18:45 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|-------|--|-------|---|-----------|
| Total Radium by Calculation | 0.320+/-0.538 | 0.872 | | pCi/L | 1 | 8/29/2018 |
|-----------------------------|---------------|-------|--|-------|---|-----------|

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|---------|-------|--|------|---|----------------------|
| Fluoride | < 0.200 | 0.200 | | mg/L | 1 | 8/24/2018 9:36:00 AM |
|----------|---------|-------|--|------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1808367

Date Reported: 9/25/2018

CLIENT: A & M Engineering

Lab Order: 1808367

Project: GRDA Monthly Assessment

Lab ID: 1808367-002

Collection Date: 8/22/2018 12:20:00 PM

Client Sample ID: MW93-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 8/27/2018 3:55:38 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **9915**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 8/28/2018 2:57:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:24:48 PM |
| Arsenic | 0.0333 | 0.00500 | | mg/L | 1 | 8/27/2018 4:24:48 PM |
| Barium | 0.0612 | 0.0100 | | mg/L | 1 | 8/27/2018 4:24:48 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:24:48 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 8/27/2018 4:24:48 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:24:48 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:24:48 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:24:48 PM |
| Molybdenum | 0.949 | 0.0100 | | mg/L | 1 | 8/27/2018 4:24:48 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:24:48 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:24:48 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|-------|--|-------|---|-----------|
| Total Radium by Calculation | 2.24+/-0.910 | 0.887 | | pCi/L | 1 | 8/29/2018 |
|-----------------------------|--------------|-------|--|-------|---|-----------|

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|-------|-------|--|------|---|----------------------|
| Fluoride | 0.865 | 0.200 | | mg/L | 1 | 8/24/2018 9:36:00 AM |
|----------|-------|-------|--|------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1808367

Date Reported: 9/25/2018

CLIENT: A & M Engineering

Lab Order: 1808367

Project: GRDA Monthly Assessment

Lab ID: 1808367-003

Collection Date: 8/22/2018 1:45:00 PM

Client Sample ID: MW93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **KR**

| | | | | | | |
|---------|----------|-----------|--|------|---|----------------------|
| Mercury | 0.000514 | 0.0000500 | | mg/L | 1 | 8/27/2018 3:55:38 PM |
|---------|----------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **9915**

| | | | | | | |
|---------|-------|--------|--|------|---|----------------------|
| Lithium | 0.159 | 0.0150 | | mg/L | 1 | 8/28/2018 2:57:00 PM |
|---------|-------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

SW3010A

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:35:36 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:35:36 PM |
| Barium | 0.184 | 0.0100 | | mg/L | 1 | 8/27/2018 4:35:36 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:35:36 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 8/27/2018 4:35:36 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:35:36 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:35:36 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:35:36 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:35:36 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:35:36 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:35:36 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|------|--|-------|---|-----------|
| Total Radium by Calculation | 1.00+/-0.761 | 1.02 | | pCi/L | 1 | 8/29/2018 |
|-----------------------------|--------------|------|--|-------|---|-----------|

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | | |
|----------|---------|-------|--|------|---|----------------------|
| Fluoride | < 0.200 | 0.200 | | mg/L | 1 | 8/24/2018 9:36:00 AM |
|----------|---------|-------|--|------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

Original

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Analytical Report

(continuous)

WO#: 1808367

Date Reported: 9/25/2018

CLIENT: A & M Engineering

Lab Order: 1808367

Project: GRDA Monthly Assessment

Lab ID: 1808367-004

Collection Date: 8/22/2018 2:45:00 PM

Client Sample ID: MW03-01

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|----------|-----------|--|------|---|----------------------|
| Mercury | 0.000184 | 0.0000500 | | mg/L | 1 | 8/27/2018 3:55:38 PM |
|---------|----------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **9915**

| | | | | | | |
|---------|--------|--------|--|------|---|----------------------|
| Lithium | 0.0461 | 0.0150 | | mg/L | 1 | 8/28/2018 2:57:00 PM |
|---------|--------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:41:21 PM |
| Arsenic | 0.123 | 0.00500 | | mg/L | 1 | 8/27/2018 4:41:21 PM |
| Barium | 2.00 | 0.0100 | | mg/L | 1 | 8/27/2018 4:41:21 PM |
| Beryllium | 0.0108 | 0.0100 | | mg/L | 1 | 8/27/2018 4:41:21 PM |
| Cadmium | 0.0204 | 0.00100 | | mg/L | 1 | 8/27/2018 4:41:21 PM |
| Calcium | 613 | 0.0500 | | mg/L | 1 | 8/27/2018 4:41:21 PM |
| Chromium | 0.380 | 0.0100 | | mg/L | 1 | 8/27/2018 4:41:21 PM |
| Cobalt | 0.115 | 0.0100 | | mg/L | 1 | 8/27/2018 4:41:21 PM |
| Lead | 0.143 | 0.00500 | | mg/L | 1 | 8/27/2018 4:41:21 PM |
| Molybdenum | 0.0167 | 0.0100 | | mg/L | 1 | 8/27/2018 4:41:21 PM |
| Selenium | 0.0144 | 0.00500 | | mg/L | 1 | 8/27/2018 4:41:21 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:41:21 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|-------------|-------|--|-------|---|-----------|
| Total Radium by Calculation | 6.10+/-1.09 | 0.907 | | pCi/L | 1 | 8/29/2018 |
|-----------------------------|-------------|-------|--|-------|---|-----------|

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|---------|-------|--|------|---|----------------------|
| Fluoride | < 0.200 | 0.200 | | mg/L | 1 | 8/24/2018 9:36:00 AM |
|----------|---------|-------|--|------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1808367

Date Reported: 9/25/2018

CLIENT: A & M Engineering

Lab Order: 1808367

Project: GRDA Monthly Assessment

Lab ID: 1808367-005

Collection Date: 8/22/2018 3:40:00 PM

Client Sample ID: MW03-02

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|----------|-----------|--|------|---|----------------------|
| Mercury | 0.000255 | 0.0000500 | | mg/L | 1 | 8/27/2018 3:55:38 PM |
|---------|----------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **9915**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 8/28/2018 2:57:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:52:46 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:52:46 PM |
| Barium | 0.0409 | 0.0100 | | mg/L | 1 | 8/27/2018 4:52:46 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:52:46 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 8/27/2018 4:52:46 PM |
| Calcium | 325 | 0.0500 | | mg/L | 1 | 8/27/2018 4:52:46 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:52:46 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:52:46 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:52:46 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:52:46 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:52:46 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:52:46 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|-------|--|-------|---|-----------|
| Total Radium by Calculation | 0.515+/-0.575 | 0.840 | | pCi/L | 1 | 8/29/2018 |
|-----------------------------|---------------|-------|--|-------|---|-----------|

FLUORIDE **4500 F-C, 2011** Analyst: **CW**

| | | | | | | |
|----------|---------|-------|--|------|---|----------------------|
| Fluoride | < 0.200 | 0.200 | | mg/L | 1 | 8/24/2018 9:36:00 AM |
|----------|---------|-------|--|------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1808367

Date Reported: 9/25/2018

CLIENT: A & M Engineering

Lab Order: 1808367

Project: GRDA Monthly Assessment

Lab ID: 1808367-006

Collection Date: 8/22/2018 4:30:00 PM

Client Sample ID: Duplicate

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 8/27/2018 3:55:38 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **9915**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 8/28/2018 2:57:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

SW3010A

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:58:46 PM |
| Arsenic | 0.0342 | 0.00500 | | mg/L | 1 | 8/27/2018 4:58:46 PM |
| Barium | 0.0647 | 0.0100 | | mg/L | 1 | 8/27/2018 4:58:46 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:58:46 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 8/27/2018 4:58:46 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:58:46 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:58:46 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:58:46 PM |
| Molybdenum | 0.870 | 0.0100 | | mg/L | 1 | 8/27/2018 4:58:46 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 8/27/2018 4:58:46 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 8/27/2018 4:58:46 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|------|--|-------|---|-----------|
| Total Radium by Calculation | 0.000+/-0.683 | 1.12 | | pCi/L | 1 | 8/29/2018 |
|-----------------------------|---------------|------|--|-------|---|-----------|

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | | |
|----------|-------|-------|--|------|---|----------------------|
| Fluoride | 0.790 | 0.200 | | mg/L | 1 | 8/24/2018 9:36:00 AM |
|----------|-------|-------|--|------|---|----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

Original



QC SUMMARY REPORT

WO#: 1808367
 25-Sep-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: 4500 F-C, 2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33241 | SampType: MBLK | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 33241 | | | | | | |
| Client ID: PBW | Batch ID: R33241 | TestNo: 4500 F-C, 201 | | Analysis Date: 8/24/2018 | SeqNo: 358391 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | < 0.200 | 0.200 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33241 | SampType: LCS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 33241 | | | | | | |
| Client ID: LCSW | Batch ID: R33241 | TestNo: 4500 F-C, 201 | | Analysis Date: 8/24/2018 | SeqNo: 358392 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 2.19 | 0.200 | 2.000 | 0 | 110 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1808345-001BMS | SampType: MS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 33241 | | | | | | |
| Client ID: BatchQC | Batch ID: R33241 | TestNo: 4500 F-C, 201 | | Analysis Date: 8/24/2018 | SeqNo: 358394 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 6.28 | 0.200 | 5.000 | 0.7670 | 110 | 72.7 | 139 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1808345-001BMSD | SampType: MSD | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 33241 | | | | | | |
| Client ID: BatchQC | Batch ID: R33241 | TestNo: 4500 F-C, 201 | | Analysis Date: 8/24/2018 | SeqNo: 358395 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 6.20 | 0.200 | 5.000 | 0.7670 | 109 | 72.7 | 139 | 6.280 | 1.28 | 7.08 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: 1808367
 25-Sep-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: MB-9309 | SampType: MBLK | TestCode: MET_WW_T | Units: mg/L | Prep Date: 8/24/2018 | RunNo: 33296 | | | | | | |
|---------------------------|-----------------------|-------------------------------------|---------------------------------|-----------------------------|---------------------|----------|-----------|-------------|------|----------|------|
| Client ID: PBW | Batch ID: 9309 | TestNo: E200.7, 1994 SW3010A | Analysis Date: 8/27/2018 | SeqNo: 358878 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | < 0.0100 | 0.0100 | | | | | | | | | |
| Arsenic | < 0.00500 | 0.00500 | | | | | | | | | |
| Barium | < 0.0100 | 0.0100 | | | | | | | | | |
| Beryllium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cadmium | < 0.00100 | 0.00100 | | | | | | | | | |
| Calcium | < 0.0500 | 0.0500 | | | | | | | | | |
| Chromium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cobalt | < 0.0100 | 0.0100 | | | | | | | | | |
| Lead | < 0.00500 | 0.00500 | | | | | | | | | |
| Molybdenum | < 0.0100 | 0.0100 | | | | | | | | | |
| Selenium | < 0.00500 | 0.00500 | | | | | | | | | |
| Thallium | < 0.0100 | 0.0100 | | | | | | | | | |

| Sample ID: LCS-9309 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 8/24/2018 | RunNo: 33296 | | | | | | |
|----------------------------|-----------------------|-------------------------------------|---------------------------------|-----------------------------|---------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9309 | TestNo: E200.7, 1994 SW3010A | Analysis Date: 8/27/2018 | SeqNo: 358879 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 1.90 | 0.0100 | 2.000 | 0 | 95.1 | 85 | 115 | | | | |
| Arsenic | 1.91 | 0.00500 | 2.000 | 0 | 95.3 | 85 | 115 | | | | |
| Barium | 1.98 | 0.0100 | 2.000 | 0 | 99.0 | 85 | 115 | | | | |
| Beryllium | 2.02 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Cadmium | 1.95 | 0.00100 | 2.000 | 0 | 97.4 | 85 | 115 | | | | |
| Calcium | 2.04 | 0.0500 | 2.000 | 0 | 102 | 85 | 115 | | | | |
| Chromium | 2.00 | 0.0100 | 2.000 | 0 | 100 | 85 | 115 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: 1808367
 25-Sep-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: LCS-9309 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 8/24/2018 | RunNo: 33296 | | | | | | |
|----------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9309 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 8/27/2018 | SeqNo: 358879 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Cobalt | 2.00 | 0.0100 | 2.000 | 0 | 99.9 | 85 | 115 | | | | |
| Lead | 2.04 | 0.00500 | 2.000 | 0 | 102 | 85 | 115 | | | | |
| Molybdenum | 2.00 | 0.0100 | 2.000 | 0 | 99.9 | 85 | 115 | | | | |
| Selenium | 1.90 | 0.00500 | 2.000 | 0 | 95.0 | 85 | 115 | | | | |
| Thallium | 2.06 | 0.0100 | 2.000 | 0 | 103 | 85 | 115 | | | | |

| Sample ID: 1808366-002BMS | SampType: MS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 8/24/2018 | RunNo: 33296 | | | | | | |
|----------------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: BatchQC | Batch ID: 9309 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 8/27/2018 | SeqNo: 358881 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 1.92 | 0.0100 | 2.000 | 0 | 96.2 | 80.5 | 118 | | | | |
| Arsenic | 1.97 | 0.00500 | 2.000 | 0 | 98.4 | 80.3 | 117 | | | | |
| Barium | 2.02 | 0.0100 | 2.000 | 0.01275 | 100 | 88.4 | 109 | | | | |
| Beryllium | 2.10 | 0.0100 | 2.000 | 0 | 105 | 80.3 | 117 | | | | |
| Cadmium | 1.98 | 0.00100 | 2.000 | 0 | 98.9 | 80.9 | 117 | | | | |
| Calcium | 32.0 | 0.0500 | 2.000 | 29.91 | 102 | 21.9 | 163 | | | | |
| Chromium | 2.05 | 0.0100 | 2.000 | 0 | 102 | 80.5 | 117 | | | | |
| Cobalt | 1.99 | 0.0100 | 2.000 | 0 | 99.4 | 81.5 | 116 | | | | |
| Lead | 2.02 | 0.00500 | 2.000 | 0 | 101 | 80.2 | 118 | | | | |
| Molybdenum | 2.03 | 0.0100 | 2.000 | 0 | 101 | 81.7 | 118 | | | | |
| Selenium | 1.95 | 0.00500 | 2.000 | 0 | 97.6 | 78.5 | 115 | | | | |
| Thallium | 1.99 | 0.0100 | 2.000 | 0 | 99.6 | 79.9 | 120 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: 1808367
 25-Sep-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: 1808366-002BMSD | SampType: MSD | TestCode: MET_WW_T | Units: mg/L | Prep Date: 8/24/2018 | RunNo: 33296 | | | | | | |
|-----------------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|--------|----------|------|
| Client ID: BatchQC | Batch ID: 9309 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 8/27/2018 | SeqNo: 358882 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 1.92 | 0.0100 | 2.000 | 0 | 95.9 | 80.5 | 118 | 1.924 | 0.364 | 3.45 | |
| Arsenic | 1.96 | 0.00500 | 2.000 | 0 | 98.0 | 80.3 | 117 | 1.968 | 0.356 | 3.26 | |
| Barium | 2.00 | 0.0100 | 2.000 | 0.01275 | 99.5 | 88.4 | 109 | 2.020 | 0.895 | 3.25 | |
| Beryllium | 2.08 | 0.0100 | 2.000 | 0 | 104 | 80.3 | 117 | 2.097 | 0.574 | 3.52 | |
| Cadmium | 1.97 | 0.00100 | 2.000 | 0 | 98.6 | 80.9 | 117 | 1.977 | 0.253 | 3.22 | |
| Calcium | 31.6 | 0.0500 | 2.000 | 29.91 | 86.0 | 21.9 | 163 | 31.95 | 1.01 | 2.28 | |
| Chromium | 2.04 | 0.0100 | 2.000 | 0 | 102 | 80.5 | 117 | 2.048 | 0.196 | 3.37 | |
| Cobalt | 1.98 | 0.0100 | 2.000 | 0 | 99.2 | 81.5 | 116 | 1.988 | 0.151 | 3.38 | |
| Lead | 2.02 | 0.00500 | 2.000 | 0 | 101 | 80.2 | 118 | 2.018 | 0.149 | 3.09 | |
| Molybdenum | 2.03 | 0.0100 | 2.000 | 0 | 101 | 81.7 | 118 | 2.027 | 0.0493 | 3.32 | |
| Selenium | 1.96 | 0.00500 | 2.000 | 0 | 98.0 | 78.5 | 115 | 1.952 | 0.358 | 3.4 | |
| Thallium | 1.99 | 0.0100 | 2.000 | 0 | 99.4 | 79.9 | 120 | 1.991 | 0.201 | 3.26 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1808367**
25-Sep-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: MB-R33293 | SampType: MBLK | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 33293 |
| Client ID: PBW | Batch ID: R33293 | TestNo: E245.1, 1994 | | Analysis Date: 8/27/2018 | SeqNo: 358815 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Mercury | < 0.0000500 | 0.0000500 | | | |

| | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: LCS-R33293 | SampType: LCS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 33293 |
| Client ID: LCSW | Batch ID: R33293 | TestNo: E245.1, 1994 | | Analysis Date: 8/27/2018 | SeqNo: 358816 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Mercury | 0.00100 | 0.0000500 | 0.001000 | 0 | 100 85 115 |

| | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: 1808364-001AMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 33293 |
| Client ID: BatchQC | Batch ID: R33293 | TestNo: E245.1, 1994 | | Analysis Date: 8/27/2018 | SeqNo: 358818 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Mercury | 0.000977 | 0.0000500 | 0.001000 | 0 | 97.7 77.8 119 |

| | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|--|
| Sample ID: 1808364-001AMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 33293 |
| Client ID: BatchQC | Batch ID: R33293 | TestNo: E245.1, 1994 | | Analysis Date: 8/27/2018 | SeqNo: 358819 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Mercury | 0.000974 | 0.0000500 | 0.001000 | 0 | 97.4 77.8 119 0.0009768 0.287 1.89 |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1808367**
25-Sep-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1808367-005AMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 33293 | | | | | | |
| Client ID: MW03-02 | Batch ID: R33293 | TestNo: E245.1, 1994 | | Analysis Date: 8/27/2018 | SeqNo: 358825 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00124 | 0.0000500 | 0.001000 | 0.0002546 | 98.0 | 77.8 | 119 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1808367-005AMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 33293 | | | | | | |
| Client ID: MW03-02 | Batch ID: R33293 | TestNo: E245.1, 1994 | | Analysis Date: 8/27/2018 | SeqNo: 358826 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00124 | 0.0000500 | 0.001000 | 0.0002546 | 98.3 | 77.8 | 119 | 0.001235 | 0.243 | 1.89 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp

Chain of Custody Record

 Laboratory Number: **1808307**

| | | | |
|--|--|--|--|
| Company Name: A+M Engineering Contact Name: Tom Trebonik / Ed Van Schaik Address: _____ City, State Zip: _____ Phone Number: 918-665-6575 Ext: 227 Fax Number: _____ E-mail Address: _____ | Billing Information: _____ PO Number: 1986-030-003 Quote Number: _____ Required QC Level: Std. Bill Monthly: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Project Name/Number: GRDA Monthly Assessment Sampler's Signature: Ed Van Schaik Shipping Method: UPS / FedEx / Airborne GCT / Hand / Mail | Page 1 of 2 Turn Time: <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other (Rush turn times will incur a surcharge.) |
|--|--|--|--|

| | | | | |
|---|--|---------------------------------|---|----------|
| Which Regulations Apply: <input type="checkbox"/> RCRA <input type="checkbox"/> Drinking Water <input type="checkbox"/> POTW <input type="checkbox"/> Distribution <input type="checkbox"/> NPDES <input type="checkbox"/> Special <input type="checkbox"/> USDA/FDA <input type="checkbox"/> State <input type="checkbox"/> RECAP/RISC <input type="checkbox"/> Other | Matrix Code: SO = Soil O = Oil AQ = Aqueous SL = Sludge DW = Drinking F = Food WW = Waste SW = Swab MW = Monit. Well SOL = Solid LQ = Liquid | Container: _____ Pres: _____ | Requested Tests: Antimony Arsenic Barium Beryllium Cadmium Chromium Cobalt Fluoride Lead Lithium | Comments |
|---|--|---------------------------------|---|----------|

| Sample ID/Description | Date | Time | Container | Matrix | Type | Pres | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Fluoride | Lead | Lithium |
|-----------------------|---------|------|-----------|--------|------|------|----------|---------|--------|-----------|---------|----------|--------|----------|------|---------|
| MW 93-1 | 8-22-18 | 1100 | G | AQ | P | | X | X | X | X | X | X | X | X | X | X |
| MW 93-2 | 8-22-18 | 1220 | G | AQ | P | | X | X | X | X | X | X | X | X | X | X |
| MW 93-3 | 8-22-18 | 1345 | G | AQ | P | | X | X | X | X | X | X | X | X | X | X |
| MW 03-1 | 8-22-18 | 1445 | G | AQ | P | | X | X | X | X | X | X | X | X | X | X |
| MW 03-2 | 8-22-18 | 1540 | G | AQ | P | | X | X | X | X | X | X | X | X | X | X |
| Duplicate | 8-22-18 | 1630 | G | AQ | P | | X | X | X | X | X | X | X | X | X | X |

GREENCOUNTRYTESTING
 CHAIN OF CUSTODY
 ATTACHMENT
 1 OF 2 PAGES

5189

| | | | | |
|--|--------------------------------|---------------------------------|--------------------------------|------------------|
| Relinquished by: Ed Van Schaik | Date/Time: 8-23-18 0938 | Received by: [Signature] | Date/Time: 8/23/18 0938 | Field Notes: |
| Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | Temp: 9°C |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

Chain of Custody Record

 Laboratory Number: **18083102**

| | | | | | | | |
|--|--|---|--|--|--|--|--|
| Client Information: Company Name: A+M Engineering Contact Name: Tom Trebonik / Ed Van Schaik Address: _____ City, State Zip: _____ Phone Number: 918-665-6575 Ext: 227 Fax Number: _____ E-mail Address: _____ | | Billing Information: PO Number: 1986-030-003 Quote Number: _____ Required QC Level: Std. Bill Monthly: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | Project Name/Number: GRDA Monthly Assessment Sampler's Signature: Ed Van Schaik Shipping Method: <input type="checkbox"/> UPS / FedEx / Airborne <input checked="" type="checkbox"/> GCT / <u>Hand</u> / Mail | | Page 2 of 2 Turn Time: <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other (Rush turn times will incur a surcharge.) | |
|--|--|---|--|--|--|--|--|

| Which Regulations Apply: | | Matrix Code: | | Container: | | Pres: | | Requested Tests: | | | | | | Comments |
|--------------------------|--------------------------|------------------|-------------|------------|-------------------------------------|--|--|------------------|------------|----------|----------|-----------------------|---------|--|
| RCRA | Drinking Water | AQ = Aqueous | SO = Soil | Number | Type P-Plastic G-Glass / Vial | HCl, HNO ₃ , H ₂ SO ₄ , NaOH, Na ₂ SO ₄ | | Mercury | Molybdenum | Selenium | Thallium | Radium 226 & 228 Comb | Calcium | |
| <input type="checkbox"/> | <input type="checkbox"/> | DW = Drinking | O = Oil | | | | | | | | | | | GREENCOUNTRYTESTING CHAIN OF CUSTODY ATTACHMENT OF 2 PAGES 5189 |
| <input type="checkbox"/> | <input type="checkbox"/> | WW = Waste | F = Food | | | | | X | X | X | X | X | | |
| <input type="checkbox"/> | <input type="checkbox"/> | MW = Monit. Well | SW = Swab | | | | | X | X | X | X | X | X | |
| <input type="checkbox"/> | <input type="checkbox"/> | LQ = Liquid | SOL = Solid | | | | | X | X | X | X | X | X | |
| <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | X | X | X | X | X | X | |
| <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | X | X | X | X | X | X | |

| Relinquished by | Date/Time | Received by | Date/Time | Field Notes |
|----------------------|---------------------|--------------------|---------------------|---|
| Ed Van Schaik | 8-23-18 0958 | [Signature] | 8/23/18 0958 | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Temp: 5E |
| | | | | |
| | | | | |
| | | | | |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

 6825 E. 38th Street
 Tulsa, OK 74145
 918-828-9977
 Fax: 918-828-7756

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



October 22, 2018

Tom Trebonik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: GRDA Monthly Assessment

Order No.: 1809339

Dear Tom Trebonik:

Green Country Testing, Inc. received 5 sample(s) on 9/20/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

Original

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



Case Narrative

WO#: 1809339
Date: 10/22/2018

CLIENT: A & M Engineering
Project: GRDA Monthly Assessment

1809339
met_ww_odd has been Sub Contracted.
1809339
Radium-226 has been Sub Contracted.
1809339
Radium-228 has been Sub Contracted.
1809339
met_ww_odd has been Sub Contracted.
1809339
Radium-226 has been Sub Contracted.
1809339
Radium-228 has been Sub Contracted.
1809339
met_ww_odd has been Sub Contracted.
1809339
Radium-226 has been Sub Contracted.
1809339
Radium-228 has been Sub Contracted.
1809339
met_ww_odd has been Sub Contracted.
1809339
Radium-226 has been Sub Contracted.
1809339
Radium-228 has been Sub Contracted.
1809339
met_ww_odd has been Sub Contracted.
1809339
Radium-226 has been Sub Contracted.
1809339
Radium-228 has been Sub Contracted.

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
 TEL: 918-828-9977 FAX: 918-828-7756
 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1809339

Date Reported: 10/22/2018

CLIENT: A & M Engineering

Lab Order: 1809339

Project: GRDA Monthly Assessment

Lab ID: 1809339-001

Collection Date: 9/19/2018 5:15:00 PM

Client Sample ID: MW93-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **JF**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 9/20/2018 2:14:00 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **9915**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 9/27/2018 3:27:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:36:36 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 9/25/2018 5:36:36 PM |
| Barium | 0.0267 | 0.0100 | | mg/L | 1 | 9/25/2018 5:36:36 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:36:36 PM |
| Cadmium | 0.00117 | 0.00100 | | mg/L | 1 | 9/25/2018 5:36:36 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:36:36 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:36:36 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 9/25/2018 5:36:36 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:36:36 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 9/25/2018 5:36:36 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:36:36 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|-------|--|-------|---|------------|
| Total Radium by Calculation | 0.000+/-0.447 | 0.804 | | pCi/L | 1 | 10/18/2018 |
|-----------------------------|---------------|-------|--|-------|---|------------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|------------------|-------|--|-------|---|------------|
| Radium-226 | -0.0372+/-0.0729 | 0.246 | | pCi/L | 1 | 10/11/2018 |
|------------|------------------|-------|--|-------|---|------------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|----------------|-------|--|-------|---|------------|
| Radium-228 | -0.358+/-0.374 | 0.558 | | pCi/L | 1 | 10/18/2018 |
|------------|----------------|-------|--|-------|---|------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1809339**

Date Reported: **10/22/2018**

CLIENT: A & M Engineering

Lab Order: 1809339

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|-------|-------|------|---|-----------------------|
| Fluoride | 0.243 | 0.200 | mg/L | 1 | 9/24/2018 10:30:00 AM |
|----------|-------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1809339

Date Reported: 10/22/2018

CLIENT: A & M Engineering

Lab Order: 1809339

Project: GRDA Monthly Assessment

Lab ID: 1809339-002

Collection Date: 9/19/2018 2:55:00 PM

Client Sample ID: MW93-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **JF**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 9/20/2018 2:14:00 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **9915**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 9/27/2018 3:30:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

SW3010A

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:42:36 PM |
| Arsenic | 0.0344 | 0.00500 | | mg/L | 1 | 9/25/2018 5:42:36 PM |
| Barium | 0.0641 | 0.0100 | | mg/L | 1 | 9/25/2018 5:42:36 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:42:36 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 9/25/2018 5:42:36 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:42:36 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:42:36 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 9/25/2018 5:42:36 PM |
| Molybdenum | 1.34 | 0.0100 | | mg/L | 1 | 9/25/2018 5:42:36 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 9/25/2018 5:42:36 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:42:36 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|-------|--|-------|---|------------|
| Total Radium by Calculation | 0.935+/-0.616 | 0.833 | | pCi/L | 1 | 10/18/2018 |
|-----------------------------|---------------|-------|--|-------|---|------------|

RADIUM - N

E903.1

Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|------------|
| Radium-226 | 0.280+/-0.250 | 0.305 | | pCi/L | 1 | 10/11/2018 |
|------------|---------------|-------|--|-------|---|------------|

RADIUM - N

E904.0

Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|------------|
| Radium-228 | 0.656+/-0.366 | 0.528 | | pCi/L | 1 | 10/18/2018 |
|------------|---------------|-------|--|-------|---|------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1809339**

Date Reported: **10/22/2018**

CLIENT: A & M Engineering

Lab Order: 1809339

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|------|-------|------|---|-----------------------|
| Fluoride | 1.00 | 0.200 | mg/L | 1 | 9/24/2018 10:30:00 AM |
|----------|------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1809339

Date Reported: 10/22/2018

CLIENT: A & M Engineering

Lab Order: 1809339

Project: GRDA Monthly Assessment

Lab ID: 1809339-003

Collection Date: 9/19/2018 1:30:00 PM

Client Sample ID: MW93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **JF**

| | | | | | | |
|---------|----------|-----------|--|------|---|----------------------|
| Mercury | 0.000428 | 0.0000500 | | mg/L | 1 | 9/20/2018 2:14:00 PM |
|---------|----------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **9915**

| | | | | | | |
|---------|-------|--------|--|------|---|----------------------|
| Lithium | 0.160 | 0.0150 | | mg/L | 1 | 9/27/2018 3:33:00 PM |
|---------|-------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

SW3010A

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:47:48 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 9/25/2018 5:47:48 PM |
| Barium | 0.228 | 0.0100 | | mg/L | 1 | 9/25/2018 5:47:48 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:47:48 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 9/25/2018 5:47:48 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:47:48 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:47:48 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 9/25/2018 5:47:48 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:47:48 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 9/25/2018 5:47:48 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:47:48 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|-------|--|-------|---|------------|
| Total Radium by Calculation | 0.300+/-0.601 | 0.851 | | pCi/L | 1 | 10/18/2018 |
|-----------------------------|---------------|-------|--|-------|---|------------|

RADIUM - N

E903.1

Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|------------|
| Radium-226 | 0.273+/-0.248 | 0.308 | | pCi/L | 1 | 10/11/2018 |
|------------|---------------|-------|--|-------|---|------------|

RADIUM - N

E904.0

Analyst: **9915**

| | | | | | | |
|------------|----------------|-------|--|-------|---|------------|
| Radium-228 | 0.0269+/-0.353 | 0.543 | | pCi/L | 1 | 10/18/2018 |
|------------|----------------|-------|--|-------|---|------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1809339**

Date Reported: **10/22/2018**

CLIENT: A & M Engineering

Lab Order: 1809339

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|-------|-------|------|---|-----------------------|
| Fluoride | 0.389 | 0.200 | mg/L | 1 | 9/24/2018 10:30:00 AM |
|----------|-------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1809339

Date Reported: 10/22/2018

CLIENT: A & M Engineering

Lab Order: 1809339

Project: GRDA Monthly Assessment

Lab ID: 1809339-004

Collection Date: 9/19/2018 11:50:00 AM

Client Sample ID: MW03-02

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **JF**

| | | | | | | |
|---------|----------|-----------|--|------|---|----------------------|
| Mercury | 0.000636 | 0.0000500 | | mg/L | 1 | 9/20/2018 2:14:00 PM |
|---------|----------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **9915**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 9/27/2018 3:35:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:53:30 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 9/25/2018 5:53:30 PM |
| Barium | 0.0447 | 0.0100 | | mg/L | 1 | 9/25/2018 5:53:30 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:53:30 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 9/25/2018 5:53:30 PM |
| Calcium | 303 | 0.0500 | | mg/L | 1 | 9/25/2018 5:53:30 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:53:30 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:53:30 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 9/25/2018 5:53:30 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:53:30 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 9/25/2018 5:53:30 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 5:53:30 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|-------|--|-------|---|------------|
| Total Radium by Calculation | 0.340+/-0.578 | 0.920 | | pCi/L | 1 | 10/18/2018 |
|-----------------------------|---------------|-------|--|-------|---|------------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|------------|
| Radium-226 | 0.103+/-0.210 | 0.339 | | pCi/L | 1 | 10/11/2018 |
|------------|---------------|-------|--|-------|---|------------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|------------|
| Radium-228 | 0.238+/-0.368 | 0.581 | | pCi/L | 1 | 10/18/2018 |
|------------|---------------|-------|--|-------|---|------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1809339**

Date Reported: **10/22/2018**

CLIENT: A & M Engineering

Lab Order: 1809339

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|-------|-------|------|---|-----------------------|
| Fluoride | 0.210 | 0.200 | mg/L | 1 | 9/24/2018 10:30:00 AM |
|----------|-------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1809339

Date Reported: 10/22/2018

CLIENT: A & M Engineering

Lab Order: 1809339

Project: GRDA Monthly Assessment

Lab ID: 1809339-005

Collection Date: 9/19/2018 5:30:00 PM

Client Sample ID: Duplicate

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **JF**

| | | | | | | |
|---------|-------------|-----------|--|------|---|----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 9/20/2018 2:14:00 PM |
|---------|-------------|-----------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **9915**

| | | | | | | |
|---------|----------|--------|--|------|---|----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 9/27/2018 3:38:00 PM |
|---------|----------|--------|--|------|---|----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

SW3010A

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 6:15:48 PM |
| Arsenic | 0.0360 | 0.00500 | | mg/L | 1 | 9/25/2018 6:15:48 PM |
| Barium | 0.0687 | 0.0100 | | mg/L | 1 | 9/25/2018 6:15:48 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 6:15:48 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 9/25/2018 6:15:48 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 6:15:48 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 6:15:48 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 9/25/2018 6:15:48 PM |
| Molybdenum | 1.41 | 0.0100 | | mg/L | 1 | 9/25/2018 6:15:48 PM |
| Selenium | 0.00546 | 0.00500 | | mg/L | 1 | 9/25/2018 6:15:48 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 9/25/2018 6:15:48 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|-------|--|-------|---|------------|
| Total Radium by Calculation | 1.07+/-0.654 | 0.860 | | pCi/L | 1 | 10/18/2018 |
|-----------------------------|--------------|-------|--|-------|---|------------|

RADIUM - N

E903.1

Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|------------|
| Radium-226 | 0.310+/-0.274 | 0.312 | | pCi/L | 1 | 10/11/2018 |
|------------|---------------|-------|--|-------|---|------------|

RADIUM - N

E904.0

Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|------------|
| Radium-228 | 0.764+/-0.380 | 0.548 | | pCi/L | 1 | 10/18/2018 |
|------------|---------------|-------|--|-------|---|------------|

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

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Analytical Report

(continuous)

WO#: **1809339**

Date Reported: **10/22/2018**

CLIENT: A & M Engineering

Lab Order: 1809339

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|-------|-------|------|---|-----------------------|
| Fluoride | 0.925 | 0.200 | mg/L | 1 | 9/24/2018 10:30:00 AM |
|----------|-------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |



