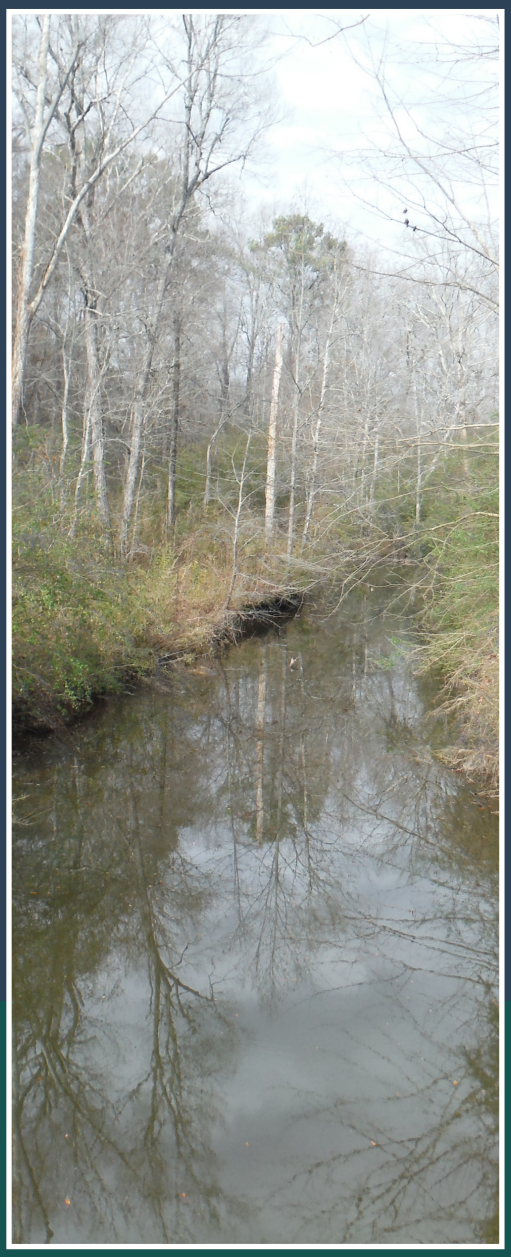
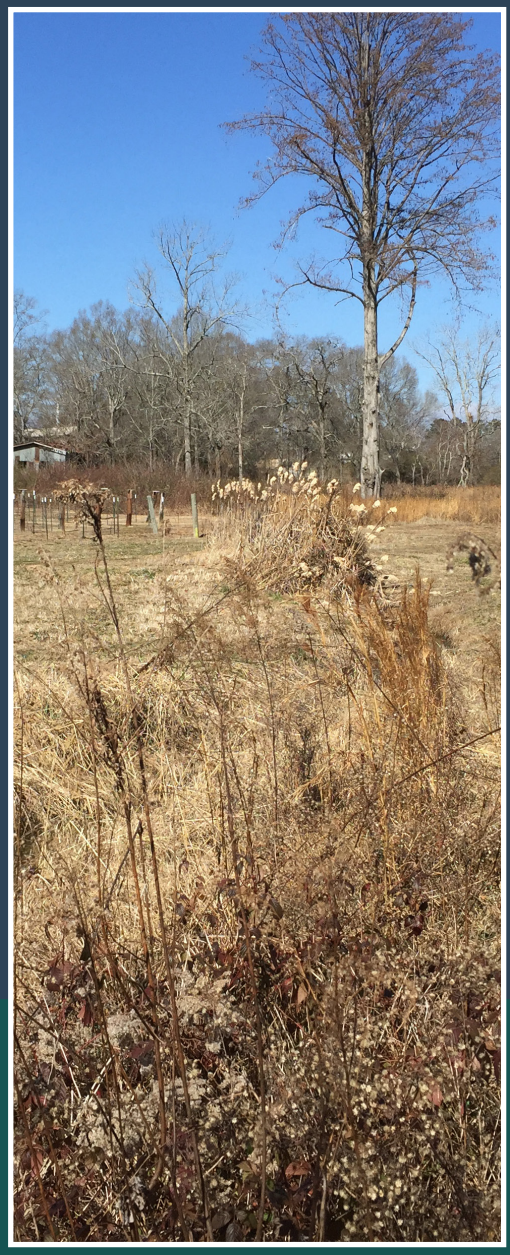
HOKES BLUFF MS4







Annual Report

April 1, 2022 to March 31, 2023

Prepared by
S&ME, Inc.

May 31, 2022

City of Hokes Bluff
3301 Alford Bend Road
Hokes Bluff, Alabama 35903

Attention: Mayor Scott Reeves

Reference: **Annual Report: April 1, 2022 to March 31, 2023**
Hokes Bluff MS4
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 215660D
NPDES Permit No. ALR040055

Dear Mayor Reeves:

S&ME has prepared the attached Annual Report for the Hokes Bluff Phase II Small Municipal Separate Storm Sewer System in accordance with S&ME Proposal No. 22820250, dated October 25, 2022. The Annual Report covers the April 1, 2022 to March 31, 2023 reporting period.

S&ME appreciates the opportunity to provide our services to the City of Hokes Bluff. Should you have questions concerning this report, or if additional information is required, please contact the undersigned.

Sincerely,

S&ME, Inc.

Sarah L. Yeldell, P.E.
Project Manager

Deborah J. Jones, P.E.
Senior Engineer

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1.0 Introduction

S&ME, Inc. has prepared this Annual Report for the Hokes Bluff, Alabama Urbanized Area Phase II Small Municipal Separate Storm Sewer System in accordance with S&ME Proposal No. 22820250, dated October 25, 2022.

The Annual Report is required by Part VI of the Alabama Department of Environmental Management (ADEM) National Pollutant Discharge Elimination System (NPDES) General Permit ALR040000 for discharges from regulated small municipal separate storm sewer systems (MS4).

1.1 Permit History

The Storm Water Phase II Final Rule issued by the United States Environmental Protection Agency (USEPA) in 1999 requires nationwide coverage of all operators of small MS4s located within the boundaries of an "urbanized area" as defined by the latest decennial Census. Based on the results of the 2010 census, the Bureau of the Census designated the *Gadsden, Alabama Urbanized Area* to include the City of Attalla, the City of Gadsden, the City of Glencoe, the City of Hokes Bluff, City of Rainbow City, the City of Southside, and portions of unincorporated Etowah County. A map outlining the approximate boundary of the 2010 *Gadsden, Alabama Urbanized Area* is included in **Appendix A** as **Figure 1**. Revised urbanized area boundaries based on the 2020 Census were not available as of May 31, 2023.

The City of Attalla, the City of Gadsden, the City of Glencoe, the City of Hokes Bluff, City of Rainbow City, the City of Southside, and Etowah County initially applied for and received a NPDES MS4 Phase II General Permit from ADEM in 2003, with the seven entities as co-permittees under authorization number ALR040009. The five-year permit expired on March 9, 2008. A Notice of Intent for renewal of the permit was submitted 180 days prior to expiration and permit coverage was administratively continued until the re-issuance of the MS4 Phase II General Permit with an effective date of February 1, 2011.

The 2011 permit expired on February 1, 2016. A Notice of Intent for renewal of the permit was submitted by each entity 180 days prior to expiration; therefore, the permit coverage was extended until the re-issuance of the MS4 Phase II General Permit in September. To assist in compliance tracking, the Gadsden-Etowah MS4 entities were each issued a separate permit, although the entities agreed to continue under a joint SWMPP and monitoring plan. The City of Hokes Bluff MS4 was authorized to discharge under authorization number ALR040055 with an effective date of October 1, 2016.

The 2016 permit expired on September 30, 2021. A Notice of Intent for renewal of the permit was submitted 180 days prior to expiration, and the MS4 Phase II General Permit was re-issued with an effective date of October 1, 2021. The current permit will expire on September 30, 2026. Under the new permitting system, the City of Hokes Bluff was required to prepare a separate SWMPP detailing the individual actions taken by the City to comply with the 2021 permit, as well as the joint activities shared with the remaining Gadsden-Etowah MS4 entities.

A copy of the NPDES General Permit is included in the 2022 SWMPP.

1.2 Storm Sewer System

A Municipal Separate Storm Sewer System (MS4) is defined by 40 CFR Part 122.26(b)(8) to be a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that is:

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) Designed or used for collecting or conveying storm water;

(iii) Not a combined sewer; and,

(iv) Not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

1.3 Hokes Bluff MS4 Area

The City of Hokes Bluff Municipal Separate Storm Sewer System (Hokes Bluff MS4) is defined as the area within both the city limits and the urbanized area boundary. As defined by the 2010 Census, the *Gadsden, Alabama Urbanized Area* encompasses approximately 74.8 square miles. The Hokes Bluff MS4 comprises approximately 4.1 square miles (5.4%) of the 2010 *Gadsden, Alabama Urbanized Area*. Approximately 34% of the city is located within the MS4 boundary. A map depicting the City of Hokes Bluff's urbanized area and city limits is located in **Appendix A** as **Figure 2**.

At the 2010 Census, the City of Hokes Bluff had a total population of 4,286. The 2020 Census data has a total population of 4,446. Revised urbanized area boundaries based on the 2020 Census were not available as of April 1, 2023.

1.3.1 Hydrologic Units in the Urbanized Area

Neely Henry Lake (Coosa River) is the primary receiving water for the Hokes Bluff MS4. Hydrologic Hierarchy, Watersheds, and Subwatersheds are provided in the tables below.

Table 1-1 Hydrologic Hierarchy

Type	Code	Name
REGION	03	South Atlantic-Gulf
SUBREGION	03-15	Alabama River Basin

Type	Code	Name
BASIN	0315-01	Coosa-Tallapoosa: Above the confluence of and including the Coosa and Tallapoosa River Basins
SUBBASIN	031501-06	Middle Coosa

Table 1-2 Watersheds in the MS4 Area

Watershed	10 Digit HUC
Big Wills Creek	03150106-01
Black Creek-Coosa River	03150106-02
Big Canoe Creek- Coosa River	03150106-03

Table 1-3 Subwatersheds in the Hokes Bluff MS4 Area

Subwatershed	12 Digit HUC	Total Area (Acres)	Area within Hokes Bluff MS4 (Acres)
Big Cove Creek	03150106-02-03	18,028	1,161
Thorton Lakes-Dry Creek	03150106-02-02	9,777	34
Turkey Town Creek	03150106-02-04	57,474	1,406

A map showing the HUC12 subwatersheds in relation to the Hokes Bluff MS4 boundary is included in the 2022 SWMPP.

1.4 Responsible Party

The **Building Department** is responsible for the coordination and implementation of the Storm Water Management Program Plan. Coordination between City departments is established in each section of the SWMPP.

The **Storm Water Steering** Committee is responsible for the implementation of the monitoring plan.

1.5 Annual Report Components

Part IV of the NPDES General Permit requires that the Hokes Bluff MS4 prepare and submit annual reports to ADEM each year by May 31. The Annual Report must cover the year prior to the submittal date (April 1 through March 31) and is required to include the following:

1. Contacts and responsible parties who had input to and are responsible for the preparation of the annual report

2. Overall evaluation of the SWMPP-developments and progress on the following:
    a. Major accomplishments
    b. Overall program strengths/weaknesses
    c. Future direction of the program
    d. Overall determination of the effectiveness of the SWMPP considering water quality/watershed improvements
    e. Measurable goals that were not performed and reasons why the goals were not accomplished
    f. Evaluation of the monitoring data

3. A narrative report of all minimum storm water control measures referenced in the permit to include the following:
    a. Minimum control measures completed and in progress
    b. Assessment of the controls
    c. Discussion of proposed BMP revisions or any identified measurable goals that apply to the minimum storm water control measures

4. Summary table of the storm water controls that are planned/scheduled for the next reporting cycle

5. Results of information collected and analyzed during the reporting period including monitoring data used to assess the success of the program at reducing the discharge of pollutants to the Maximum Extent Practical (MEP)

6. Notice of reliance on another entity to satisfy some of your permit obligations

7. Results of the evaluation to determine whether discharges from any part of the MS4 contributes directly or indirectly to a waterbody that is included on the latest 303(d) list or for which a TMDL has been established or approved by EPA

8. All monitoring results collected during the reporting period

In 2021, S&ME was retained by the City of Hokes Bluff to revise and update the SWMPP to meet the requirements of the reissued 2021 MS4 permit. The updated SWMPP was submitted to ADEM on April 1, 2022. This Annual Report covers activities performed under the new SWMPP, dated April 2022.

2.0 Contacts List

Reference Part VI.B.1

Part VI.B.1 of the NPDES Permit requires that the City of Hokes Bluff provide a list of contacts and responsible parties involved in the preparation of the Annual Report. The following personnel were directly responsible for the preparation of the 2022-2023 Annual Report:

Ms. Lisa Lowman
City Clerk
3301 Alford Bend Road
Hokes Bluff, Alabama 35903
(256) 492-2414
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Mr. Patrick Curwen
Consultant
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Huntsville, Alabama 35806
256-837-8882
pcurwen@smeinc.com

Questions concerning the 2022-2023 Annual Report should be directed to the **Building Department**.

3.0 Evaluation of Water Quality Concerns

Reference Part VI.B.7

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987, and EPA's Water Quality Planning and Management Regulations (40CFR130) require states to identify waterbodies not in compliance with the water quality standards applicable to their designated use classifications. The identified waters are prioritized based on severity of the pollution. Section 303(d) then requires that total maximum daily loads (TMDLs) be determined for all pollutants causing violation of applicable water quality standards in each identified segment. The TMDL process establishes the allowable loading of pollutants, or other quantifiable

parameters for a waterbody, based on the relationship between pollution sources and in-stream water quality conditions.

A map showing the impaired waterbodies and watersheds in relation to the Etowah County MS4 is provided in **Appendix A** as **Figure 3**.

3.1.1 Impaired Waterbodies Within the MS4

None of the City's outfalls discharge directly to an impaired waterbody. No impaired waterbodies are located within the Hokes Bluff MS4 boundary or within the Hokes Bluff city limits.

3.1.1 Impaired Waterbodies Adjacent to the MS4

Approximately 4.2 miles of the Hokes Bluff MS4 boundary borders the Neely Henry Lake. The MS4 discharges to the lake directly via sheet flow and ditches and indirectly via Big Cove Creek and Dry Creek.

Table 3-1 Impaired Waterbodies Adjacent to the MS4

Waterbody	Impaired Segment	Type	Causes	Use
Coosa River (Neely Henry Lake)	AL03150106-0204-102	TMDL	Nutrients Organic enrichment (CBOD, NBOD) pH	PWS F&W

3.1.2 Neely Henry Lake TMDL

In 2008, the EPA approved TMDLs for Neely Henry Lake related to Nutrients (Total Phosphorous), pH, and Organic Enrichment/Dissolved Oxygen. The Hokes Bluff MS4 directly and indirectly discharges to Neely Henry Lake; therefore, **the Hokes Bluff MS4 is required to achieve a 30% reduction in Total Phosphorus discharge loading**.

Sources of nutrient and organic enrichment from non-point sources within the Coosa River watershed include:

- Runoff from pastures
- Runoff from animal operations
- Direct discharge to streams due to cattle
- Improper land application of animal waste
- Failing septic systems
- Urban runoff

Point source contributors of storm water pollution within the Coosa River watershed include:

- Discharge from wastewater treatment plants
- Discharge from industrial operations

Part IV.D of the NPDES General Permit requires that the City implement Best Management Practices (BMPs) and control measures specifically targeted to achieve the waste load allocations prescribed in the TMDL. The City must also implement a monitoring program to document that the waste load allocations prescribed in the TMDL are being achieved.

4.0 Overall Program Evaluation

Reference Part VI.B.2

4.1 Major Accomplishments

During the 2022-2023 reporting period, the City completed 76 out of 80 planned strategies, as well as one additional strategy. The number of completed planned strategies (77) demonstrates the City's commitment to implement the SWMPP and Phase II Permit.

1. Distributed storm water awareness messaging

The City of Hokes Bluff continued to implement a variety of strategies to publicize storm water awareness messages. In particular, events and publications associated with Hokes Bluff High School were targeted with printed, radio, and television ads. These events and publications were selected because they have high levels of public engagement, allowing the City to reach large numbers of people.

2. Prevented improper disposal

To prevent improper disposal into the MS4, the City provides brush, limb, and large-item pickup and recycling. Approximately 20,000 pounds of limb debris were collected. The City provides curbside garbage pickup for 1,642 households. While not all collection services can be quantified, the collection allowed for proper disposal of waste.

3. Performed outfall inspections

The City of Hokes Bluff continued to perform outfall inspections as required by the MS4 permit. During the 2022-2023 reporting period, 18 outfalls were inspected, including two major outfalls. No outfalls were observed with dry weather flow and no suspect discharges were discovered. One outfall was determined to be a roof downspout and was removed from the outfall inventory.

4. Maintained municipal facilities

The City used the previously established SOPs and an associated checklist for inspections of nine municipal facilities that have the potential to discharge pollutants through storm water runoff. The inspections identified no deficiencies.

4.2 Overall Programs Strengths and Weaknesses

The City continues to evaluate the processes and procedures in which it accomplishes the objectives of the SWMPP. However, their strengths and weaknesses remain very similar as past years.

The main strength of the program is the Public Education outreach efforts. The wide variety of outreach methods allows the City to reach a significant portion of Hokes Bluff residents.

The main weakness of the program is the small number of municipal staff that can be dedicated exclusively to the performance of the duties required by the Phase II Permit. The City currently employs the City Clerk as the primary executive of the storm water program. The City does not have an Engineering Department to assist with the storm water program responsibilities; the program duties are handled by one individual. The City does not currently have the ability to expand the Building Department for the storm water program; therefore, this weakness is expected to remain for several years.

4.3 Future Direction of the Program

During the upcoming reporting period, the City will work to adapt their program to meet the requirements of the reissued Phase II general permit and the revised SWMPP.

The City of Hokes Bluff is committed to educating citizens on the SWMPP Program and how their actions can impact storm water and the Coosa River. The City will continue to perform outreach activities and promote storm water awareness.

4.4 Overall Effectiveness of the SWMPP

The City of Hokes Bluff is proud of their efforts to achieve the objectives of the SWMPP. Based on this evaluation, the 2022 SWMPP appears to have been effective in meeting the objectives and requirements of the 2021 Phase II Permit.

4.5 Measurable Goals Not Performed

The City did not actively seek public input on the SWMPP or 2021-2022 Annual Report by posting an announcement on the City's electronic sign.

The City did not maintain an inventory of active qualifying construction sites within the MS4 boundary. None of the three active qualifying sites were inspected or re-inspected during the reporting period.

The City did not develop a policy by March 31, 2023 to require adequate long-term operation and maintenance of post-construction BMPs.

5.0 Storm Water Monitoring Data Evaluation

Reference Part VI.B.5 and 8

5.1 Rationale Statement

As discussed in Section 3.0, the Hokes Bluff MS4 currently discharges to an impaired waterbody for which a TMDL has been approved. Part V.A of the 2021 MS4 Permit requires that the SWMPP include a monitoring plan to assess the effectiveness of the BMPs in achieving the waste load reductions/allocations outlined in the TMDL.

The intent of the monitoring program is to evaluate the effectiveness of the City's BMPs in achieving the required phosphorous reduction as established in the TMDL and to generally evaluate overall water quality. Where deviations are documented and/or expected, the collected monitoring data will be used to determine the extent and cause of the pollutant of concern.

The 2022 *Gadsden-Etowah Wet Weather Monitoring Plan* is included as Appendix C of the SWMPP dated April 1, 2022. The plan details monitoring parameters, monitoring locations, field documentation, and sampling procedures.

5.2 Monitoring Events

Beginning in January 2013, S&ME was retained by the Gadsden-Etowah Storm Water Steering Committee to collect the required quarterly surface water samples and provide analyses of the sampling events.

Table 5-1 Monitoring Events to Date

MS4 Reporting Period	Monitoring Event	Date(s) Monitoring Conducted
April 1, 2012 – March 31, 2013	2013 Q1	March 12 & 13, 2013
April 1, 2013 – March 31, 2014	2013 Q2	May 8 & 20, 2013
	2013 Q3	September 23, 2013
	2013 Q4	December 10, 2013
	2014 Q1	February 6, 2014
April 1, 2014 – March 31, 2015	2014 Q2	June 26, 2014
	2014 Q3	September 30, 2014
	2014 Q4	November 19, 2014
	2015 Q1	March 23, 2015
April 1, 2015 – March 31, 2016	2015 Q2	April 22, 2015
	2015 Q3	September 30, 2015
	2015 Q4	November 19, 2015
	2016 Q1	March 15, 2016
April 1, 2016 – March 31, 2017	2016 Q2	June 29, 2016
	2016 Q3	August 9, 2016
	2016 Q4	December 7, 2016
	2017 Q1	March 2, 2017
April 1, 2017 – March 31, 2018	2017 Q2	June 21, 29, 30 and July 5, 2017
	2017 Q3	August 16-17, 2017
	2017 Q4	October 25-26, 2017
	2018 Q1	March 27-28, 2018

MS4 Reporting Period	Monitoring Event	Date(s) Monitoring Conducted
April 1, 2018 – March 31, 2019	2018 Q2	June 26 and 29, 2018
	2018 Q3	August 1-2, 2018
	2018 Q4	December 10-11, 2018
	2019 Q1	April 15 and 17, 2019
April 1, 2019 – March 31, 2020	2019 Q2	June 11-12, 2019
	2019 Q3	August 27-28, 2019
	2019 Q4	October 29-30, 2019
	2020 Q1	March 30-31, 2020
April 1, 2020 – March 31, 2021	2020 Q2	June 10, 2020
	2020 Q3	September 21, 2020
	2020 Q4	December 17, 2020
	2021 Q1	March 18, 2021
April 1, 2021 – March 31, 2022	2021 Q2	May 5, 2021
	2021 Q3	September 2, 2021
	2021 Q4	November 23, 2021
	2022 Q1	January 10-11, 2022
April 1, 2022 – March 31, 2023	2022 Q2	April 7, 2022
	2022 Q3	August 2-3, 2022
	2022 Q4	November 16, 2022
	2023 Q1	February 13-14, 2023

A monitoring report was issued to the members of the Steering Committee following each monitoring event. Copies of the reports for the monitoring events conducted during the April 1, 2022 to March 31, 2023 reporting period are provided in **Appendix C**.

5.3 Addition and Removal of Monitoring Points

Following evaluation of the monitoring program in April 2022, monitoring points SME 2 and SME 8 were removed from the monitoring program and monitoring points SME 9 and SME 10 were added. The changes to the monitoring program were implemented beginning with the 2022 second quarter sampling event. The monitoring locations are identified on Figure 2 in **Appendix A**.

5.3.1 Unnamed Tributary from Hokes Bluff

Monitoring point HB 3 was sited in 2012 to assess discharges from Hokes Bluff to the Coosa River; however, the watershed for the monitoring point also captures approximately 1.3 square miles of land outside the urbanized area. Monitoring point SME 8 was added in December 2020 to monitor runoff from a portion of Hokes Bluff for

comparison with the values obtained at HB 3. However, upon further evaluation of the watershed, SME 8 was determined to not be a representative background sample for HB 3. **Monitoring point SME 8 was removed from the monitoring program in April 2022.**

Monitoring point SME 9 was established on the blue-line stream that flows from Hokes Bluff to HB 3. The drainage area for SME 9 encompasses approximately 0.21 square miles of the HB 3 drainage area and includes residential, commercial, and light industrial land uses, as well as Hokes Bluff Elementary School. **Monitoring point SME 9 was added to the monitoring program in April 2022.**

5.3.2 Big Cove Creek

Monitoring point GD 5 was sited in 2012 to monitor discharges from Big Cove Creek into the Coosa River, but the drainage area for GD 5 includes 21.2 square miles of land outside the urbanized area. To assess storm water discharges from the Hokes Bluff MS4, monitoring point SME 10 was sited where an unnamed tributary to Big Cove Creek leaves the east portion of the Hokes Bluff MS4. The drainage area for SME 10 encompasses approximately 0.57 square miles of the GD 5 drainage area and includes residential and commercial land uses. **Monitoring point SME 10 was added to the monitoring program in April 2022.**

5.3.3 Monitoring Point SME 2

In keeping with the recommendation made in the previous Annual Report, the Gadsden-Etowah MS4 has discontinued monitoring at SME 2. The SME 2 watershed is only 1.05 square miles and has very similar land use characteristics to the much larger GD 7 watershed. Past monitoring results at points GD 7 and SME 2 indicate similar results at both locations, suggesting that SME 2 is redundant. Monitoring point SME 2 was last sampled on January 10, 2022. **Monitoring point SME 2 was removed from the monitoring program in April 2022.**

5.4 Statistical Analysis

A total of 41 quarterly monitoring events have been conducted since the Monitoring Program was first implemented in March of 2013. Charts 1 through 9 in **Appendix B** summarize the analytical data collected during these monitoring events.

Statistical analysis was performed on the cumulative monitoring data to evaluate trends and to determine whether there has been a statistically significant increase (SSI) of concentrations between specific monitoring points.

For the current statistical analysis, S&ME performed the statistical evaluation using the ChemStat Version 6.2 software produced by Starpoint Software. The appropriate statistical procedure used in this evaluation was determined by the characteristics of the data set. The approach used to determine the appropriate statistical evaluation and the results of the statistical evaluation are summarized in the following paragraphs.

Specific monitoring points were chosen for comparison based on their location within the MS4 area respective to other monitoring point locations and trend of collected data. Detailed results are given in **Appendix B**.

5.4.1 *Approach to Statistical Analysis*

Essentially, there are two sets of data to be compared during this statistical evaluation. Sen's non-parametric estimator of slope is a method of estimating the slope (change in concentration over time) of the data. Because this method is non-parametric, it is suitable for high percentage of non-detects and is not significantly affected by outliers. The result indicates whether there is an upward, downward, or no trend in the concentration data.

The Wilcoxon rank-sum test evaluates potential differences in the medians of two populations. The Wilcoxon rank-sum test can be used to compare a single data group against another data group. In this evaluation, we compared the specific monitoring points to determine if a statistically significant difference is present in a monitoring point using a statistical significance value (alpha) of 0.01. If a statistically significant difference was observed, we then compared the median values of each point to evaluate whether a point had a statistically significant increase (SSI) over the background point.

The following laboratory parameters were evaluated in the statistical analysis:

- Total Suspended Solids (TSS)
- Total Phosphorous
- Orthophosphate
- Nitrate-Nitrite
- Total Kjeldahl Nitrogen (TKN)

5.4.2 *Change in Concentration Over Time*

Table 5-2 below lists the points and parameters for which a trend was indicated by the Sen's Slope Analysis. The remaining assessed parameters have no trend in the slope.

Table 5-2: Summary of Results of Slope Analysis

Point Analyzed	Parameter	Trend
AT 5	Nitrate-Nitrite	Downward
AT 5	Ortho-phosphate	Downward

5.4.3 Statistically Significant Increases

Table 5-3 below reports the statistical evaluation for statistically significant increases (SSIs) for a summary of parameters and monitoring point comparisons.

Table 5-3: Summary of Results of SSIs

Upstream Monitoring Point	Downstream Monitoring Point	Point Analyzed	Analyzed Point SSI Identified	Parameters w/ SSI
SME 4	SME 6	SME 6	No	-
SME 4	SME 5	SME 5	No	-
SME 5	SME 6	SME 6	No	-
SME 7	AT 5	AT 5	No	-
AT 5	SME 1	SME 1	No	-
RC 2	SME 1	RC 2	No	-
GD 8	SME 1	GD 8	No	-
SME 1	SME 4	SME 1	Yes	Ortho-phosphate, Total Phosphorus
SME 7	SME 4	SME 7	Yes	Nitrate-Nitrite, Ortho-phosphate, Total Phosphorus
SME 4	RC 2	RC 2	No	-
SME 4	GD 8	GD 8	No	-
SME 10	GD 5	SME 10	Yes	TKN
SME 4	SME 10	SME 10	No	-
SME 4	CO 15	CO 15	Yes	TKN
SME 4	GD 12	GD 12	Yes	TKN
SME 4	SS 5	SS 5	Yes	TKN
SME 4	SS 13	SS 13	Yes	TKN
SME 4	SS 14	SS 14	Yes	TKN, Ortho-phosphate, Total Phosphorus

5.5 Evaluation of Monitoring Results

The results of the slope analysis indicate that, although fluctuations occur from one monitoring event to another, pollutant concentrations in the MS4 waterbodies have remained generally consistent over the past 10 years. The exception is Big Wills Creek where downward trends were observed for nitrate-nitrite and ortho-phosphate.