QC SUMMARY REPORT

WO#: **1809339**
 22-Oct-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: 4500 F-C, 2011

| | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|---------------------------------|--|
| Sample ID: MB-R33695 | SampType: MBLK | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 33695 |
| Client ID: PBW | Batch ID: R33695 | TestNo: 4500 F-C, 201 | | Analysis Date: 9/24/2018 | SeqNo: 363308 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Fluoride | < 0.200 | 0.200 | | | |

| | | | | | |
|------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|--|
| Sample ID: LCS-R33695 | SampType: LCS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 33695 |
| Client ID: LCSW | Batch ID: R33695 | TestNo: 4500 F-C, 201 | | Analysis Date: 9/24/2018 | SeqNo: 363309 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Fluoride | 2.12 | 0.200 | 2.000 | 0 | 106 80 120 |

| | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|--|
| Sample ID: 1809339-001BMS | SampType: MS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 33695 |
| Client ID: MW93-1 | Batch ID: R33695 | TestNo: 4500 F-C, 201 | | Analysis Date: 9/24/2018 | SeqNo: 363311 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Fluoride | 6.06 | 0.200 | 5.000 | 0.2430 | 116 72.7 139 |

| | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|---------------------------------|--|
| Sample ID: 1809339-001BMSD | SampType: MSD | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 33695 |
| Client ID: MW93-1 | Batch ID: R33695 | TestNo: 4500 F-C, 201 | | Analysis Date: 9/24/2018 | SeqNo: 363312 |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Fluoride | 5.97 | 0.200 | 5.000 | 0.2430 | 115 72.7 139 6.060 1.50 7.08 |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: 1809339
 22-Oct-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: MB-9419 | SampType: MBLK | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/21/2018 | RunNo: 33737 | | | | | | |
|---------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: PBW | Batch ID: 9419 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 9/25/2018 | SeqNo: 363719 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | < 0.0100 | 0.0100 | | | | | | | | | |
| Arsenic | < 0.00500 | 0.00500 | | | | | | | | | |
| Barium | < 0.0100 | 0.0100 | | | | | | | | | |
| Beryllium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cadmium | < 0.00100 | 0.00100 | | | | | | | | | |
| Calcium | < 0.0500 | 0.0500 | | | | | | | | | |
| Chromium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cobalt | < 0.0100 | 0.0100 | | | | | | | | | |
| Lead | < 0.00500 | 0.00500 | | | | | | | | | |
| Molybdenum | < 0.0100 | 0.0100 | | | | | | | | | |
| Selenium | < 0.00500 | 0.00500 | | | | | | | | | |
| Thallium | < 0.0100 | 0.0100 | | | | | | | | | |

| Sample ID: LCS-9419 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/21/2018 | RunNo: 33737 | | | | | | |
|----------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9419 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 9/25/2018 | SeqNo: 363720 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 1.96 | 0.0100 | 2.000 | 0 | 98.2 | 85 | 115 | | | | |
| Arsenic | 1.93 | 0.00500 | 2.000 | 0 | 96.6 | 85 | 115 | | | | |
| Barium | 1.96 | 0.0100 | 2.000 | 0 | 98.1 | 85 | 115 | | | | |
| Beryllium | 2.04 | 0.0100 | 2.000 | 0 | 102 | 85 | 115 | | | | |
| Cadmium | 1.98 | 0.00100 | 2.000 | 0 | 99.0 | 85 | 115 | | | | |
| Calcium | 2.03 | 0.0500 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Chromium | 2.00 | 0.0100 | 2.000 | 0 | 99.9 | 85 | 115 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809339**
 22-Oct-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: LCS-9419 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/21/2018 | RunNo: 33737 | | | | | | |
|----------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9419 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 9/25/2018 | SeqNo: 363720 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Cobalt | 2.02 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Lead | 2.05 | 0.00500 | 2.000 | 0 | 103 | 85 | 115 | | | | |
| Molybdenum | 2.02 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Selenium | 1.87 | 0.00500 | 2.000 | 0 | 93.6 | 85 | 115 | | | | |
| Thallium | 2.09 | 0.0100 | 2.000 | 0 | 104 | 85 | 115 | | | | |

| Sample ID: 1809313-001CMS | SampType: MS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/21/2018 | RunNo: 33737 | | | | | | |
|----------------------------------|-----------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: BatchQC | Batch ID: 9419 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 9/25/2018 | SeqNo: 363722 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 1.92 | 0.0100 | 2.000 | 0 | 95.9 | 80.5 | 118 | | | | |
| Arsenic | 1.91 | 0.00500 | 2.000 | 0 | 95.4 | 80.3 | 117 | | | | |
| Barium | 2.02 | 0.0100 | 2.000 | 0.04400 | 98.6 | 88.4 | 109 | | | | |
| Beryllium | 2.01 | 0.0100 | 2.000 | 0 | 101 | 80.3 | 117 | | | | |
| Cadmium | 1.93 | 0.00100 | 2.000 | 0.001907 | 96.5 | 80.9 | 117 | | | | |
| Calcium | 33.9 | 0.0500 | 2.000 | 32.65 | 64.0 | 21.9 | 163 | | | | |
| Chromium | 1.96 | 0.0100 | 2.000 | 0.01548 | 97.0 | 80.5 | 117 | | | | |
| Cobalt | 1.93 | 0.0100 | 2.000 | 0 | 96.7 | 81.5 | 116 | | | | |
| Lead | 1.95 | 0.00500 | 2.000 | 0 | 97.6 | 80.2 | 118 | | | | |
| Molybdenum | 1.97 | 0.0100 | 2.000 | 0 | 98.6 | 81.7 | 118 | | | | |
| Selenium | 1.84 | 0.00500 | 2.000 | 0 | 91.9 | 78.5 | 115 | | | | |
| Thallium | 1.95 | 0.0100 | 2.000 | 0 | 97.7 | 79.9 | 120 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809339**
 22-Oct-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: 1809313-001CMSD | SampType: MSD | TestCode: MET_WW_T | Units: mg/L | Prep Date: 9/21/2018 | RunNo: 33737 | | | | | | |
|-----------------------------------|-----------------------|-------------------------------------|---------------------------------|-----------------------------|---------------------|----------|-----------|-------------|-------|----------|------|
| Client ID: BatchQC | Batch ID: 9419 | TestNo: E200.7, 1994 SW3010A | Analysis Date: 9/25/2018 | SeqNo: 363723 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 1.95 | 0.0100 | 2.000 | 0 | 97.3 | 80.5 | 118 | 1.918 | 1.45 | 3.45 | |
| Arsenic | 1.94 | 0.00500 | 2.000 | 0 | 97.0 | 80.3 | 117 | 1.908 | 1.61 | 3.26 | |
| Barium | 2.03 | 0.0100 | 2.000 | 0.04400 | 99.5 | 88.4 | 109 | 2.015 | 0.939 | 3.25 | |
| Beryllium | 2.03 | 0.0100 | 2.000 | 0 | 102 | 80.3 | 117 | 2.014 | 0.988 | 3.52 | |
| Cadmium | 1.96 | 0.00100 | 2.000 | 0.001907 | 98.0 | 80.9 | 117 | 1.931 | 1.54 | 3.22 | |
| Calcium | 34.2 | 0.0500 | 2.000 | 32.65 | 78.5 | 21.9 | 163 | 33.93 | 0.851 | 2.28 | |
| Chromium | 1.98 | 0.0100 | 2.000 | 0.01548 | 98.1 | 80.5 | 117 | 1.956 | 1.12 | 3.37 | |
| Cobalt | 1.96 | 0.0100 | 2.000 | 0 | 98.2 | 81.5 | 116 | 1.934 | 1.49 | 3.38 | |
| Lead | 1.98 | 0.00500 | 2.000 | 0 | 99.1 | 80.2 | 118 | 1.951 | 1.58 | 3.09 | |
| Molybdenum | 2.00 | 0.0100 | 2.000 | 0 | 100 | 81.7 | 118 | 1.972 | 1.56 | 3.32 | |
| Selenium | 1.86 | 0.00500 | 2.000 | 0 | 93.2 | 78.5 | 115 | 1.838 | 1.40 | 3.4 | |
| Thallium | 1.98 | 0.0100 | 2.000 | 0 | 99.2 | 79.9 | 120 | 1.954 | 1.47 | 3.26 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809339**
 22-Oct-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R33673 | SampType: MBLK | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 33673 | | | | | | |
| Client ID: PBW | Batch ID: R33673 | TestNo: E245.1, 1994 | | Analysis Date: 9/20/2018 | SeqNo: 363072 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | < 0.0000500 | 0.0000500 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R33673 | SampType: LCS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 33673 | | | | | | |
| Client ID: LCSW | Batch ID: R33673 | TestNo: E245.1, 1994 | | Analysis Date: 9/20/2018 | SeqNo: 363073 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000937 | 0.0000500 | 0.001000 | 0 | 93.7 | 85 | 115 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809313-001CMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 33673 | | | | | | |
| Client ID: BatchQC | Batch ID: R33673 | TestNo: E245.1, 1994 | | Analysis Date: 9/20/2018 | SeqNo: 363075 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000934 | 0.0000500 | 0.001000 | 0 | 93.4 | 77.8 | 119 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1809313-001CMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 33673 | | | | | | |
| Client ID: BatchQC | Batch ID: R33673 | TestNo: E245.1, 1994 | | Analysis Date: 9/20/2018 | SeqNo: 363076 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000938 | 0.0000500 | 0.001000 | 0 | 93.8 | 77.8 | 119 | 0.0009340 | 0.406 | 1.89 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



QC SUMMARY REPORT

WO#: **1809339**
 22-Oct-18

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1809315-001AMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 33673 | | | | | | |
| Client ID: BatchQC | Batch ID: R33673 | TestNo: E245.1, 1994 | | Analysis Date: 9/20/2018 | SeqNo: 363078 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000856 | 0.0000500 | 0.001000 | 0 | 85.6 | 77.8 | 119 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|---------------------------------|----------------------|----------|-----------|-------------|--------|----------|------|
| Sample ID: 1809315-001AMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 33673 | | | | | | |
| Client ID: BatchQC | Batch ID: R33673 | TestNo: E245.1, 1994 | | Analysis Date: 9/20/2018 | SeqNo: 363079 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000855 | 0.0000500 | 0.001000 | 0 | 85.5 | 77.8 | 119 | 0.0008559 | 0.0935 | 1.89 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit W Sample container temperature is out of limit as sp



Chain of Custody Record

Laboratory Number: **1809339**

| | | | | | |
|---------------------|-------------------------------------|----------------------|------|------------------------------|----------------------------------|
| Client Information: | | Billing Information: | | PO Number: | Project Name/Number: GRDA |
| Company Name: | A+M Engineering | | | 1986-030-003 | Monthly Assessment |
| Contact Name: | Tom Trebonik / Ed Van Schaik | | | Quote Number: | |
| Address: | | | | Required QC Level: | Sampler's Signature: |
| City, State Zip: | | | | Std. | Ed Van Schaik |
| Phone Number: | 918-665-6575 | Ext: 227 | Ext: | Bill Monthly: | Shipping Method: |
| Fax Number: | | | | <input type="checkbox"/> Yes | UPS / FedEx / Airborne |
| E-mail Address: | | | | <input type="checkbox"/> No | GCT / Land / Mail |

Page **2** of **2**
 Turn Time
 1 Day
 2 Day
 Standard
 Other
 (Rush turn times will incur a surcharge.)

| Sample ID/Description | Date | Time | Matrix | Matrix Code | Container | Pres. | Requested Tests | | | | | | Comments |
|-----------------------|---------|------|--------|-------------|-----------|-------|-----------------|------------|----------|----------|-----------------------|---------|---|
| | | | | | | | Mercury | Molybdenum | Selenium | Thallium | Radium 226 & 228 Comb | Calcium | |
| MW 93-1 | 9-19-18 | 1715 | G | AQ | 5 | P | X | X | X | X | X | | GREENCOUNTRYTESTING CHAIN OF CUSTODY ATTACHMENT 2 OF 2 PAGES |
| MW 93-2 | 9-19-18 | 1455 | G | AQ | 5 | P | X | X | X | X | | | |
| MW 93-3 | 9-19-18 | 1330 | G | AQ | 5 | P | X | X | X | X | | | |
| MW 03-1 | 9-19-18 | NS | G | AQ | 5 | P | X | X | X | X | X | | |
| MW 03-2 | 9-19-18 | 1150 | G | AQ | 5 | P | X | X | X | X | X | | |
| Duplicate | 9-19-18 | 1730 | G | AQ | 5 | P | X | X | X | X | | | |

| Relinquished by | Date/Time | Received by | Date/Time | Field Notes: |
|----------------------|---------------------|--------------------|---------------------|--|
| Ed Van Schaik | 9-20-18 0944 | <i>[Signature]</i> | 9/20/18 9:44 | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Temp: 3.1 |
| | | | | |
| | | | | |
| | | | | |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

6825 E. 38th Street
 Tulsa, OK 74145
 918-828-9977
 Fax: 918-828-7756

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



January 21, 2019

Tom Trebonik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: GRDA Monthly Assessment

Order No.: 1810256

Dear Tom Trebonik:

Green Country Testing, Inc. received 6 sample(s) on 10/19/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

Original

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



Case Narrative

WO#: 1810256
Date: 1/21/2019

CLIENT: A & M Engineering
Project: GRDA Monthly Assessment

1810256
met_ww_odd has been Sub Contracted.
1810256
Radium-226 has been Sub Contracted.
1810256
Radium-228 has been Sub Contracted.
1810256
.

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1810256

Date Reported: 1/21/2019

CLIENT: A & M Engineering

Lab Order: 1810256

Project: GRDA Monthly Assessment

Lab ID: 1810256-001

Collection Date: 10/18/2018 1:45:00 PM

Client Sample ID: MW93-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|-----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 10/22/2018 5:56:18 PM |
|---------|-------------|-----------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|-----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 10/24/2018 4:37:00 PM |
|---------|----------|--------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

SW3010A

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|-----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 4:58:55 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 4:58:55 PM |
| Barium | 0.0213 | 0.0100 | | mg/L | 1 | 10/23/2018 4:58:55 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 4:58:55 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 10/23/2018 4:58:55 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 4:58:55 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 4:58:55 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 4:58:55 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 4:58:55 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 4:58:55 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 4:58:55 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|------|--|-------|---|-----------|
| Total Radium by Calculation | 1.19+/-0.561 | 1.03 | | pCi/L | 1 | 11/5/2018 |
|-----------------------------|--------------|------|--|-------|---|-----------|

RADIUM - N

E903.1

Analyst: **9915**

| | | | | | | |
|------------|-----------------|-------|--|-------|---|-----------|
| Radium-226 | -0.0177+/-0.134 | 0.321 | | pCi/L | 1 | 11/5/2018 |
|------------|-----------------|-------|--|-------|---|-----------|

RADIUM - N

E904.0

Analyst: **9915**

| | | | | | | |
|------------|--------------|-------|--|-------|---|-----------|
| Radium-228 | 1.19+/-0.427 | 0.708 | | pCi/L | 1 | 11/5/2018 |
|------------|--------------|-------|--|-------|---|-----------|

Qualifiers: H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit

M Manual Integration used to determine area response
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
 TEL: 918-828-9977 FAX: 918-828-7756
 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1810256

Date Reported: 1/21/2019

CLIENT: A & M Engineering

Lab Order: 1810256

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 10/22/2018 8:28:00 AM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

Green Country Testing, Inc.
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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1810256

Date Reported: 1/21/2019

CLIENT: A & M Engineering

Lab Order: 1810256

Project: GRDA Monthly Assessment

Lab ID: 1810256-002

Collection Date: 10/18/2018 2:50:00 PM

Client Sample ID: MW93-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **KR**

| | | | | | | |
|---------|-----------|-----------|--|------|---|-----------------------|
| Mercury | 0.0000572 | 0.0000500 | | mg/L | 1 | 10/22/2018 5:56:18 PM |
|---------|-----------|-----------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|-----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 10/24/2018 4:37:00 PM |
|---------|----------|--------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

SW3010A

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|-----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:04:43 PM |
| Arsenic | 0.0378 | 0.00500 | | mg/L | 1 | 10/23/2018 5:04:43 PM |
| Barium | 0.0669 | 0.0100 | | mg/L | 1 | 10/23/2018 5:04:43 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:04:43 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 10/23/2018 5:04:43 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:04:43 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:04:43 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 5:04:43 PM |
| Molybdenum | 1.08 | 0.0100 | | mg/L | 1 | 10/23/2018 5:04:43 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 5:04:43 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:04:43 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|------|--|-------|---|-----------|
| Total Radium by Calculation | 1.90+/-0.819 | 1.03 | | pCi/L | 1 | 11/5/2018 |
|-----------------------------|--------------|------|--|-------|---|-----------|

RADIUM - N

E903.1

Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|-----------|
| Radium-226 | 0.478+/-0.331 | 0.390 | | pCi/L | 1 | 11/5/2018 |
|------------|---------------|-------|--|-------|---|-----------|

RADIUM - N

E904.0

Analyst: **9915**

| | | | | | | |
|------------|--------------|-------|--|-------|---|-----------|
| Radium-228 | 1.42+/-0.488 | 0.644 | | pCi/L | 1 | 11/5/2018 |
|------------|--------------|-------|--|-------|---|-----------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1810256

Date Reported: 1/21/2019

CLIENT: A & M Engineering

Lab Order: 1810256

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|-------|-------|------|---|-----------------------|
| Fluoride | 0.698 | 0.200 | mg/L | 1 | 10/22/2018 8:28:00 AM |
|----------|-------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1810256

Date Reported: 1/21/2019

CLIENT: A & M Engineering

Lab Order: 1810256

Project: GRDA Monthly Assessment

Lab ID: 1810256-003

Collection Date: 10/18/2018 4:15:00 PM

Client Sample ID: MW93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|----------|-----------|--|------|---|-----------------------|
| Mercury | 0.000579 | 0.0000500 | | mg/L | 1 | 10/22/2018 5:56:18 PM |
|---------|----------|-----------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|-------|--------|--|------|---|-----------------------|
| Lithium | 0.164 | 0.0150 | | mg/L | 1 | 10/24/2018 4:37:00 PM |
|---------|-------|--------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|-----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:15:31 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 5:15:31 PM |
| Barium | 0.241 | 0.0100 | | mg/L | 1 | 10/23/2018 5:15:31 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:15:31 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 10/23/2018 5:15:31 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:15:31 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:15:31 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 5:15:31 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:15:31 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 5:15:31 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:15:31 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|------|--|-------|---|-----------|
| Total Radium by Calculation | 1.45+/-0.896 | 1.12 | | pCi/L | 1 | 11/5/2018 |
|-----------------------------|--------------|------|--|-------|---|-----------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|-----------|
| Radium-226 | 0.548+/-0.293 | 0.183 | | pCi/L | 1 | 11/5/2018 |
|------------|---------------|-------|--|-------|---|-----------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|-----------|
| Radium-228 | 0.092+/-0.603 | 0.937 | | pCi/L | 1 | 11/5/2018 |
|------------|---------------|-------|--|-------|---|-----------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1810256

Date Reported: 1/21/2019

CLIENT: A & M Engineering

Lab Order: 1810256

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 10/22/2018 8:28:00 AM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1810256

Date Reported: 1/21/2019

CLIENT: A & M Engineering

Lab Order: 1810256

Project: GRDA Monthly Assessment

Lab ID: 1810256-004

Collection Date: 10/18/2018 11:20:00 AM

Client Sample ID: MW03-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|-----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 10/22/2018 5:56:18 PM |
|---------|-------------|-----------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|-----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 10/24/2018 4:37:00 PM |
|---------|----------|--------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

SW3010A

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|-----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:26:37 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 5:26:37 PM |
| Barium | 0.184 | 0.0100 | | mg/L | 1 | 10/23/2018 5:26:37 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:26:37 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 10/23/2018 5:26:37 PM |
| Calcium | 91.7 | 0.0500 | | mg/L | 1 | 10/23/2018 5:26:37 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:26:37 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:26:37 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 5:26:37 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:26:37 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 5:26:37 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:26:37 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|------|--|-------|---|-----------|
| Total Radium by Calculation | 2.84+/-0.903 | 1.14 | | pCi/L | 1 | 11/5/2018 |
|-----------------------------|--------------|------|--|-------|---|-----------|

RADIUM - N

E903.1

Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|-----------|
| Radium-226 | 0.260+/-0.210 | 0.208 | | pCi/L | 1 | 11/5/2018 |
|------------|---------------|-------|--|-------|---|-----------|

RADIUM - N

E904.0

Analyst: **9915**

| | | | | | | |
|------------|--------------|-------|--|-------|---|-----------|
| Radium-228 | 2.58+/-0.693 | 0.936 | | pCi/L | 1 | 11/5/2018 |
|------------|--------------|-------|--|-------|---|-----------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1810256

Date Reported: 1/21/2019

CLIENT: A & M Engineering

Lab Order: 1810256

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 10/22/2018 8:28:00 AM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1810256

Date Reported: 1/21/2019

CLIENT: A & M Engineering

Lab Order: 1810256

Project: GRDA Monthly Assessment

Lab ID: 1810256-005

Collection Date: 10/18/2018 12:35:00 PM

Client Sample ID: MW03-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|---------|-----------|--|------|---|-----------------------|
| Mercury | 0.00101 | 0.0000500 | | mg/L | 1 | 10/22/2018 5:56:18 PM |
|---------|---------|-----------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|-----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 10/24/2018 4:37:00 PM |
|---------|----------|--------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|-----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:37:20 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 5:37:20 PM |
| Barium | 0.0463 | 0.0100 | | mg/L | 1 | 10/23/2018 5:37:20 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:37:20 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 10/23/2018 5:37:20 PM |
| Calcium | 363 | 0.500 | | mg/L | 1 | 10/23/2018 5:37:20 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:37:20 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:37:20 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 5:37:20 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:37:20 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 5:37:20 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 5:37:20 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|------|--|-------|---|-----------|
| Total Radium by Calculation | 0.939+/-0.648 | 1.13 | | pCi/L | 1 | 11/5/2018 |
|-----------------------------|---------------|------|--|-------|---|-----------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|------------------|-------|--|-------|---|-----------|
| Radium-226 | -0.0254+/-0.0642 | 0.245 | | pCi/L | 1 | 11/5/2018 |
|------------|------------------|-------|--|-------|---|-----------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|----------------|-------|--|-------|---|-----------|
| Radium-228 | 00.939+/-0.584 | 0.882 | | pCi/L | 1 | 11/5/2018 |
|------------|----------------|-------|--|-------|---|-----------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1810256

Date Reported: 1/21/2019

CLIENT: A & M Engineering

Lab Order: 1810256

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 10/22/2018 8:28:00 AM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1810256

Date Reported: 1/21/2019

CLIENT: A & M Engineering

Lab Order: 1810256

Project: GRDA Monthly Assessment

Lab ID: 1810256-006

Collection Date: 10/18/2018 5:00:00 PM

Client Sample ID: Duplicate

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|-----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 10/22/2018 5:56:18 PM |
|---------|-------------|-----------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|-----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 10/24/2018 4:37:00 PM |
|---------|----------|--------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|-----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 6:04:50 PM |
| Arsenic | 0.0369 | 0.00500 | | mg/L | 1 | 10/23/2018 6:04:50 PM |
| Barium | 0.0651 | 0.0100 | | mg/L | 1 | 10/23/2018 6:04:50 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 6:04:50 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 10/23/2018 6:04:50 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 6:04:50 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 6:04:50 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 6:04:50 PM |
| Molybdenum | 1.02 | 0.0100 | | mg/L | 1 | 10/23/2018 6:04:50 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 10/23/2018 6:04:50 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 10/23/2018 6:04:50 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|------|--|-------|---|-----------|
| Total Radium by Calculation | 1.69+/-0.738 | 1.06 | | pCi/L | 1 | 11/5/2018 |
|-----------------------------|--------------|------|--|-------|---|-----------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|-----------|
| Radium-226 | 0.334+/-0.208 | 0.166 | | pCi/L | 1 | 11/5/2018 |
|------------|---------------|-------|--|-------|---|-----------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|--------------|-------|--|-------|---|-----------|
| Radium-228 | 1.36+/-0.530 | 0.892 | | pCi/L | 1 | 11/5/2018 |
|------------|--------------|-------|--|-------|---|-----------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1810256**

Date Reported: **1/21/2019**

CLIENT: A & M Engineering

Lab Order: 1810256

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|-------|-------|------|---|-----------------------|
| Fluoride | 0.618 | 0.200 | mg/L | 1 | 10/22/2018 8:28:00 AM |
|----------|-------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |



QC SUMMARY REPORT

WO#: **1810256**
21-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: 4500 F-C, 2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R34089 | SampType: MBLK | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 34090 | | | | | | |
| Client ID: PBW | Batch ID: R34090 | TestNo: 4500 F-C, 201 | | Analysis Date: 10/22/2018 | SeqNo: 367564 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | < 0.200 | 0.200 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R34089 | SampType: LCS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 34090 | | | | | | |
| Client ID: LCSW | Batch ID: R34090 | TestNo: 4500 F-C, 201 | | Analysis Date: 10/22/2018 | SeqNo: 367565 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 2.19 | 0.200 | 2.000 | 0 | 110 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1810253-001AMS | SampType: MS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 34090 | | | | | | |
| Client ID: BatchQC | Batch ID: R34090 | TestNo: 4500 F-C, 201 | | Analysis Date: 10/22/2018 | SeqNo: 367567 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 5.15 | 0.200 | 5.000 | 0 | 103 | 72.7 | 139 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1810253-001AMSD | SampType: MSD | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 34090 | | | | | | |
| Client ID: BatchQC | Batch ID: R34090 | TestNo: 4500 F-C, 201 | | Analysis Date: 10/22/2018 | SeqNo: 367568 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 5.30 | 0.200 | 5.000 | 0 | 106 | 72.7 | 139 | 5.150 | 2.87 | 7.08 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1810256
 21-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: MB-9513 | SampType: MBLK | TestCode: MET_WW_T | Units: mg/L | Prep Date: 10/22/2018 | RunNo: 34112 | | | | | | |
|---------------------------|-----------------------|-------------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: PBW | Batch ID: 9513 | TestNo: E200.7, 1994 SW3010A | | Analysis Date: 10/23/2018 | SeqNo: 367783 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | < 0.0100 | 0.0100 | | | | | | | | | |
| Arsenic | < 0.00500 | 0.00500 | | | | | | | | | |
| Barium | < 0.0100 | 0.0100 | | | | | | | | | |
| Beryllium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cadmium | < 0.00100 | 0.00100 | | | | | | | | | |
| Calcium | < 0.0500 | 0.0500 | | | | | | | | | |
| Chromium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cobalt | < 0.0100 | 0.0100 | | | | | | | | | |
| Lead | < 0.00500 | 0.00500 | | | | | | | | | |
| Molybdenum | < 0.0100 | 0.0100 | | | | | | | | | |
| Selenium | < 0.00500 | 0.00500 | | | | | | | | | |
| Thallium | < 0.0100 | 0.0100 | | | | | | | | | |

| Sample ID: LCS-9513 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 10/22/2018 | RunNo: 34112 | | | | | | |
|----------------------------|-----------------------|-------------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9513 | TestNo: E200.7, 1994 SW3010A | | Analysis Date: 10/23/2018 | SeqNo: 367784 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 2.00 | 0.0100 | 2.000 | 0 | 100 | 85 | 115 | | | | |
| Arsenic | 1.97 | 0.00500 | 2.000 | 0 | 98.7 | 85 | 115 | | | | |
| Barium | 2.02 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Beryllium | 2.02 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Cadmium | 2.02 | 0.00100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Calcium | 2.02 | 0.0500 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Chromium | 2.01 | 0.0100 | 2.000 | 0 | 100 | 85 | 115 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1810256
 21-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: LCS-9513 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 10/22/2018 | RunNo: 34112 | | | | | | |
|----------------------------|-----------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9513 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 10/23/2018 | SeqNo: 367784 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Cobalt | 2.04 | 0.0100 | 2.000 | 0 | 102 | 85 | 115 | | | | |
| Lead | 2.07 | 0.00500 | 2.000 | 0 | 104 | 85 | 115 | | | | |
| Molybdenum | 2.02 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Selenium | 1.97 | 0.00500 | 2.000 | 0 | 98.5 | 85 | 115 | | | | |
| Thallium | 2.13 | 0.0100 | 2.000 | 0 | 107 | 85 | 115 | | | | |

| Sample ID: 1810250-001BMS | SampType: MS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 10/22/2018 | RunNo: 34112 | | | | | | |
|----------------------------------|-----------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: BatchQC | Batch ID: 9513 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 10/23/2018 | SeqNo: 367786 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 2.01 | 0.0100 | 2.000 | 0 | 100 | 80.5 | 118 | | | | |
| Arsenic | 2.04 | 0.00500 | 2.000 | 0 | 102 | 80.3 | 117 | | | | |
| Barium | 2.16 | 0.0100 | 2.000 | 0.08711 | 104 | 88.4 | 109 | | | | |
| Beryllium | 2.09 | 0.0100 | 2.000 | 0 | 104 | 80.3 | 117 | | | | |
| Cadmium | 2.04 | 0.00100 | 2.000 | 0 | 102 | 80.9 | 117 | | | | |
| Calcium | 32.1 | 0.0500 | 2.000 | 29.01 | 154 | 21.9 | 163 | | | | |
| Chromium | 2.06 | 0.0100 | 2.000 | 0 | 103 | 80.5 | 117 | | | | |
| Cobalt | 2.06 | 0.0100 | 2.000 | 0 | 103 | 81.5 | 116 | | | | |
| Lead | 2.07 | 0.00500 | 2.000 | 0 | 103 | 80.2 | 118 | | | | |
| Molybdenum | 2.08 | 0.0100 | 2.000 | 0.01195 | 104 | 81.7 | 118 | | | | |
| Selenium | 1.99 | 0.00500 | 2.000 | 0 | 99.7 | 78.5 | 115 | | | | |
| Thallium | 2.08 | 0.0100 | 2.000 | 0 | 104 | 79.9 | 120 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1810256
 21-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|------------|--------|---------|-----------|-------------|------|----------|-----------|-------------|-------|----------|------|
| Antimony | 2.00 | 0.0100 | 2.000 | 0 | 99.8 | 80.5 | 118 | 2.009 | 0.649 | 3.45 | |
| Arsenic | 2.03 | 0.00500 | 2.000 | 0 | 102 | 80.3 | 117 | 2.039 | 0.442 | 3.26 | |
| Barium | 2.17 | 0.0100 | 2.000 | 0.08711 | 104 | 88.4 | 109 | 2.161 | 0.323 | 3.25 | |
| Beryllium | 2.10 | 0.0100 | 2.000 | 0 | 105 | 80.3 | 117 | 2.089 | 0.620 | 3.52 | |
| Cadmium | 2.03 | 0.00100 | 2.000 | 0 | 101 | 80.9 | 117 | 2.038 | 0.541 | 3.22 | |
| Calcium | 32.2 | 0.0500 | 2.000 | 29.01 | 157 | 21.9 | 163 | 32.08 | 0.218 | 2.28 | |
| Chromium | 2.07 | 0.0100 | 2.000 | 0 | 104 | 80.5 | 117 | 2.061 | 0.532 | 3.37 | |
| Cobalt | 2.04 | 0.0100 | 2.000 | 0 | 102 | 81.5 | 116 | 2.055 | 0.488 | 3.38 | |
| Lead | 2.06 | 0.00500 | 2.000 | 0 | 103 | 80.2 | 118 | 2.068 | 0.291 | 3.09 | |
| Molybdenum | 2.07 | 0.0100 | 2.000 | 0.01195 | 103 | 81.7 | 118 | 2.082 | 0.481 | 3.32 | |
| Selenium | 1.98 | 0.00500 | 2.000 | 0 | 99.0 | 78.5 | 115 | 1.994 | 0.705 | 3.4 | |
| Thallium | 2.07 | 0.0100 | 2.000 | 0 | 104 | 79.9 | 120 | 2.082 | 0.481 | 3.26 | |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 RL Reporting Detection Limit

ND Not Detected at the Reporting Limit
 S Spike Recovery outside accepted recovery limits



QC SUMMARY REPORT

WO#: **1810256**
21-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R34098 | SampType: MBLK | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34098 | | | | | | |
| Client ID: PBW | Batch ID: R34098 | TestNo: E245.1, 1994 | | Analysis Date: 10/22/2018 | SeqNo: 367659 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | < 0.0000500 | 0.0000500 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R34098 | SampType: LCS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34098 | | | | | | |
| Client ID: LCSW | Batch ID: R34098 | TestNo: E245.1, 1994 | | Analysis Date: 10/22/2018 | SeqNo: 367660 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000959 | 0.0000500 | 0.001000 | 0 | 95.9 | 85 | 115 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1810235-001AMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34098 | | | | | | |
| Client ID: BatchQC | Batch ID: R34098 | TestNo: E245.1, 1994 | | Analysis Date: 10/22/2018 | SeqNo: 367662 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00101 | 0.0000500 | 0.001000 | 0 | 101 | 77.8 | 119 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1810235-001AMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34098 | | | | | | |
| Client ID: BatchQC | Batch ID: R34098 | TestNo: E245.1, 1994 | | Analysis Date: 10/22/2018 | SeqNo: 367663 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00101 | 0.0000500 | 0.001000 | 0 | 101 | 77.8 | 119 | 0.001006 | 0.496 | 1.89 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1810256
 21-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1810264-001CMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34098 | | | | | | |
| Client ID: BatchQC | Batch ID: R34098 | TestNo: E245.1, 1994 | | Analysis Date: 10/22/2018 | SeqNo: 367674 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000948 | 0.0000500 | 0.001000 | 0 | 94.8 | 77.8 | 119 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1810264-001CMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34098 | | | | | | |
| Client ID: BatchQC | Batch ID: R34098 | TestNo: E245.1, 1994 | | Analysis Date: 10/22/2018 | SeqNo: 367675 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000942 | 0.0000500 | 0.001000 | 0 | 94.2 | 77.8 | 119 | 0.0009476 | 0.646 | 1.89 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



Chain of Custody Record

Laboratory Number: **1810254**

| | | | | | | |
|---|--|----------------------|--|------------------------------|---------------------------|--|
| Client Information: | | Billing Information: | | PO Number: | Project Name/Number: | Page 1 of 2 |
| Company Name: A+M Engineering | | | | 1986-030-003 | GRDA | |
| Contact Name: Tom Trebonik / Ed Van Schaik | | | | Quote Number: | Monthly Assessment | Turn Time |
| Address: | | | | | Sampler's Signature | <input type="checkbox"/> 1 Day |
| City, State Zip: | | | | Required QC Level | Ed Van Schaik | <input type="checkbox"/> 2 Day |
| Phone Number: 918-665-6575 Ext: 227 | | Ext: | | Std. | Shipping Method: | <input checked="" type="checkbox"/> Standard |
| Fax Number: | | | | Bill Monthly | UPS / FedEx / Airborne | <input type="checkbox"/> Other |
| E-mail Address: | | | | <input type="checkbox"/> Yes | GCT / <u>Land</u> / Mail | (Rush turn times will incur a surcharge.) |
| | | | | <input type="checkbox"/> No | | |

| | | | | | | | | | | | | | | | | |
|---|---|------------|--------------------------------------|---|----------|-----------------|--------|-----------|---------|----------|--------|----------|------|---------|--|----------|
| Which Regulations Apply: <input type="checkbox"/> RCRA <input type="checkbox"/> POTW <input type="checkbox"/> NPDES <input type="checkbox"/> USDA/FDA <input type="checkbox"/> REC/AP/RISC <input type="checkbox"/> Drinking Water <input type="checkbox"/> Distribution <input type="checkbox"/> Special <input type="checkbox"/> State <input type="checkbox"/> Other | Matrix Code: SO = Soil AQ = Aqueous DW = Drinking WW = Waste MW = Monit. Well LQ = Liquid O = Oil SL = Sludge F = Food SW = Swab SOL = Solid | Container: | | Pres: | | Requested Tests | | | | | | | | | | Comments |
| | | Number | Type E-Plastic G-Glass, V-Vial | HCl, HNO ₃ , H ₂ SO ₄ NaOH, Na ₂ S ₂ O ₈ | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Fluoride | Lead | Lithium | | |

| Sample ID/Description | Date | Time | Comp. | Matrix | Number | Type | Pres. | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Fluoride | Lead | Lithium | Comments |
|-----------------------|----------|------|-------|--------|--------|------|-------|----------|---------|--------|-----------|---------|----------|--------|----------|------|---------|----------|
| MW 93-1 | 10-18-18 | 1345 | G | AQ | 5 | P | | X | X | X | X | X | X | X | X | X | X | #5342 |
| MW 93-2 | 10-18-18 | 1450 | G | AQ | 5 | P | | X | X | X | X | X | X | X | X | X | X | |
| MW 93-3 | 10-18-18 | 1615 | G | AQ | 5 | P | | X | X | X | X | X | X | X | X | X | X | |
| MW 03-1 | 10-18-18 | 1120 | G | AQ | 5 | P | | X | X | X | X | X | X | X | X | X | X | |
| MW 03-2 | 10-18-18 | 1235 | G | AQ | 5 | P | | X | X | X | X | X | X | X | X | X | X | |
| Duplicate | 10-18-18 | 1700 | G | AQ | 5 | P | | X | X | X | X | X | X | X | X | X | X | |