5.5.1 Monitoring Points SME 4, SME 5, and SME 6

Monitoring points SME 4, 5, and 6 were sited to assess water quality in the Coosa River where it enters the urbanized area, in the central portion of the urbanized area, and where it leaves the urbanized area, respectively. The points were first sampled in December 2020, and a total of ten monitoring events have been completed since, with the exception of SME 4 which was not sampled in September 2021.

Over the past ten monitoring events, turbidity increased between monitoring points SME 4 and SME 6 six times and decreased three times, with one event not sampled. Total nitrogen increased in four of the nine monitoring events and TSS increased in seven of the nine events. Ortho-phosphate was detected in one event at monitoring points SME 4 and SME 5 and was not detected at SME 6. Total phosphorous was not detected in the ten events.

As shown in Table 5-3, no SSIs were observed when the downstream Coosa River points were compared to the upstream river points. **These results indicate that no statistically significant increase in pollutants is occurring in the Coosa River due to runoff from the Gadsden-Etowah MS4.**

The Gadsden-Etowah MS4 will continue to monitor points SME 4, SME 5, and SME 6 during the April 1, 2023 to March 31, 2024 reporting period.

5.5.2 Monitoring Points AT 5 and SME 7

Monitoring point SME 7 is located in Big Wills Creek, upstream of monitoring point AT 5. Monitoring point AT 5 is located in Big Wills Creek, downstream of its confluence with Little Wills Creek. Monitoring point SME 7 was first sampled in December 2020, and a total of ten monitoring events have been completed.

Nitrate-nitrite decreased between SME 7 and AT 5 in nine out of the last ten monitoring events, ortho-phosphate decreased seven out of the last ten monitoring events, and total phosphorus has decreased between the two points in the last ten events.

As shown in Table 5-3, no SSIs were observed when AT 5 was compared to SME 7 upstream, indicating that a reduction in pollutant concentrations is occurring as Big Wills Creek passes through the Attalla, Etowah County, and Gadsden MS4s, possibly due to dilution as other waterbodies and runoff enter Big Wills Creek. The pollutants in Big Wills Creek are generally from outside of the MS4, and the urbanized area is not contributing additional pollution to the waterbody.

An SSI was noted when SME 7 was compared to the Coosa River (SME 4), indicating that the pollutant concentrations in Big Wills Creek are higher than the concentrations in the Coosa; however, as previously discussed, no SSIs were observed when the downstream Coosa River points were compared to the upstream river points. These results indicate that although Big Wills Creek is a source of pollutants to the Coosa River, the flow is not sufficient to cause an observable impact on the Coosa River.

The Gadsden-Etowah MS4 will continue to monitor points SME 7 and AT 5 during the April 1, 2023 to March 31, 2024 reporting period.

5.5.3 *Monitoring Point SME 1*

Monitoring point SME 1 was sited to observe water quality at the location where the combined flow from Big Wills Creek, Black Creek, and Horton Creek enters the Coosa River. Monitoring point AT 5 is located in Big Wills Creek, monitoring point GD 8 is located in Black Creek, and monitoring point RC 2 is located in Horton Creek. The monitoring points were first sampled in March 2013, and a total of 41 monitoring events have been completed.

Generally, nitrogen and phosphorous results at AT 5 are higher than those recorded at SME 1, whereas nitrogen and phosphorous values at RC 2 and GD 8 are lower than those recorded at SME 1. As shown in Table 5-3, no SSIs were observed when SME 1 was compared to upstream points AT 5, GD 8, or RC 2. A reduction in pollutant concentrations is occurring before the combined flow from AT 5, GD 8, and RC 2 discharges to the Coosa River.

These results indicate that the Big Wills Creek watershed is the primary source of nitrogen and phosphorous approaching SME 1. A portion of the observed reduction between AT 5 and SME 1 may come from dilution as other waterbodies and runoff join Big Wills Creek. This further indicates that the urbanized area is not contributing additional pollution to the waterbody.

The Gadsden-Etowah MS4 will continue to monitor points AT 5, GD 8, RC 2, and SME 1 during the April 1, 2023 to March 31, 2024 reporting period.

5.5.4 *Monitoring Point SS 14*

Monitoring point SS 14 was sited to observe water quality in an unnamed tributary to the Coosa River in Southside. The drainage area for SS 14 includes portions of the Southside and Etowah County MS4s, as well as areas outside of the Gadsden-Etowah MS4. Land uses in the SS 14 drainage area include residential, commercial, recreational, and agricultural. As shown in Charts 6 and 7, ortho-phosphate and total phosphorous concentrations at SS 14 are consistently higher than other locations within the MS4.

The monitoring results for ortho-phosphate and total phosphorous at SS 14 indicate that concentrations in the unnamed tributary are higher than those observed in the Coosa River; however, there is no clear increase in the levels of phosphorus and ortho-phosphate in the receiving water between SME 5 (Coosa River upstream of SS 14) and SME 6 (Coosa River downstream of SS 14). This seems to indicate that although levels of certain pollutants are elevated at SS 14, the flow from the unnamed tributary is not sufficient to cause an observable impact on the Coosa River.

The Gadsden-Etowah MS4 will continue to monitor points SS 14, SME 5, and SME 6 during the April 1, 2023 to March 31, 2024 monitoring period.

5.5.5 *Monitoring Point SME 9*

Monitoring point SME 9 was established on the blue-line stream that flows from Hokes Bluff to HB 3. The drainage area for SME 9 encompasses approximately 0.21 square miles of the HB 3 drainage area and includes residential, commercial, and light industrial land uses, as well as Hokes Bluff Elementary School. Monitoring point SME 9 was added to the monitoring program in April 2022, and a total of four monitoring events have been completed since.

Over the past four monitoring events, ortho-phosphates and nitrates were not detected. Total phosphorous was detectable during one of the four monitoring events. Turbidity increased between SME 9 and HB 3 during all four monitoring events. As shown in Table 5-3, no SSIs were observed when HB 3 was compared to SME 9.

The Gadsden-Etowah MS4 will continue to monitor points SME 9 during the April 1, 2023 to March 31, 2024 reporting period.

5.5.6 Monitoring Point SME 10

To assess storm water discharges from the Hokes Bluff MS4, monitoring point SME 10 was sited where an unnamed tributary to Big Cove Creek leaves the east portion of the Hokes Bluff MS4. The drainage area for SME 10 encompasses approximately 0.57 square miles of the GD 5 drainage area and includes residential and commercial land uses. Monitoring point SME 10 was added to the monitoring program in April 2022, and a total of four monitoring events have been completed since.

Over the past four monitoring events, ortho-phosphates were not detected. Total nitrate was detected in one of the four monitoring events. TSS increased between SME 10 and GD 5, while turbidity increased twice and decreased twice during the four monitoring events. As shown in Table 5-3, an SSI was noted when SME 10 was compared to GD 5 downstream, indicating that the pollutant concentrations leaving the Hokes Bluff MS4 are higher than the concentrations entering the Coosa at GD 5 due to dilution in Big Cove Creek.

The Gadsden-Etowah MS4 will continue to monitor points SME 10 during the April 1, 2023 to March 31, 2024 reporting period.

5.6 Summary of Recommendations

The entities that comprise the Gadsden-Etowah MS4 took a watershed approach regarding their Storm Water Monitoring Plan. This approach has allowed them to see how the overall watershed is responding to the established BMPs and to generally evaluate water quality across the MS4.

A revised *Wet-Weather Monitoring Program* was prepared in 2022 and went into effect April 2022. The Gadsden-Etowah MS4 entities plan to continue the watershed approach and do not propose any changes at this time to the Storm Water Monitoring Plan.

6.0 Narrative Report of Minimum Storm Water Control Measures

Reference Part VI.B.3 and 4

6.1 Public Education and Public Involvement on Storm Water Impacts

6.1.1 Implementation Status

During the April 1, 2022 to March 31, 2023 reporting period, the City of Hokes Bluff completed seventeen (17) of the eighteen (18) Public Education and Public Involvement strategies identified in the previous Annual Report and the 2022 SWMPP. The City did not complete one (1) strategy:

- The City did not actively seek public input on the SWMPP or 2021-2022 Annual Report by posting an announcement on the City's electronic sign (Strategy 6).

The City completed one (1) additional strategy:

- City personnel attended three continuing education events on erosion and sediment control, BMP installation, and floodplain management.

A table identifying each Public Education and Public Involvement strategy planned for the 2022-2023 reporting period, a description of actions taken by the City of Hokes Bluff, and a description of activities planned for the next reporting period is provided in **Appendix D**. Supporting documentation is also included in **Appendix D.**

6.1.2 Proposed Activities for the April 1, 2023 to March 31, 2024 Reporting Period

The City will implement the activities listed in the 2022 SWMPP and in the tables in **Appendix D** as part of their Public Education and Public Involvement Program during the 2023-2024 reporting period. The City will evaluate the success of the program to aid in preparing the required Annual Report based on the evaluation criteria established for each strategy.

6.1.3 Assessment of Controls

The strategies enacted during the reporting period appear to be effective in meeting the objectives of the Public Education and Public Involvement Control Measure as outlined in the 2021 permit. The strategies are adequate to educate the community about the impacts of storm water runoff, identify steps the community can take to help reduce pollutants, and provide opportunities for public involvement.

6.1.4 Proposed Changes

The City of Hokes Bluff requests no changes to the Public Education and Public Involvement strategies identified in the 2022 SWMPP.

6.1.5 Responsible Parties

The **City Clerk** is responsible for overseeing, developing, and coordinating the Public Education and Public Involvement efforts. The City Clerk is also responsible for providing content for the Storm Water Webpage.

The **Building** Department is responsible for performing plan review regarding erosion, sediment, pollution control, drainage, and flood control.

The **IT Contractor** is responsible for maintaining the storm water webpage and providing outclick information to track public engagement with the webpage.

The **Public Works Department** is responsible for performing brush pickup, placing and maintaining the "No Littering" signs, and operating the recycling center.

6.2 Illicit Discharge Detection and Elimination

6.2.1 Implementation Status

During the April 1, 2022 to March 31, 2023 reporting period, the City of Hokes Bluff completed eighteen (18) of the eighteen (18) Illicit Discharge Detection and Elimination strategies identified in the previous Annual Report and the 2022 SWMPP.

A table identifying each Illicit Discharge Detection and Elimination strategy planned for the 2022-2023 reporting period, a description of actions taken by the City of Hokes Bluff, and a description of activities planned for the next reporting period is provided in **Appendix E**. Supporting documentation is also included in **Appendix E**.

6.2.2 Proposed Activities for the April 1, 2023 to March 31, 2024 Reporting Period

The City will implement the activities listed in the 2022 SWMPP and in the tables in **Appendix E** as part of their Illicit Discharge Detection and Elimination Program during the 2023-2024 reporting period. The City will evaluate the success of the program to aid in preparing the required Annual Report based on the evaluation criteria established for each strategy.

6.2.3 Assessment of Control

The strategies enacted during the reporting period appear to be effective in meeting the objectives of the Illicit Discharge Detection and Elimination Control Measure as outlined in the 2021 permit. The strategies are adequate to prevent or correct illicit discharges to the Gadsden-Etowah MS4.

6.2.4 Proposed Changes

The City of Hokes Bluff requests no changes to the Illicit Discharge Detection and Elimination strategies identified in the 2022 SWMPP.

6.2.5 Responsible Party

The **Building Department** is responsible for overseeing, developing, and coordinating the IDDE program in the City of Hokes Bluff regulated MS4 area.

The **City Clerk** is responsible for providing storm water educational materials for the storm water webpage.

Other City departments, including the **Public Works Department**, the **Sanitation Department**, **Parks and Recreation Department**, the **Fire Department**, and the **Police Department**, will report illicit discharges observed during the course of their normal duties. Reports of observed or suspected illicit discharges will be made to the Building Department.

Hokes Bluff Utilities is responsible for corrective actions regarding Sanitary Sewer Overflows.

The **Fire Department** is responsible for corrective actions regarding hazardous spill response and for reporting spills over 25 gallons to ADEM.

6.3 Construction Site Storm Water Runoff

6.3.1 Implementation Status

During the April 1, 2022 to March 31, 2023 reporting period, the City of Hokes Bluff completed thirteen (13) of the fifteen (15) Construction Site Storm Water Runoff strategies identified in the previous Annual Report and the 2022 SWMPP. The City did not complete three (3) strategies:

- The City did not maintain an inventory of active qualifying construction sites within the MS4 boundary (Strategy 5).
- The City did not perform inspections once every three months at the three active qualifying sites (Strategy 6).

A table identifying each Construction Site Storm Water Runoff strategy planned for the 2022-2023 reporting period, a description of actions taken by the City of Hokes Bluff, and a description of activities planned for the next reporting period is provided in **Appendix F**. Supporting documentation is also included in **Appendix F**.

6.3.2 Proposed Activities for the April 1, 2023 to March 31, 2023 Reporting Period

The City will implement the activities listed in the 2022 SWMPP and in the tables in **Appendix F** as part of their Construction Site Storm Water Runoff Control Measure during the 2023-2024 reporting period. The City will evaluate the success of the program to aid in preparing the required Annual Report based on the evaluation criteria established for each strategy.

6.3.3 *Assessment of Controls*

The strategies enacted during the reporting period appear to be effective in meeting the objectives of the Construction Site Storm Water Runoff Control Measure as outlined in the 2021 permit. The strategies are adequate to monitor and control pollutants associated with land disturbing activities.

6.3.4 *Proposed Changes*

The City of Hokes Bluff requests no changes to the Construction Site Storm Water Runoff strategies identified in the 2022 SWMPP.

6.3.5 *Responsible Party*

The **Building Department** is responsible for implementing and tracking the construction site storm water provisions of the ordinance as well as other Construction Site Storm Water Runoff strategies.

6.4 Post-Construction Storm Water Management in New Development and Redevelopment

6.4.1 *Implementation Status*

During the April 1, 2022 to March 31, 2023 reporting period, the City of Hokes Bluff completed eleven (11) of the twelve (12) Post-Construction Storm Water Management strategies identified in the previous Annual Report and the 2022 SWMPP. The City did not complete (1) strategy:

- The City did not develop a policy by March 31, 2023 to require adequate long-term operation and maintenance of post-construction BMPs (Strategy 8).

A table identifying each Post-Construction Storm Water Management strategy planned for the 2022-2023 reporting period, a description of actions taken by the City of Hokes Bluff, and a description of activities planned for the next reporting period is provided in **Appendix G**. Supporting documentation is also included in **Appendix G**.

6.4.2 *Proposed Activities for the April 1, 2023 to March 31, 2024 Reporting Period*

The City will implement the activities listed in the 2022 SWMPP and in the tables in **Appendix G** as part of their Post-construction Storm Water Management Control Measure during the 2023-2024 reporting period. The City will evaluate the success of the program to aid in preparing the required Annual Report based on the evaluation criteria established for each strategy.

6.4.3 *Assessment of Control*

The strategies enacted during the reporting period appear to be effective in meeting the objectives of the Post-construction Storm Water Management Control Measure as outlined in the 2021 permit. The strategies are adequate to address post-construction storm water runoff from new development and re-development.

6.4.4 Proposed Changes

The City of Hokes Bluff requests no changes to the Post-Construction Storm Water Management in New Development and Redevelopment strategies identified in the 2022 SWMPP.

6.4.5 Responsible Party

The **Building Department** is responsible for establishing design criteria for post-construction BMPs, evaluating the storm water ordinance, reviewing submitted Stormwater Management Plans, performing inspections of post-construction BMPs, and enforcing the provisions of the storm water ordinance.

6.5 Pollution Prevention and Good Housekeeping for Municipal Operations

6.5.1 Implementation Status

During the April 1, 2022 to March 31, 2023 reporting period, the City of Hokes Bluff completed seventeen (17) of the seventeen (17) Pollution Prevention and Good Housekeeping for Municipal Operations strategies identified in the previous Annual Report and the 2022 SWMPP.

A table identifying each Pollution Prevention and Good Housekeeping for Municipal Operations strategy planned for the 2022-2023 reporting period, a description of actions taken by the City of Hokes Bluff, and a description of activities planned for the next reporting period is provided in **Appendix H**. Supporting documentation is also included in **Appendix H**.

6.5.2 Proposed Activities for the April 1, 2023 to March 31, 2024 Reporting Period

The City will implement the activities listed in the 2022 SWMPP and in the tables in **Appendix H** as part of their Pollution Prevention and Good Housekeeping for Municipal Operations Control Measure during the 2023-2024 reporting period. The City will evaluate the success of the program to aid in preparing the required Annual Report based on the evaluation criteria established for each strategy.

6.5.3 Assessment of Control

The strategies enacted during the reporting period appear to be effective in meeting the objectives of the Pollution Prevention and Good Housekeeping for Municipal Operations Control Measure as outlined in the 2021 permit. The strategies are adequate to address storm water pollution prevention from municipal operations.

6.5.4 Proposed Changes

The City of Hokes Bluff requests no changes to the Pollution Prevention and Good Housekeeping for Municipal Operations strategies identified in the 2022 SWMPP.

6.5.5 Responsible Party

The **Building Department** will be responsible for conducting the municipal facility evaluations and maintaining records of the facility inspections. The Building Department is also responsible for coordinating the annual reviews of the SOPs.

The **Public Works Department** will be responsible for roadway maintenance, streets and storm drain maintenance, and collection and disposal of the waste collected in City-owned or operated BMPs.

The **Parks and Recreation Department** will be responsible for the application, storage, and management of PHF.

7.0 Notice of Reliance

Reference Part VI.B.6

7.1 Steering Committee

The Gadsden-Etowah Steering Committee was first established in 2011 following re-issuance of the joint permit. The intent of the steering committee was to provide for coordination between the co-permittees. When the joint permit was superseded by the separate permits in 2016, the committee continued to work together to produce and implement a joint SWMPP and monitoring program.

The Steering Committee will continue under the 2021 permit. Despite the preparation of individual SWMPPs for each entity, the Gadsden-Etowah MS4 entities remain committed to partnership and joint implementation of the monitoring program.

Each of the seven entities provide at least one member to the Gadsden-Etowah Storm Water Steering Committee. Each entity is responsible for providing the required annual updates and monitoring data to the Steering Committee.

Table 7-1 MS4 Storm Water Steering Committee

Entity	Contact	Phone Number	Email
City of Gadsden	Heath Williamson	256-549-4520	hwilliamson@cityofgadsden.com
City of Gadsden	Keener Morrow	256-549-4524	kmorrow@cityofgadsden.com
City of Attalla	Jason Nicholson	256-441-9200	jnicholson@attallacity.org
City of Rainbow City	Joel Garmon	256-413-1230	jgarmon@rbcalabama.com
City of Southside	Judd Rich	256-442-9775 Ext. 131	jrich@cityofsouthside.com
City of Glencoe	Todd Means	256-492-1424	toddmeans@cityofglencoe.net
City of Hokes Bluff	Lisa Lowman	256-492-2414	Lisa.lowman@cityofhokesbluff.com
Etowah County	Robert Nail	256-549-5358	rnail@etowahcounty.org

7.2 Monitoring Program

The monitoring program initially developed in 2011 to evaluate compliance with the Neely Henry Lake TMDL consists of quarterly wet-weather monitoring in several water bodies across the Gadsden-Etowah MS4. The City of Attalla, the City of Gadsden, the City of Glencoe, the City of Hokes Bluff, City of Rainbow City, the City of Southside, and Etowah County entered into a Cooperative Agreement on March 24, 2015 to jointly perform the quarterly monitoring.

The submission of individual SWMPPs and Annual Reports for each entity will require modification of the 2015 monitoring agreement. The Gadsden-Etowah Steering Committee will establish a revised cooperative agreement for the quarterly monitoring by March 31, 2024.

8.0 Agency Certification

Reference Parts VI.A.2 and VII.G

I certify under penalty of law that this document and all attachments pertaining to the City of Hokes Bluff were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment for knowing violations.

Scott Reeves, Mayor
City of Hokes Bluff, Alabama

5/30/2023
Date

Appendices

Appendix A – Figures

GADSDEN-ETOWAH MS4 BOUNDARIES

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

N

0 1.5 3 Miles

Legend

- Gadsden, AL Urbanized Area Outline
- Unincorporated Etowah County MS4

City Limits

- Attalla
- Gadsden
- Glencoe
- Hokes Bluff
- Rainbow City
- Southside

SCALE: 1:100,000

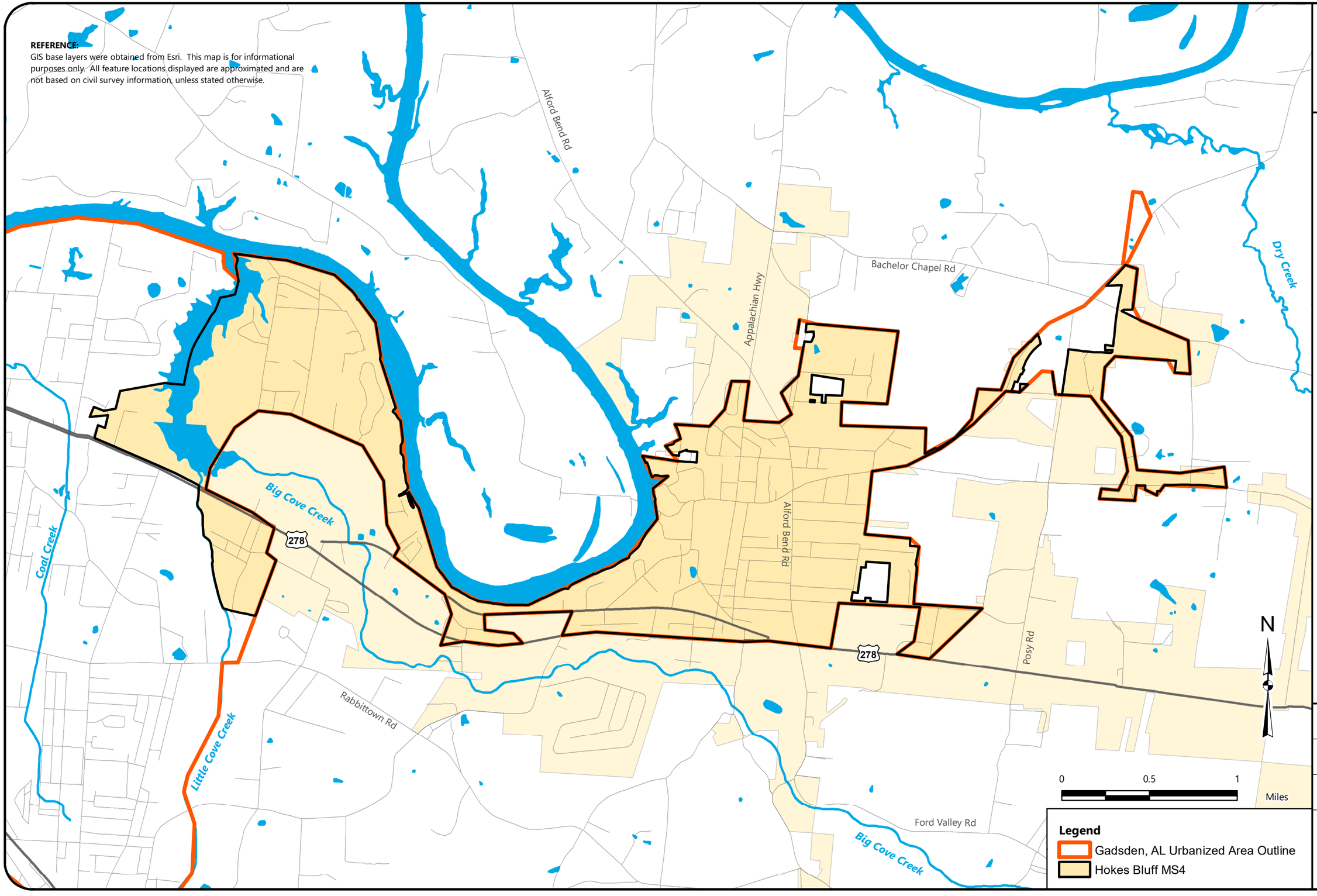
DATE: 02/18/2022

PROJECT NUMBER 215660

FIGURE NO. 1

REFERENCE:
GIS base layers were obtained from Esri. This map is for informational purposes only. All feature locations displayed are approximated and are not based on civil survey information, unless stated otherwise.

REFERENCE:
GIS base layers were obtained from Esri. This map is for informational purposes only. All feature locations displayed are approximated and are not based on civil survey information, unless stated otherwise.



HOKES BLUFF MS4 BOUNDARIES

CITY OF HOKES BLUFF, ALABAMA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040055

SCALE:	1:32,000
DATE:	02/19/2022
PROJECT NUMBER	215660D
FIGURE NO.	2

HOKES BLUFF MS4 IMPAIRMENTS

CITY OF HOKES BLUFF, ALABAMA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040055

REFERENCE:
GIS base layers were obtained from Esri. This map is for informational purposes only. All feature locations displayed are approximated and are not based on civil survey information, unless stated otherwise.

0 0.5 1
Miles

N

Legend

- Hokes Bluff MS4
- 2020 Approved TMDL
- 2020 303(d)

Watersheds

- Big Cove Creek
- Thorton Lakes-Dry Creek
- Turkey Town Creek

SCALE:	1:32,000
DATE:	02/19/2022
PROJECT NUMBER	215660D
FIGURE NO.	3

Appendix B – Charts and Statistics

CHART 1 - TURBIDITY ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

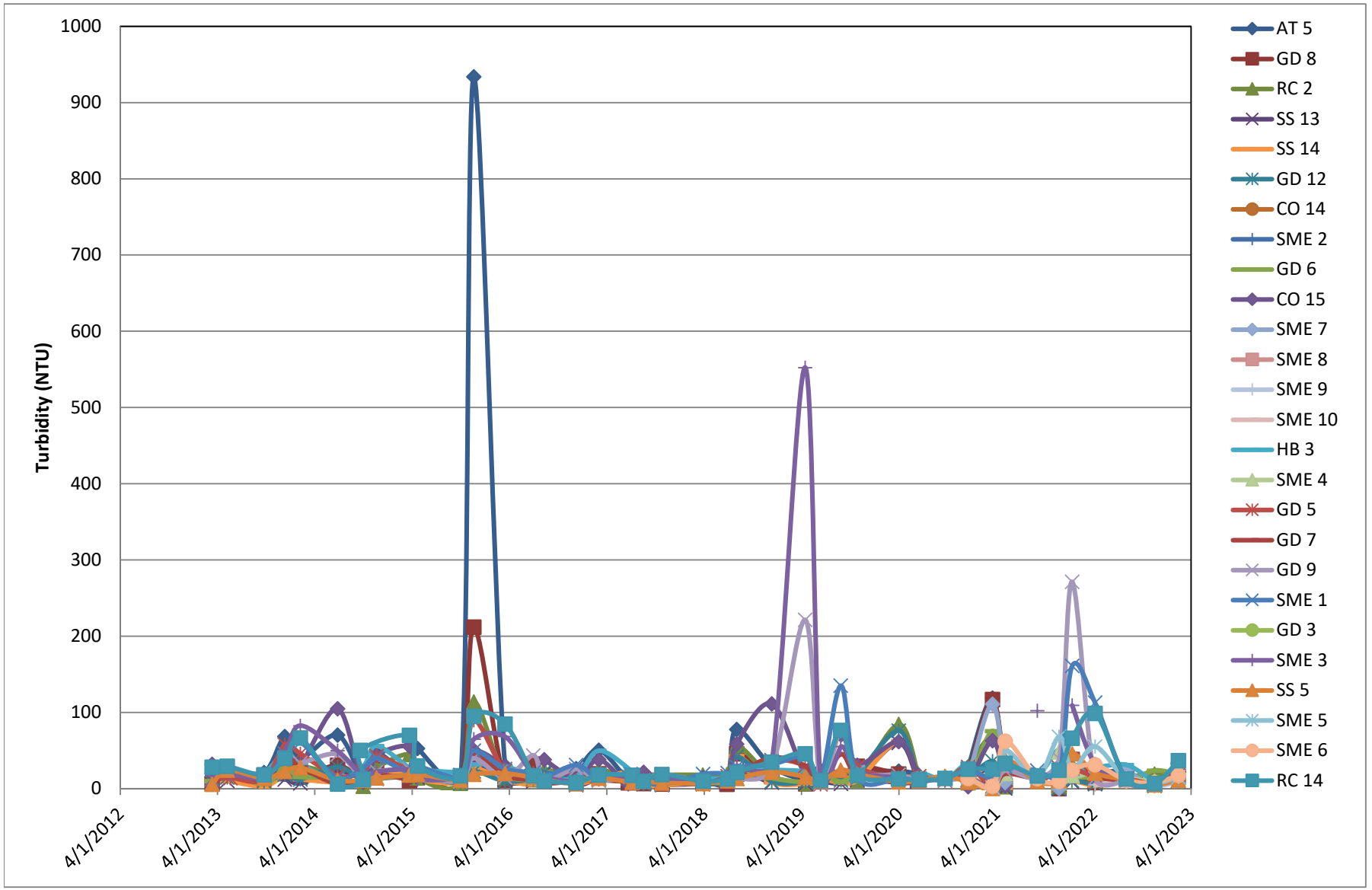


CHART 2 - pH ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

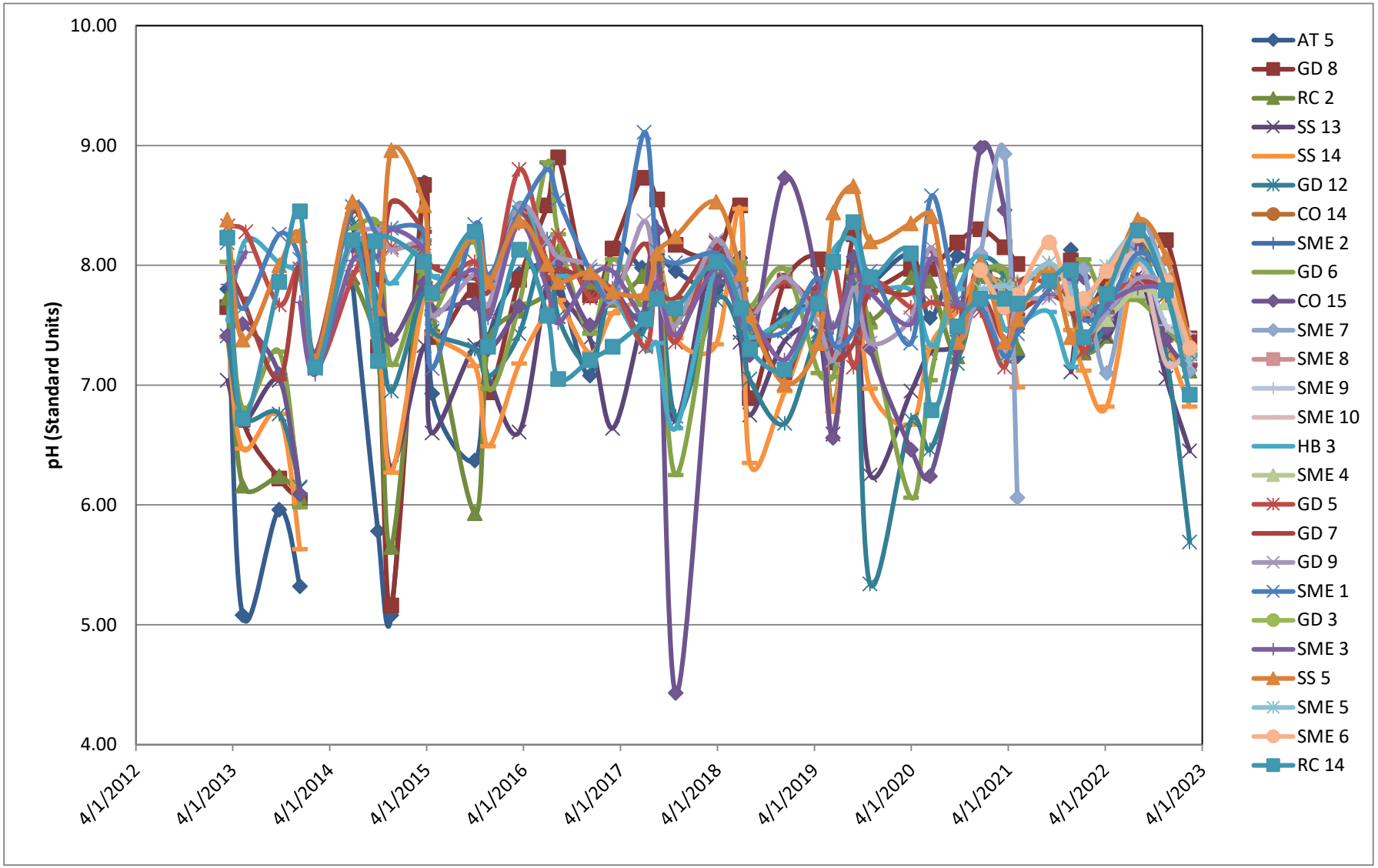


CHART 3 - DISSOLVED OXYGEN ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

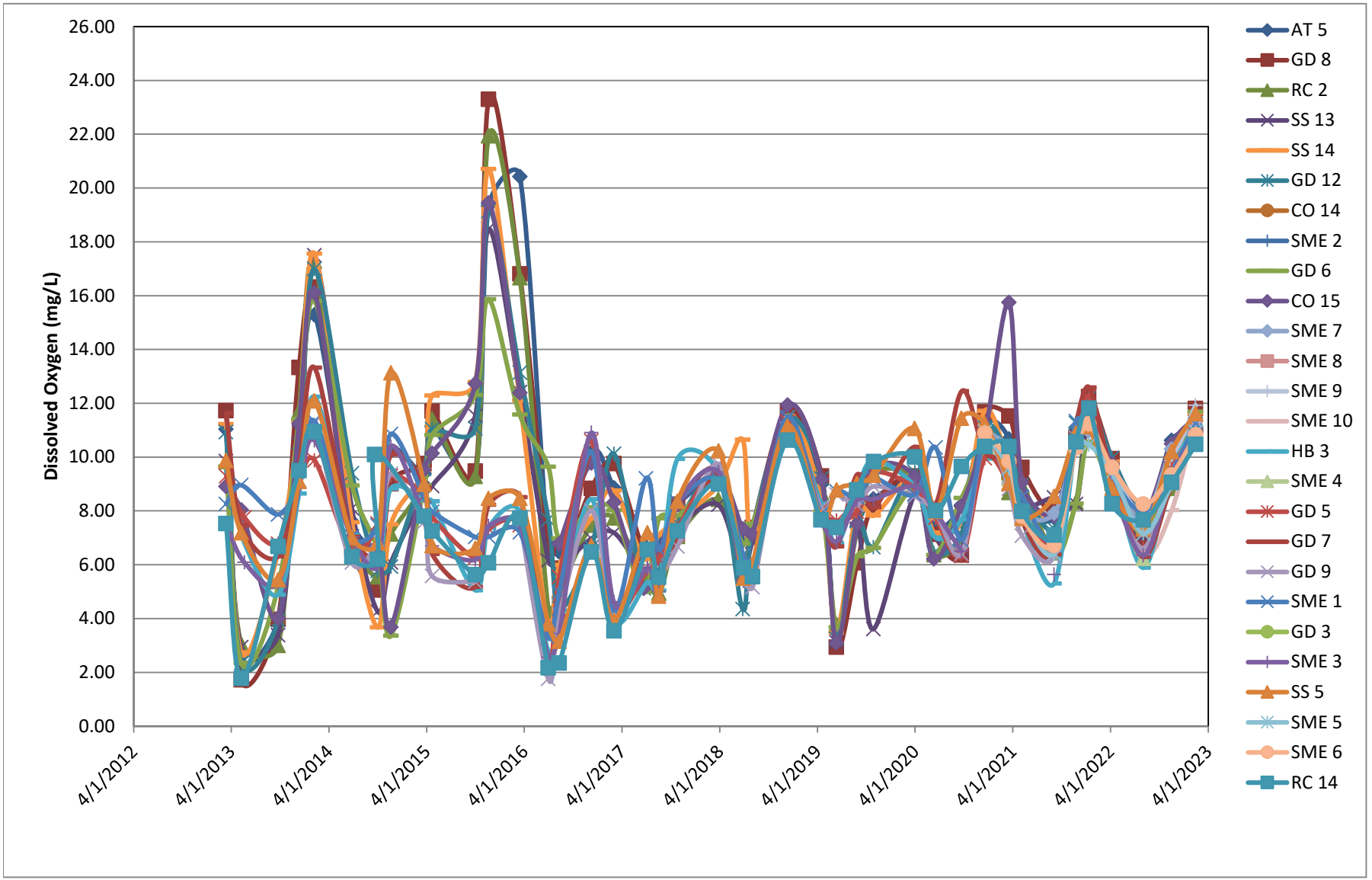


CHART 4 - TEMPERATURE ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

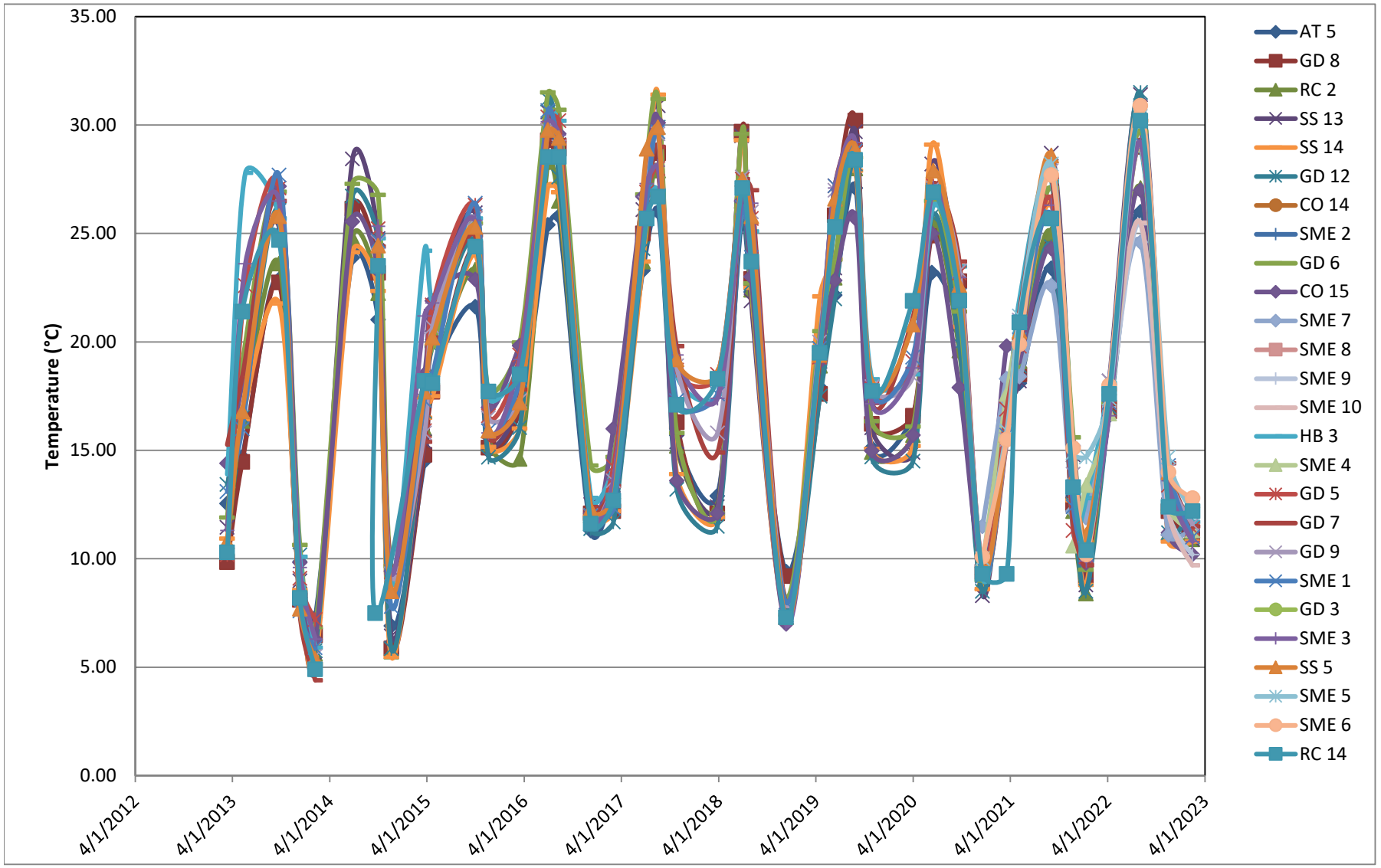


CHART 5 - NITRATE-NITRITE ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

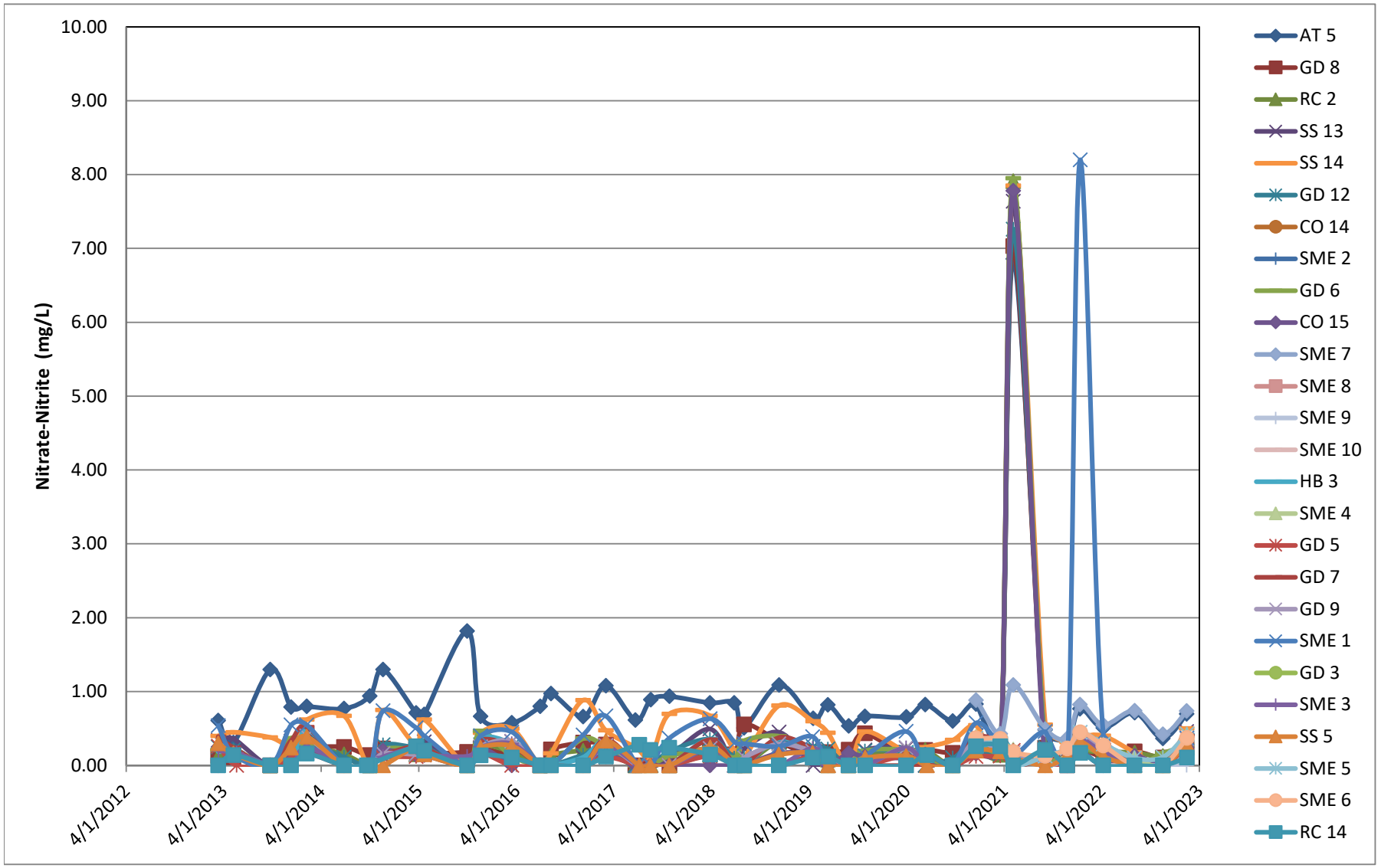


CHART 6 - ORTHOPHOSPHATE ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

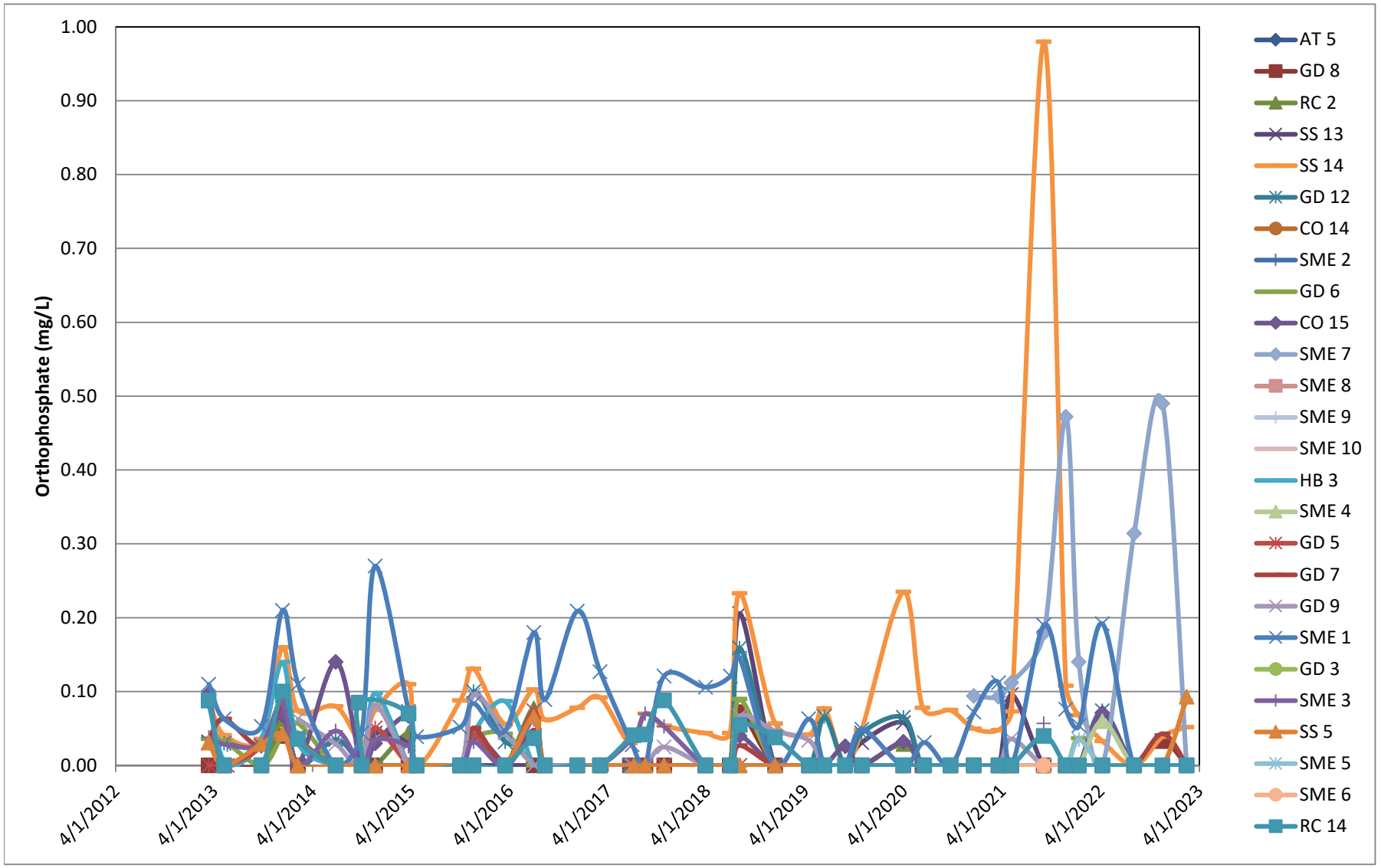


CHART 7 - TOTAL PHOSPHOROUS ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

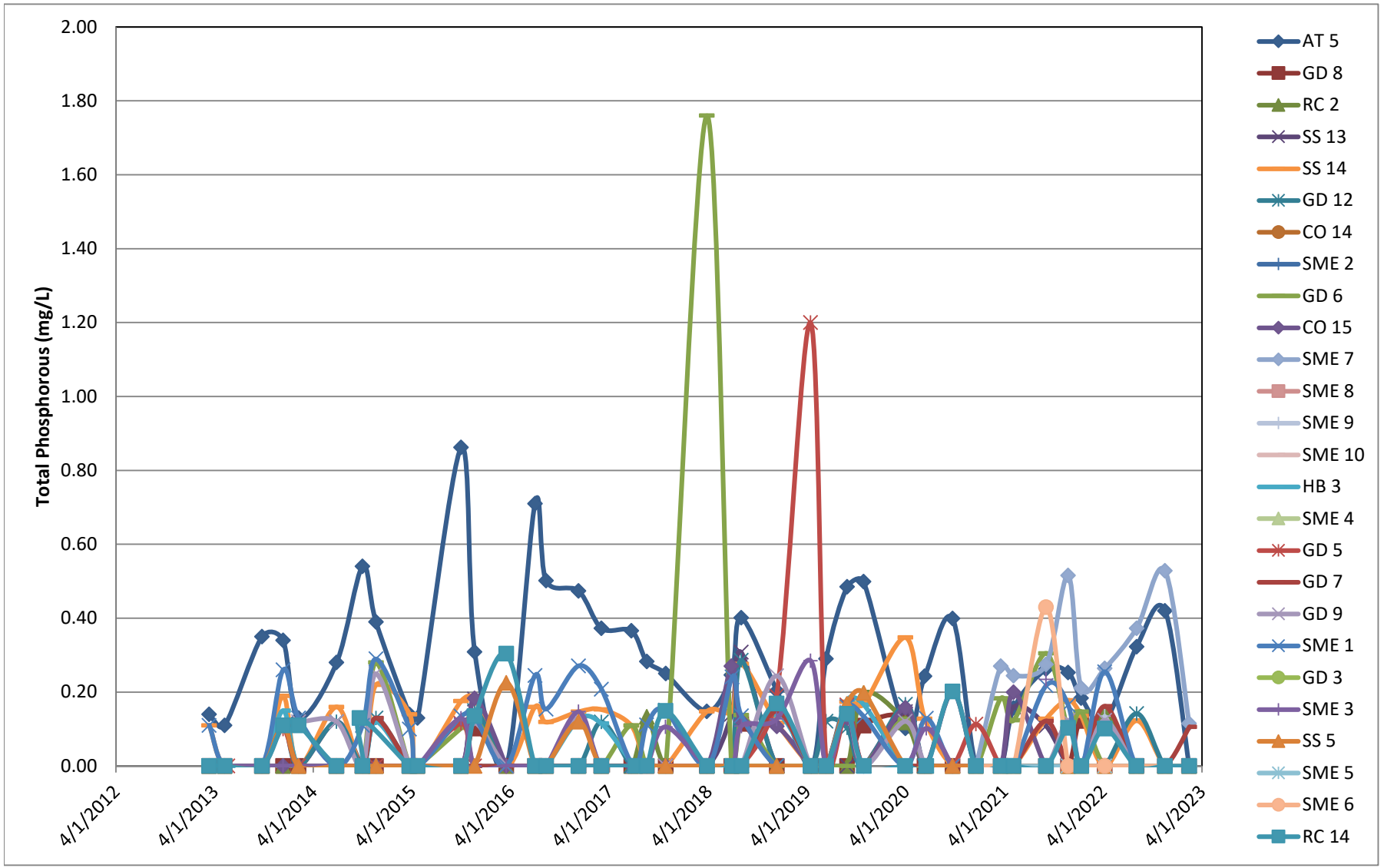


CHART 8 - TOTAL KJELDAHL NITROGEN ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