GREENCOUNTRYTESTING
CHAIN OF CUSTODY
ATTACHMENT
1 OF 2 PAGES

| Relinquished by | Date/Time | Received by | Date/Time | Field Notes: |
|----------------------|----------------------|--------------------|-----------------------|--|
| Ed Van Schaik | 10-19-18 0958 | <i>[Signature]</i> | 10/19/18 10958 | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Temp: 4.8°C |
| | | | | |
| | | | | |
| | | | | |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

6825 E. 38th Street
Tulsa, OK 74145
918-828-9977
Fax: 918-828-7756



Chain of Custody Record

Laboratory Number: **1810256**

| | | | | | | | |
|--|--|---|--|--|--|--|--|
| Client Information: Company Name: A+M Engineering Contact Name: Tom Trebanik / Ed Van Schaik Address: _____ City, State Zip: _____ Phone Number: 918-665-6575 Ext: 227 Fax Number: _____ E-mail Address: _____ | | Billing Information: PO Number: _____ Quote Number: 1986-030-003 Required QC Level: Std. Bill Monthly: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | Project Name/Number: GRDA Monthly Assessment Sampler's Signature: Ed Van Schaik Shipping Method: GCT / Land / Mail UPS / FedEx / Airborne | | Page 2 of 2 Turn Time: <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other (Rush turn times will incur a surcharge.) | |
|--|--|---|--|--|--|--|--|

| | | | | | |
|---|--|--|--|--|--|
| Which Regulations Apply: <input type="checkbox"/> RCRA <input type="checkbox"/> Drinking Water <input type="checkbox"/> POTW <input type="checkbox"/> Distribution <input type="checkbox"/> NPDES <input type="checkbox"/> Special <input type="checkbox"/> USDA/FDA <input type="checkbox"/> State <input type="checkbox"/> REC/AP/RISC <input type="checkbox"/> Other | Matrix Code: AQ - Aqueous DW - Drinking WW - Waste MW - Monit. Well LQ - Liquid SO - Soil O - Oil SL - Sludge F - Food SW - Swab SOL - Solid | Container Number: _____ Type: <input type="checkbox"/> Plastic <input type="checkbox"/> Glass <input type="checkbox"/> Vial | Pres. <input type="checkbox"/> HCl/HNO ₃ /H ₂ SO ₄ <input type="checkbox"/> NaOH/Na ₂ S ₂ O ₈ | Requested Tests Mercury Molybdenum Selenium Thallium Radium 226 & 228 Combined Calcium | Comments <p style="text-align: center; font-weight: bold;">GREENCOUNTRY TESTING CHAIN OF CUSTODY ATTACHMENT 2 OF 2 PAGES</p> |
|---|--|--|--|--|--|

| Sample ID/Description | Date | Time | Grab/Composite | Matrix | Number | Type | Pres. | Mercury | Molybdenum | Selenium | Thallium | Radium 226 & 228 Combined | Calcium | Comments |
|-----------------------|----------|------|----------------|--------|--------|------|-------|---------|------------|----------|----------|---------------------------|---------|----------|
| MW 93-1 | 10-18-18 | 1345 | G | AQ | 5 | P | | X | X | X | X | X | | |
| MW 93-2 | 10-18-18 | 1450 | G | AQ | 5 | P | | X | X | X | X | X | | |
| MW 93-3 | 10-18-18 | 1615 | G | AQ | 5 | P | | X | X | X | X | X | | |
| MW 03-1 | 10-18-18 | 1120 | G | AQ | 5 | P | | X | X | X | X | X | X | |
| MW 03-2 | 10-18-18 | 1235 | G | AQ | 5 | P | | X | X | X | X | X | X | |
| Duplicate | 10-18-18 | 1700 | G | AQ | 5 | P | | X | X | X | X | X | | |

| | | |
|--|--|--|
| Relinquished by: Ed Van Schaik Date/Time: 10-18-18 0958 | Received by: Paul Fitzgerald Date/Time: 10/19/18 0958 | Field Notes: Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Temp: 4.8 |
|--|--|--|

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



January 17, 2019

Tom Trebonik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: GRDA Monthly Assessment

Order No.: 1811301

Dear Tom Trebonik:

Green Country Testing, Inc. received 6 sample(s) on 11/21/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

Original

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



Case Narrative

WO#: 1811301
Date: 1/17/2019

CLIENT: A & M Engineering
Project: GRDA Monthly Assessment

1811301
met_ww_odd has been Sub Contracted.
1811301
Radium-226 has been Sub Contracted.
1811301
Radium-228 has been Sub Contracted.
1811301
met_ww_odd has been Sub Contracted.
1811301
Radium-226 has been Sub Contracted.
1811301
Radium-228 has been Sub Contracted.
1811301
met_ww_odd has been Sub Contracted.
1811301
Radium-226 has been Sub Contracted.
1811301
Radium-228 has been Sub Contracted.
1811301
met_ww_odd has been Sub Contracted.
1811301
Radium-226 has been Sub Contracted.
1811301
Radium-228 has been Sub Contracted.
1811301
met_ww_odd has been Sub Contracted.
1811301
Radium-226 has been Sub Contracted.
1811301
Radium-228 has been Sub Contracted.
1811301
met_ww_odd has been Sub Contracted.
1811301

Green Country Testing, Inc.
6825 E 38th Street
Tulsa, OK 74145
TEL: 918-828-9977 FAX: 918-828-7756
Website: www.greencountrytesting.com



Case Narrative

WO#: 1811301
Date: 1/17/2019

CLIENT: A & M Engineering
Project: GRDA Monthly Assessment

Radium-226 has been Sub Contracted.

1811301

Radium-228 has been Sub Contracted.

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
 TEL: 918-828-9977 FAX: 918-828-7756
 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1811301

Date Reported: 1/17/2019

CLIENT: A & M Engineering

Lab Order: 1811301

Project: GRDA Monthly Assessment

Lab ID: 1811301-001

Collection Date: 11/20/2018 11:00:00 AM

Client Sample ID: MW93-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|-----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 11/21/2018 3:25:26 PM |
|---------|-------------|-----------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|-----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 11/29/2018 1:52:00 AM |
|---------|----------|--------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|-----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 6:33:27 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 6:33:27 PM |
| Barium | 0.0267 | 0.0100 | | mg/L | 1 | 11/28/2018 6:33:27 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 6:33:27 PM |
| Cadmium | 0.00125 | 0.00100 | | mg/L | 1 | 11/28/2018 6:33:27 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 6:33:27 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 6:33:27 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 6:33:27 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 6:33:27 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 6:33:27 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 6:33:27 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|-------|--|-------|---|-----------|
| Total Radium by Calculation | 0.785+/-0.540 | 0.868 | | pCi/L | 1 | 12/5/2018 |
|-----------------------------|---------------|-------|--|-------|---|-----------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|------------------|-------|--|-------|---|-----------|
| Radium-226 | -0.0574+/-0.0951 | 0.298 | | pCi/L | 1 | 12/5/2018 |
|------------|------------------|-------|--|-------|---|-----------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|-----------|
| Radium-228 | 0.785+/-0.445 | 0.570 | | pCi/L | 1 | 12/5/2018 |
|------------|---------------|-------|--|-------|---|-----------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

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Analytical Report

(continuous)

WO#: 1811301

Date Reported: 1/17/2019

CLIENT: A & M Engineering

Lab Order: 1811301

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 11/27/2018 9:00:00 AM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

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Analytical Report

(continuous)

WO#: 1811301

Date Reported: 1/17/2019

CLIENT: A & M Engineering

Lab Order: 1811301

Project: GRDA Monthly Assessment

Lab ID: 1811301-002

Collection Date: 11/20/2018 12:15:00 PM

Client Sample ID: MW93-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|-----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 11/21/2018 3:25:26 PM |
|---------|-------------|-----------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **8727**

| | | | | | | |
|---------|--------|--------|--|------|---|-----------------------|
| Lithium | 0.0185 | 0.0150 | | mg/L | 1 | 11/29/2018 1:52:00 AM |
|---------|--------|--------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

SW3010A

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|-----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:00:25 PM |
| Arsenic | 0.0313 | 0.00500 | | mg/L | 1 | 11/28/2018 7:00:25 PM |
| Barium | 0.0690 | 0.0100 | | mg/L | 1 | 11/28/2018 7:00:25 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:00:25 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 11/28/2018 7:00:25 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:00:25 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:00:25 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:00:25 PM |
| Molybdenum | 1.29 | 0.0100 | | mg/L | 1 | 11/28/2018 7:00:25 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:00:25 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:00:25 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|-------|--|-------|---|-----------|
| Total Radium by Calculation | 1.28+/-0.567 | 0.718 | | pCi/L | 1 | 12/5/2018 |
|-----------------------------|--------------|-------|--|-------|---|-----------|

RADIUM - N

E903.1

Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|-----------|
| Radium-226 | 0.175+/-0.155 | 0.165 | | pCi/L | 1 | 12/5/2018 |
|------------|---------------|-------|--|-------|---|-----------|

RADIUM - N

E904.0

Analyst: **9915**

| | | | | | | |
|------------|--------------|-------|--|-------|---|-----------|
| Radium-228 | 1.10+/-0.412 | 0.553 | | pCi/L | 1 | 12/5/2018 |
|------------|--------------|-------|--|-------|---|-----------|

Qualifiers:
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 R RPD outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 PL Permit Limit
 RL Reporting Detection Limit

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Analytical Report

(continuous)

WO#: 1811301

Date Reported: 1/17/2019

CLIENT: A & M Engineering

Lab Order: 1811301

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|------|-------|------|---|-----------------------|
| Fluoride | 1.02 | 0.200 | mg/L | 1 | 11/27/2018 9:00:00 AM |
|----------|------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

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Analytical Report

(continuous)

WO#: 1811301

Date Reported: 1/17/2019

CLIENT: A & M Engineering

Lab Order: 1811301

Project: GRDA Monthly Assessment

Lab ID: 1811301-003

Collection Date: 11/20/2018 1:30:00 PM

Client Sample ID: MW93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|----------|-----------|--|------|---|-----------------------|
| Mercury | 0.000577 | 0.0000500 | | mg/L | 1 | 11/21/2018 3:25:26 PM |
|---------|----------|-----------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|-------|--------|--|------|---|-----------------------|
| Lithium | 0.187 | 0.0150 | | mg/L | 1 | 11/29/2018 1:52:00 AM |
|---------|-------|--------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|-----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:11:08 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:11:08 PM |
| Barium | 0.244 | 0.0100 | | mg/L | 1 | 11/28/2018 7:11:08 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:11:08 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 11/28/2018 7:11:08 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:11:08 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:11:08 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:11:08 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:11:08 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:11:08 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:11:08 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|-------|--|-------|---|-----------|
| Total Radium by Calculation | 1.42+/-0.667 | 0.885 | | pCi/L | 1 | 12/5/2018 |
|-----------------------------|--------------|-------|--|-------|---|-----------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|-----------|
| Radium-226 | 0.200+/-0.203 | 0.259 | | pCi/L | 1 | 12/5/2018 |
|------------|---------------|-------|--|-------|---|-----------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|--------------|-------|--|-------|---|-----------|
| Radium-228 | 1.22+/-0.464 | 0.626 | | pCi/L | 1 | 12/5/2018 |
|------------|--------------|-------|--|-------|---|-----------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

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Analytical Report

(continuous)

WO#: 1811301

Date Reported: 1/17/2019

CLIENT: A & M Engineering

Lab Order: 1811301

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|-------|-------|------|---|-----------------------|
| Fluoride | 0.283 | 0.200 | mg/L | 1 | 11/27/2018 9:00:00 AM |
|----------|-------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

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Analytical Report

(continuous)

WO#: 1811301

Date Reported: 1/17/2019

CLIENT: A & M Engineering

Lab Order: 1811301

Project: GRDA Monthly Assessment

Lab ID: 1811301-004

Collection Date: 11/20/2018 2:40:00 PM

Client Sample ID: MW03-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL

E245.1, 1994

Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|-----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 11/21/2018 3:25:26 PM |
|---------|-------------|-----------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|-----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 11/29/2018 1:52:00 AM |
|---------|----------|--------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL

E200.7, 1994

SW3010A

Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|-----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:22:19 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:22:19 PM |
| Barium | 0.0663 | 0.0100 | | mg/L | 1 | 11/28/2018 7:22:19 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:22:19 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 11/28/2018 7:22:19 PM |
| Calcium | 35.6 | 0.0500 | | mg/L | 1 | 11/28/2018 7:22:19 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:22:19 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:22:19 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:22:19 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:22:19 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:22:19 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:22:19 PM |

RADIUM - N

PER CLIENT

Analyst: **9915**

| | | | | | | |
|-----------------------------|---------------|-------|--|-------|---|-----------|
| Total Radium by Calculation | 0.809+/-0.593 | 0.838 | | pCi/L | 1 | 12/5/2018 |
|-----------------------------|---------------|-------|--|-------|---|-----------|

RADIUM - N

E903.1

Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|-----------|
| Radium-226 | 0.164+/-0.203 | 0.285 | | pCi/L | 1 | 12/5/2018 |
|------------|---------------|-------|--|-------|---|-----------|

RADIUM - N

E904.0

Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|-----------|
| Radium-228 | 0.645+/-0.390 | 0.553 | | pCi/L | 1 | 12/5/2018 |
|------------|---------------|-------|--|-------|---|-----------|

Qualifiers:

| | |
|----|---|
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| R | RPD outside accepted recovery limits |
| W | Sample container temperature is out of limit as specified at testcode |

| | |
|----|--|
| M | Manual Integration used to determine area response |
| PL | Permit Limit |
| RL | Reporting Detection Limit |

Original

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 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1811301

Date Reported: 1/17/2019

CLIENT: A & M Engineering

Lab Order: 1811301

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 11/27/2018 9:00:00 AM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

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Analytical Report

(continuous)

WO#: 1811301

Date Reported: 1/17/2019

CLIENT: A & M Engineering

Lab Order: 1811301

Project: GRDA Monthly Assessment

Lab ID: 1811301-005

Collection Date: 11/20/2018 4:25:00 PM

Client Sample ID: MW03-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|----------|-----------|--|------|---|-----------------------|
| Mercury | 0.000803 | 0.0000500 | | mg/L | 1 | 11/21/2018 3:25:26 PM |
|---------|----------|-----------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|----------|--------|--|------|---|-----------------------|
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 11/29/2018 1:52:00 AM |
|---------|----------|--------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|-----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:33:04 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:33:04 PM |
| Barium | 0.0402 | 0.0100 | | mg/L | 1 | 11/28/2018 7:33:04 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:33:04 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 11/28/2018 7:33:04 PM |
| Calcium | 331 | 0.500 | | mg/L | 1 | 11/28/2018 7:33:04 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:33:04 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:33:04 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:33:04 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:33:04 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:33:04 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:33:04 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|--------------|-------|--|-------|---|-----------|
| Total Radium by Calculation | 1.39+/-0.579 | 0.795 | | pCi/L | 1 | 12/5/2018 |
|-----------------------------|--------------|-------|--|-------|---|-----------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|-----------|
| Radium-226 | 0.172+/-0.170 | 0.197 | | pCi/L | 1 | 12/5/2018 |
|------------|---------------|-------|--|-------|---|-----------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|--------------|-------|--|-------|---|-----------|
| Radium-228 | 1.22+/-0.409 | 0.598 | | pCi/L | 1 | 12/5/2018 |
|------------|--------------|-------|--|-------|---|-----------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

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Analytical Report

(continuous)

WO#: 1811301

Date Reported: 1/17/2019

CLIENT: A & M Engineering

Lab Order: 1811301

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 11/27/2018 9:00:00 AM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

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Analytical Report

(continuous)

WO#: 1811301

Date Reported: 1/17/2019

CLIENT: A & M Engineering

Lab Order: 1811301

Project: GRDA Monthly Assessment

Lab ID: 1811301-006

Collection Date: 11/20/2018

Client Sample ID: Duplicate

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|----------|--------|-----|------|-------|----|---------------|
|----------|--------|-----|------|-------|----|---------------|

MERCURY IN WATER, TOTAL **E245.1, 1994** Analyst: **KR**

| | | | | | | |
|---------|-------------|-----------|--|------|---|-----------------------|
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 11/21/2018 3:25:26 PM |
|---------|-------------|-----------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994** Analyst: **8727**

| | | | | | | |
|---------|--------|--------|--|------|---|-----------------------|
| Lithium | 0.0200 | 0.0150 | | mg/L | 1 | 11/29/2018 1:52:00 AM |
|---------|--------|--------|--|------|---|-----------------------|

METALS IN WATER BY ICP, TOTAL **E200.7, 1994 SW3010A** Analyst: **KR**

| | | | | | | |
|------------|-----------|---------|--|------|---|-----------------------|
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:44:18 PM |
| Arsenic | 0.0295 | 0.00500 | | mg/L | 1 | 11/28/2018 7:44:18 PM |
| Barium | 0.0698 | 0.0100 | | mg/L | 1 | 11/28/2018 7:44:18 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:44:18 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 11/28/2018 7:44:18 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:44:18 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:44:18 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:44:18 PM |
| Molybdenum | 1.29 | 0.0100 | | mg/L | 1 | 11/28/2018 7:44:18 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 11/28/2018 7:44:18 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 11/28/2018 7:44:18 PM |