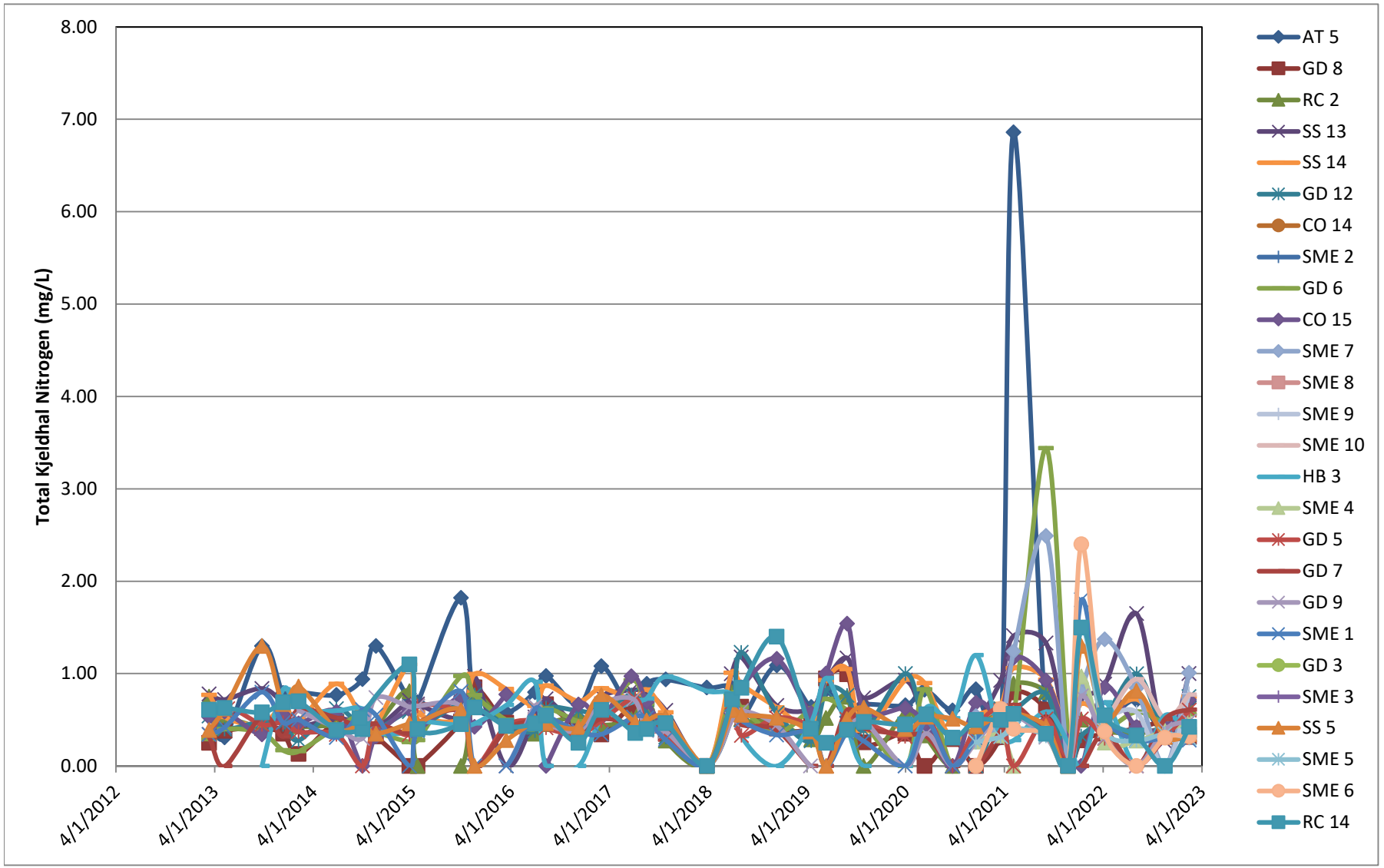
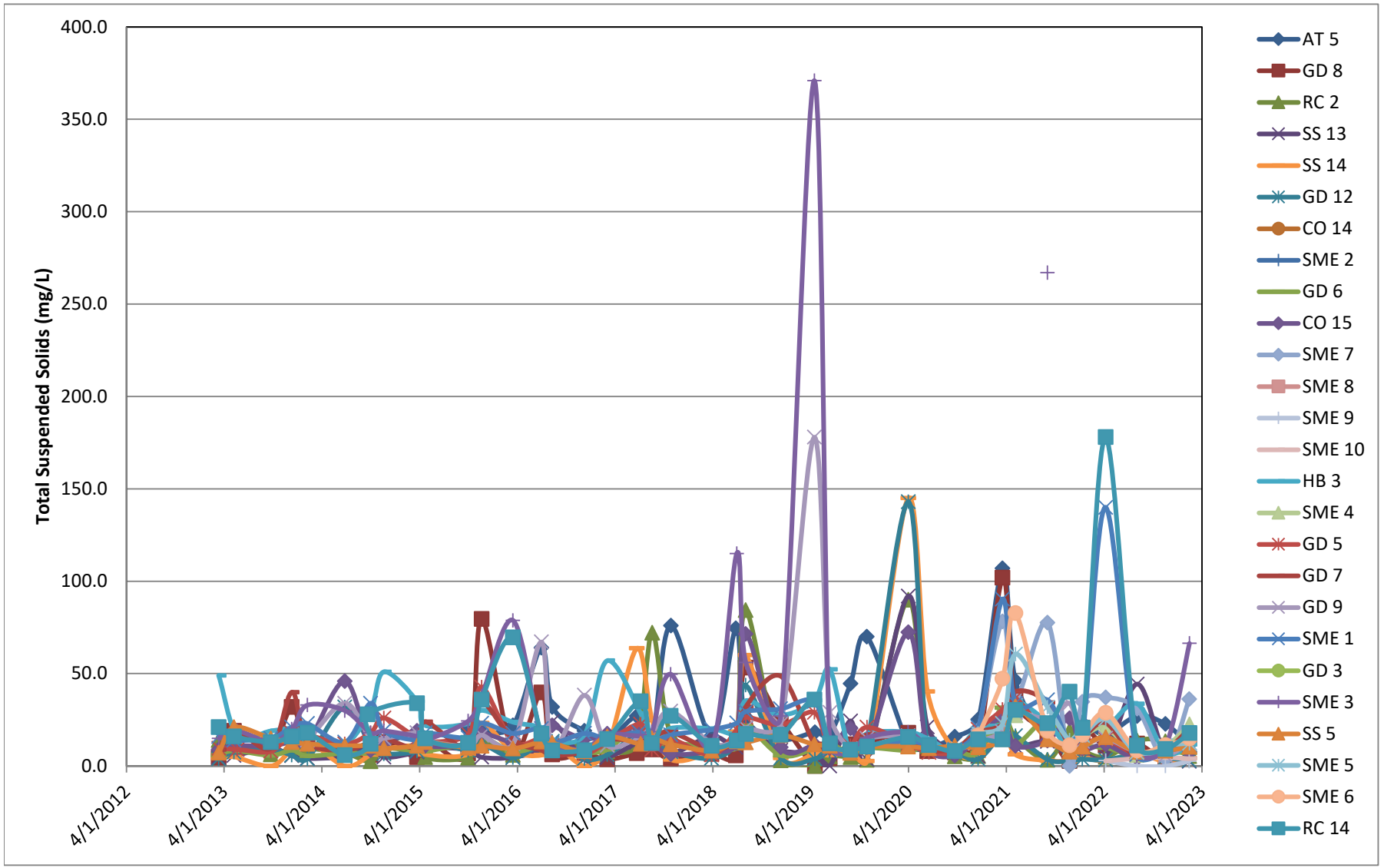


CHART 9 - TOTAL SUSPENDED SOLIDS ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	0 (0%)
Pooled Mean	9.49842
Pooled Std Dev	1.52013
Compliance Meas.	10
Compliance Mean	9.49
Compliance Std Dev	1.4819
Background Meas.	9
Background Mean	9.50778
Background Std Dev	1.65185

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	0	0	85.57

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.50778	1.65185	0	90	10

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	0	0	94.9

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	9.49	1.4819	-0.0177778	0.718689	100	10

Analysis of Variance Statistics

SS Wells	0.00149708
SS Total	41.5945

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	90
Background Rank Mean	10
H Statistic	0
H Adjusted for Ties	0

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	14
	3/18/2021	9.2	6
	5/5/2021	7.81	4
	11/23/2021	10.41	13
	1/11/2022	11.35	19
	4/7/2022	9.3	7
	8/2/2022	6.24	1
	11/16/2022	9.45	9
	2/14/2023	10.99	17
SME 6	12/17/2020	10.89	16
	3/18/2021	9.84	11
	5/5/2021	7.8	3
	9/2/2021	6.72	2
	11/23/2021	10.35	12
	1/11/2022	11.24	18
	4/7/2022	9.63	10
	8/2/2022	8.26	5
	11/16/2022	9.34	8
	2/14/2023	10.83	15

The Wilcoxon Statistic is 45
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is -0.0408248
The Standard Deviation adjusted for ties is 12.2474
The Z Score adjusted for ties is -0.0408248
-0.0408248 < 2.326 indicating no statistical significance at 1% level
-0.0408248 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	3 (15.7895%)
Pooled Mean	0.246263
Pooled Std Dev	0.150184
Compliance Meas.	10
Compliance Mean	0.2365
Compliance Std Dev	0.157604
Background Meas.	9
Background Mean	0.257111
Background Std Dev	0.150179

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	1	11.1111	2.314

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.257111	0.150179	0	94	10.4444

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	2	20	2.365

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0.2365	0.157604	-0.0206111	0.0708291	96	9.6

Analysis of Variance Statistics

SS Wells	0.0020123
SS Total	0.405994

Kruskal-Wallis Statistics

Non-Detect Rank	2
Background Rank Sum	94
Background Rank Mean	10.4444
H Statistic	0.106667
H Adjusted for Ties	0.107042

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 3
Non detect rank is 2

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	16
	3/18/2021	0.319	12
	5/5/2021	0.213	8
	11/23/2021	0.164	6
	1/11/2022	0.44	18
	4/7/2022	0.273	11
	8/2/2022	0.102	4
	11/16/2022	ND<0	2
	2/14/2023	0.416	17
SME 6	12/17/2020	0.368	14
	3/18/2021	0.358	13
	5/5/2021	0.183	7
	9/2/2021	0.131	5
	11/23/2021	0.231	9
	1/11/2022	0.45	19
	4/7/2022	0.27	10
	8/2/2022	ND<0	2
	11/16/2022	ND<0	2
	2/14/2023	0.374	15

The Wilcoxon Statistic is 41
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is -0.367423
The Standard Deviation adjusted for ties is 12.2259
The Z Score adjusted for ties is -0.36807
-0.367423 < 2.326 indicating no statistical significance at 1% level
-0.36807 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	18 (94.7368%)
Pooled Mean	0.00315789
Pooled Std Dev	0.0137649
Compliance Meas.	10
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	9
Background Mean	0.00666667
Background Std Dev	0.02

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	8	88.8889	0.06

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.00666667	0.02	0	95	10.5556

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	10	100	0

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0	0	-0.00666667	0.00630385	95	9.5

Analysis of Variance Statistics

SS Wells	0.000210526
SS Total	0.00341053

Kruskal-Wallis Statistics

Non-Detect Rank	9.5
Background Rank Sum	95
Background Rank Mean	10.5556
H Statistic	0.166667
H Adjusted for Ties	1.11111

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 18
Non detect rank is 9.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	9.5
	3/18/2021	ND<0	9.5
	5/5/2021	ND<0	9.5
	11/23/2021	ND<0	9.5
	1/11/2022	ND<0	9.5
	4/7/2022	0.06	19
	8/2/2022	ND<0	9.5
	11/16/2022	ND<0	9.5
	2/14/2023	ND<0	9.5
SME 6	12/17/2020	ND<0	9.5
	3/18/2021	ND<0	9.5
	5/5/2021	ND<0	9.5
	9/2/2021	ND<0	9.5
	11/23/2021	ND<0	9.5
	1/11/2022	ND<0	9.5
	4/7/2022	ND<0	9.5
	8/2/2022	ND<0	9.5
	11/16/2022	ND<0	9.5
	2/14/2023	ND<0	9.5

The Wilcoxon Statistic is 40
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is -0.449073
The Standard Deviation adjusted for ties is 4.74342
The Z Score adjusted for ties is -1.1595
-0.449073 < 2.326 indicating no statistical significance at 1% level
-1.1595 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: pH

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	0 (0%)
Pooled Mean	7.70842
Pooled Std Dev	0.279051
Compliance Meas.	10
Compliance Mean	7.833
Compliance Std Dev	0.275401
Background Meas.	9
Background Mean	7.57
Background Std Dev	0.22119

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	0	0	68.13

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.57	0.22119	0	64	7.11111

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	0	0	78.33

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	7.833	0.275401	0.263	0.115488	126	12.6

Analysis of Variance Statistics

SS Wells	0.327643
SS Total	1.40165

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	64
Background Rank Mean	7.11111
H Statistic	4.50667
H Adjusted for Ties	4.50667

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	9
	3/18/2021	7.25	1
	5/5/2021	7.86	14
	11/23/2021	7.64	6
	1/11/2022	7.39	4
	4/7/2022	7.55	5
	8/2/2022	7.79	13
	11/16/2022	7.69	10
	2/14/2023	7.27	2
SME 6	12/17/2020	7.96	17
	3/18/2021	7.65	7
	5/5/2021	7.75	12
	9/2/2021	8.19	18
	11/23/2021	7.68	8
	1/11/2022	7.72	11
	4/7/2022	7.95	16
	8/2/2022	8.25	19
	11/16/2022	7.87	15
	2/14/2023	7.31	3

The Wilcoxon Statistic is 71
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is 2.08207
The Standard Deviation adjusted for ties is 12.2474
The Z Score adjusted for ties is 2.08207
2.08207 < 2.326 indicating no statistical significance at 1% level
2.08207 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	0 (0%)
Pooled Mean	16.6421
Pooled Std Dev	6.50806
Compliance Meas.	10
Compliance Mean	17.42
Compliance Std Dev	7.00552
Background Meas.	9
Background Mean	15.7778
Background Std Dev	6.20399

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	0	0	142

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	15.7778	6.20399	0	83	9.22222

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	0	0	174.2

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	17.42	7.00552	1.64222	3.05105	107	10.7

Analysis of Variance Statistics

SS Wells	12.7748
SS Total	762.386

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	83
Background Rank Mean	9.22222
H Statistic	0.326667
H Adjusted for Ties	0.326667

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	9.8	1
	3/18/2021	17.6	13
	5/5/2021	21	16
	11/23/2021	10.6	4
	1/11/2022	13.4	8
	4/7/2022	16.7	12
	8/2/2022	29.1	18
	11/16/2022	12.5	6
	2/14/2023	11.3	5
SME 6	12/17/2020	10.1	2
	3/18/2021	15.5	11
	5/5/2021	19.9	15
	9/2/2021	27.7	17
	11/23/2021	15.1	10
	1/11/2022	10.2	3
	4/7/2022	18	14
	8/2/2022	30.9	19
	11/16/2022	14	9
	2/14/2023	12.8	7

The Wilcoxon Statistic is 52
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is 0.530723
The Standard Deviation adjusted for ties is 12.2474
The Z Score adjusted for ties is 0.530723
0.530723 < 2.326 indicating no statistical significance at 1% level
0.530723 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	6 (31.5789%)
Pooled Mean	0.374421
Pooled Std Dev	0.545616
Compliance Meas.	10
Compliance Mean	0.4156
Compliance Std Dev	0.719223
Background Meas.	9
Background Mean	0.328667
Background Std Dev	0.288792

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	2	22.2222	2.958

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.328667	0.288792	0	93	10.3333

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	4	40	4.156

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0.4156	0.719223	0.0869333	0.257098	97	9.7

Analysis of Variance Statistics

SS Wells	0.0357982
SS Total	5.35854

Kruskal-Wallis Statistics

Non-Detect Rank	3.5
Background Rank Sum	93
Background Rank Mean	10.3333
H Statistic	0.06
H Adjusted for Ties	0.0619005

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 6
Non detect rank is 3.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	8
	3/18/2021	0.331	12
	5/5/2021	ND<0	3.5
	11/23/2021	ND<0	3.5
	1/11/2022	0.97	18
	4/7/2022	0.254	7
	8/2/2022	0.274	9
	11/16/2022	0.382	15
	2/14/2023	0.484	17
SME 6	12/17/2020	ND<0	3.5
	3/18/2021	ND<0	3.5
	5/5/2021	0.403	16
	9/2/2021	0.353	13
	11/23/2021	ND<0	3.5
	1/11/2022	2.4	19
	4/7/2022	0.373	14
	8/2/2022	ND<0	3.5
	11/16/2022	0.308	10
	2/14/2023	0.319	11

The Wilcoxon Statistic is 42
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is -0.285774
The Standard Deviation adjusted for ties is 12.058
The Z Score adjusted for ties is -0.290264
-0.285774 < 2.326 indicating no statistical significance at 1% level
-0.290264 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	18 (94.7368%)
Pooled Mean	0.0226316
Pooled Std Dev	0.0986488
Compliance Meas.	10
Compliance Mean	0.043
Compliance Std Dev	0.135978
Background Meas.	9
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	9	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	85.5	9.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	9	90	0.43

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0.043	0.135978	0.043	0.0454591	104.5	10.45

Analysis of Variance Statistics

SS Wells	0.00875842
SS Total	0.175168

Kruskal-Wallis Statistics

Non-Detect Rank	9.5
Background Rank Sum	85.5
Background Rank Mean	9.5
H Statistic	0.135
H Adjusted for Ties	0.9

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 18
Non detect rank is 9.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	9.5
	3/18/2021	ND<0	9.5
	5/5/2021	ND<0	9.5
	11/23/2021	ND<0	9.5
	1/11/2022	ND<0	9.5
	4/7/2022	ND<0	9.5
	8/2/2022	ND<0	9.5
	11/16/2022	ND<0	9.5
	2/14/2023	ND<0	9.5
SME 6	12/17/2020	ND<0	9.5
	3/18/2021	ND<0	9.5
	5/5/2021	ND<0	9.5
	9/2/2021	0.43	19
	11/23/2021	ND<0	9.5
	1/11/2022	ND<0	9.5
	4/7/2022	ND<0	9.5
	8/2/2022	ND<0	9.5
	11/16/2022	ND<0	9.5
	2/14/2023	ND<0	9.5

The Wilcoxon Statistic is 49.5
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is 0.326599
The Standard Deviation adjusted for ties is 4.74342
The Z Score adjusted for ties is 0.843274
0.326599 < 2.326 indicating no statistical significance at 1% level
0.843274 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	0 (0%)
Pooled Mean	21.5158
Pooled Std Dev	17.5525
Compliance Meas.	10
Compliance Mean	25.72
Compliance Std Dev	23.0196
Background Meas.	9
Background Mean	16.8444
Background Std Dev	7.10055

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	0	0	151.6

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	16.8444	7.10055	0	85	9.44444

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	0	0	257.2

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	25.72	23.0196	8.87556	8.01457	105	10.5

Analysis of Variance Statistics

SS Wells	373.147
SS Total	5545.63

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	85
Background Rank Mean	9.44444
H Statistic	0.166667
H Adjusted for Ties	0.166667

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	11
	3/18/2021	21.6	14
	5/5/2021	27.5	16
	11/23/2021	9.2	3
	1/11/2022	15.6	8
	4/7/2022	20.9	13
	8/2/2022	6	1
	11/16/2022	10.5	4
	2/14/2023	22.5	15
SME 6	12/17/2020	16.7	9
	3/18/2021	47.2	18
	5/5/2021	82.8	19
	9/2/2021	19	12
	11/23/2021	11.2	5
	1/11/2022	16.9	10
	4/7/2022	28.8	17
	8/2/2022	8.4	2
	11/16/2022	11.3	6
	2/14/2023	14.9	7

The Wilcoxon Statistic is 50
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is 0.367423
The Standard Deviation adjusted for ties is 12.2474
The Z Score adjusted for ties is 0.367423
0.367423 < 2.326 indicating no statistical significance at 1% level
0.367423 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	0 (0%)
Pooled Mean	19.0511
Pooled Std Dev	14.7585
Compliance Meas.	10
Compliance Mean	19.493
Compliance Std Dev	17.1106
Background Meas.	9
Background Mean	18.56
Background Std Dev	12.6569

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	0	0	167.04

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.56	12.6569	0	95	10.5556

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	0	0	194.93

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	19.493	17.1106	0.933	6.974	95	9.5

Analysis of Variance Statistics

SS Wells	4.12337
SS Total	3920.66

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	95
Background Rank Mean	10.5556
H Statistic	0.166667
H Adjusted for Ties	0.166667

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	12
	3/18/2021	2.2	1
	5/5/2021	20.02	14
	11/23/2021	48.51	18
	1/11/2022	17.3	11
	4/7/2022	21.6	15
	8/2/2022	14	9
	11/16/2022	9.91	5
	2/14/2023	15.8	10
SME 6	12/17/2020	13.6	8
	3/18/2021	3.3	2
	5/5/2021	62.32	19
	9/2/2021	13.32	7
	11/23/2021	9.79	4
	1/11/2022	24.4	16
	4/7/2022	31.4	17
	8/2/2022	11.1	6
	11/16/2022	8	3
	2/14/2023	17.7	13

The Wilcoxon Statistic is 40
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is -0.449073
The Standard Deviation adjusted for ties is 12.2474
The Z Score adjusted for ties is -0.449073
-0.449073 < 2.326 indicating no statistical significance at 1% level
-0.449073 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	0 (0%)
Pooled Mean	9.36211
Pooled Std Dev	1.58028
Compliance Meas.	10
Compliance Mean	9.231
Compliance Std Dev	1.59023
Background Meas.	9
Background Mean	9.50778
Background Std Dev	1.65185

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	0	0	85.57

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	9.50778	1.65185	0	94	10.4444

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	10	0	0	92.31

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	9.231	1.59023	-0.276778	0.744117	96	9.6

Analysis of Variance Statistics

SS Wells	0.36287
SS Total	44.9511

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	94
Background Rank Mean	10.4444
H Statistic	0.106667
H Adjusted for Ties	0.106667

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	10.82	15
	3/18/2021	9.2	7
	5/5/2021	7.81	4
	11/23/2021	10.41	12
	1/11/2022	11.35	19
	4/7/2022	9.3	8
	8/2/2022	6.24	1
	11/16/2022	9.45	10
	2/14/2023	10.99	18
SME 5	12/17/2020	10.94	17
	3/18/2021	9.59	11
	5/5/2021	7.96	5
	9/2/2021	6.42	2
	11/23/2021	10.42	13
	1/11/2022	10.46	14
	4/7/2022	9.43	9
	8/2/2022	7.16	3
	11/16/2022	9	6
	2/14/2023	10.93	16

The Wilcoxon Statistic is 41
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is -0.367423
The Standard Deviation adjusted for ties is 12.2474
The Z Score adjusted for ties is -0.367423
-0.367423 < 2.326 indicating no statistical significance at 1% level
-0.367423 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	2 (10.5263%)
Pooled Mean	0.249474
Pooled Std Dev	0.147294
Compliance Meas.	10
Compliance Mean	0.2426
Compliance Std Dev	0.152422
Background Meas.	9
Background Mean	0.257111
Background Std Dev	0.150179

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	1	11.1111	2.314

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.257111	0.150179	0	91.5	10.1667

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	10	1	10	2.426

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	0.2426	0.152422	-0.0145111	0.0695499	98.5	9.85

Analysis of Variance Statistics

SS Wells	0.000997448
SS Total	0.390519

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	91.5
Background Rank Mean	10.1667
H Statistic	0.015
H Adjusted for Ties	0.0150132

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.387	15
	3/18/2021	0.319	13
	5/5/2021	0.213	8
	11/23/2021	0.164	7
	1/11/2022	0.44	18
	4/7/2022	0.273	10
	8/2/2022	0.102	3
	11/16/2022	ND<0	1.5
	2/14/2023	0.416	16
SME 5	12/17/2020	0.371	14
	3/18/2021	0.316	12
	5/5/2021	ND<0	1.5
	9/2/2021	0.128	6
	11/23/2021	0.231	9
	1/11/2022	0.45	19
	4/7/2022	0.29	11
	8/2/2022	0.102	4
	11/16/2022	0.113	5
	2/14/2023	0.425	17

The Wilcoxon Statistic is 43.5
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is -0.163299
The Standard Deviation adjusted for ties is 12.2421
The Z Score adjusted for ties is -0.163371
-0.163299 < 2.326 indicating no statistical significance at 1% level
-0.163371 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	17 (89.4737%)
Pooled Mean	0.005
Pooled Std Dev	0.0155456
Compliance Meas.	10
Compliance Mean	0.0035
Compliance Std Dev	0.011068
Background Meas.	9
Background Mean	0.00666667
Background Std Dev	0.02

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	8	88.8889	0.06

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.00666667	0.02	0	91	10.1111

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	10	9	90	0.035

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	0.0035	0.011068	-0.00316667	0.00730956	99	9.9

Analysis of Variance Statistics

SS Wells	4.75e-005
SS Total	0.00435

Kruskal-Wallis Statistics

Non-Detect Rank	9
Background Rank Sum	91
Background Rank Mean	10.1111
H Statistic	0.00666667
H Adjusted for Ties	0.0234568

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 17
Non detect rank is 9

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	9
	3/18/2021	ND<0	9
	5/5/2021	ND<0	9
	11/23/2021	ND<0	9
	1/11/2022	ND<0	9
	4/7/2022	0.06	19
	8/2/2022	ND<0	9
	11/16/2022	ND<0	9
	2/14/2023	ND<0	9
SME 5	12/17/2020	ND<0	9
	3/18/2021	ND<0	9
	5/5/2021	ND<0	9
	9/2/2021	ND<0	9
	11/23/2021	ND<0	9
	1/11/2022	0.035	18
	4/7/2022	ND<0	9
	8/2/2022	ND<0	9
	11/16/2022	ND<0	9
	2/14/2023	ND<0	9

The Wilcoxon Statistic is 44
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is -0.122474
The Standard Deviation adjusted for ties is 6.52929
The Z Score adjusted for ties is -0.229734
-0.122474 < 2.326 indicating no statistical significance at 1% level
-0.229734 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: pH

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	0 (0%)
Pooled Mean	7.70263
Pooled Std Dev	0.280215
Compliance Meas.	10
Compliance Mean	7.822
Compliance Std Dev	0.28307
Background Meas.	9
Background Mean	7.57
Background Std Dev	0.22119

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	0	0	68.13

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	7.57	0.22119	0	63	7

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	10	0	0	78.22

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	7.822	0.28307	0.252	0.117542	127	12.7

Analysis of Variance Statistics

SS Wells	0.300808
SS Total	1.41337

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	63
Background Rank Mean	7
H Statistic	4.86
H Adjusted for Ties	4.86

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	7.69	8
	3/18/2021	7.25	2
	5/5/2021	7.86	15
	11/23/2021	7.64	6
	1/11/2022	7.39	4
	4/7/2022	7.55	5
	8/2/2022	7.79	11
	11/16/2022	7.69	9
	2/14/2023	7.27	3
SME 5	12/17/2020	7.8	12
	3/18/2021	7.83	14
	5/5/2021	7.8	13
	9/2/2021	8.02	18
	11/23/2021	7.78	10
	1/11/2022	7.66	7
	4/7/2022	7.99	17
	8/2/2022	8.26	19
	11/16/2022	7.91	16
	2/14/2023	7.17	1

The Wilcoxon Statistic is 72
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is 2.16372
The Standard Deviation adjusted for ties is 12.2474
The Z Score adjusted for ties is 2.16372
2.16372 < 2.326 indicating no statistical significance at 1% level
2.16372 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	0 (0%)
Pooled Mean	16.9263
Pooled Std Dev	6.37834
Compliance Meas.	10
Compliance Mean	17.96
Compliance Std Dev	6.68185
Background Meas.	9
Background Mean	15.7778
Background Std Dev	6.20399

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	0	0	142

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	15.7778	6.20399	0	80	8.88889

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	10	0	0	179.6

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	17.96	6.68185	2.18222	2.9688	110	11

Analysis of Variance Statistics

SS Wells	22.5573
SS Total	732.297

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	80
Background Rank Mean	8.88889
H Statistic	0.666667
H Adjusted for Ties	0.666667

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	9.8	1
	3/18/2021	17.6	14
	5/5/2021	21	15
	11/23/2021	10.6	3
	1/11/2022	13.4	7
	4/7/2022	16.7	12
	8/2/2022	29.1	18
	11/16/2022	12.5	6
	2/14/2023	11.3	4
SME 5	12/17/2020	10	2
	3/18/2021	15.9	11
	5/5/2021	21.2	16
	9/2/2021	28.2	17
	11/23/2021	14.9	10
	1/11/2022	14.7	8
	4/7/2022	17.4	13
	8/2/2022	30.4	19
	11/16/2022	14.7	9
	2/14/2023	12.2	5

The Wilcoxon Statistic is 55
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is 0.775672
The Standard Deviation adjusted for ties is 12.2474
The Z Score adjusted for ties is 0.775672
0.775672 < 2.326 indicating no statistical significance at 1% level
0.775672 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	3 (15.7895%)
Pooled Mean	0.372579
Pooled Std Dev	0.343936
Compliance Meas.	10
Compliance Mean	0.4121
Compliance Std Dev	0.398481
Background Meas.	9
Background Mean	0.328667
Background Std Dev	0.288792

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	2	22.2222	2.958

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0.328667	0.288792	0	82	9.11111

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	10	1	10	4.121

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	0.4121	0.398481	0.0834333	0.161345	108	10.8

Analysis of Variance Statistics

SS Wells	0.0329737
SS Total	2.12926

Kruskal-Wallis Statistics

Non-Detect Rank	2
Background Rank Sum	82
Background Rank Mean	9.11111
H Statistic	0.426667
H Adjusted for Ties	0.428169

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 3
Non detect rank is 2

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	0.263	6
	3/18/2021	0.331	12
	5/5/2021	ND<0	2
	11/23/2021	ND<0	2
	1/11/2022	0.97	18
	4/7/2022	0.254	4
	8/2/2022	0.274	7
	11/16/2022	0.382	14
	2/14/2023	0.484	17
SME 5	12/17/2020	0.258	5
	3/18/2021	0.317	10
	5/5/2021	0.41	16
	9/2/2021	0.325	11
	11/23/2021	ND<0	2
	1/11/2022	1.5	19
	4/7/2022	0.385	15
	8/2/2022	0.277	8
	11/16/2022	0.347	13
	2/14/2023	0.302	9