RADIUM - N **PER CLIENT** Analyst: **9915**

| | | | | | | |
|-----------------------------|-------------|-------|--|-------|---|-----------|
| Total Radium by Calculation | 148+/-0.708 | 0.904 | | pCi/L | 1 | 12/5/2018 |
|-----------------------------|-------------|-------|--|-------|---|-----------|

RADIUM - N **E903.1** Analyst: **9915**

| | | | | | | |
|------------|---------------|-------|--|-------|---|-----------|
| Radium-226 | 0.366+/-0.259 | 0.282 | | pCi/L | 1 | 12/5/2018 |
|------------|---------------|-------|--|-------|---|-----------|

RADIUM - N **E904.0** Analyst: **9915**

| | | | | | | |
|------------|--------------|-------|--|-------|---|-----------|
| Radium-228 | 1.12+/-0.449 | 0.622 | | pCi/L | 1 | 12/5/2018 |
|------------|--------------|-------|--|-------|---|-----------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
 TEL: 918-828-9977 FAX: 918-828-7756
 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: 1811301

Date Reported: 1/17/2019

CLIENT: A & M Engineering

Lab Order: 1811301

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|------|-------|------|---|-----------------------|
| Fluoride | 1.04 | 0.200 | mg/L | 1 | 11/27/2018 9:00:00 AM |
|----------|------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|---|----|--|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| | W | Sample container temperature is out of limit as specified at testcode | | |



QC SUMMARY REPORT

WO#: 1811301
 17-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: 4500 F-C, 2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R34552 | SampType: MBLK | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 34552 | | | | | | |
| Client ID: PBW | Batch ID: R34552 | TestNo: 4500 F-C, 201 | | Analysis Date: 11/27/2018 | SeqNo: 372673 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | < 0.200 | 0.200 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R34552 | SampType: LCS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 34552 | | | | | | |
| Client ID: LCSW | Batch ID: R34552 | TestNo: 4500 F-C, 201 | | Analysis Date: 11/27/2018 | SeqNo: 372674 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 2.17 | 0.200 | 2.000 | 0 | 108 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1811301-001BMS | SampType: MS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 34552 | | | | | | |
| Client ID: MW93-1 | Batch ID: R34552 | TestNo: 4500 F-C, 201 | | Analysis Date: 11/27/2018 | SeqNo: 372678 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 5.65 | 0.200 | 5.000 | 0 | 113 | 72.7 | 139 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1811301-001BMSD | SampType: MSD | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 34552 | | | | | | |
| Client ID: MW93-1 | Batch ID: R34552 | TestNo: 4500 F-C, 201 | | Analysis Date: 11/27/2018 | SeqNo: 372679 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 4.90 | 0.200 | 5.000 | 0 | 98.0 | 72.7 | 139 | 5.650 | 14.2 | 7.08 | R |

Qualifiers: H Holding times for preparation or analysis exceeded
 PL Permit Limit
 S Spike Recovery outside accepted recovery limits
 M Manual Integration used to determine area response
 R RPD outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit



QC SUMMARY REPORT

WO#: 1811301
 17-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: MB-9635 | SampType: MBLK | TestCode: MET_WW_T | Units: mg/L | Prep Date: 11/27/2018 | RunNo: 34587 | | | | | | |
|---------------------------|-----------------------|-------------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: PBW | Batch ID: 9635 | TestNo: E200.7, 1994 SW3010A | | Analysis Date: 11/28/2018 | SeqNo: 373158 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | < 0.0100 | 0.0100 | | | | | | | | | |
| Arsenic | < 0.00500 | 0.00500 | | | | | | | | | |
| Barium | < 0.0100 | 0.0100 | | | | | | | | | |
| Beryllium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cadmium | < 0.00100 | 0.00100 | | | | | | | | | |
| Calcium | < 0.0500 | 0.0500 | | | | | | | | | |
| Chromium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cobalt | < 0.0100 | 0.0100 | | | | | | | | | |
| Lead | < 0.00500 | 0.00500 | | | | | | | | | |
| Molybdenum | < 0.0100 | 0.0100 | | | | | | | | | |
| Selenium | < 0.00500 | 0.00500 | | | | | | | | | |
| Thallium | < 0.0100 | 0.0100 | | | | | | | | | |

| Sample ID: LCS-9635 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 11/27/2018 | RunNo: 34587 | | | | | | |
|----------------------------|-----------------------|-------------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9635 | TestNo: E200.7, 1994 SW3010A | | Analysis Date: 11/28/2018 | SeqNo: 373158 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 1.91 | 0.0100 | 2.000 | 0 | 95.3 | 85 | 115 | | | | |
| Arsenic | 1.86 | 0.00500 | 2.000 | 0 | 93.2 | 85 | 115 | | | | |
| Barium | 1.96 | 0.0100 | 2.000 | 0 | 98.0 | 85 | 115 | | | | |
| Beryllium | 1.92 | 0.0100 | 2.000 | 0 | 96.2 | 85 | 115 | | | | |
| Cadmium | 1.94 | 0.00100 | 2.000 | 0 | 96.8 | 85 | 115 | | | | |
| Calcium | 1.95 | 0.0500 | 2.000 | 0 | 97.6 | 85 | 115 | | | | |
| Chromium | 1.92 | 0.0100 | 2.000 | 0 | 96.2 | 85 | 115 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit R RPD outside accepted recovery limits RL Reporting Detection Limit
 S Spike Recovery outside accepted recovery limits W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1811301
 17-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: LCS-9635 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 11/27/2018 | RunNo: 34587 | | | | | | |
|----------------------------|-----------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9635 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 11/28/2018 | SeqNo: 373159 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Cobalt | 1.97 | 0.0100 | 2.000 | 0 | 98.4 | 85 | 115 | | | | |
| Lead | 2.00 | 0.00500 | 2.000 | 0 | 99.9 | 85 | 115 | | | | |
| Molybdenum | 1.96 | 0.0100 | 2.000 | 0 | 97.8 | 85 | 115 | | | | |
| Selenium | 1.82 | 0.00500 | 2.000 | 0 | 91.0 | 85 | 115 | | | | |
| Thallium | 2.03 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |

| Sample ID: 1811302-049AMS | SampType: MS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 11/27/2018 | RunNo: 34587 | | | | | | |
|----------------------------------|-----------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: BatchQC | Batch ID: 9635 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 11/28/2018 | SeqNo: 373161 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 1.94 | 0.0100 | 2.000 | 0 | 97.2 | 80.5 | 118 | | | | |
| Arsenic | 1.91 | 0.00500 | 2.000 | 0 | 95.4 | 80.3 | 117 | | | | |
| Barium | 1.99 | 0.0100 | 2.000 | 0 | 99.6 | 88.4 | 109 | | | | |
| Beryllium | 2.01 | 0.0100 | 2.000 | 0 | 100 | 80.3 | 117 | | | | |
| Cadmium | 1.98 | 0.00100 | 2.000 | 0 | 99.0 | 80.9 | 117 | | | | |
| Calcium | 2.06 | 0.0500 | 2.000 | 0.07098 | 99.7 | 21.9 | 163 | | | | |
| Chromium | 2.02 | 0.0100 | 2.000 | 0 | 101 | 80.5 | 117 | | | | |
| Cobalt | 2.03 | 0.0100 | 2.000 | 0 | 101 | 81.5 | 116 | | | | |
| Lead | 2.05 | 0.00500 | 2.000 | 0 | 103 | 80.2 | 118 | | | | |
| Molybdenum | 2.02 | 0.0100 | 2.000 | 0 | 101 | 81.7 | 118 | | | | |
| Selenium | 1.85 | 0.00500 | 2.000 | 0 | 92.6 | 78.5 | 115 | | | | |
| Thallium | 2.08 | 0.0100 | 2.000 | 0 | 104 | 79.9 | 120 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit R RPD outside accepted recovery limits RL Reporting Detection Limit
 S Spike Recovery outside accepted recovery limits W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1811301
 17-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: 1811302-049AMSD | SampType: MSD | TestCode: MET_WW_T | Units: mg/L | Prep Date: 11/27/2018 | RunNo: 34587 | | | | | | |
|-----------------------------------|-----------------------|-------------------------------------|----------------------------------|------------------------------|---------------------|----------|-----------|-------------|-------|----------|------|
| Client ID: BatchQC | Batch ID: 9635 | TestNo: E200.7, 1994 SW3010A | Analysis Date: 11/28/2018 | SeqNo: 373162 | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 1.95 | 0.0100 | 2.000 | 0 | 97.6 | 80.5 | 118 | 1.944 | 0.462 | 3.45 | |
| Arsenic | 1.92 | 0.00500 | 2.000 | 0 | 96.0 | 80.3 | 117 | 1.908 | 0.627 | 3.26 | |
| Barium | 2.00 | 0.0100 | 2.000 | 0 | 100 | 88.4 | 109 | 1.993 | 0.301 | 3.25 | |
| Beryllium | 2.02 | 0.0100 | 2.000 | 0 | 101 | 80.3 | 117 | 2.007 | 0.596 | 3.52 | |
| Cadmium | 1.99 | 0.00100 | 2.000 | 0 | 99.6 | 80.9 | 117 | 1.980 | 0.604 | 3.22 | |
| Calcium | 2.07 | 0.0500 | 2.000 | 0.07098 | 99.8 | 21.9 | 163 | 2.064 | 0.145 | 2.28 | |
| Chromium | 2.02 | 0.0100 | 2.000 | 0 | 101 | 80.5 | 117 | 2.020 | 0.248 | 3.37 | |
| Cobalt | 2.04 | 0.0100 | 2.000 | 0 | 102 | 81.5 | 116 | 2.026 | 0.541 | 3.38 | |
| Lead | 2.07 | 0.00500 | 2.000 | 0 | 103 | 80.2 | 118 | 2.051 | 0.729 | 3.09 | |
| Molybdenum | 2.03 | 0.0100 | 2.000 | 0 | 101 | 81.7 | 118 | 2.017 | 0.593 | 3.32 | |
| Selenium | 1.86 | 0.00500 | 2.000 | 0 | 92.8 | 78.5 | 115 | 1.853 | 0.216 | 3.4 | |
| Thallium | 2.10 | 0.0100 | 2.000 | 0 | 105 | 79.9 | 120 | 2.085 | 0.526 | 3.26 | |

Qualifiers:

| | | | | | |
|----|--|---|---|----|-------------------------------------|
| H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response | ND | Not Detected at the Reporting Limit |
| PL | Permit Limit | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out of limit as specified at testcode | | |



QC SUMMARY REPORT

WO#: **1811301**
17-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R34526 | SampType: MBLK | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34526 | | | | | | |
| Client ID: PBW | Batch ID: R34526 | TestNo: E245.1, 1994 | | Analysis Date: 11/21/2018 | SeqNo: 372296 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | < 0.0000500 | 0.0000500 | | | | | | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1811235-001CMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34526 | | | | | | |
| Client ID: BatchQC | Batch ID: R34526 | TestNo: E245.1, 1994 | | Analysis Date: 11/21/2018 | SeqNo: 372298 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00114 | 0.0000500 | 0.001000 | 0.0003434 | 79.2 | 77.8 | 119 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1811235-001CMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34526 | | | | | | |
| Client ID: BatchQC | Batch ID: R34526 | TestNo: E245.1, 1994 | | Analysis Date: 11/21/2018 | SeqNo: 372299 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00108 | 0.0000500 | 0.001000 | 0.0003434 | 73.5 | 77.8 | 119 | 0.001135 | 5.15 | 1.89 | RS |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1811237-001CMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34526 | | | | | | |
| Client ID: BatchQC | Batch ID: R34526 | TestNo: E245.1, 1994 | | Analysis Date: 11/21/2018 | SeqNo: 372303 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00101 | 0.0000500 | 0.001000 | 0 | 101 | 77.8 | 119 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit R RPD outside accepted recovery limits RL Reporting Detection Limit
 S Spike Recovery outside accepted recovery limits W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1811301
 17-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1811237-001CMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34526 | | | | | | |
| Client ID: BatchQC | Batch ID: R34526 | TestNo: E245.1, 1994 | | Analysis Date: 11/21/2018 | SeqNo: 372304 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00101 | 0.0000500 | 0.001000 | 0 | 101 | 77.8 | 119 | 0.001014 | 0.395 | 1.89 | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R34526 | SampType: LCS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34526 | | | | | | |
| Client ID: LCSW | Batch ID: R34526 | TestNo: E245.1, 1994 | | Analysis Date: 11/21/2018 | SeqNo: 372321 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00103 | 0.0000500 | 0.001000 | 0 | 103 | 85 | 115 | | | | |

Qualifiers:

| | | | | | |
|----|--|---|---|----|-------------------------------------|
| H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response | ND | Not Detected at the Reporting Limit |
| PL | Permit Limit | R | RPD outside accepted recovery limits | RL | Reporting Detection Limit |
| S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out of limit as specified at testcode | | |



Chain of Custody Record

Laboratory Number: **181301**

| | | | | | | |
|---|--|----------------------|--|------------------------------|---------------------------|--|
| Client Information: | | Billing Information: | | PO Number: | Project Name/Number: | Page 1 of 2 |
| Company Name: A+M Engineering | | | | 1986-030-003 | GRDA | |
| Contact Name: Tom Trebanik / Ed Van Schaik | | | | Quote Number: | Monthly Assessment | Turn Time |
| Address: | | | | | Sampler's Signature | <input type="checkbox"/> 1 Day |
| City, State Zip: | | | | Required QC Level | Ed Van Schaik | <input type="checkbox"/> 2 Day |
| Phone Number: 918-665-6575 Ext: 227 | | Ext: | | Std. | Shipping Method: | <input checked="" type="checkbox"/> Standard |
| Fax Number: | | | | Bill Monthly | UPS / FedEx / Airborne | <input type="checkbox"/> Other |
| E-mail Address: | | | | <input type="checkbox"/> Yes | GCT / <u>Hand</u> / Mail | (Rush turn times will incur a surcharge.) |
| | | | | <input type="checkbox"/> No | | |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|---|------------------|-------------|--------|--------------------------------------|--|----------|---------|--------|-----------|---------|----------|--------|-----------------|------|---------|------|----------|---------|--------|-----------|---------|----------|----------|
| Which Regulations Apply: | Matrix Code: | SO = Soil | Container | | | | | | | | | | Pres. | Requested Tests | | | | | | | | | | Comments |
| <input type="checkbox"/> RCRA | <input type="checkbox"/> Drinking Water | AQ = Aqueous | O = Oil | Number | Type P-Plastic G-Glass, V-Vial | AC, HNO ₃ , H ₂ SO ₄ , NaOH, Na ₂ S ₂ O ₈ | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Fluoride | Lead | Lithium | 5403 | | | | | | | |
| <input type="checkbox"/> POTW | <input type="checkbox"/> Distribution | DW = Drinking | SL = Sludge | | | | | | | | | | | | | | | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt |
| <input type="checkbox"/> NPDES | <input type="checkbox"/> Special | WW = Waste | F = Food | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> USDA/FDA | <input type="checkbox"/> State | MW = Monit. Well | SW = Swab | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> RECAP/RISC | <input type="checkbox"/> Other | LQ = Liquid | SOL = Solid | | | | | | | | | | | | | | | | | | | | | |

| Sample ID/Description | Date | Time | Container | Matrix | Number | Type | AC, HNO ₃ , H ₂ SO ₄ , NaOH, Na ₂ S ₂ O ₈ | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Fluoride | Lead | Lithium |
|-----------------------|----------|------|-----------|--------|--------|------|---|----------|---------|--------|-----------|---------|----------|--------|----------|------|---------|
| MW 93-1 | 11-20-18 | 1100 | G | AQ | 5 | P | | X | X | X | X | X | X | X | X | X | X |
| MW 93-2 | 11-20-18 | 1215 | G | AQ | 5 | P | | X | X | X | X | X | X | X | X | X | X |
| MW 93-3 | 11-20-18 | 1330 | G | AQ | 5 | P | | X | X | X | X | X | X | X | X | X | X |
| MW 03-1 | 11-20-18 | 1440 | G | AQ | 5 | P | | X | X | X | X | X | X | X | X | X | X |
| MW 03-2 | 11-20-18 | 1625 | G | AQ | 5 | P | | X | X | X | X | X | X | X | X | X | X |
| Duplicate | 11-20-18 | - | G | AQ | 5 | P | | X | X | X | X | X | X | X | X | X | X |

GREENCOUNTRYTESTING
CHAIN OF CUSTODY
ATTACHMENT
1 OF 2 PAGES
MW 93-2 C
NO time is.
Duplicate

| Relinquished by | Date/Time | Received by | Date/Time | Field Notes |
|----------------------|---------------|--------------------|---------------|--|
| Ed Van Schaik | 11-21-18 0919 | <i>[Signature]</i> | 11/21/18 9:19 | as per Ed |
| | | | | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | | | | Temp: 2 |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

6825 E. 38th Street
Tulsa, OK 74145
918-828-9977
Fax: 918-828-7756



Chain of Custody Record

Laboratory Number: **181301**

| | | | | | | |
|---|--|-----------------------------|--|------------------------------|----------------------------------|--|
| Client Information: | | Billing Information: | | PO Number: | Project Name/Number: GRDA | Page 2 of 2 |
| Company Name: A+M Engineering | | | | 1986-030-003 | Monthly Assessment | |
| Contact Name: Tom Trebanik / Ed Van Schaik | | | | Quote Number: | Sampler's Signature | <input type="checkbox"/> 1 Day |
| Address: | | | | | Ed Van Schaik | <input type="checkbox"/> 2 Day |
| City, State Zip: | | | | Required QC Level | | <input checked="" type="checkbox"/> Standard |
| Phone Number: 918-665-6575 Ext: 227 | | Ext: | | Std. | Shipping Method: | <input type="checkbox"/> Other |
| Fax Number: | | | | Bill Monthly | UPS / FedEx / Airborne | (Rush turn times will incur a surcharge.) |
| E-mail Address: | | | | <input type="checkbox"/> Yes | GCT / <u>Hand</u> / Mail | |
| | | | | <input type="checkbox"/> No | | |

| Which Regulations Apply: | Matrix Code: | SO = Soil | | Container | | Pres. | Requested Tests | | | | | | Comments |
|---|--|--|--|-----------|------|---------|-----------------|------------|----------|----------|-----------------------|---------|---|
| | | SO = Soil | O = Oil | Number | Type | | Mercury | Molybdenum | Selenium | Thallium | Radium 226 & 228 Comb | Calcium | |
| <input type="checkbox"/> RCRA <input type="checkbox"/> POTW <input type="checkbox"/> NPDES <input type="checkbox"/> USDA/FDA <input type="checkbox"/> RFC/AP/RISC | <input type="checkbox"/> Drinking Water <input type="checkbox"/> Distribution <input type="checkbox"/> Special <input type="checkbox"/> State <input type="checkbox"/> Other | AQ = Aqueous DW = Drinking WW = Waste MW = Monit. Well LQ = Liquid | O = Oil SL = Sludge F = Food SW = Swab SOL = Solid | Number | Type | ISO 150 | Mercury | Molybdenum | Selenium | Thallium | Radium 226 & 228 Comb | Calcium | GREENCOUNTRYTESTING CHAIN OF CUSTODY ATTACHMENT 2 OF 2 PAGES |
| Sample ID/Description | Date/Time | Container | Matrix | | | | | | | | | | |
| MW 93-1 | 11-20-18 1100 | G | AQ | 5 | P | | X | X | X | X | | | |
| MW 93-2 | 11-20-18 1215 | G | AQ | 5 | P | | X | X | X | X | | | |
| MW 93-3 | 11-20-18 1330 | G | AQ | 5 | P | | X | X | X | X | | | |
| MW 03-1 | 11-20-18 1440 | G | AQ | 5 | P | | X | X | X | X | X | | |
| MW 03-2 | 11-20-18 1625 | G | AQ | 5 | P | | X | X | X | X | X | | |
| Duplicate | 11-20-18 - | G | AQ | 5 | P | | X | X | X | X | | | |

| Relinquished by | Date/Time | Received by | Date/Time | Field Notes: |
|----------------------|----------------------|--------------------|----------------------|--|
| Ed Van Schaik | 11-21-18 0919 | <i>[Signature]</i> | 11/21/18 9:19 | |
| | | | | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | | | | Temp: 2 |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

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January 23, 2019

Tom Trebonik
A & M Engineering
10010 E. 16th St.
Tulsa, OK 74128-4813
TEL: (918) 665-6575
FAX: (918) 665-6576

RE: GRDA Monthly Assessment

Order No.: 1812299

Dear Tom Trebonik:

Green Country Testing, Inc. received 6 sample(s) on 12/21/2018 for the analyses presented in the following report.

In accordance with your instructions, Green Country Testing conducted the analysis shown on the following pages on samples submitted by your company. The results relate only to the items tested. Unless otherwise noted, all analysis were conducted using EPA approved methodologies. Test reports meet all the NELAC requirements. All relevant sampling information is on the attached chain-of-custody form. The initials SUB as the analyst designate any testing sub-contracted by Green Country Testing.

Certifications/Accreditation: OK - 7604 - AR - ADEQ - KS - E-10232 - LA - 4002

A scope of Certified/Accredited parameters is available upon request. If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Duzan", with a stylized flourish at the end.

Brian Duzan
Laboratory Director

Original

Green Country Testing, Inc.
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Case Narrative

WO#: 1812299
Date: 1/23/2019

CLIENT: A & M Engineering
Project: GRDA Monthly Assessment

1812299
met_ww_odd has been Sub Contracted.
1812299
Radium-226 has been Sub Contracted.
1812299
Radium-228 has been Sub Contracted.
1812299
met_ww_odd has been Sub Contracted.
1812299
Radium-226 has been Sub Contracted.
1812299
Radium-228 has been Sub Contracted.
1812299
met_ww_odd has been Sub Contracted.
1812299
Radium-226 has been Sub Contracted.
1812299
Radium-228 has been Sub Contracted.
1812299
met_ww_odd has been Sub Contracted.
1812299
Radium-226 has been Sub Contracted.
1812299
Radium-228 has been Sub Contracted.
1812299
met_ww_odd has been Sub Contracted.
1812299
Radium-226 has been Sub Contracted.
1812299
Radium-228 has been Sub Contracted.
1812299
met_ww_odd has been Sub Contracted.
1812299

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Case Narrative

WO#: 1812299

Date: 1/23/2019

CLIENT: A & M Engineering
Project: GRDA Monthly Assessment

Radium-226 has been Sub Contracted.
1812299
Radium-228 has been Sub Contracted.

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Analytical Report

(continuous)

WO#: 1812299

Date Reported: 1/23/2019

CLIENT: A & M Engineering

Lab Order: 1812299

Project: GRDA Monthly Assessment

Lab ID: 1812299-001

Collection Date: 12/20/2018 2:35:00 PM

Client Sample ID: MW93-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|--------------------------------------|------------------|-----------|------|-----------------------------|----|------------------------|
| MERCURY IN WATER, TOTAL | | | | E245.1, 1994 | | Analyst: KR |
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 12/27/2018 5:35:22 PM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 | | Analyst: 9915 |
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 12/30/2018 10:59:00 AM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 SW3010A | | Analyst: KR |
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 7:55:53 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 7:55:53 PM |
| Barium | 0.0175 | 0.0100 | | mg/L | 1 | 1/2/2019 7:55:53 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 7:55:53 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 1/2/2019 7:55:53 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 7:55:53 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 7:55:53 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 7:55:53 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 7:55:53 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 7:55:53 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 7:55:53 PM |
| RADIUM - N | | | | PER CLIENT | | Analyst: BWD |
| Total Radium by Calculation | 0.735+/-0.440 | 0.809 | | pCi/L | 1 | 1/21/2019 |
| RADIUM - N | | | | E903.1 | | Analyst: BWD |
| Radium-226 | -0.0327+/-0.0717 | 0.254 | | pCi/L | 1 | 1/21/2019 |
| RADIUM - N | | | | E904.0 | | Analyst: BWD |
| Radium-228 | 0.735+/-0.368 | 0.555 | | pCi/L | 1 | 1/2/2019 |

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1812299**

Date Reported: **1/23/2019**

CLIENT: A & M Engineering

Lab Order: 1812299

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 12/26/2018 1:16:00 PM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1812299

Date Reported: 1/23/2019

CLIENT: A & M Engineering

Lab Order: 1812299

Project: GRDA Monthly Assessment

Lab ID: 1812299-002

Collection Date: 12/20/2018 5:15:00 PM

Client Sample ID: MW93-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|--------------------------------------|---------------|-----------|------|-----------------------------|----|------------------------|
| MERCURY IN WATER, TOTAL | | | | E245.1, 1994 | | Analyst: KR |
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 12/27/2018 5:35:22 PM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 | | Analyst: 9915 |
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 12/30/2018 11:02:00 AM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 SW3010A | | Analyst: KR |
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:22:53 PM |
| Arsenic | 0.0285 | 0.00500 | | mg/L | 1 | 1/2/2019 8:22:53 PM |
| Barium | 0.0651 | 0.0100 | | mg/L | 1 | 1/2/2019 8:22:53 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:22:53 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 1/2/2019 8:22:53 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:22:53 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:22:53 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 8:22:53 PM |
| Molybdenum | 1.34 | 0.0100 | | mg/L | 1 | 1/2/2019 8:22:53 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 8:22:53 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:22:53 PM |
| RADIUM - N | | | | PER CLIENT | | Analyst: BWD |
| Total Radium by Calculation | 1.16+/-0.532 | 0.720 | | pCi/L | 1 | 1/21/2019 |
| RADIUM - N | | | | E903.1 | | Analyst: BWD |
| Radium-226 | 0.182+/-0.153 | 0.145 | | pCi/L | 1 | 1/21/2019 |
| RADIUM - N | | | | E904.0 | | Analyst: BWD |
| Radium-228 | 0.975+/-0.379 | 0.575 | | pCi/L | 1 | 1/2/2019 |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response
 ND Not Detected at the Reporting Limit PL Permit Limit
 RL Reporting Detection Limit W Sample container temperature is out of limit as specified at testcode

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Analytical Report

(continuous)

WO#: **1812299**

Date Reported: **1/23/2019**

CLIENT: A & M Engineering

Lab Order: 1812299

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|-------|-------|------|---|-----------------------|
| Fluoride | 0.685 | 0.200 | mg/L | 1 | 12/26/2018 1:16:00 PM |
|----------|-------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1812299

Date Reported: 1/23/2019

CLIENT: A & M Engineering

Lab Order: 1812299

Project: GRDA Monthly Assessment

Lab ID: 1812299-003

Collection Date: 12/20/2018 4:00:00 PM

Client Sample ID: MW93-3

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|--------------------------------------|---------------|-----------|------|-----------------------------|----|------------------------|
| MERCURY IN WATER, TOTAL | | | | E245.1, 1994 | | Analyst: KR |
| Mercury | 0.000245 | 0.0000500 | | mg/L | 1 | 12/27/2018 5:35:22 PM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 | | Analyst: 9915 |
| Lithium | 0.168 | 0.0150 | | mg/L | 1 | 12/30/2018 11:04:00 AM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 SW3010A | | Analyst: KR |
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:33:41 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 8:33:41 PM |
| Barium | 0.259 | 0.0100 | | mg/L | 1 | 1/2/2019 8:33:41 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:33:41 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 1/2/2019 8:33:41 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:33:41 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:33:41 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 8:33:41 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:33:41 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 8:33:41 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:33:41 PM |
| RADIUM - N | | | | PER CLIENT | | Analyst: BWD |
| Total Radium by Calculation | 1.39+/-0.760 | 0.923 | | pCi/L | 1 | 1/21/2019 |
| RADIUM - N | | | | E903.1 | | Analyst: BWD |
| Radium-226 | 0.640+/-0.350 | 0.331 | | pCi/L | 1 | 1/21/2019 |
| RADIUM - N | | | | E904.0 | | Analyst: BWD |
| Radium-228 | 0.754+/-0.410 | 0.592 | | pCi/L | 1 | 1/2/2019 |

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: **1812299**

Date Reported: **1/23/2019**

CLIENT: A & M Engineering

Lab Order: 1812299

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 12/26/2018 1:16:00 PM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1812299

Date Reported: 1/23/2019

CLIENT: A & M Engineering

Lab Order: 1812299

Project: GRDA Monthly Assessment

Lab ID: 1812299-004

Collection Date: 12/20/2018 11:15:00 AM

Client Sample ID: MW03-1

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|--------------------------------------|---------------|-----------|------|-----------------------------|----|------------------------|
| MERCURY IN WATER, TOTAL | | | | E245.1, 1994 | | Analyst: KR |
| Mercury | < 0.0000500 | 0.0000500 | | mg/L | 1 | 12/27/2018 5:35:22 PM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 | | Analyst: 9915 |
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 12/30/2018 11:07:00 AM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 SW3010A | | Analyst: KR |
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:44:52 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 8:44:52 PM |
| Barium | 0.0375 | 0.0100 | | mg/L | 1 | 1/2/2019 8:44:52 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:44:52 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 1/2/2019 8:44:52 PM |
| Calcium | 13.3 | 0.0500 | | mg/L | 1 | 1/2/2019 8:44:52 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:44:52 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:44:52 PM |
| Lead | 0.00791 | 0.00500 | | mg/L | 1 | 1/2/2019 8:44:52 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:44:52 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 8:44:52 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:44:52 PM |
| RADIUM - N | | | | PER CLIENT | | Analyst: BWD |
| Total Radium by Calculation | 1.71+/-0.667 | 1.12 | | pCi/L | 1 | 1/21/2019 |
| RADIUM - N | | | | E903.1 | | Analyst: BWD |
| Radium-226 | 0.360+/-0.252 | 0.244 | | pCi/L | 1 | 1/21/2019 |
| RADIUM - N | | | | E904.0 | | Analyst: BWD |
| Radium-228 | 1.35+/-0.415 | 0.874 | | pCi/L | 1 | 1/2/2019 |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response
 ND Not Detected at the Reporting Limit PL Permit Limit
 RL Reporting Detection Limit W Sample container temperature is out of limit as specified at testcode

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Analytical Report

(continuous)

WO#: **1812299**

Date Reported: **1/23/2019**

CLIENT: A & M Engineering

Lab Order: 1812299

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 12/26/2018 1:16:00 PM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1812299

Date Reported: 1/23/2019

CLIENT: A & M Engineering

Lab Order: 1812299

Project: GRDA Monthly Assessment

Lab ID: 1812299-005

Collection Date: 12/20/2018 12:30:00 PM

Client Sample ID: MW03-2

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|--------------------------------------|-----------------|-----------|------|-----------------------------|----|------------------------|
| MERCURY IN WATER, TOTAL | | | | E245.1, 1994 | | Analyst: KR |
| Mercury | 0.00107 | 0.0000500 | | mg/L | 1 | 12/27/2018 5:35:22 PM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 | | Analyst: 9915 |
| Lithium | < 0.0150 | 0.0150 | | mg/L | 1 | 12/30/2018 11:10:00 AM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 SW3010A | | Analyst: KR |
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:55:34 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 8:55:34 PM |
| Barium | 0.0443 | 0.0100 | | mg/L | 1 | 1/2/2019 8:55:34 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:55:34 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 1/2/2019 8:55:34 PM |
| Calcium | 350 | 0.500 | | mg/L | 1 | 1/2/2019 8:55:34 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:55:34 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:55:34 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 8:55:34 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:55:34 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 8:55:34 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 8:55:34 PM |
| RADIUM - N | | | | PER CLIENT | | Analyst: BWD |
| Total Radium by Calculation | 1.01+/-0.452 | 0.745 | | pCi/L | 1 | 1/21/2019 |
| RADIUM - N | | | | E903.1 | | Analyst: BWD |
| Radium-226 | 0.0422+/-0.0952 | 0.175 | | pCi/L | 1 | 1/21/2019 |
| RADIUM - N | | | | E904.0 | | Analyst: BWD |
| Radium-228 | 0.972+/-0.357 | 0.570 | | pCi/L | 1 | 1/2/2019 |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response
 ND Not Detected at the Reporting Limit PL Permit Limit
 RL Reporting Detection Limit W Sample container temperature is out of limit as specified at testcode

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Analytical Report

(continuous)

WO#: **1812299**

Date Reported: **1/23/2019**

CLIENT: A & M Engineering

Lab Order: 1812299

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 12/26/2018 1:16:00 PM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

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Analytical Report

(continuous)

WO#: 1812299

Date Reported: 1/23/2019

CLIENT: A & M Engineering

Lab Order: 1812299

Project: GRDA Monthly Assessment

Lab ID: 1812299-006

Collection Date: 12/20/2018

Client Sample ID: Duplicate

Matrix: AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|--------------------------------------|---------------|-----------|------|-----------------------------|----|------------------------|
| MERCURY IN WATER, TOTAL | | | | E245.1, 1994 | | Analyst: KR |
| Mercury | 0.000248 | 0.0000500 | | mg/L | 1 | 12/27/2018 5:35:22 PM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 | | Analyst: 9915 |
| Lithium | 0.169 | 0.0150 | | mg/L | 1 | 12/30/2018 11:18:00 AM |
| METALS IN WATER BY ICP, TOTAL | | | | E200.7, 1994 SW3010A | | Analyst: KR |
| Antimony | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 9:22:47 PM |
| Arsenic | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 9:22:47 PM |
| Barium | 0.267 | 0.0100 | | mg/L | 1 | 1/2/2019 9:22:47 PM |
| Beryllium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 9:22:47 PM |
| Cadmium | < 0.00100 | 0.00100 | | mg/L | 1 | 1/2/2019 9:22:47 PM |
| Chromium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 9:22:47 PM |
| Cobalt | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 9:22:47 PM |
| Lead | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 9:22:47 PM |
| Molybdenum | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 9:22:47 PM |
| Selenium | < 0.00500 | 0.00500 | | mg/L | 1 | 1/2/2019 9:22:47 PM |
| Thallium | < 0.0100 | 0.0100 | | mg/L | 1 | 1/2/2019 9:22:47 PM |
| RADIUM - N | | | | PER CLIENT | | Analyst: BWD |
| Total Radium by Calculation | 2.10+/-0.676 | 0.923 | | pCi/L | 1 | 1/21/2019 |
| RADIUM - N | | | | E903.1 | | Analyst: BWD |
| Radium-226 | 0.400+/-0.286 | 0.338 | | pCi/L | 1 | 1/21/2019 |
| RADIUM - N | | | | E904.0 | | Analyst: BWD |
| Radium-228 | 0.400+/-0.286 | 0.585 | | pCi/L | 1 | 1/2/2019 |

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |

Green Country Testing, Inc.
 6825 E 38th Street
 Tulsa, OK 74145
 TEL: 918-828-9977 FAX: 918-828-7756
 Website: www.greencountrytesting.com



Analytical Report

(continuous)

WO#: **1812299**

Date Reported: **1/23/2019**

CLIENT: A & M Engineering

Lab Order: 1812299

Project: GRDA Monthly Assessment

FLUORIDE

4500 F-C, 2011

Analyst: **CW**

| | | | | | |
|----------|---------|-------|------|---|-----------------------|
| Fluoride | < 0.200 | 0.200 | mg/L | 1 | 12/26/2018 1:16:00 PM |
|----------|---------|-------|------|---|-----------------------|

| | | | | |
|--------------------|----|--|----|---|
| Qualifiers: | H | Holding times for preparation or analysis exceeded | M | Manual Integration used to determine area response |
| | ND | Not Detected at the Reporting Limit | PL | Permit Limit |
| | RL | Reporting Detection Limit | W | Sample container temperature is out of limit as specified at testcode |