The Wilcoxon Statistic is 53
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is 0.612372
The Standard Deviation adjusted for ties is 12.2259
The Z Score adjusted for ties is 0.61345
0.612372 < 2.326 indicating no statistical significance at 1% level
0.61345 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	18 (94.7368%)
Pooled Mean	0.00526316
Pooled Std Dev	0.0229416
Compliance Meas.	10
Compliance Mean	0.01
Compliance Std Dev	0.0316228
Background Meas.	9
Background Mean	0
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	9	100	0

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	0	0	0	85.5	9.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	10	9	90	0.1

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	0.01	0.0316228	0.01	0.0105719	104.5	10.45

Analysis of Variance Statistics

SS Wells	0.000473684
SS Total	0.00947368

Kruskal-Wallis Statistics

Non-Detect Rank	9.5
Background Rank Sum	85.5
Background Rank Mean	9.5
H Statistic	0.135
H Adjusted for Ties	0.9

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 18
Non detect rank is 9.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	ND<0	9.5
	3/18/2021	ND<0	9.5
	5/5/2021	ND<0	9.5
	11/23/2021	ND<0	9.5
	1/11/2022	ND<0	9.5
	4/7/2022	ND<0	9.5
	8/2/2022	ND<0	9.5
	11/16/2022	ND<0	9.5
	2/14/2023	ND<0	9.5
SME 5	12/17/2020	ND<0	9.5
	3/18/2021	ND<0	9.5
	5/5/2021	ND<0	9.5
	9/2/2021	0.1	19
	11/23/2021	ND<0	9.5
	1/11/2022	ND<0	9.5
	4/7/2022	ND<0	9.5
	8/2/2022	ND<0	9.5
	11/16/2022	ND<0	9.5
	2/14/2023	ND<0	9.5

The Wilcoxon Statistic is 49.5
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is 0.326599
The Standard Deviation adjusted for ties is 4.74342
The Z Score adjusted for ties is 0.843274
0.326599 < 2.326 indicating no statistical significance at 1% level
0.843274 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	0 (0%)
Pooled Mean	19.5474
Pooled Std Dev	12.1734
Compliance Meas.	10
Compliance Mean	21.98
Compliance Std Dev	15.4171
Background Meas.	9
Background Mean	16.8444
Background Std Dev	7.10055

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	0	0	151.6

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	16.8444	7.10055	0	83	9.22222

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	10	0	0	219.8

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	21.98	15.4171	5.13556	5.61908	107	10.7

Analysis of Variance Statistics

SS Wells	124.929
SS Total	2667.47

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	83
Background Rank Mean	9.22222
H Statistic	0.326667
H Adjusted for Ties	0.326667

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.8	11
	3/18/2021	21.6	13
	5/5/2021	27.5	17
	11/23/2021	9.2	3
	1/11/2022	15.6	8
	4/7/2022	20.9	12
	8/2/2022	6	1
	11/16/2022	10.5	4
	2/14/2023	22.5	14
SME 5	12/17/2020	17.7	10
	3/18/2021	23	15
	5/5/2021	60.6	19
	9/2/2021	31.8	18
	11/23/2021	14	7
	1/11/2022	16.6	9
	4/7/2022	25.4	16
	8/2/2022	7.3	2
	11/16/2022	11.1	5
	2/14/2023	12.3	6

The Wilcoxon Statistic is 52
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is 0.530723
The Standard Deviation adjusted for ties is 12.2474
The Z Score adjusted for ties is 0.530723
0.530723 < 2.326 indicating no statistical significance at 1% level
0.530723 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	19
Total Non-Detects	0 (0%)
Pooled Mean	22.7553
Pooled Std Dev	18.7107
Compliance Meas.	10
Compliance Mean	26.531
Compliance Std Dev	22.8985
Background Meas.	9
Background Mean	18.56
Background Std Dev	12.6569

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 4	9	0	0	167.04

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 4	18.56	12.6569	0	88	9.77778

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 5	10	0	0	265.31

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 5	26.531	22.8985	7.971	8.63237	102	10.2

Analysis of Variance Statistics

SS Wells	300.964
SS Total	6301.61

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	88
Background Rank Mean	9.77778
H Statistic	0.0266667
H Adjusted for Ties	0.0266667

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 4	12/17/2020	17.7	12
	3/18/2021	2.2	2
	5/5/2021	20.02	13
	11/23/2021	48.51	16
	1/11/2022	17.3	11
	4/7/2022	21.6	14
	8/2/2022	14	6
	11/16/2022	9.91	4
	2/14/2023	15.8	10
SME 5	12/17/2020	15.4	9
	3/18/2021	1.7	1
	5/5/2021	50.11	17
	9/2/2021	15.15	8
	11/23/2021	68.29	19
	1/11/2022	24.9	15
	4/7/2022	55.4	18
	8/2/2022	12	5
	11/16/2022	7.26	3
	2/14/2023	15.1	7

The Wilcoxon Statistic is 47
The Expected value is is 45
The Standard Deviation is 12.2474
The Z Score is 0.122474
The Standard Deviation adjusted for ties is 12.2474
The Z Score adjusted for ties is 0.122474
0.122474 < 2.326 indicating no statistical significance at 1% level
0.122474 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	20
Total Non-Detects	0 (0%)
Pooled Mean	9.3605
Pooled Std Dev	1.50191
Compliance Meas.	10
Compliance Mean	9.49
Compliance Std Dev	1.4819
Background Meas.	10
Background Mean	9.231
Background Std Dev	1.59023

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	10	0	0	92.31

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	9.231	1.59023	0.744117	101	10.1

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	0	0	94.9

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	9.49	1.4819	0.259	0.687376	109	10.9

Analysis of Variance Statistics

SS Wells	0.335405
SS Total	42.8591

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	101
Background Rank Mean	10.1
H Statistic	0.0914286
H Adjusted for Ties	0.0914286

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	10.94	19
	3/18/2021	9.59	10
	5/5/2021	7.96	5
	9/2/2021	6.42	1
	11/23/2021	10.42	14
	1/11/2022	10.46	15
	4/7/2022	9.43	9
	8/2/2022	7.16	3
	11/16/2022	9	7
	2/14/2023	10.93	18
SME 6	12/17/2020	10.89	17
	3/18/2021	9.84	12
	5/5/2021	7.8	4
	9/2/2021	6.72	2
	11/23/2021	10.35	13
	1/11/2022	11.24	20
	4/7/2022	9.63	11
	8/2/2022	8.26	6
	11/16/2022	9.34	8
	2/14/2023	10.83	16

The Wilcoxon Statistic is 54
The Expected value is is 50
The Standard Deviation is 13.2288
The Z Score is 0.264575
The Standard Deviation adjusted for ties is 13.2288
The Z Score adjusted for ties is 0.264575
0.264575 < 2.326 indicating no statistical significance at 1% level
0.264575 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	20
Total Non-Detects	3 (15%)
Pooled Mean	0.23955
Pooled Std Dev	0.150932
Compliance Meas.	10
Compliance Mean	0.2365
Compliance Std Dev	0.157604
Background Meas.	10
Background Mean	0.2426
Background Std Dev	0.152422

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	10	1	10	2.426

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.2426	0.152422	0.0695499	104	10.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	2	20	2.365

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0.2365	0.157604	-0.0061	0.0693337	106	10.6

Analysis of Variance Statistics

SS Wells	0.00018605
SS Total	0.432831

Kruskal-Wallis Statistics

Non-Detect Rank	2
Background Rank Sum	104
Background Rank Mean	10.4
H Statistic	0.00571429
H Adjusted for Ties	0.00573152

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 3
Non detect rank is 2

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	0.371	16
	3/18/2021	0.316	13
	5/5/2021	ND<0	2
	9/2/2021	0.128	6
	11/23/2021	0.231	9
	1/11/2022	0.45	19
	4/7/2022	0.29	12
	8/2/2022	0.102	4
	11/16/2022	0.113	5
	2/14/2023	0.425	18
SME 6	12/17/2020	0.368	15
	3/18/2021	0.358	14
	5/5/2021	0.183	8
	9/2/2021	0.131	7
	11/23/2021	0.231	10
	1/11/2022	0.45	20
	4/7/2022	0.27	11
	8/2/2022	ND<0	2
	11/16/2022	ND<0	2
	2/14/2023	0.374	17

The Wilcoxon Statistic is 51
The Expected value is is 50
The Standard Deviation is 13.2288
The Z Score is 0.0377964
The Standard Deviation adjusted for ties is 13.2088
The Z Score adjusted for ties is 0.0378534
0.0377964 < 2.326 indicating no statistical significance at 1% level
0.0378534 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	20
Total Non-Detects	19 (95%)
Pooled Mean	0.00175
Pooled Std Dev	0.00782624
Compliance Meas.	10
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	10
Background Mean	0.0035
Background Std Dev	0.011068

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	10	9	90	0.035

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.0035	0.011068	0.00730956	110	11

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	10	100	0

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0	0	-0.0035	0.0035	100	10

Analysis of Variance Statistics

SS Wells	6.125e-005
SS Total	0.00116375

Kruskal-Wallis Statistics

Non-Detect Rank	10
Background Rank Sum	110
Background Rank Mean	11
H Statistic	0.142857
H Adjusted for Ties	1

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 19
Non detect rank is 10

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	ND<0	10
	3/18/2021	ND<0	10
	5/5/2021	ND<0	10
	9/2/2021	ND<0	10
	11/23/2021	ND<0	10
	1/11/2022	0.035	20
	4/7/2022	ND<0	10
	8/2/2022	ND<0	10
	11/16/2022	ND<0	10
	2/14/2023	ND<0	10
SME 6	12/17/2020	ND<0	10
	3/18/2021	ND<0	10
	5/5/2021	ND<0	10
	9/2/2021	ND<0	10
	11/23/2021	ND<0	10
	1/11/2022	ND<0	10
	4/7/2022	ND<0	10
	8/2/2022	ND<0	10
	11/16/2022	ND<0	10
	2/14/2023	ND<0	10

The Wilcoxon Statistic is 45
The Expected value is is 50
The Standard Deviation is 13.2288
The Z Score is -0.415761
The Standard Deviation adjusted for ties is 5
The Z Score adjusted for ties is -1.1
-0.415761 < 2.326 indicating no statistical significance at 1% level
-1.1 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: pH

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

Total Measurements	20
Total Non-Detects	0 (0%)
Pooled Mean	7.8275
Pooled Std Dev	0.271872
Compliance Meas.	10
Compliance Mean	7.833
Compliance Std Dev	0.275401
Background Meas.	10
Background Mean	7.822
Background Std Dev	0.28307

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	10	0	0	78.22

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	7.822	0.28307	0.117542	109	10.9

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	0	0	78.33

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	7.833	0.275401	0.011	0.12489	101	10.1

Analysis of Variance Statistics

SS Wells	0.000605
SS Total	1.40437

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	109
Background Rank Mean	10.9
H Statistic	0.0914286
H Adjusted for Ties	0.0914286

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	7.8	9
	3/18/2021	7.83	11
	5/5/2021	7.8	10
	9/2/2021	8.02	17
	11/23/2021	7.78	8
	1/11/2022	7.66	4
	4/7/2022	7.99	16
	8/2/2022	8.26	20
	11/16/2022	7.91	13
	2/14/2023	7.17	1
SME 6	12/17/2020	7.96	15
	3/18/2021	7.65	3
	5/5/2021	7.75	7
	9/2/2021	8.19	18
	11/23/2021	7.68	5
	1/11/2022	7.72	6
	4/7/2022	7.95	14
	8/2/2022	8.25	19
	11/16/2022	7.87	12
	2/14/2023	7.31	2

The Wilcoxon Statistic is 46
The Expected value is is 50
The Standard Deviation is 13.2288
The Z Score is -0.340168
The Standard Deviation adjusted for ties is 13.2288
The Z Score adjusted for ties is -0.340168
-0.340168 < 2.326 indicating no statistical significance at 1% level
-0.340168 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	20
Total Non-Detects	0 (0%)
Pooled Mean	17.69
Pooled Std Dev	6.66877
Compliance Meas.	10
Compliance Mean	17.42
Compliance Std Dev	7.00552
Background Meas.	10
Background Mean	17.96
Background Std Dev	6.68185

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	10	0	0	179.6

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	17.96	6.68185	2.9688	107	10.7

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	0	0	174.2

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	17.42	7.00552	-0.54	3.06144	103	10.3

Analysis of Variance Statistics

SS Wells	1.458
SS Total	844.978

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	107
Background Rank Mean	10.7
H Statistic	0.0228571
H Adjusted for Ties	0.0228571

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	10	1
	3/18/2021	15.9	12
	5/5/2021	21.2	16
	9/2/2021	28.2	18
	11/23/2021	14.9	9
	1/11/2022	14.7	7
	4/7/2022	17.4	13
	8/2/2022	30.4	19
	11/16/2022	14.7	8
	2/14/2023	12.2	4
SME 6	12/17/2020	10.1	2
	3/18/2021	15.5	11
	5/5/2021	19.9	15
	9/2/2021	27.7	17
	11/23/2021	15.1	10
	1/11/2022	10.2	3
	4/7/2022	18	14
	8/2/2022	30.9	20
	11/16/2022	14	6
	2/14/2023	12.8	5

The Wilcoxon Statistic is 48
The Expected value is is 50
The Standard Deviation is 13.2288
The Z Score is -0.188982
The Standard Deviation adjusted for ties is 13.2288
The Z Score adjusted for ties is -0.188982
-0.188982 < 2.326 indicating no statistical significance at 1% level
-0.188982 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

Total Measurements	20
Total Non-Detects	5 (25%)
Pooled Mean	0.41385
Pooled Std Dev	0.565903
Compliance Meas.	10
Compliance Mean	0.4156
Compliance Std Dev	0.719223
Background Meas.	10
Background Mean	0.4121
Background Std Dev	0.398481

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	10	1	10	4.121

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.4121	0.398481	0.161345	112	11.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	4	40	4.156

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0.4156	0.719223	0.0035	0.260013	98	9.8

Analysis of Variance Statistics

SS Wells	6.125e-005
SS Total	6.08468

Kruskal-Wallis Statistics

Non-Detect Rank	3
Background Rank Sum	112
Background Rank Mean	11.2
H Statistic	0.28
H Adjusted for Ties	0.284275

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 5
Non detect rank is 3

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	0.258	6
	3/18/2021	0.317	10
	5/5/2021	0.41	18
	9/2/2021	0.325	12
	11/23/2021	ND<0	3
	1/11/2022	1.5	19
	4/7/2022	0.385	16
	8/2/2022	0.277	7
	11/16/2022	0.347	13
	2/14/2023	0.302	8
SME 6	12/17/2020	ND<0	3
	3/18/2021	ND<0	3
	5/5/2021	0.403	17
	9/2/2021	0.353	14
	11/23/2021	ND<0	3
	1/11/2022	2.4	20
	4/7/2022	0.373	15
	8/2/2022	ND<0	3
	11/16/2022	0.308	9
	2/14/2023	0.319	11

The Wilcoxon Statistic is 43
The Expected value is is 50
The Standard Deviation is 13.2288
The Z Score is -0.566947
The Standard Deviation adjusted for ties is 13.1289
The Z Score adjusted for ties is -0.571258
-0.566947 < 2.326 indicating no statistical significance at 1% level
-0.571258 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	20
Total Non-Detects	18 (90%)
Pooled Mean	0.0265
Pooled Std Dev	0.0975637
Compliance Meas.	10
Compliance Mean	0.043
Compliance Std Dev	0.135978
Background Meas.	10
Background Mean	0.01
Background Std Dev	0.0316228

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	10	9	90	0.1

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	0.01	0.0316228	0.0105719	104.5	10.45

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	9	90	0.43

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	0.043	0.135978	0.033	0.0441475	105.5	10.55

Analysis of Variance Statistics

SS Wells	0.005445
SS Total	0.180855

Kruskal-Wallis Statistics

Non-Detect Rank	9.5
Background Rank Sum	104.5
Background Rank Mean	10.45
H Statistic	0.00142857
H Adjusted for Ties	0.00526316

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 18
Non detect rank is 9.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	ND<0	9.5
	3/18/2021	ND<0	9.5
	5/5/2021	ND<0	9.5
	9/2/2021	0.1	19
	11/23/2021	ND<0	9.5
	1/11/2022	ND<0	9.5
	4/7/2022	ND<0	9.5
	8/2/2022	ND<0	9.5
	11/16/2022	ND<0	9.5
	2/14/2023	ND<0	9.5
SME 6	12/17/2020	ND<0	9.5
	3/18/2021	ND<0	9.5
	5/5/2021	ND<0	9.5
	9/2/2021	0.43	20
	11/23/2021	ND<0	9.5
	1/11/2022	ND<0	9.5
	4/7/2022	ND<0	9.5
	8/2/2022	ND<0	9.5
	11/16/2022	ND<0	9.5
	2/14/2023	ND<0	9.5

The Wilcoxon Statistic is 50.5
The Expected value is is 50
The Standard Deviation is 13.2288
The Z Score is 0
The Standard Deviation adjusted for ties is 6.89202
The Z Score adjusted for ties is 0
0 < 2.326 indicating no statistical significance at 1% level
0 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	20
Total Non-Detects	0 (0%)
Pooled Mean	23.85
Pooled Std Dev	19.1645
Compliance Meas.	10
Compliance Mean	25.72
Compliance Std Dev	23.0196
Background Meas.	10
Background Mean	21.98
Background Std Dev	15.4171

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	10	0	0	219.8

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	21.98	15.4171	5.61908	103	10.3

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	0	0	257.2

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	25.72	23.0196	3.74	8.76124	107	10.7

Analysis of Variance Statistics

SS Wells	69.938
SS Total	6978.27

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	103
Background Rank Mean	10.3
H Statistic	0.0228571
H Adjusted for Ties	0.0228571

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	17.7	12
	3/18/2021	23	14
	5/5/2021	60.6	19
	9/2/2021	31.8	17
	11/23/2021	14	7
	1/11/2022	16.6	9
	4/7/2022	25.4	15
	8/2/2022	7.3	1
	11/16/2022	11.1	3
	2/14/2023	12.3	6
SME 6	12/17/2020	16.7	10
	3/18/2021	47.2	18
	5/5/2021	82.8	20
	9/2/2021	19	13
	11/23/2021	11.2	4
	1/11/2022	16.9	11
	4/7/2022	28.8	16
	8/2/2022	8.4	2
	11/16/2022	11.3	5
	2/14/2023	14.9	8

The Wilcoxon Statistic is 52
The Expected value is is 50
The Standard Deviation is 13.2288
The Z Score is 0.113389
The Standard Deviation adjusted for ties is 13.2288
The Z Score adjusted for ties is 0.113389
0.113389 < 2.326 indicating no statistical significance at 1% level
0.113389 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	20
Total Non-Detects	0 (0%)
Pooled Mean	23.012
Pooled Std Dev	20.0022
Compliance Meas.	10
Compliance Mean	19.493
Compliance Std Dev	17.1106
Background Meas.	10
Background Mean	26.531
Background Std Dev	22.8985

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 5	10	0	0	265.31

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 5	26.531	22.8985	8.63237	114	11.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 6	10	0	0	194.93

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 6	19.493	17.1106	-7.038	9.03942	96	9.6

Analysis of Variance Statistics

SS Wells	247.667
SS Total	7601.67

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	114
Background Rank Mean	11.4
H Statistic	0.462857
H Adjusted for Ties	0.462857

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 6

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 5	12/17/2020	15.4	12
	3/18/2021	1.7	1
	5/5/2021	50.11	17
	9/2/2021	15.15	11
	11/23/2021	68.29	20
	1/11/2022	24.9	15
	4/7/2022	55.4	18
	8/2/2022	12	7
	11/16/2022	7.26	3
	2/14/2023	15.1	10
SME 6	12/17/2020	13.6	9
	3/18/2021	3.3	2
	5/5/2021	62.32	19
	9/2/2021	13.32	8
	11/23/2021	9.79	5
	1/11/2022	24.4	14
	4/7/2022	31.4	16
	8/2/2022	11.1	6
	11/16/2022	8	4
	2/14/2023	17.7	13

The Wilcoxon Statistic is 41
The Expected value is is 50
The Standard Deviation is 13.2288
The Z Score is -0.718132
The Standard Deviation adjusted for ties is 13.2288
The Z Score adjusted for ties is -0.718132
-0.718132 < 2.326 indicating no statistical significance at 1% level
-0.718132 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	51
Total Non-Detects	0 (0%)
Pooled Mean	9.31725
Pooled Std Dev	3.11434
Compliance Meas.	41
Compliance Mean	9.22439
Compliance Std Dev	3.4143
Background Meas.	10
Background Mean	9.698
Background Std Dev	1.3684

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	10	0	0	96.98

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	9.698	1.3684	0	302	30.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	41	0	0	378.2

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	9.22439	3.4143	-0.473615	1.10748	1024	24.9756

Analysis of Variance Statistics

SS Wells	1.80328
SS Total	484.955

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	302
Background Rank Mean	30.2
H Statistic	0.992871
H Adjusted for Ties	0.992871

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	11.01	40
	3/18/2021	10.25	33
	5/5/2021	8.01	18
	9/2/2021	7.91	17
	11/23/2021	10.45	35
	1/10/2022	10.98	39
	4/7/2022	9.27	27
	8/3/2022	7.69	15
	11/16/2022	10.3	34
	2/13/2023	11.11	44
AT 5	3/12/2013	11.04	42
	5/8/2013	2.59	1
	9/23/2013	3.9498	3
	12/10/2013	11.43	47
	2/6/2014	15.29	49
	6/26/2014	7.61	14
	9/30/2014	6.63	6
	11/19/2014	10.23	32
	3/23/2015	9.39	29
	4/22/2015	11.13	45
	9/30/2015	9.45	30
	11/19/2015	19.33	50
	3/15/2016	20.43	51
	6/29/2016	6.57	5
	8/9/2016	6.47	4
	12/7/2016	10.19	31
	3/2/2017	8.86	23
	6/21/2017	6.74	7
	8/17/2017	6.77	8
	10/26/2017	8.25	20
	3/27/2018	9.03	25
	6/26/2018	6.89	9
	8/1/2018	7.16	10
	12/11/2018	10.73	38
	4/17/2019	8.99	24
	6/11/2019	3.48	2
	8/28/2019	7.42	12
	10/28/2019	8.45	21
	3/31/2020	9.07	26
	6/10/2020	7.35	11
	9/21/2020	8.21	19
	12/17/2020	11.21	46
	3/18/2021	10.68	37
	5/5/2021	8.45	22

9/2/2021	7.75	16
11/23/2021	11.09	43
1/10/2022	11.46	48
4/7/2022	9.3	28
8/3/2022	7.5	13
11/16/2022	10.62	36
2/13/2023	11.01	41

The Wilcoxon Statistic is 163
The Expected value is is 205
The Standard Deviation is 42.1505
The Z Score is -1.00829
The Standard Deviation adjusted for ties is 42.1505
The Z Score adjusted for ties is -1.00829
-1.00829 < 2.326 indicating no statistical significance at 1% level
-1.00829 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	51
Total Non-Detects	0 (0%)
Pooled Mean	0.857157
Pooled Std Dev	0.900949
Compliance Meas.	41
Compliance Mean	0.906585
Compliance Std Dev	0.994507
Background Meas.	10
Background Mean	0.6545
Background Std Dev	0.2387

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	10	0	0	6.545

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	0.6545	0.2387	0	218	21.8

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	41	0	0	37.17

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	0.906585	0.994507	0.252085	0.318955	1108	27.0244

Analysis of Variance Statistics

SS Wells	0.510868
SS Total	40.5854

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	218
Background Rank Mean	21.8
H Statistic	0.992871
H Adjusted for Ties	0.992871

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	0.884	40
	3/18/2021	0.429	7
	5/5/2021	1.09	46
	9/2/2021	0.491	9
	11/23/2021	0.367	5
	1/10/2022	0.832	37
	4/7/2022	0.549	13
	8/3/2022	0.742	28
	11/16/2022	0.424	6
	2/13/2023	0.737	27
AT 5	3/12/2013	0.61	16
	5/8/2013	0.31	1
	9/23/2013	1.3	48
	12/10/2013	0.79	31
	2/6/2014	0.8	32
	6/26/2014	0.77	30
	9/30/2014	0.94	43
	11/19/2014	1.3	49
	3/23/2015	0.71	25
	4/22/2015	0.69	23
	9/30/2015	1.82	50
	11/19/2015	0.666	22
	3/15/2016	0.578	14
	6/29/2016	0.8	33
	8/9/2016	0.975	44
	12/7/2016	0.663	20
	3/2/2017	1.08	45
	6/21/2017	0.616	17
	8/17/2017	0.89	41
	10/26/2017	0.936	42
	3/27/2018	0.849	38
	6/26/2018	0.849	39
	8/1/2018	0.51	11
	12/11/2018	1.09	47
	4/17/2019	0.638	18
	6/11/2019	0.822	34
	8/28/2019	0.534	12
	10/28/2019	0.665	21
	3/31/2020	0.657	19
	6/10/2020	0.825	35
	9/21/2020	0.603	15
	12/17/2020	0.831	36
	3/18/2021	0.31	2
	5/5/2021	6.86	51

9/2/2021	0.482	8
11/23/2021	0.343	3
1/10/2022	0.769	29
4/7/2022	0.509	10
8/3/2022	0.715	26
11/16/2022	0.366	4
2/13/2023	0.699	24

The Wilcoxon Statistic is 247
The Expected value is is 205
The Standard Deviation is 42.1505
The Z Score is 0.984567
The Standard Deviation adjusted for ties is 42.1505
The Z Score adjusted for ties is 0.984567
0.984567 < 2.326 indicating no statistical significance at 1% level
0.984567 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	51
Total Non-Detects	3 (5.88235%)
Pooled Mean	0.236608
Pooled Std Dev	0.17205
Compliance Meas.	41
Compliance Mean	0.248122
Compliance Std Dev	0.170874
Background Meas.	10
Background Mean	0.1894
Background Std Dev	0.177772

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	10	2	20	1.894

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	0.1894	0.177772	0	217	21.7

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	41	1	2.43902	10.173

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	0.248122	0.170874	0.058722	0.0607198	1109	27.0488

Analysis of Variance Statistics

SS Wells	0.0277214
SS Total	1.48007

Kruskal-Wallis Statistics

Non-Detect Rank	2
Background Rank Sum	217
Background Rank Mean	21.7
H Statistic	1.04071
H Adjusted for Ties	1.0409

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 3
Non detect rank is 2

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	0.094	12
	3/18/2021	0.093	11
	5/5/2021	0.112	16
	9/2/2021	0.179	25
	11/23/2021	0.472	44
	1/10/2022	0.14	22
	4/7/2022	ND<0	2
	8/3/2022	0.314	37
	11/16/2022	0.49	46
	2/13/2023	ND<0	2
AT 5	3/12/2013	0.15	23
	5/8/2013	0.099	13
	9/23/2013	0.4	39
	12/10/2013	0.29	36
	2/6/2014	0.13	19
	6/26/2014	0.34	38
	9/30/2014	0.49	47
	11/19/2014	0.41	41
	3/23/2015	0.13	20
	4/22/2015	0.11	15
	9/30/2015	0.664	51
	11/19/2015	0.261	32
	3/15/2016	0.068	8
	6/29/2016	0.598	50
	8/9/2016	0.482	45
	12/7/2016	0.45	43
	3/2/2017	0.267	33
	6/21/2017	0.226	27
	8/17/2017	0.258	31
	10/26/2017	0.226	28
	3/27/2018	0.162	24
	6/26/2018	0.23	29
	8/1/2018	0.285	35
	12/11/2018	0.066	7
	4/17/2019	0.061	6
	6/11/2019	0.206	26
	8/28/2019	0.404	40
	10/28/2019	0.523	49
	3/31/2020	0.032	4
	6/10/2020	0.248	30
	9/21/2020	0.491	48
	12/17/2020	0.087	10
	3/18/2021	0.05	5
	5/5/2021	0.121	17