QC SUMMARY REPORT

WO#: 1812299
 23-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: 4500 F-C, 2011

| | | | | | | | | | | | |
|-----------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R34946 | SampType: MBLK | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 34946 | | | | | | |
| Client ID: PBW | Batch ID: R34946 | TestNo: 4500 F-C, 201 | | Analysis Date: 12/26/2018 | SeqNo: 377147 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | < 0.200 | 0.200 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R34946 | SampType: LCS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 34946 | | | | | | |
| Client ID: LCSW | Batch ID: R34946 | TestNo: 4500 F-C, 201 | | Analysis Date: 12/26/2018 | SeqNo: 377148 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 2.12 | 0.200 | 2.000 | 0 | 106 | 80 | 120 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1812299-001BMS | SampType: MS | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 34946 | | | | | | |
| Client ID: MW93-1 | Batch ID: R34946 | TestNo: 4500 F-C, 201 | | Analysis Date: 12/26/2018 | SeqNo: 377150 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 4.90 | 0.200 | 5.000 | 0 | 98.0 | 72.7 | 139 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|------------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1812299-001BMSD | SampType: MSD | TestCode: FLUOR | Units: mg/L | Prep Date: | RunNo: 34946 | | | | | | |
| Client ID: MW93-1 | Batch ID: R34946 | TestNo: 4500 F-C, 201 | | Analysis Date: 12/26/2018 | SeqNo: 377151 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Fluoride | 5.08 | 0.200 | 5.000 | 0 | 102 | 72.7 | 139 | 4.900 | 3.61 | 7.08 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1812299
 23-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: MB-9756 | SampType: MBLK | TestCode: MET_WW_T | Units: mg/L | Prep Date: 12/27/2018 | RunNo: 35057 | | | | | | |
|---------------------------|-----------------------|-------------------------------------|--------------------|--------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: PBW | Batch ID: 9756 | TestNo: E200.7, 1994 SW3010A | | Analysis Date: 1/2/2019 | SeqNo: 378542 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | < 0.0100 | 0.0100 | | | | | | | | | |
| Arsenic | < 0.00500 | 0.00500 | | | | | | | | | |
| Barium | < 0.0100 | 0.0100 | | | | | | | | | |
| Beryllium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cadmium | < 0.00100 | 0.00100 | | | | | | | | | |
| Calcium | < 0.0500 | 0.0500 | | | | | | | | | |
| Chromium | < 0.0100 | 0.0100 | | | | | | | | | |
| Cobalt | < 0.0100 | 0.0100 | | | | | | | | | |
| Lead | < 0.00500 | 0.00500 | | | | | | | | | |
| Molybdenum | < 0.0100 | 0.0100 | | | | | | | | | |
| Selenium | < 0.00500 | 0.00500 | | | | | | | | | |
| Thallium | < 0.0100 | 0.0100 | | | | | | | | | |

| Sample ID: LCS-9756 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 12/27/2018 | RunNo: 35057 | | | | | | |
|----------------------------|-----------------------|-------------------------------------|--------------------|--------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9756 | TestNo: E200.7, 1994 SW3010A | | Analysis Date: 1/2/2019 | SeqNo: 378543 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 2.03 | 0.0100 | 2.000 | 0 | 102 | 85 | 115 | | | | |
| Arsenic | 1.99 | 0.00500 | 2.000 | 0 | 99.6 | 85 | 115 | | | | |
| Barium | 1.91 | 0.0100 | 2.000 | 0 | 95.6 | 85 | 115 | | | | |
| Beryllium | 1.95 | 0.0100 | 2.000 | 0 | 97.6 | 85 | 115 | | | | |
| Cadmium | 2.04 | 0.00100 | 2.000 | 0 | 102 | 85 | 115 | | | | |
| Calcium | 1.99 | 0.0500 | 2.000 | 0 | 99.4 | 85 | 115 | | | | |
| Chromium | 1.97 | 0.0100 | 2.000 | 0 | 98.6 | 85 | 115 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1812299
 23-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: LCS-9756 | SampType: LCS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 12/27/2018 | RunNo: 35057 | | | | | | |
|----------------------------|-----------------------|-----------------------------|--------------------|--------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: LCSW | Batch ID: 9756 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 1/2/2019 | SeqNo: 378543 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Cobalt | 2.03 | 0.0100 | 2.000 | 0 | 101 | 85 | 115 | | | | |
| Lead | 2.08 | 0.00500 | 2.000 | 0 | 104 | 85 | 115 | | | | |
| Molybdenum | 2.00 | 0.0100 | 2.000 | 0 | 100 | 85 | 115 | | | | |
| Selenium | 2.01 | 0.00500 | 2.000 | 0 | 100 | 85 | 115 | | | | |
| Thallium | 2.13 | 0.0100 | 2.000 | 0 | 107 | 85 | 115 | | | | |

| Sample ID: 1812282-042AMS | SampType: MS | TestCode: MET_WW_T | Units: mg/L | Prep Date: 12/27/2018 | RunNo: 35057 | | | | | | |
|----------------------------------|-----------------------|-----------------------------|--------------------|--------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Client ID: BatchQC | Batch ID: 9756 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 1/2/2019 | SeqNo: 378545 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 2.03 | 0.0100 | 2.000 | 0 | 101 | 80.5 | 118 | | | | |
| Arsenic | 1.99 | 0.00500 | 2.000 | 0 | 99.4 | 80.3 | 117 | | | | |
| Barium | 2.00 | 0.0100 | 2.000 | 0 | 100 | 88.4 | 109 | | | | |
| Beryllium | 2.01 | 0.0100 | 2.000 | 0 | 101 | 80.3 | 117 | | | | |
| Cadmium | 2.04 | 0.00100 | 2.000 | 0 | 102 | 80.9 | 117 | | | | |
| Calcium | 2.09 | 0.0500 | 2.000 | 0.1329 | 97.8 | 21.9 | 163 | | | | |
| Chromium | 1.99 | 0.0100 | 2.000 | 0 | 99.4 | 80.5 | 117 | | | | |
| Cobalt | 2.03 | 0.0100 | 2.000 | 0 | 102 | 81.5 | 116 | | | | |
| Lead | 2.08 | 0.00500 | 2.000 | 0 | 104 | 80.2 | 118 | | | | |
| Molybdenum | 2.01 | 0.0100 | 2.000 | 0 | 100 | 81.7 | 118 | | | | |
| Selenium | 2.01 | 0.00500 | 2.000 | 0 | 101 | 78.5 | 115 | | | | |
| Thallium | 2.12 | 0.0100 | 2.000 | 0.01126 | 106 | 79.9 | 120 | | | | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1812299
 23-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E200.7, 1994

| Sample ID: 1812282-042AMSD | SampType: MSD | TestCode: MET_WW_T | Units: mg/L | Prep Date: 12/27/2018 | RunNo: 35057 | | | | | | |
|-----------------------------------|-----------------------|-----------------------------|--------------------|--------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Client ID: BatchQC | Batch ID: 9756 | TestNo: E200.7, 1994 | SW3010A | Analysis Date: 1/2/2019 | SeqNo: 378546 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Antimony | 2.02 | 0.0100 | 2.000 | 0 | 101 | 80.5 | 118 | 2.027 | 0.198 | 3.45 | |
| Arsenic | 1.98 | 0.00500 | 2.000 | 0 | 99.2 | 80.3 | 117 | 1.989 | 0.302 | 3.26 | |
| Barium | 1.97 | 0.0100 | 2.000 | 0 | 98.4 | 88.4 | 109 | 1.999 | 1.56 | 3.25 | |
| Beryllium | 1.96 | 0.0100 | 2.000 | 0 | 98.2 | 80.3 | 117 | 2.011 | 2.42 | 3.52 | |
| Cadmium | 2.03 | 0.00100 | 2.000 | 0 | 102 | 80.9 | 117 | 2.037 | 0.197 | 3.22 | |
| Calcium | 2.07 | 0.0500 | 2.000 | 0.1329 | 96.7 | 21.9 | 163 | 2.088 | 1.06 | 2.28 | |
| Chromium | 1.97 | 0.0100 | 2.000 | 0 | 98.6 | 80.5 | 117 | 1.988 | 0.757 | 3.37 | |
| Cobalt | 2.03 | 0.0100 | 2.000 | 0 | 101 | 81.5 | 116 | 2.034 | 0.295 | 3.38 | |
| Lead | 2.07 | 0.00500 | 2.000 | 0 | 104 | 80.2 | 118 | 2.081 | 0.385 | 3.09 | |
| Molybdenum | 2.00 | 0.0100 | 2.000 | 0 | 100 | 81.7 | 118 | 2.007 | 0.150 | 3.32 | |
| Selenium | 2.00 | 0.00500 | 2.000 | 0 | 100 | 78.5 | 115 | 2.013 | 0.548 | 3.4 | |
| Thallium | 2.14 | 0.0100 | 2.000 | 0.01126 | 106 | 79.9 | 120 | 2.125 | 0.469 | 3.26 | |

Qualifiers:
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 W Sample container temperature is out of limit as specified at testcode

M Manual Integration used to determine area response
 RL Reporting Detection Limit

ND Not Detected at the Reporting Limit
 S Spike Recovery outside accepted recovery limits



QC SUMMARY REPORT

WO#: 1812299
 23-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|-----------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: MB-R34972 | SampType: MBLK | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34972 | | | | | | |
| Client ID: PBW | Batch ID: R34972 | TestNo: E245.1, 1994 | | Analysis Date: 12/27/2018 | SeqNo: 377362 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | < 0.0000500 | 0.0000500 | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: LCS-R34972 | SampType: LCS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34972 | | | | | | |
| Client ID: LCSW | Batch ID: R34972 | TestNo: E245.1, 1994 | | Analysis Date: 12/27/2018 | SeqNo: 377363 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000996 | 0.0000500 | 0.001000 | 0 | 99.6 | 85 | 115 | | | | |

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1812299-001AMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34972 | | | | | | |
| Client ID: MW93-1 | Batch ID: R34972 | TestNo: E245.1, 1994 | | Analysis Date: 12/27/2018 | SeqNo: 377365 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000646 | 0.0000500 | 0.001000 | 0 | 64.6 | 77.8 | 119 | | | | S |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|-------|----------|------|
| Sample ID: 1812299-001AMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34972 | | | | | | |
| Client ID: MW93-1 | Batch ID: R34972 | TestNo: E245.1, 1994 | | Analysis Date: 12/27/2018 | SeqNo: 377366 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.000649 | 0.0000500 | 0.001000 | 0 | 64.9 | 77.8 | 119 | 0.0006458 | 0.510 | 1.89 | S |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



QC SUMMARY REPORT

WO#: 1812299
 23-Jan-19

Client: A & M Engineering
Project: GRDA Monthly Assessment

TestNo: E245.1, 1994

| | | | | | | | | | | | |
|----------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|------|----------|------|
| Sample ID: 1812299-005AMS | SampType: MS | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34972 | | | | | | |
| Client ID: MW03-2 | Batch ID: R34972 | TestNo: E245.1, 1994 | | Analysis Date: 12/27/2018 | SeqNo: 377377 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00202 | 0.0000500 | 0.001000 | 0.001073 | 94.7 | 77.8 | 119 | | | | |

| | | | | | | | | | | | |
|-----------------------------------|-------------------------|-----------------------------|--------------------|----------------------------------|----------------------|----------|-----------|-------------|--------|----------|------|
| Sample ID: 1812299-005AMSD | SampType: MSD | TestCode: HG_WW | Units: mg/L | Prep Date: | RunNo: 34972 | | | | | | |
| Client ID: MW03-2 | Batch ID: R34972 | TestNo: E245.1, 1994 | | Analysis Date: 12/27/2018 | SeqNo: 377378 | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Mercury | 0.00202 | 0.0000500 | 0.001000 | 0.001073 | 94.8 | 77.8 | 119 | 0.002020 | 0.0495 | 1.89 | |

Qualifiers: H Holding times for preparation or analysis exceeded M Manual Integration used to determine area response ND Not Detected at the Reporting Limit
 PL Permit Limit RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits
 W Sample container temperature is out of limit as specified at testcode



Chain of Custody Record

Laboratory Number: **1812299**

| | | | | | | |
|---------------------|-------------------------------------|----------------------|------------|------------------------------|---------------------------|--|
| Client Information: | | Billing Information: | | PO Number: | Project Name/Number: | Page 1 of 2 |
| Company Name: | A+M Engineering | | | 1986-030-003 | GRDA | |
| Contact Name: | Tom Trebonik / Ed Van Schaik | | | Quote Number: | Monthly Assessment | Turn Time |
| Address: | | | | | Sampler's Signature | <input type="checkbox"/> 1 Day |
| City, State Zip: | | | | Required QC Level | Ed Van Schaik | <input type="checkbox"/> 2 Day |
| Phone Number: | 918-665-6575 | Ext: | 227 | Bill Monthly | Shipping Method: | <input checked="" type="checkbox"/> Standard |
| Fax Number: | | | | <input type="checkbox"/> Yes | UPS / FedEx / Airborne | <input type="checkbox"/> Other |
| E-mail Address: | | | | <input type="checkbox"/> No | GCT / <u>Land</u> / Mail | (Rush turn times will incur a surcharge.) |

| Which Regulations Apply: | | Matrix Code: | | Container | | Requested Tests | | | | | | | | | | Comments | | |
|--------------------------------------|---|------------------|-------------|-----------|---|---|----------|---------|--------|-----------|---------|----------|--------|----------|------|----------|------|--|
| <input type="checkbox"/> RCRA | <input type="checkbox"/> Drinking Water | AQ = Aqueous | SO = Soil | Number | Type P - Plastic G - Glass / Vial | Pres. H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₈ | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Fluoride | Lead | Lithium | 5403 | |
| <input type="checkbox"/> POTW | <input type="checkbox"/> Distribution | DW = Drinking | O = Oil | | | | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Fluoride | Lead | Lithium | | |
| <input type="checkbox"/> NPDES | <input type="checkbox"/> Special | WW = Waste | F = Food | | | | | | | | | | | | | | | |
| <input type="checkbox"/> USDA/FDA | <input type="checkbox"/> State | MW = Monit. Well | SW = Swab | | | | | | | | | | | | | | | |
| <input type="checkbox"/> REC/AP/RISC | <input type="checkbox"/> Other | LQ = Liquid | SOL = Solid | | | | | | | | | | | | | | | |
| Sample ID/Description | Date | Time | Container | Matrix | | | | | | | | | | | | | | |
| MW 93-1 | 12-20-18 | 1435 | G | AQ | 5 | P | X | X | X | X | X | X | X | X | X | X | | |
| MW 93-2 | 12-20-18 | 1715 | G | AQ | 5 | P | X | X | X | X | X | X | X | X | X | X | | |
| MW 93-3 | 12-20-18 | 1600 | G | AQ | 5 | P | X | X | X | X | X | X | X | X | X | X | | |
| MW 03-1 | 12-20-18 | 1115 | G | AQ | 5 | P | X | X | X | X | X | X | X | X | X | X | | |
| MW 03-2 | 12-20-18 | 1230 | G | AQ | 5 | P | X | X | X | X | X | X | X | X | X | X | | |
| Duplicate | 12-20-18 | - | G | AQ | 5 | P | X | X | X | X | X | X | X | X | X | X | | |

GREENCOUNTRYTESTING
CHAIN OF CUSTODY
ATTACHMENT
1 OF 2 PAGES

| Relinquished by | Date/Time | Received by | Date/Time | Field Notes |
|----------------------|----------------------|--------------------|---------------------|--|
| Ed Van Schaik | 12-21-18 0949 | <i>[Signature]</i> | 12/21/18 949 | |
| | | | | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | | | | Temp: 3 |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

6825 E. 38th Street
 Tulsa, OK 74145
 918-828-9977
 Fax: 918-828-7756



Chain of Custody Record

Laboratory Number: **1812299**

| | | | |
|---|----------------------|---|--|
| Company Name: A+M Engineering | Billing Information: | PO Number: 1986-030-003 | Project Name/Number: GRDA |
| Contact Name: Tom Trebanik / Ed Van Schaik | | Quote Number: | Monthly Assessment |
| Address: | | Required QC Level: Std. | Sampler's Signature: Ed Van Schaik |
| City, State/Zip: | | Bill Monthly: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Shipping Method: <input type="checkbox"/> UPS / FedEx / Airborne <input checked="" type="checkbox"/> GCT / Hand / Mail |
| Phone Number: 918-665-6575 EXT: 227 | Ext: | | Page 2 of 2 |
| Fax Number: | | | Turn Time: <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other |
| E-mail Address: | | | (Rush turn times will incur a surcharge.) |

| Sample ID/Description | Date | Time | Matrix | Matrix Code | Container | | Pres | Requested Tests | | | | | | Comments |
|-----------------------|----------|------|--------|-------------|-----------|------|------|-----------------|------------|----------|----------|------------|---------|---|
| | | | | | Number | Type | | Mercury | Molybdenum | Selenium | Thallium | Radium 226 | Calcium | |
| MW 93-1 | 12-20-18 | 1435 | G | AQ | 5 | P | | X | X | X | X | X | | GREENCOUNTRYTESTING CHAIN OF CUSTODY ATTACHMENT 2 OF 2 PAGES |
| MW 93-2 | 12-20-18 | 1715 | G | AQ | 5 | P | | X | X | X | X | X | | |
| MW 93-3 | 12-20-18 | 1600 | G | AQ | 5 | P | | X | X | X | X | X | | |
| MW 03-1 | 12-20-18 | 1115 | G | AQ | 5 | P | | X | X | X | X | X | X | |
| MW 03-2 | 12-20-18 | 1230 | G | AQ | 5 | P | | X | X | X | X | X | X | |
| Duplicate | 12-20-18 | - | G | AQ | 5 | P | | X | X | X | X | X | X | |

| Relinquished by | Date/Time | Received by | Date/Time | Field Notes |
|----------------------|----------------------|--------------------|----------------------|--|
| Ed Van Schaik | 12-21-18 0949 | [Signature] | 12/21/18 9:49 | Received on ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Temp: 3 |
| | | | | |
| | | | | |
| | | | | |

All samples submitted to Green Country Testing for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Green Country Testing reserves the right to return unused sample portions.

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