9/2/2021	0.131	21
11/23/2021	ND<0	2
1/10/2022	0.126	18
4/7/2022	0.101	14
8/3/2022	0.271	34
11/16/2022	0.448	42
2/13/2023	0.081	9

The Wilcoxon Statistic is 248
The Expected value is is 205
The Standard Deviation is 42.1505
The Z Score is 1.00829
The Standard Deviation adjusted for ties is 42.1467
The Z Score adjusted for ties is 1.00838
1.00829 < 2.326 indicating no statistical significance at 1% level
1.00838 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: pH

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

Total Measurements	49
Total Non-Detects	0 (0%)
Pooled Mean	7.40551
Pooled Std Dev	0.990328
Compliance Meas.	40
Compliance Mean	7.3405
Compliance Std Dev	1.02036
Background Meas.	9
Background Mean	7.69444
Background Std Dev	0.833008

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	9	0	0	69.25

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	7.69444	0.833008	0	259	28.7778

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	40	0	0	293.62

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	7.3405	1.02036	-0.353944	0.365603	966	24.15

Analysis of Variance Statistics

SS Wells	0.9204
SS Total	47.076

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	259
Background Rank Mean	28.7778
H Statistic	0.770667
H Adjusted for Ties	0.770667

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	8.1	43
	3/18/2021	8.93	49
	5/5/2021	6.06	7
	11/23/2021	7.78	23
	1/10/2022	7.97	36
	4/7/2022	7.1	11
	8/3/2022	8.32	47
	11/16/2022	7.87	31
	2/13/2023	7.12	12
AT 5	3/12/2013	7.8	25
	5/8/2013	5.08	2
	9/23/2013	5.96	6
	12/10/2013	5.32	4
	2/6/2014	4.06	1
	6/26/2014	7.85	30
	9/30/2014	5.78	5
	11/19/2014	5.08	3
	3/23/2015	8.69	48
	4/22/2015	6.93	9
	9/30/2015	6.37	8
	11/19/2015	7.38	17
	3/15/2016	7.93	34
	6/29/2016	7.99	38
	8/9/2016	7.89	32
	12/7/2016	7.08	10
	3/2/2017	8.14	45
	6/21/2017	7.98	37
	8/17/2017	8.09	41
	10/26/2017	7.95	35
	3/27/2018	7.79	24
	6/26/2018	8.06	39
	8/1/2018	7.33	16
	12/11/2018	7.59	21
	4/17/2019	7.63	22
	6/11/2019	7.18	13
	8/28/2019	7.84	28
	10/28/2019	7.84	29
	3/31/2020	8.09	42
	6/10/2020	7.56	20
	9/21/2020	8.08	40
	12/17/2020	7.91	33
	3/18/2021	7.82	27
	5/5/2021	7.24	14
	11/23/2021	8.13	44

1/10/2022	7.39	18
4/7/2022	7.53	19
8/3/2022	8.17	46
11/16/2022	7.8	26
2/13/2023	7.29	15

The Wilcoxon Statistic is 146
The Expected value is is 180
The Standard Deviation is 38.7298
The Z Score is -0.890786
The Standard Deviation adjusted for ties is 38.7298
The Z Score adjusted for ties is -0.890786
-0.890786 < 2.326 indicating no statistical significance at 1% level
-0.890786 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	51
Total Non-Detects	0 (0%)
Pooled Mean	17.1347
Pooled Std Dev	5.75047
Compliance Meas.	41
Compliance Mean	17.4115
Compliance Std Dev	5.93325
Background Meas.	10
Background Mean	16
Background Std Dev	5.04689

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	10	0	0	160

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	16	5.04689	0	231	23.1

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	41	0	0	713.87

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	17.4115	5.93325	1.41146	2.03878	1095	26.7073

Analysis of Variance Statistics

SS Wells	16.016
SS Total	1653.39

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	231
Background Rank Mean	23.1
H Statistic	0.473358
H Adjusted for Ties	0.473358

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	11.5	11
	3/18/2021	18.3	31
	5/5/2021	18.4	32
	9/2/2021	22.6	39
	11/23/2021	12.2	14
	1/10/2022	11.9	13
	4/7/2022	18	29
	8/3/2022	24.6	45
	11/16/2022	11.1	7
	2/13/2023	11.4	10
AT 5	3/12/2013	12.55	15
	5/8/2013	14.69	20
	9/23/2013	22.88	40
	12/10/2013	8.21	3
	2/6/2014	7.28	2
	6/26/2014	23.89	44
	9/30/2014	21.03	35
	11/19/2014	6.91	1
	3/23/2015	14.5	19
	4/22/2015	18.4	33
	9/30/2015	21.63	36
	11/19/2015	14.98	21
	3/15/2016	16.86	26
	6/29/2016	25.4	46
	8/9/2016	25.8	48
	12/7/2016	11.3	9
	3/2/2017	13.4	18
	6/21/2017	23.3	42
	8/17/2017	26	49
	10/26/2017	15.7	23
	3/27/2018	12.9	16
	6/26/2018	25.5	47
	8/1/2018	22.3	38
	12/11/2018	9.4	4
	4/17/2019	17.9	28
	6/11/2019	22.16	37
	8/28/2019	27.1	51
	10/28/2019	15.1	22
	3/31/2020	16.6	24
	6/10/2020	23.2	41
	9/21/2020	20.6	34
	12/17/2020	9.6	5
	3/18/2021	17.2	27
	5/5/2021	18.1	30

9/2/2021	23.4	43
11/23/2021	12.9	17
1/10/2022	10	6
4/7/2022	16.6	25
8/3/2022	26	50
11/16/2022	11.1	8
2/13/2023	11.5	12

The Wilcoxon Statistic is 234
The Expected value is is 205
The Standard Deviation is 42.1505
The Z Score is 0.676148
The Standard Deviation adjusted for ties is 42.1505
The Z Score adjusted for ties is 0.676148
0.676148 < 2.326 indicating no statistical significance at 1% level
0.676148 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	51
Total Non-Detects	18 (35.2941%)
Pooled Mean	0.470137
Pooled Std Dev	0.512811
Compliance Meas.	41
Compliance Mean	0.372439
Compliance Std Dev	0.396255
Background Meas.	10
Background Mean	0.8707
Background Std Dev	0.735769

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	10	2	20	8.707

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	0.8707	0.735769	0	354	35.4

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	41	16	39.0244	15.27

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	0.372439	0.396255	-0.498261	0.168263	972	23.7073

Analysis of Variance Statistics

SS Wells	1.99585
SS Total	13.1488

Kruskal-Wallis Statistics

Non-Detect Rank	9.5
Background Rank Sum	354
Background Rank Mean	35.4
H Statistic	4.97336
H Adjusted for Ties	5.20142

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 18
Non detect rank is 9.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	0.541	33
	3/18/2021	0.407	28
	5/5/2021	1.24	47
	9/2/2021	2.49	51
	11/23/2021	ND<0	9.5
	1/10/2022	0.805	41
	4/7/2022	1.37	48
	8/3/2022	0.844	42
	11/16/2022	ND<0	9.5
	2/13/2023	1.01	45
AT 5	3/12/2013	0.37	24
	5/8/2013	0.56	35
	9/23/2013	0.37	25
	12/10/2013	0.97	44
	2/6/2014	0.35	23
	6/26/2014	0.38	26
	9/30/2014	ND<0	9.5
	11/19/2014	0.5	31
	3/23/2015	0.27	20
	4/22/2015	ND<0	9.5
	9/30/2015	ND<0	9.5
	11/19/2015	1.47	50
	3/15/2016	0.772	40
	6/29/2016	ND<0	9.5
	8/9/2016	0.268	19
	12/7/2016	ND<0	9.5
	3/2/2017	0.529	32
	6/21/2017	0.544	34
	8/17/2017	0.69	38
	10/26/2017	ND<0	9.5
	3/27/2018	ND<0	9.5
	6/26/2018	0.411	29
	8/1/2018	0.68	37
	12/11/2018	0.579	36
	4/17/2019	ND<0	9.5
	6/11/2019	0.486	30
	8/28/2019	1.07	46
	10/28/2019	ND<0	9.5
	3/31/2020	ND<0	9.5
	6/10/2020	ND<0	9.5
	9/21/2020	ND<0	9.5
	12/17/2020	ND<0	9.5
	3/18/2021	ND<0	9.5
	5/5/2021	1.37	49

9/2/2021	0.969	43
11/23/2021	ND<0	9.5
1/10/2022	0.279	21
4/7/2022	0.38	27
8/3/2022	0.702	39
11/16/2022	ND<0	9.5
2/13/2023	0.301	22

The Wilcoxon Statistic is 111
The Expected value is is 205
The Standard Deviation is 42.1505
The Z Score is -2.24197
The Standard Deviation adjusted for ties is 41.2161
The Z Score adjusted for ties is -2.29279
-2.24197 < 2.326 indicating no statistical significance at 1% level
-2.29279 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	51
Total Non-Detects	6 (11.7647%)
Pooled Mean	0.278667
Pooled Std Dev	0.184818
Compliance Meas.	41
Compliance Mean	0.278439
Compliance Std Dev	0.191701
Background Meas.	10
Background Mean	0.2796
Background Std Dev	0.162587

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	10	1	10	2.796

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	0.2796	0.162587	0	265.5	26.55

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	41	5	12.1951	11.416

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	0.278439	0.191701	-0.00116098	0.065845	1060.5	25.8659

Analysis of Variance Statistics

SS Wells	1.08358e-005
SS Total	1.70789

Kruskal-Wallis Statistics

Non-Detect Rank	3.5
Background Rank Sum	265.5
Background Rank Mean	26.55
H Statistic	0.0170263
H Adjusted for Ties	0.0170533

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 6
Non detect rank is 3.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	ND<0	3.5
	3/18/2021	0.27	27
	5/5/2021	0.244	21
	9/2/2021	0.275	28
	11/23/2021	0.516	47
	1/10/2022	0.211	19
	4/7/2022	0.264	26
	8/3/2022	0.373	37
	11/16/2022	0.528	48
	2/13/2023	0.115	9
AT 5	3/12/2013	0.14	13
	5/8/2013	0.11	8
	9/23/2013	0.35	35
	12/10/2013	0.34	34
	2/6/2014	0.13	11
	6/26/2014	0.28	29
	9/30/2014	0.54	49
	11/19/2014	0.39	39
	3/23/2015	0.14	14
	4/22/2015	0.13	12
	9/30/2015	0.862	51
	11/19/2015	0.309	32
	3/15/2016	ND<0	3.5
	6/29/2016	0.71	50
	8/9/2016	0.502	46
	12/7/2016	0.474	43
	3/2/2017	0.373	38
	6/21/2017	0.366	36
	8/17/2017	0.283	30
	10/26/2017	0.25	23
	3/27/2018	0.148	15
	6/26/2018	0.246	22
	8/1/2018	0.401	41
	12/11/2018	0.204	18
	4/17/2019	ND<0	3.5
	6/11/2019	0.29	31
	8/28/2019	0.485	44
	10/28/2019	0.499	45
	3/31/2020	0.102	7
	6/10/2020	0.243	20
	9/21/2020	0.399	40
	12/17/2020	ND<0	3.5
	3/18/2021	ND<0	3.5
	5/5/2021	0.157	16

9/2/2021	0.262	25
11/23/2021	0.253	24
1/10/2022	0.184	17
4/7/2022	0.121	10
8/3/2022	0.323	33
11/16/2022	0.42	42
2/13/2023	ND<0	3.5

The Wilcoxon Statistic is 199.5
The Expected value is is 205
The Standard Deviation is 42.1505
The Z Score is -0.142347
The Standard Deviation adjusted for ties is 42.1171
The Z Score adjusted for ties is -0.14246
-0.142347 < 2.326 indicating no statistical significance at 1% level
-0.14246 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	51
Total Non-Detects	1 (1.96078%)
Pooled Mean	31.759
Pooled Std Dev	23.2141
Compliance Meas.	41
Compliance Mean	30.8588
Compliance Std Dev	22.7103
Background Meas.	10
Background Mean	35.45
Background Std Dev	26.1302

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	10	1	10	354.5

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	35.45	26.1302	0	302	30.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	41	0	0	1265.21

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	30.8588	22.7103	-4.59122	8.24447	1024	24.9756

Analysis of Variance Statistics

SS Wells	169.461
SS Total	26944.8

Kruskal-Wallis Statistics

Non-Detect Rank	1
Background Rank Sum	302
Background Rank Mean	30.2
H Statistic	0.992871
H Adjusted for Ties	0.992871

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 1
Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	19.4	21
	3/18/2021	78.2	50
	5/5/2021	36.4	37
	9/2/2021	77.6	49
	11/23/2021	ND<0	1
	1/10/2022	34.7	35
	4/7/2022	37.2	38
	8/3/2022	31	32
	11/16/2022	3.8	3
	2/13/2023	36.2	36
AT 5	3/12/2013	20	22
	5/8/2013	19	19
	9/23/2013	22	23
	12/10/2013	64	44
	2/6/2014	32	33
	6/26/2014	19	20
	9/30/2014	14	8
	11/19/2014	27	28
	3/23/2015	15	11
	4/22/2015	76	48
	9/30/2015	16.4	14
	11/19/2015	74.6	47
	3/15/2016	26.7	27
	6/29/2016	14.5	10
	8/9/2016	18.3	17
	12/7/2016	16.9	15
	3/2/2017	44.6	41
	6/21/2017	70	46
	8/17/2017	12	7
	10/26/2017	9.41	5
	3/27/2018	15.9	12
	6/26/2018	25.2	26
	8/1/2018	107	51
	12/11/2018	46.2	42
	4/17/2019	14.4	9
	6/11/2019	15.9	13
	8/28/2019	23.5	25
	10/28/2019	17	16
	3/31/2020	27.1	29
	6/10/2020	22.8	24
	9/21/2020	11.3	6
	12/17/2020	18.6	18
	3/18/2021	55.6	43
	5/5/2021	43.7	40

9/2/2021	67.4	45
11/23/2021	2.6	2
1/10/2022	29.7	30
4/7/2022	33.8	34
8/3/2022	30.8	31
11/16/2022	7.3	4
2/13/2023	38	39

The Wilcoxon Statistic is 163
The Expected value is is 205
The Standard Deviation is 42.1505
The Z Score is -1.00829
The Standard Deviation adjusted for ties is 42.1505
The Z Score adjusted for ties is -1.00829
-1.00829 < 2.326 indicating no statistical significance at 1% level
-1.00829 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	48
Total Non-Detects	3 (6.25%)
Pooled Mean	46.521
Pooled Std Dev	133.232
Compliance Meas.	40
Compliance Mean	50.3463
Compliance Std Dev	145.172
Background Meas.	8
Background Mean	27.395
Background Std Dev	35.5556

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 7	8	1	12.5	219.16

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 7	27.395	35.5556	0	166	20.75

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	40	2	5	2013.85

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	50.3463	145.172	22.9513	52.0485	1010	25.25

Analysis of Variance Statistics

SS Wells	3511.73
SS Total	834286

Kruskal-Wallis Statistics

Non-Detect Rank	2
Background Rank Sum	166
Background Rank Mean	20.75
H Statistic	0.688776
H Adjusted for Ties	0.688925

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 3
Non detect rank is 2

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 7	12/17/2020	16.76	17
	3/18/2021	111	46
	5/5/2021	8.2	7
	11/23/2021	ND<0	2
	1/10/2022	19.2	21
	8/3/2022	24.8	31
	11/16/2022	4.9	4
	2/13/2023	34.3	38
AT 5	3/12/2013	15.4	14
	5/8/2013	25.3	32
	9/23/2013	21.3	25
	12/10/2013	68.4	43
	2/6/2014	39.8	39
	6/26/2014	70.4	44
	9/30/2014	14.9	13
	11/19/2014	47.1	40
	3/23/2015	17.1	18
	4/22/2015	52.8	42
	9/30/2015	15.4	15
	11/19/2015	934	48
	3/15/2016	30.2	36
	6/29/2016	18.1	20
	8/9/2016	17.1	19
	12/7/2016	26.5	33
	3/2/2017	50.8	41
	6/21/2017	11.7	10
	8/17/2017	9.5	8
	10/26/2017	9.8	9
	3/27/2018	14.5	12
	6/26/2018	16.4	16
	8/1/2018	77.9	45
	12/11/2018	29.2	35
	4/17/2019	12.2	11
	6/11/2019	24.6	30
	8/28/2019	20.7	23
	10/28/2019	22.5	28
	3/31/2020	23.1	29
	6/10/2020	19.4	22
	9/21/2020	ND<0.15	2
	12/17/2020	28.7	34
	3/18/2021	119	47
	5/5/2021	6.5	6
	11/23/2021	ND<0	2
	1/10/2022	20.8	24

4/7/2022	21.9	27
8/3/2022	21.7	26
11/16/2022	6.4	5
2/13/2023	32.6	37

The Wilcoxon Statistic is 190
The Expected value is is 160
The Standard Deviation is 36.1478
The Z Score is 0.816093
The Standard Deviation adjusted for ties is 36.1439
The Z Score adjusted for ties is 0.816182
0.816093 < 2.326 indicating no statistical significance at 1% level
0.816182 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	0 (0%)
Pooled Mean	8.81853
Pooled Std Dev	2.78699
Compliance Meas.	41
Compliance Mean	8.41268
Compliance Std Dev	1.93228
Background Meas.	41
Background Mean	9.22439
Background Std Dev	3.4143

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	41	0	0	378.2

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	9.22439	3.4143	1.10748	1783	43.4878

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	41	0	0	344.92

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	8.41268	1.93228	-0.811702	0.612695	1620	39.5122

Analysis of Variance Statistics

SS Wells	13.5066
SS Total	629.154

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1783
Background Rank Mean	43.4878
H Statistic	0.571282
H Adjusted for Ties	0.571282

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	11.04	69
	5/8/2013	2.59	1
	9/23/2013	3.9498	4
	12/10/2013	11.43	77
	2/6/2014	15.29	80
	6/26/2014	7.61	27
	9/30/2014	6.63	12
	11/19/2014	10.23	61
	3/23/2015	9.39	55
	4/22/2015	11.13	71
	9/30/2015	9.45	56
	11/19/2015	19.33	81
	3/15/2016	20.43	82
	6/29/2016	6.57	10
	8/9/2016	6.47	9
	12/7/2016	10.19	59
	3/2/2017	8.86	44
	6/21/2017	6.74	13
	8/17/2017	6.77	14
	10/26/2017	8.25	34
	3/27/2018	9.03	47
	6/26/2018	6.89	15
	8/1/2018	7.16	21
	12/11/2018	10.73	66
	4/17/2019	8.99	46
	6/11/2019	3.48	3
	8/28/2019	7.42	24
	10/28/2019	8.45	37
	3/31/2020	9.07	48
	6/10/2020	7.35	23
	9/21/2020	8.21	33
	12/17/2020	11.21	72
	3/18/2021	10.68	64
	5/5/2021	8.45	38
	9/2/2021	7.75	28
	11/23/2021	11.09	70
	1/10/2022	11.46	78
	4/7/2022	9.3	54
	8/3/2022	7.5	26
	11/16/2022	10.62	63
	2/13/2023	11.01	68
SME 1	3/12/2013	8.26	35
	5/8/2013	8.96	45
	9/23/2013	7.87	29

12/10/2013	9.15	49
2/6/2014	11.34	75
6/26/2014	7.05	20
9/30/2014	7.46	25
11/19/2014	10.86	67
3/23/2015	8.52	40
4/22/2015	7.97	31
9/30/2015	7.03	18
11/19/2015	7.04	19
3/15/2016	7.21	22
6/29/2016	3.29	2
8/9/2016	4.98	6
12/7/2016	10.2	60
3/2/2017	4.31	5
6/29/2017	9.21	51
8/16/2017	6.58	11
10/25/2017	8.32	36
3/28/2018	9.18	50
6/29/2018	6.37	8
8/2/2018	5.82	7
12/10/2018	11.48	79
4/15/2019	7.89	30
6/12/2019	8.73	43
8/27/2019	8.51	39
10/29/2019	9.21	52
3/30/2020	8.61	42
6/16/2020	10.36	62
9/21/2020	6.92	16
12/17/2020	10.68	65
3/18/2021	9.54	58
5/5/2021	8.53	41
9/2/2021	6.93	17
11/23/2021	11.34	76
1/11/2022	11.29	74
4/7/2022	9.26	53
8/2/2022	7.98	32
11/16/2022	9.45	57
2/14/2023	11.23	73

The Wilcoxon Statistic is 759
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -0.760469
The Standard Deviation adjusted for ties is 107.828
The Z Score adjusted for ties is -0.760469
-0.760469 < 2.326 indicating no statistical significance at 1% level
-0.760469 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	15 (18.2927%)
Pooled Mean	0.680744
Pooled Std Dev	1.152
Compliance Meas.	41
Compliance Mean	0.454902
Compliance Std Dev	1.26245
Background Meas.	41
Background Mean	0.906585
Background Std Dev	0.994507

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	41	0	0	37.17

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	0.906585	0.994507	0.318955	2370	57.8049

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	41	15	36.5854	18.651

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.454902	1.26245	-0.451683	0.25099	1033	25.1951

Analysis of Variance Statistics

SS Wells	4.18236
SS Total	107.495

Kruskal-Wallis Statistics

Non-Detect Rank	8
Background Rank Sum	2370
Background Rank Mean	57.8049
H Statistic	38.436
H Adjusted for Ties	38.6717

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 15
Non detect rank is 8

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	0.61	48
	5/8/2013	0.31	22
	9/23/2013	1.3	78
	12/10/2013	0.79	64
	2/6/2014	0.8	65
	6/26/2014	0.77	63
	9/30/2014	0.94	74
	11/19/2014	1.3	79
	3/23/2015	0.71	59
	4/22/2015	0.69	57
	9/30/2015	1.82	80
	11/19/2015	0.666	55
	3/15/2016	0.578	46
	6/29/2016	0.8	66
	8/9/2016	0.975	75
	12/7/2016	0.663	53
	3/2/2017	1.08	76
	6/21/2017	0.616	49
	8/17/2017	0.89	72
	10/26/2017	0.936	73
	3/27/2018	0.849	70
	6/26/2018	0.849	71
	8/1/2018	0.51	39
	12/11/2018	1.09	77
	4/17/2019	0.638	51
	6/11/2019	0.822	67
	8/28/2019	0.534	41
	10/28/2019	0.665	54
	3/31/2020	0.657	52
	6/10/2020	0.825	68
	9/21/2020	0.603	47
	12/17/2020	0.831	69
	3/18/2021	0.31	23
	5/5/2021	6.86	81
	9/2/2021	0.482	37
	11/23/2021	0.343	25
	1/10/2022	0.769	62
	4/7/2022	0.509	38
	8/3/2022	0.715	60
	11/16/2022	0.366	26
	2/13/2023	0.699	58
SME 1	3/12/2013	0.54	42
	5/8/2013	0.15	18
	9/23/2013	ND<0	8

12/10/2013	0.55	43
2/6/2014	0.55	44
6/26/2014	ND<0	8
9/30/2014	ND<0	8
11/19/2014	0.74	61
3/23/2015	0.51	40
4/22/2015	0.4	30
9/30/2015	ND<0	8
11/19/2015	0.401	31
3/15/2016	0.454	34
6/29/2016	ND<0	8
8/9/2016	ND<0	8
12/7/2016	0.413	32
3/2/2017	0.671	56
6/29/2017	ND<0	8
8/16/2017	ND<0	8
10/25/2017	0.368	27
3/28/2018	0.633	50
6/29/2018	0.312	24
8/2/2018	0.296	21
12/10/2018	0.259	19
4/15/2019	0.39	29
6/12/2019	ND<0	8
8/27/2019	ND<0	8
10/29/2019	0.129	17
3/30/2020	0.462	36
6/16/2020	ND<0	8
9/21/2020	ND<0	8
12/17/2020	0.577	45
3/18/2021	0.263	20
5/5/2021	0.122	16
9/2/2021	0.458	35
11/23/2021	ND<0	8
1/11/2022	8.2	82
4/7/2022	0.431	33
8/2/2022	ND<0	8
11/16/2022	ND<0	8
2/14/2023	0.372	28

The Wilcoxon Statistic is 172
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -6.20431
The Standard Deviation adjusted for ties is 107.499
The Z Score adjusted for ties is -6.22331
-6.20431 < 2.326 indicating no statistical significance at 1% level
-6.22331 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	13 (15.8537%)
Pooled Mean	0.160744
Pooled Std Dev	0.157082
Compliance Meas.	41
Compliance Mean	0.0733659
Compliance Std Dev	0.0715328
Background Meas.	41
Background Mean	0.248122
Background Std Dev	0.170874

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	41	1	2.43902	10.173

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	0.248122	0.170874	0.0607198	2273	55.439

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	41	12	29.2683	3.008

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.0733659	0.0715328	-0.174756	0.0289301	1130	27.561

Analysis of Variance Statistics

SS Wells	0.626064
SS Total	1.99866

Kruskal-Wallis Statistics

Non-Detect Rank	7
Background Rank Sum	2273
Background Rank Mean	55.439
H Statistic	28.091
H Adjusted for Ties	28.2028

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 13
Non detect rank is 7

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	0.15	52
	5/8/2013	0.099	37
	9/23/2013	0.4	72
	12/10/2013	0.29	70
	2/6/2014	0.13	48
	6/26/2014	0.34	71
	9/30/2014	0.49	78
	11/19/2014	0.41	74
	3/23/2015	0.13	49
	4/22/2015	0.11	40
	9/30/2015	0.664	82
	11/19/2015	0.261	65
	3/15/2016	0.068	29
	6/29/2016	0.598	81
	8/9/2016	0.482	77
	12/7/2016	0.45	76
	3/2/2017	0.267	66
	6/21/2017	0.226	60
	8/17/2017	0.258	64
	10/26/2017	0.226	61
	3/27/2018	0.162	53
	6/26/2018	0.23	62
	8/1/2018	0.285	69
	12/11/2018	0.066	28
	4/17/2019	0.061	25
	6/11/2019	0.206	57
	8/28/2019	0.404	73
	10/28/2019	0.523	80
	3/31/2020	0.032	16
	6/10/2020	0.248	63
	9/21/2020	0.491	79
	12/17/2020	0.087	35
	3/18/2021	0.05	21
	5/5/2021	0.121	43
	9/2/2021	0.131	50
	11/23/2021	ND<0	7
	1/10/2022	0.126	46
	4/7/2022	0.101	38
	8/3/2022	0.271	68
	11/16/2022	0.448	75
	2/13/2023	0.081	33
SME 1	3/12/2013	0.11	41
	5/8/2013	0.063	26
	9/23/2013	0.053	23

12/10/2013	0.21	59
2/6/2014	0.11	42
6/26/2014	ND<0	7
9/30/2014	0.044	18
11/19/2014	0.27	67
3/23/2015	0.073	31
4/22/2015	0.039	17
9/30/2015	0.052	22
11/19/2015	0.084	34
3/15/2016	0.047	19
6/29/2016	0.18	54
8/9/2016	0.089	36
12/7/2016	0.209	58
3/2/2017	0.127	47
6/29/2017	0.028	14
8/16/2017	ND<0	7
10/25/2017	0.121	44
3/28/2018	0.106	39
6/29/2018	0.121	45
8/2/2018	0.145	51
12/10/2018	ND<0	7
4/15/2019	0.063	27
6/12/2019	ND<0	7
8/27/2019	ND<0	7
10/29/2019	0.049	20
3/30/2020	ND<0	7
6/16/2020	0.031	15
9/21/2020	ND<0	7
12/17/2020	0.072	30
3/18/2021	ND<0	7
5/5/2021	ND<0	7
9/2/2021	0.19	55
11/23/2021	0.076	32
1/11/2022	0.054	24
4/7/2022	0.192	56
8/2/2022	ND<0	7
11/16/2022	ND<0	7
2/14/2023	ND<0	7

The Wilcoxon Statistic is 269
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -5.30474
The Standard Deviation adjusted for ties is 107.614
The Z Score adjusted for ties is -5.31527
-5.30474 < 2.326 indicating no statistical significance at 1% level
-5.31527 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	81
Total Non-Detects	0 (0%)
Pooled Mean	7.63012
Pooled Std Dev	0.834508
Compliance Meas.	41
Compliance Mean	7.91268
Compliance Std Dev	0.460413
Background Meas.	40
Background Mean	7.3405
Background Std Dev	1.02036

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	40	0	0	293.62

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	7.3405	1.02036	0.365603	1364	34.1

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	41	0	0	324.42

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	7.91268	0.460413	0.572183	0.175176	1957	47.7317

Analysis of Variance Statistics

SS Wells	6.6287
SS Total	55.7123

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1364
Background Rank Mean	34.1
H Statistic	6.79738
H Adjusted for Ties	6.79738

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	7.8	37
	5/8/2013	5.08	2
	9/23/2013	5.96	6
	12/10/2013	5.32	4
	2/6/2014	4.06	1
	6/26/2014	7.85	44
	9/30/2014	5.78	5
	11/19/2014	5.08	3
	3/23/2015	8.69	79
	4/22/2015	6.93	8
	9/30/2015	6.37	7
	11/19/2015	7.38	20
	3/15/2016	7.93	51
	6/29/2016	7.99	56
	8/9/2016	7.89	46
	12/7/2016	7.08	9
	3/2/2017	8.14	67
	6/21/2017	7.98	55
	8/17/2017	8.09	61
	10/26/2017	7.95	52
	3/27/2018	7.79	36
	6/26/2018	8.06	59
	8/1/2018	7.33	17
	12/11/2018	7.59	29
	4/17/2019	7.63	30
	6/11/2019	7.18	11
	8/28/2019	7.84	41
	10/28/2019	7.84	42
	3/31/2020	8.09	62
	6/10/2020	7.56	28
	9/21/2020	8.08	60
	12/17/2020	7.91	48
	3/18/2021	7.82	40
	5/5/2021	7.24	13
	11/23/2021	8.13	66
	1/10/2022	7.39	21
	4/7/2022	7.53	26
	8/3/2022	8.17	68
	11/16/2022	7.8	38
	2/13/2023	7.29	16
SME 1	3/12/2013	8.19	69
	5/8/2013	7.64	31
	9/23/2013	8.26	71
	12/10/2013	8.05	58

2/6/2014	7.22	12
6/26/2014	8.49	76
9/30/2014	8.25	70
11/19/2014	8.31	73
3/23/2015	8.26	72
4/22/2015	7.14	10
9/30/2015	8.34	74
11/19/2015	7.92	50
3/15/2016	8.44	75
6/29/2016	8.8	80
8/9/2016	8.55	77
12/7/2016	7.96	54
3/2/2017	7.75	35
6/29/2017	9.11	81
8/16/2017	8.12	65
10/25/2017	8.02	57
3/28/2018	8.1	63
6/29/2018	7.84	43
8/2/2018	7.48	25
12/10/2018	7.45	23
4/15/2019	7.89	47
6/12/2019	7.34	18
8/27/2019	7.45	24
10/29/2019	7.95	53
3/30/2020	7.35	19
6/16/2020	8.58	78
9/21/2020	7.71	34
12/17/2020	7.66	33
3/18/2021	7.24	14
5/5/2021	7.43	22
9/2/2021	7.8	39
11/23/2021	7.91	49
1/11/2022	7.55	27
4/7/2022	7.65	32
8/2/2022	8.1	64
11/16/2022	7.86	45
2/14/2023	7.26	15

The Wilcoxon Statistic is 1096
The Expected value is is 820
The Standard Deviation is 105.862
The Z Score is 2.60246
The Standard Deviation adjusted for ties is 105.862
The Z Score adjusted for ties is 2.60246
2.60246 > 2.326 indicating statistical significance at 1% level
2.60246 > 2.326 indicating statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	81
Total Non-Detects	0 (0%)
Pooled Mean	18.1765
Pooled Std Dev	6.61609
Compliance Meas.	40
Compliance Mean	18.9608
Compliance Std Dev	7.2414
Background Meas.	41
Background Mean	17.4115
Background Std Dev	5.93325

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	41	0	0	713.87

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	17.4115	5.93325	2.03878	1558	38

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	40	0	0	758.43

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	18.9608	7.2414	1.54929	1.46933	1763	44.075

Analysis of Variance Statistics

SS Wells	48.5984
SS Total	3501.82

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1558
Background Rank Mean	38
H Statistic	1.35
H Adjusted for Ties	1.35

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	12.55	20
	5/8/2013	14.69	27
	9/23/2013	22.88	57
	12/10/2013	8.21	7
	2/6/2014	7.28	3
	6/26/2014	23.89	61
	9/30/2014	21.03	52
	11/19/2014	6.91	2
	3/23/2015	14.5	26
	4/22/2015	18.4	46
	9/30/2015	21.63	53
	11/19/2015	14.98	28
	3/15/2016	16.86	36
	6/29/2016	25.4	64
	8/9/2016	25.8	66
	12/7/2016	11.3	15
	3/2/2017	13.4	24
	6/21/2017	23.3	59
	8/17/2017	26	69
	10/26/2017	15.7	30
	3/27/2018	12.9	21
	6/26/2018	25.5	65
	8/1/2018	22.3	56
	12/11/2018	9.4	9
	4/17/2019	17.9	43
	6/11/2019	22.16	54
	8/28/2019	27.1	74
	10/28/2019	15.1	29
	3/31/2020	16.6	34
	6/10/2020	23.2	58
	9/21/2020	20.6	51
	12/17/2020	9.6	10
	3/18/2021	17.2	37
	5/5/2021	18.1	44
	9/2/2021	23.4	60
	11/23/2021	12.9	22
	1/10/2022	10	11
	4/7/2022	16.6	35
	8/3/2022	26	70
	11/16/2022	11.1	14
	2/13/2023	11.5	16
SME 1	3/12/2013	13.1	23
	5/8/2013	16	33
	9/23/2013	27.7	76

12/10/2013	7.6	4
2/6/2014	5.9	1
9/30/2014	24.67	63
11/19/2014	7.8	5
3/23/2015	17.3	39
4/22/2015	18.5	47
9/30/2015	26.4	72
11/19/2015	15.9	32
3/15/2016	18.3	45
6/29/2016	30.67	81
8/9/2016	28.87	78
12/7/2016	11.98	17
3/2/2017	12.34	18
6/29/2017	25.8	67
8/16/2017	29.7	80
10/25/2017	17.3	40
3/28/2018	17.6	41
6/29/2018	26.2	71
8/2/2018	23.9	62
12/10/2018	8	6
4/15/2019	19.7	49
6/12/2019	27.2	75
8/27/2019	28.8	77
10/29/2019	17.6	42
3/30/2020	19.3	48
6/16/2020	27	73
9/21/2020	22.2	55
12/17/2020	9.2	8
3/18/2021	15.7	31
5/5/2021	20.1	50
9/2/2021	25.8	68
11/23/2021	12.4	19
1/11/2022	10.2	12
4/7/2022	17.2	38
8/2/2022	29.2	79
11/16/2022	14.3	25
2/14/2023	11	13

The Wilcoxon Statistic is 943
The Expected value is is 820
The Standard Deviation is 105.862
The Z Score is 1.15717
The Standard Deviation adjusted for ties is 105.862
The Z Score adjusted for ties is 1.15717
1.15717 < 2.326 indicating no statistical significance at 1% level
1.15717 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	24 (29.2683%)
Pooled Mean	0.38422
Pooled Std Dev	0.356321
Compliance Meas.	41
Compliance Mean	0.396
Compliance Std Dev	0.315912
Background Meas.	41
Background Mean	0.372439
Background Std Dev	0.396255

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	41	16	39.0244	15.27

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	0.372439	0.396255	0.168263	1627	39.6829

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	41	8	19.5122	16.236

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.396	0.315912	0.023561	0.0791446	1776	43.3171

Analysis of Variance Statistics

SS Wells	0.01138
SS Total	10.2841

Kruskal-Wallis Statistics

Non-Detect Rank	12.5
Background Rank Sum	1627
Background Rank Mean	39.6829
H Statistic	0.477362
H Adjusted for Ties	0.489618

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 24
Non detect rank is 12.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	0.37	43
	5/8/2013	0.56	65
	9/23/2013	0.37	44
	12/10/2013	0.97	78
	2/6/2014	0.35	39
	6/26/2014	0.38	46
	9/30/2014	ND<0	12.5
	11/19/2014	0.5	56
	3/23/2015	0.27	26
	4/22/2015	ND<0	12.5
	9/30/2015	ND<0	12.5
	11/19/2015	1.47	81
	3/15/2016	0.772	74
	6/29/2016	ND<0	12.5
	8/9/2016	0.268	25
	12/7/2016	ND<0	12.5
	3/2/2017	0.529	59
	6/21/2017	0.544	61
	8/17/2017	0.69	72
	10/26/2017	ND<0	12.5
	3/27/2018	ND<0	12.5
	6/26/2018	0.411	50
	8/1/2018	0.68	71
	12/11/2018	0.579	66
	4/17/2019	ND<0	12.5
	6/11/2019	0.486	54
	8/28/2019	1.07	79
	10/28/2019	ND<0	12.5
	3/31/2020	ND<0	12.5
	6/10/2020	ND<0	12.5
	9/21/2020	ND<0	12.5
	12/17/2020	ND<0	12.5
	3/18/2021	ND<0	12.5
	5/5/2021	1.37	80
	9/2/2021	0.969	77
	11/23/2021	ND<0	12.5
	1/10/2022	0.279	28
	4/7/2022	0.38	47
	8/3/2022	0.702	73
	11/16/2022	ND<0	12.5
	2/13/2023	0.301	33
SME 1	3/12/2013	0.34	37
	5/8/2013	0.42	51
	9/23/2013	0.8	75

12/10/2013	0.47	52
2/6/2014	0.5	57
6/26/2014	0.31	35
9/30/2014	0.61	68
11/19/2014	0.55	64
3/23/2015	ND<0	12.5
4/22/2015	0.38	48
9/30/2015	0.807	76
11/19/2015	ND<0	12.5
3/15/2016	ND<0	12.5
6/29/2016	0.62	69
8/9/2016	0.547	63
12/7/2016	0.378	45
3/2/2017	0.345	38
6/29/2017	0.53	60
8/16/2017	0.52	58
10/25/2017	0.288	31
3/28/2018	ND<0	12.5
6/29/2018	0.67	70
8/2/2018	0.495	55
12/10/2018	0.336	36
4/15/2019	0.36	42
6/12/2019	ND<0	12.5
8/27/2019	0.356	41
10/29/2019	0.272	27
3/30/2020	ND<0	12.5
6/16/2020	0.485	53
9/21/2020	ND<0	12.5
12/17/2020	0.3	32
3/18/2021	0.58	67
5/5/2021	0.402	49
9/2/2021	0.353	40
11/23/2021	ND<0	12.5
1/11/2022	1.8	82
4/7/2022	0.544	62
8/2/2022	0.281	29
11/16/2022	0.306	34
2/14/2023	0.281	30

The Wilcoxon Statistic is 915
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is 0.686277
The Standard Deviation adjusted for ties is 106.47
The Z Score adjusted for ties is 0.695031
0.686277 < 2.326 indicating no statistical significance at 1% level
0.695031 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	23 (28.0488%)
Pooled Mean	0.187512
Pooled Std Dev	0.176712
Compliance Meas.	41
Compliance Mean	0.0965854
Compliance Std Dev	0.0976581
Background Meas.	41
Background Mean	0.278439
Background Std Dev	0.191701

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	41	5	12.1951	11.416

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	0.278439	0.191701	0.065845	2202	53.7073

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	41	18	43.9024	3.96

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	0.0965854	0.0976581	-0.181854	0.0335996	1201	29.2927

Analysis of Variance Statistics

SS Wells	0.67795
SS Total	2.5294

Kruskal-Wallis Statistics

Non-Detect Rank	12
Background Rank Sum	2202
Background Rank Mean	53.7073
H Statistic	21.5449
H Adjusted for Ties	22.0301

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 23
Non detect rank is 12

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	0.14	40
	5/8/2013	0.11	26
	9/23/2013	0.35	69
	12/10/2013	0.34	68
	2/6/2014	0.13	33
	6/26/2014	0.28	62
	9/30/2014	0.54	80
	11/19/2014	0.39	72
	3/23/2015	0.14	41
	4/22/2015	0.13	34
	9/30/2015	0.862	82
	11/19/2015	0.309	66
	3/15/2016	ND<0	12
	6/29/2016	0.71	81
	8/9/2016	0.502	79
	12/7/2016	0.474	76
	3/2/2017	0.373	71
	6/21/2017	0.366	70
	8/17/2017	0.283	63
	10/26/2017	0.25	56
	3/27/2018	0.148	42
	6/26/2018	0.246	55
	8/1/2018	0.401	74
	12/11/2018	0.204	49
	4/17/2019	ND<0	12
	6/11/2019	0.29	64
	8/28/2019	0.485	77
	10/28/2019	0.499	78
	3/31/2020	0.102	25
	6/10/2020	0.243	53
	9/21/2020	0.399	73
	12/17/2020	ND<0	12
	3/18/2021	ND<0	12
	5/5/2021	0.157	45
	9/2/2021	0.262	60
	11/23/2021	0.253	57
	1/10/2022	0.184	48
	4/7/2022	0.121	31
	8/3/2022	0.323	67
	11/16/2022	0.42	75
	2/13/2023	ND<0	12
SME 1	3/12/2013	0.11	27
	5/8/2013	ND<0	12
	9/23/2013	ND<0	12

12/10/2013	0.26	59
2/6/2014	0.13	35
6/26/2014	ND<0	12
9/30/2014	0.11	28
11/19/2014	0.29	65
3/23/2015	0.1	24
4/22/2015	ND<0	12
9/30/2015	0.135	38
11/19/2015	0.134	36
3/15/2016	ND<0	12
6/29/2016	0.245	54
8/9/2016	0.154	44
12/7/2016	0.271	61
3/2/2017	0.208	50
6/29/2017	ND<0	12
8/16/2017	0.111	29
10/25/2017	0.151	43
3/28/2018	ND<0	12
6/29/2018	0.241	52
8/2/2018	0.136	39
12/10/2018	ND<0	12
4/15/2019	ND<0	12
6/12/2019	ND<0	12
8/27/2019	0.161	46
10/29/2019	0.134	37
3/30/2020	ND<0	12
6/16/2020	0.129	32
9/21/2020	ND<0	12
12/17/2020	ND<0	12
3/18/2021	0.112	30
5/5/2021	ND<0	12
9/2/2021	0.218	51
11/23/2021	0.165	47
1/11/2022	ND<0	12
4/7/2022	0.255	58
8/2/2022	ND<0	12
11/16/2022	ND<0	12
2/14/2023	ND<0	12

The Wilcoxon Statistic is 340
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -4.64628
The Standard Deviation adjusted for ties is 106.634
The Z Score adjusted for ties is -4.69832
-4.64628 < 2.326 indicating no statistical significance at 1% level
-4.69832 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	0 (0%)
Pooled Mean	26.8083
Pooled Std Dev	23.185
Compliance Meas.	41
Compliance Mean	22.7578
Compliance Std Dev	23.2194
Background Meas.	41
Background Mean	30.8588
Background Std Dev	22.7103

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	41	0	0	1265.21

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	30.8588	22.7103	8.24447	1952	47.6098

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	41	0	0	933.07

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	22.7578	23.2194	-8.10098	5.07239	1451	35.3902

Analysis of Variance Statistics

SS Wells	1345.33
SS Total	43541.2

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1952
Background Rank Mean	47.6098
H Statistic	5.39698
H Adjusted for Ties	5.39698

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	20	46
	5/8/2013	19	42
	9/23/2013	22	50
	12/10/2013	64	75
	2/6/2014	32	64
	6/26/2014	19	43
	9/30/2014	14	19
	11/19/2014	27	58
	3/23/2015	15	24
	4/22/2015	76	79
	9/30/2015	16.4	31
	11/19/2015	74.6	78
	3/15/2016	26.7	57
	6/29/2016	14.5	23
	8/9/2016	18.3	39
	12/7/2016	16.9	32
	3/2/2017	44.6	72
	6/21/2017	70	77
	8/17/2017	12	13
	10/26/2017	9.41	7
	3/27/2018	15.9	28
	6/26/2018	25.2	56
	8/1/2018	107	81
	12/11/2018	46.2	73
	4/17/2019	14.4	22
	6/11/2019	15.9	29
	8/28/2019	23.5	55
	10/28/2019	17	34
	3/31/2020	27.1	59
	6/10/2020	22.8	51
	9/21/2020	11.3	10
	12/17/2020	18.6	41
	3/18/2021	55.6	74
	5/5/2021	43.7	71
	9/2/2021	67.4	76
	11/23/2021	2.6	1
	1/10/2022	29.7	61
	4/7/2022	33.8	65
	8/3/2022	30.8	62
	11/16/2022	7.3	4
	2/13/2023	38	70
SME 1	3/12/2013	16	30
	5/8/2013	14	20
	9/23/2013	15	25

12/10/2013	21	49
2/6/2014	23	52
6/26/2014	13	17
9/30/2014	34	66
11/19/2014	19	44
3/23/2015	14	21
4/22/2015	18	38
9/30/2015	15.3	27
11/19/2015	23.2	53
3/15/2016	17.7	36
6/29/2016	20.3	47
8/9/2016	12.6	14
12/7/2016	17.7	37
3/2/2017	15	26
6/29/2017	18.3	40
8/16/2017	12.7	15
10/25/2017	16.9	33
3/28/2018	19.8	45
6/29/2018	23.3	54
8/2/2018	29.5	60
12/10/2018	31	63
4/15/2019	35	68
6/12/2019	9.67	8
8/27/2019	7.1	3
10/29/2019	11	9
3/30/2020	13.3	18
6/16/2020	11.4	12
9/21/2020	9	6
12/17/2020	20.9	48
3/18/2021	90.4	80
5/5/2021	34	67
9/2/2021	35.8	69
11/23/2021	12.7	16
1/11/2022	17	35
4/7/2022	140	82
8/2/2022	6.3	2
11/16/2022	7.9	5
2/14/2023	11.3	11

The Wilcoxon Statistic is 590
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -2.32778
The Standard Deviation adjusted for ties is 107.828
The Z Score adjusted for ties is -2.32778
-2.32778 < 2.326 indicating no statistical significance at 1% level
-2.32778 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	81
Total Non-Detects	2 (2.46914%)
Pooled Mean	40.3847
Pooled Std Dev	104.452
Compliance Meas.	41
Compliance Mean	30.6661
Compliance Std Dev	32.8072
Background Meas.	40
Background Mean	50.3463
Background Std Dev	145.172

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
AT 5	40	2	5	2013.85

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
AT 5	50.3463	145.172	52.0485	1680	42

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 1	41	0	0	1257.31

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 1	30.6661	32.8072	-19.6802	23.2546	1641	40.0244

Analysis of Variance Statistics

SS Wells	7841.8
SS Total	872819

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	1680
Background Rank Mean	42
H Statistic	0.142772
H Adjusted for Ties	0.142774

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 1

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
AT 5	3/12/2013	15.4	27
	5/8/2013	25.3	52
	9/23/2013	21.3	43
	12/10/2013	68.4	74
	2/6/2014	39.8	65
	6/26/2014	70.4	75
	9/30/2014	14.9	24
	11/19/2014	47.1	69
	3/23/2015	17.1	31
	4/22/2015	52.8	72
	9/30/2015	15.4	28
	11/19/2015	934	81
	3/15/2016	30.2	61
	6/29/2016	18.1	33
	8/9/2016	17.1	32
	12/7/2016	26.5	54
	3/2/2017	50.8	71
	6/21/2017	11.7	11
	8/17/2017	9.5	7
	10/26/2017	9.8	8
	3/27/2018	14.5	22
	6/26/2018	16.4	30
	8/1/2018	77.9	76
	12/11/2018	29.2	60
	4/17/2019	12.2	13
	6/11/2019	24.6	51
	8/28/2019	20.7	38
	10/28/2019	22.5	46
	3/31/2020	23.1	47
	6/10/2020	19.4	37
	9/21/2020	ND<0.15	1.5
	12/17/2020	28.7	57
	3/18/2021	119	78
	5/5/2021	6.5	6
	11/23/2021	ND<0	1.5
	1/10/2022	20.8	40
	4/7/2022	21.9	45
	8/3/2022	21.7	44
	11/16/2022	6.4	5
	2/13/2023	32.6	64
SME 1	3/12/2013	13.1	15
	5/8/2013	24	50
	9/23/2013	14.2	21
	12/10/2013	46.3	68

2/6/2014	61	73
6/26/2014	14	18
9/30/2014	27.6	55
11/19/2014	40.1	66
3/23/2015	21	41
4/22/2015	29	59
9/30/2015	15	25
11/19/2015	50	70
3/15/2016	26.2	53
6/29/2016	21.2	42
8/9/2016	15.3	26
12/7/2016	31	62
3/2/2017	14	19
6/29/2017	19.2	35
8/16/2017	10.6	9
10/25/2017	5.4	3
3/28/2018	19.3	36
6/29/2018	20.7	39
8/2/2018	28.5	56
12/10/2018	32	63
4/15/2019	42.2	67
6/12/2019	12.2	14
8/27/2019	135.2	79
10/29/2019	14.5	23
3/30/2020	13.3	16
6/16/2020	11.6	10
9/21/2020	13.8	17
12/17/2020	23.19	48
3/18/2021	14.1	20
5/5/2021	28.83	58
9/2/2021	23.89	49
11/23/2021	18.42	34
1/11/2022	161.2	80
4/7/2022	112.9	77
8/2/2022	12	12
11/16/2022	5.78	4
2/14/2023	15.5	29

The Wilcoxon Statistic is 780
The Expected value is is 820
The Standard Deviation is 105.862
The Z Score is -0.382575
The Standard Deviation adjusted for ties is 105.861
The Z Score adjusted for ties is -0.382577
-0.382575 < 2.326 indicating no statistical significance at 1% level
-0.382577 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	0 (0%)
Pooled Mean	8.49902
Pooled Std Dev	2.94326
Compliance Meas.	41
Compliance Mean	8.58537
Compliance Std Dev	3.71392
Background Meas.	41
Background Mean	8.41268
Background Std Dev	1.93228

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	0	0	344.92

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	8.41268	1.93228	0.612695	1751	42.7073

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 2	41	0	0	352

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 2	8.58537	3.71392	0.172683	0.653824	1652	40.2927

Analysis of Variance Statistics

SS Wells	0.611298
SS Total	701.687

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1751
Background Rank Mean	42.7073
H Statistic	0.210739
H Adjusted for Ties	0.210739

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	8.26	38
	5/8/2013	8.96	51
	9/23/2013	7.87	34
	12/10/2013	9.15	55
	2/6/2014	11.34	72
	6/26/2014	7.05	23
	9/30/2014	7.46	31
	11/19/2014	10.86	68
	3/23/2015	8.52	43
	4/22/2015	7.97	36
	9/30/2015	7.03	21
	11/19/2015	7.04	22
	3/15/2016	7.21	27
	6/29/2016	3.29	3
	8/9/2016	4.98	8
	12/7/2016	10.2	65
	3/2/2017	4.31	5
	6/29/2017	9.21	57
	8/16/2017	6.58	17
	10/25/2017	8.32	39
	3/28/2018	9.18	56
	6/29/2018	6.37	14
	8/2/2018	5.82	12
	12/10/2018	11.48	76
	4/15/2019	7.89	35
	6/12/2019	8.73	48
	8/27/2019	8.51	42
	10/29/2019	9.21	58
	3/30/2020	8.61	45
	6/16/2020	10.36	66
	9/21/2020	6.92	19
	12/17/2020	10.68	67
	3/18/2021	9.54	63
	5/5/2021	8.53	44
	9/2/2021	6.93	20
	11/23/2021	11.34	73
	1/11/2022	11.29	71
	4/7/2022	9.26	59
	8/2/2022	7.98	37
	11/16/2022	9.45	62
	2/14/2023	11.23	69
RC 2	3/12/2013	9.83	64
	5/8/2013	3.06	2
	9/23/2013	3	1

12/10/2013	11.71	79
2/6/2014	17.28	81
6/26/2014	6.81	18
9/30/2014	5.55	10
11/19/2014	7.14	26
3/23/2015	9.07	53
4/22/2015	11.42	75
9/30/2015	9.28	60
11/19/2015	21.94	82
3/15/2016	16.67	80
6/29/2016	4.31	6
8/9/2016	5.05	9
12/7/2016	7.47	32
3/2/2017	7.74	33
6/21/2017	5.61	11
8/17/2017	4.94	7
10/26/2017	7.05	24
3/27/2018	8.43	41
6/26/2018	6.19	13
8/1/2018	7.1	25
12/11/2018	11.41	74
4/17/2019	8.67	46
6/11/2019	3.78	4
8/28/2019	7.3	29
10/28/2019	9.42	61
3/31/2020	9.1	54
6/10/2020	6.37	15
9/21/2020	7.24	28
12/17/2020	11.23	70
3/18/2021	8.68	47
5/5/2021	8.95	50
9/2/2021	6.52	16
11/23/2021	8.33	40
1/10/2022	11.5	77
4/7/2022	9.02	52
8/3/2022	7.41	30
11/16/2022	8.84	49
2/13/2023	11.58	78

The Wilcoxon Statistic is 791
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -0.463701
The Standard Deviation adjusted for ties is 107.828
The Z Score adjusted for ties is -0.463701
-0.463701 < 2.326 indicating no statistical significance at 1% level
-0.463701 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	26 (31.7073%)
Pooled Mean	0.38711
Pooled Std Dev	1.23491
Compliance Meas.	41
Compliance Mean	0.319317
Compliance Std Dev	1.21858
Background Meas.	41
Background Mean	0.454902
Background Std Dev	1.26245

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	15	36.5854	18.651

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	0.454902	1.26245	0.25099	1906.5	46.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 2	41	11	26.8293	13.092

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 2	0.319317	1.21858	-0.135585	0.274027	1496.5	36.5

Analysis of Variance Statistics

SS Wells	0.37686
SS Total	123.526

Kruskal-Wallis Statistics

Non-Detect Rank	13.5
Background Rank Sum	1906.5
Background Rank Mean	46.5
H Statistic	3.61446
H Adjusted for Ties	3.73331

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 26
Non detect rank is 13.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.54	74
	5/8/2013	0.15	39
	9/23/2013	ND<0	13.5
	12/10/2013	0.55	75
	2/6/2014	0.55	76
	6/26/2014	ND<0	13.5
	9/30/2014	ND<0	13.5
	11/19/2014	0.74	80
	3/23/2015	0.51	73
	4/22/2015	0.4	66
	9/30/2015	ND<0	13.5
	11/19/2015	0.401	67
	3/15/2016	0.454	70
	6/29/2016	ND<0	13.5
	8/9/2016	ND<0	13.5
	12/7/2016	0.413	68
	3/2/2017	0.671	79
	6/29/2017	ND<0	13.5
	8/16/2017	ND<0	13.5
	10/25/2017	0.368	63
	3/28/2018	0.633	78
	6/29/2018	0.312	61
	8/2/2018	0.296	60
	12/10/2018	0.259	54
	4/15/2019	0.39	65
	6/12/2019	ND<0	13.5
	8/27/2019	ND<0	13.5
	10/29/2019	0.129	34
	3/30/2020	0.462	72
	6/16/2020	ND<0	13.5
	9/21/2020	ND<0	13.5
	12/17/2020	0.577	77
	3/18/2021	0.263	57
	5/5/2021	0.122	30
	9/2/2021	0.458	71
	11/23/2021	ND<0	13.5
	1/11/2022	8.2	82
	4/7/2022	0.431	69
	8/2/2022	ND<0	13.5
	11/16/2022	ND<0	13.5
	2/14/2023	0.372	64
RC 2	3/12/2013	0.12	29
	5/8/2013	0.19	49
	9/23/2013	ND<0	13.5

12/10/2013	0.11	28
2/6/2014	0.26	55
6/26/2014	0.15	40
9/30/2014	ND<0	13.5
11/19/2014	0.17	44
3/23/2015	0.15	41
4/22/2015	0.26	56
9/30/2015	ND<0	13.5
11/19/2015	0.271	58
3/15/2016	0.181	46
6/29/2016	ND<0	13.5
8/9/2016	0.14	36
12/7/2016	0.2	51
3/2/2017	0.166	43
6/21/2017	ND<0	13.5
8/17/2017	ND<0	13.5
10/26/2017	ND<0	13.5
3/27/2018	0.146	38
6/26/2018	0.101	27
8/1/2018	ND<0	13.5
12/11/2018	0.316	62
4/17/2019	0.165	42
6/11/2019	ND<0	13.5
8/28/2019	ND<0	13.5
10/28/2019	0.132	35
3/31/2020	0.19	50
6/10/2020	0.21	52
9/21/2020	ND<0	13.5
12/17/2020	0.218	53
3/18/2021	0.145	37
5/5/2021	7.91	81
9/2/2021	0.122	31
11/23/2021	0.124	32
1/10/2022	0.185	47
4/7/2022	0.186	48
8/3/2022	0.175	45
11/16/2022	0.126	33
2/13/2023	0.273	59

The Wilcoxon Statistic is 635.5
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -1.90581
The Standard Deviation adjusted for ties is 106.098
The Z Score adjusted for ties is -1.93689
-1.90581 < 2.326 indicating no statistical significance at 1% level
-1.93689 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	48 (58.5366%)
Pooled Mean	0.0403415
Pooled Std Dev	0.0620838
Compliance Meas.	41
Compliance Mean	0.00731707
Compliance Std Dev	0.0212714
Background Meas.	41
Background Mean	0.0733659
Background Std Dev	0.0715328

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	12	29.2683	3.008

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	0.0733659	0.0715328	0.0289301	2223	54.2195

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 2	41	36	87.8049	0.3

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 2	0.00731707	0.0212714	-0.0660488	0.011655	1180	28.7805

Analysis of Variance Statistics

SS Wells	0.08943
SS Total	0.312206

Kruskal-Wallis Statistics

Non-Detect Rank	24.5
Background Rank Sum	2223
Background Rank Mean	54.2195
H Statistic	23.3907
H Adjusted for Ties	29.2575

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 48
Non detect rank is 24.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.11	71
	5/8/2013	0.063	61
	9/23/2013	0.053	58
	12/10/2013	0.21	81
	2/6/2014	0.11	72
	6/26/2014	ND<0	24.5
	9/30/2014	0.044	53
	11/19/2014	0.27	82
	3/23/2015	0.073	64
	4/22/2015	0.039	52
	9/30/2015	0.052	57
	11/19/2015	0.084	67
	3/15/2016	0.047	55
	6/29/2016	0.18	77
	8/9/2016	0.089	69
	12/7/2016	0.209	80
	3/2/2017	0.127	75
	6/29/2017	0.028	49
	8/16/2017	ND<0	24.5
	10/25/2017	0.121	73
	3/28/2018	0.106	70
	6/29/2018	0.121	74
	8/2/2018	0.145	76
	12/10/2018	ND<0	24.5
	4/15/2019	0.063	62
	6/12/2019	ND<0	24.5
	8/27/2019	ND<0	24.5
	10/29/2019	0.049	56
	3/30/2020	ND<0	24.5
	6/16/2020	0.031	51
	9/21/2020	ND<0	24.5
	12/17/2020	0.072	63
	3/18/2021	ND<0	24.5
	5/5/2021	ND<0	24.5
	9/2/2021	0.19	78
	11/23/2021	0.076	65
	1/11/2022	0.054	59
	4/7/2022	0.192	79
	8/2/2022	ND<0	24.5
	11/16/2022	ND<0	24.5
	2/14/2023	ND<0	24.5
RC 2	3/12/2013	0.088	68
	5/8/2013	ND<0	24.5
	9/23/2013	ND<0	24.5

12/10/2013	0.062	60
2/6/2014	ND<0	24.5
6/26/2014	ND<0	24.5
9/30/2014	ND<0	24.5
11/19/2014	ND<0	24.5
3/23/2015	0.044	54
4/22/2015	ND<0	24.5
9/30/2015	ND<0	24.5
11/19/2015	ND<0	24.5
3/15/2016	ND<0	24.5
6/29/2016	0.077	66
8/9/2016	ND<0	24.5
12/7/2016	ND<0	24.5
3/2/2017	ND<0	24.5
6/21/2017	ND<0	24.5
8/17/2017	ND<0	24.5
10/26/2017	ND<0	24.5
3/27/2018	ND<0	24.5
6/26/2018	ND<0	24.5
8/1/2018	ND<0	24.5
12/11/2018	ND<0	24.5
4/17/2019	ND<0	24.5
6/11/2019	ND<0	24.5
8/28/2019	ND<0	24.5
10/28/2019	ND<0	24.5
3/31/2020	0.029	50
6/10/2020	ND<0	24.5
9/21/2020	ND<0	24.5
12/17/2020	ND<0	24.5
3/18/2021	ND<0	24.5
5/5/2021	ND<0	24.5
9/2/2021	ND<0	24.5
11/23/2021	ND<0	24.5
1/10/2022	ND<0	24.5
4/7/2022	ND<0	24.5
8/3/2022	ND<0	24.5
11/16/2022	ND<0	24.5
2/13/2023	ND<0	24.5

The Wilcoxon Statistic is 319
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -4.84104
The Standard Deviation adjusted for ties is 96.4131
The Z Score adjusted for ties is -5.4142
-4.84104 < 2.326 indicating no statistical significance at 1% level
-5.4142 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: pH

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

Total Measurements	80
Total Non-Detects	0 (0%)
Pooled Mean	7.65063
Pooled Std Dev	0.734696
Compliance Meas.	39
Compliance Mean	7.37513
Compliance Std Dev	0.864316
Background Meas.	41
Background Mean	7.91268
Background Std Dev	0.460413

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	0	0	324.42

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	7.91268	0.460413	0.175176	1968	48

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 2	39	0	0	287.63

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 2	7.37513	0.864316	-0.537555	0.153777	1272	32.6154

Analysis of Variance Statistics

SS Wells	5.77569
SS Total	42.6425

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1968
Background Rank Mean	48
H Statistic	8.76068
H Adjusted for Ties	8.76068

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	8.19	67
	5/8/2013	7.64	31
	9/23/2013	8.26	70
	12/10/2013	8.05	61
	2/6/2014	7.22	10
	6/26/2014	8.49	76
	9/30/2014	8.25	69
	11/19/2014	8.31	73
	3/23/2015	8.26	71
	4/22/2015	7.14	9
	9/30/2015	8.34	74
	11/19/2015	7.92	55
	3/15/2016	8.44	75
	6/29/2016	8.8	79
	8/9/2016	8.55	77
	12/7/2016	7.96	58
	3/2/2017	7.75	39
	6/29/2017	9.11	80
	8/16/2017	8.12	65
	10/25/2017	8.02	60
	3/28/2018	8.1	63
	6/29/2018	7.84	43
	8/2/2018	7.48	25
	12/10/2018	7.45	23
	4/15/2019	7.89	47
	6/12/2019	7.34	16
	8/27/2019	7.45	24
	10/29/2019	7.95	57
	3/30/2020	7.35	17
	6/16/2020	8.58	78
	9/21/2020	7.71	36
	12/17/2020	7.66	34
	3/18/2021	7.24	11
	5/5/2021	7.43	22
	9/2/2021	7.8	42
	11/23/2021	7.91	51
	1/11/2022	7.55	27
	4/7/2022	7.65	33
	8/2/2022	8.1	64
	11/16/2022	7.86	44
	2/14/2023	7.26	12
RC 2	3/12/2013	7.73	38
	5/8/2013	6.16	5
	9/23/2013	6.24	6

12/10/2013	6.07	4
2/6/2014	3.89	1
6/26/2014	7.9	48
9/30/2014	7.27	13
11/19/2014	5.65	2
3/23/2015	8.23	68
4/22/2015	7.64	32
9/30/2015	5.93	3
11/19/2015	7.36	19
3/15/2016	7.62	30
6/29/2016	7.78	41
8/9/2016	8.12	66
12/7/2016	7.86	45
3/2/2017	7.71	37
6/21/2017	7.91	52
8/17/2017	8.08	62
10/26/2017	7.57	29
3/27/2018	7.91	53
6/26/2018	7.94	56
8/1/2018	7.4	20
12/11/2018	7.54	26
4/17/2019	7.77	40
6/11/2019	6.83	7
8/2/2019	8.01	59
10/28/2019	7.55	28
3/31/2020	7.9	49
6/10/2020	7.87	46
12/17/2020	7.91	54
3/18/2021	7.9	50
5/5/2021	7.31	15
11/23/2021	7.66	35
1/10/2022	7.27	14
4/7/2022	7.41	21
8/3/2022	8.26	72
11/16/2022	7.35	18
2/13/2023	7.12	8

The Wilcoxon Statistic is 492
The Expected value is is 799.5
The Standard Deviation is 103.891
The Z Score is -2.96466
The Standard Deviation adjusted for ties is 103.891
The Z Score adjusted for ties is -2.96466
-2.96466 < 2.326 indicating no statistical significance at 1% level
-2.96466 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	81
Total Non-Detects	0 (0%)
Pooled Mean	18.1374
Pooled Std Dev	7.11272
Compliance Meas.	41
Compliance Mean	17.3341
Compliance Std Dev	6.97965
Background Meas.	40
Background Mean	18.9608
Background Std Dev	7.2414

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	40	0	0	758.43

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	18.9608	7.2414	1.46933	1758	43.95

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 2	41	0	0	710.7

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 2	17.3341	6.97965	-1.6266	1.58014	1563	38.122

Analysis of Variance Statistics

SS Wells	53.5701
SS Total	4047.27

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1758
Background Rank Mean	43.95
H Statistic	1.24247
H Adjusted for Ties	1.24247

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	13.1	24
	5/8/2013	16	34
	9/23/2013	27.7	73
	12/10/2013	7.6	5
	2/6/2014	5.9	3
	9/30/2014	24.67	60
	11/19/2014	7.8	7
	3/23/2015	17.3	39
	4/22/2015	18.5	46
	9/30/2015	26.4	67
	11/19/2015	15.9	33
	3/15/2016	18.3	44
	6/29/2016	30.67	81
	8/9/2016	28.87	78
	12/7/2016	11.98	18
	3/2/2017	12.34	21
	6/29/2017	25.8	64
	8/16/2017	29.7	80
	10/25/2017	17.3	40
	3/28/2018	17.6	42
	6/29/2018	26.2	66
	8/2/2018	23.9	59
	12/10/2018	8	8
	4/15/2019	19.7	50
	6/12/2019	27.2	72
	8/27/2019	28.8	77
	10/29/2019	17.6	43
	3/30/2020	19.3	49
	6/16/2020	27	70
	9/21/2020	22.2	52
	12/17/2020	9.2	12
	3/18/2021	15.7	31
	5/5/2021	20.1	51
	9/2/2021	25.8	65
	11/23/2021	12.4	22
	1/11/2022	10.2	13
	4/7/2022	17.2	38
	8/2/2022	29.2	79
	11/16/2022	14.3	26
	2/14/2023	11	16
RC 2	3/12/2013	10.53	14
	5/8/2013	16.36	36
	9/23/2013	23.61	57
	12/10/2013	8.38	9

2/6/2014	5.62	1
6/26/2014	24.81	61
9/30/2014	22.25	53
11/19/2014	5.72	2
3/23/2015	16	35
4/22/2015	18.4	45
9/30/2015	23.33	56
11/19/2015	15.29	30
3/15/2016	14.61	27
6/29/2016	28.3	76
8/9/2016	26.5	68
12/7/2016	12	19
3/2/2017	13.1	25
6/21/2017	23.7	58
8/17/2017	27.9	74
10/26/2017	15.2	29
3/27/2018	12.4	23
6/26/2018	26.5	69
8/1/2018	22.4	54
12/11/2018	7.7	6
4/17/2019	18.9	47
6/11/2019	22.96	55
8/28/2019	28	75
10/28/2019	14.9	28
3/31/2020	15.7	32
6/10/2020	25.6	63
9/21/2020	7.03	4
12/17/2020	8.9	11
3/18/2021	16.7	37
5/5/2021	19.1	48
9/2/2021	25	62
11/23/2021	12.2	20
1/10/2022	8.4	10
4/7/2022	17.5	41
8/3/2022	27.1	71
11/16/2022	11.2	17
2/13/2023	10.9	15

The Wilcoxon Statistic is 702
The Expected value is is 820
The Standard Deviation is 105.862
The Z Score is -1.11939
The Standard Deviation adjusted for ties is 105.862
The Z Score adjusted for ties is -1.11939
-1.11939 < 2.326 indicating no statistical significance at 1% level
-1.11939 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	13 (15.8537%)
Pooled Mean	0.427829
Pooled Std Dev	0.277382
Compliance Meas.	41
Compliance Mean	0.459659
Compliance Std Dev	0.232224
Background Meas.	41
Background Mean	0.396
Background Std Dev	0.315912

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	8	19.5122	16.236

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	0.396	0.315912	0.0791446	1508	36.7805

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 2	41	5	12.1951	18.846

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 2	0.459659	0.232224	0.0636585	0.061233	1895	46.2195

Analysis of Variance Statistics

SS Wells	0.0830744
SS Total	6.23222

Kruskal-Wallis Statistics

Non-Detect Rank	7
Background Rank Sum	1508
Background Rank Mean	36.7805
H Statistic	3.22031
H Adjusted for Ties	3.23312

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 13
Non detect rank is 7

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.34	25
	5/8/2013	0.42	39
	9/23/2013	0.8	76
	12/10/2013	0.47	48
	2/6/2014	0.5	52
	6/26/2014	0.31	22
	9/30/2014	0.61	67
	11/19/2014	0.55	63
	3/23/2015	ND<0	7
	4/22/2015	0.38	34
	9/30/2015	0.807	79
	11/19/2015	ND<0	7
	3/15/2016	ND<0	7
	6/29/2016	0.62	69
	8/9/2016	0.547	62
	12/7/2016	0.378	33
	3/2/2017	0.345	27
	6/29/2017	0.53	58
	8/16/2017	0.52	56
	10/25/2017	0.288	18
	3/28/2018	ND<0	7
	6/29/2018	0.67	71
	8/2/2018	0.495	51
	12/10/2018	0.336	24
	4/15/2019	0.36	32
	6/12/2019	ND<0	7
	8/27/2019	0.356	31
	10/29/2019	0.272	14
	3/30/2020	ND<0	7
	6/16/2020	0.485	50
	9/21/2020	ND<0	7
	12/17/2020	0.3	20
	3/18/2021	0.58	66
	5/5/2021	0.402	38
	9/2/2021	0.353	30
	11/23/2021	ND<0	7
	1/11/2022	1.8	82
	4/7/2022	0.544	61
	8/2/2022	0.281	16
	11/16/2022	0.306	21
	2/14/2023	0.281	17
RC 2	3/12/2013	0.75	74
	5/8/2013	0.55	64
	9/23/2013	0.43	40

12/10/2013	0.54	60
2/6/2014	0.43	41
6/26/2014	0.44	45
9/30/2014	0.4	37
11/19/2014	0.43	42
3/23/2015	0.81	80
4/22/2015	ND<0	7
9/30/2015	ND<0	7
11/19/2015	0.753	75
3/15/2016	0.432	43
6/29/2016	0.35	28
8/9/2016	0.454	47
12/7/2016	0.532	59
3/2/2017	0.445	46
6/21/2017	0.505	54
8/17/2017	0.724	72
10/26/2017	0.274	15
3/27/2018	ND<0	7
6/26/2018	0.802	77
8/1/2018	0.506	55
12/11/2018	0.479	49
4/17/2019	0.288	19
6/11/2019	0.52	57
8/28/2019	0.748	73
10/28/2019	ND<0	7
3/31/2020	0.574	65
6/10/2020	0.33	23
9/21/2020	ND<0	7
12/17/2020	0.396	36
3/18/2021	0.611	68
5/5/2021	0.892	81
9/2/2021	0.802	78
11/23/2021	0.34	26
1/10/2022	0.501	53
4/7/2022	0.386	35
8/3/2022	0.352	29
11/16/2022	0.434	44
2/13/2023	0.636	70

The Wilcoxon Statistic is 1034
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is 1.78988
The Standard Deviation adjusted for ties is 107.614
The Z Score adjusted for ties is 1.79344
1.78988 < 2.326 indicating no statistical significance at 1% level
1.79344 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	54 (65.8537%)
Pooled Mean	0.0571707
Pooled Std Dev	0.0864944
Compliance Meas.	41
Compliance Mean	0.0177561
Compliance Std Dev	0.0492726
Background Meas.	41
Background Mean	0.0965854
Background Std Dev	0.0976581

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	18	43.9024	3.96

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	0.0965854	0.0976581	0.0335996	2083	50.8049

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 2	41	36	87.8049	0.728

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 2	0.0177561	0.0492726	-0.0788293	0.0170829	1320	32.1951

Analysis of Variance Statistics

SS Wells	0.127388
SS Total	0.605984

Kruskal-Wallis Statistics

Non-Detect Rank	27.5
Background Rank Sum	2083
Background Rank Mean	50.8049
H Statistic	12.5177
H Adjusted for Ties	17.5203

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 54
Non detect rank is 27.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.11	56
	5/8/2013	ND<0	27.5
	9/23/2013	ND<0	27.5
	12/10/2013	0.26	80
	2/6/2014	0.13	62
	6/26/2014	ND<0	27.5
	9/30/2014	0.11	57
	11/19/2014	0.29	82
	3/23/2015	0.1	55
	4/22/2015	ND<0	27.5
	9/30/2015	0.135	67
	11/19/2015	0.134	65
	3/15/2016	ND<0	27.5
	6/29/2016	0.245	78
	8/9/2016	0.154	71
	12/7/2016	0.271	81
	3/2/2017	0.208	75
	6/29/2017	ND<0	27.5
	8/16/2017	0.111	58
	10/25/2017	0.151	70
	3/28/2018	ND<0	27.5
	6/29/2018	0.241	77
	8/2/2018	0.136	68
	12/10/2018	ND<0	27.5
	4/15/2019	ND<0	27.5
	6/12/2019	ND<0	27.5
	8/27/2019	0.161	72
	10/29/2019	0.134	66
	3/30/2020	ND<0	27.5
	6/16/2020	0.129	61
	9/21/2020	ND<0	27.5
	12/17/2020	ND<0	27.5
	3/18/2021	0.112	59
	5/5/2021	ND<0	27.5
	9/2/2021	0.218	76
	11/23/2021	0.165	73
	1/11/2022	ND<0	27.5
	4/7/2022	0.255	79
	8/2/2022	ND<0	27.5
	11/16/2022	ND<0	27.5
	2/14/2023	ND<0	27.5
RC 2	3/12/2013	ND<0	27.5
	5/8/2013	ND<0	27.5
	9/23/2013	ND<0	27.5

12/10/2013	ND<0	27.5
2/6/2014	ND<0	27.5
6/26/2014	ND<0	27.5
9/30/2014	ND<0	27.5
11/19/2014	ND<0	27.5
3/23/2015	ND<0	27.5
4/22/2015	ND<0	27.5
9/30/2015	ND<0	27.5
11/19/2015	0.133	63
3/15/2016	ND<0	27.5
6/29/2016	ND<0	27.5
8/9/2016	ND<0	27.5
12/7/2016	ND<0	27.5
3/2/2017	ND<0	27.5
6/21/2017	ND<0	27.5
8/17/2017	0.133	64
10/26/2017	ND<0	27.5
3/27/2018	ND<0	27.5
6/26/2018	ND<0	27.5
8/1/2018	ND<0	27.5
12/11/2018	ND<0	27.5
4/17/2019	ND<0	27.5
6/11/2019	ND<0	27.5
8/28/2019	ND<0	27.5
10/28/2019	0.2	74
3/31/2020	0.118	60
6/10/2020	ND<0	27.5
9/21/2020	ND<0	27.5
12/17/2020	ND<0	27.5
3/18/2021	ND<0	27.5
5/5/2021	ND<0	27.5
9/2/2021	ND<0	27.5
11/23/2021	ND<0	27.5
1/10/2022	ND<0	27.5
4/7/2022	0.144	69
8/3/2022	ND<0	27.5
11/16/2022	ND<0	27.5
2/13/2023	ND<0	27.5

The Wilcoxon Statistic is 459
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -3.54267
The Standard Deviation adjusted for ties is 91.143
The Z Score adjusted for ties is -4.19121
-3.54267 < 2.326 indicating no statistical significance at 1% level
-4.19121 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	1 (1.21951%)
Pooled Mean	18.8472
Pooled Std Dev	21.8768
Compliance Meas.	41
Compliance Mean	14.9366
Compliance Std Dev	19.9667
Background Meas.	41
Background Mean	22.7578
Background Std Dev	23.2194

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	0	0	933.07

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	22.7578	23.2194	5.07239	2163	52.7561

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 2	41	1	2.43902	612.4

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 2	14.9366	19.9667	-7.82122	4.78261	1240	30.2439

Analysis of Variance Statistics

SS Wells	1254.02
SS Total	38766.3

Kruskal-Wallis Statistics

Non-Detect Rank	1
Background Rank Sum	2163
Background Rank Mean	52.7561
H Statistic	18.318
H Adjusted for Ties	18.318

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 1
Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	16	53
	5/8/2013	14	45
	9/23/2013	15	49
	12/10/2013	21	67
	2/6/2014	23	68
	6/26/2014	13	40
	9/30/2014	34	74
	11/19/2014	19	62
	3/23/2015	14	46
	4/22/2015	18	59
	9/30/2015	15.3	51
	11/19/2015	23.2	69
	3/15/2016	17.7	57
	6/29/2016	20.3	65
	8/9/2016	12.6	37
	12/7/2016	17.7	58
	3/2/2017	15	50
	6/29/2017	18.3	61
	8/16/2017	12.7	38
	10/25/2017	16.9	54
	3/28/2018	19.8	64
	6/29/2018	23.3	70
	8/2/2018	29.5	72
	12/10/2018	31	73
	4/15/2019	35	76
	6/12/2019	9.67	24
	8/27/2019	7.1	17
	10/29/2019	11	29
	3/30/2020	13.3	42
	6/16/2020	11.4	32
	9/21/2020	9	21
	12/17/2020	20.9	66
	3/18/2021	90.4	81
	5/5/2021	34	75
	9/2/2021	35.8	77
	11/23/2021	12.7	39
	1/11/2022	17	55
	4/7/2022	140	82
	8/2/2022	6.3	15
	11/16/2022	7.9	19
	2/14/2023	11.3	31
RC 2	3/12/2013	14	47
	5/8/2013	12	34
	9/23/2013	6.3	16

12/10/2013	10	26
2/6/2014	9.6	23
6/26/2014	7.2	18
9/30/2014	2.5	2
11/19/2014	11	30
3/23/2015	18	60
4/22/2015	4.8	7
9/30/2015	4.6	6
11/19/2015	14.4	48
3/15/2016	6	14
6/29/2016	10.9	28
8/9/2016	9.9	25
12/7/2016	11.9	33
3/2/2017	8	20
6/21/2017	12.3	35
8/17/2017	72.2	78
10/26/2017	17.5	56
3/27/2018	12.5	36
6/26/2018	13	41
8/1/2018	84.4	79
12/11/2018	3.1	3
4/17/2019	ND<0	1
6/11/2019	5.2	10
8/28/2019	4.8	8
10/28/2019	3.4	4
3/31/2020	90	80
6/10/2020	10.8	27
9/21/2020	5.2	11
12/17/2020	5.4	13
3/18/2021	26.8	71
5/5/2021	15.6	52
9/2/2021	3.4	5
11/23/2021	19.2	63
1/10/2022	9	22
4/7/2022	5	9
8/3/2022	13.8	44
11/16/2022	13.4	43
2/13/2023	5.3	12

The Wilcoxon Statistic is 379
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -4.28459
The Standard Deviation adjusted for ties is 107.828
The Z Score adjusted for ties is -4.28459
-4.28459 < 2.326 indicating no statistical significance at 1% level
-4.28459 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	81
Total Non-Detects	1 (1.23457%)
Pooled Mean	27.3465
Pooled Std Dev	28.1416
Compliance Meas.	40
Compliance Mean	23.944
Compliance Std Dev	22.2969
Background Meas.	41
Background Mean	30.6661
Background Std Dev	32.8072

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	0	0	1257.31

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	30.6661	32.8072	23.2546	1783	43.4878

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
RC 2	40	1	2.5	957.76

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
RC 2	23.944	22.2969	-6.7221	6.24803	1538	38.45

Analysis of Variance Statistics

SS Wells	914.889
SS Total	63356.2

Kruskal-Wallis Statistics

Non-Detect Rank	1
Background Rank Sum	1783
Background Rank Mean	43.4878
H Statistic	0.928376
H Adjusted for Ties	0.928376

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 1
Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	13.1	17
	5/8/2013	24	53
	9/23/2013	14.2	24
	12/10/2013	46.3	72
	2/6/2014	61	75
	6/26/2014	14	20
	9/30/2014	27.6	58
	11/19/2014	40.1	69
	3/23/2015	21	49
	4/22/2015	29	62
	9/30/2015	15	30
	11/19/2015	50	73
	3/15/2016	26.2	56
	6/29/2016	21.2	50
	8/9/2016	15.3	32
	12/7/2016	31	65
	3/2/2017	14	21
	6/29/2017	19.2	43
	8/16/2017	10.6	9
	10/25/2017	5.4	5
	3/28/2018	19.3	44
	6/29/2018	20.7	48
	8/2/2018	28.5	60
	12/10/2018	32	66
	4/15/2019	42.2	70
	6/12/2019	12.2	16
	8/27/2019	135.2	80
	10/29/2019	14.5	28
	3/30/2020	13.3	18
	6/16/2020	11.6	13
	9/21/2020	13.8	19
	12/17/2020	23.19	51
	3/18/2021	14.1	22
	5/5/2021	28.83	61
	9/2/2021	23.89	52
	11/23/2021	18.42	40
	1/11/2022	161.2	81
	4/7/2022	112.9	78
	8/2/2022	12	14
	11/16/2022	5.78	6
	2/14/2023	15.5	33
RC 2	3/12/2013	29.1	63
	5/8/2013	18.9	42
	9/23/2013	11.4	11

12/10/2013	33.6	68
2/6/2014	30.4	64
6/26/2014	17.6	36
9/30/2014	3.37	3
11/19/2014	27.4	57
3/23/2015	45	71
4/22/2015	14.1	23
9/30/2015	7.08	8
11/19/2015	114	79
3/15/2016	14.5	29
6/29/2016	12.1	15
8/9/2016	24.5	54
12/7/2016	17.2	35
3/2/2017	25.3	55
6/21/2017	14.2	25
8/17/2017	18.2	38
10/26/2017	18.1	37
3/27/2018	18.2	39
6/26/2018	18.8	41
8/1/2018	56.8	74
12/11/2018	16	34
4/17/2019	7	7
6/11/2019	14.3	26
8/28/2019	14.4	27
10/28/2019	11.4	12
3/31/2020	84.5	77
6/10/2020	20.5	47
9/21/2020	ND<0.35	1
12/17/2020	28.1	59
3/18/2021	67.5	76
5/5/2021	2.8	2
11/23/2021	3.5	4
1/10/2022	32.1	67
4/7/2022	10.96	10
8/3/2022	15.1	31
11/16/2022	19.4	45
2/13/2023	20	46

The Wilcoxon Statistic is 718
The Expected value is is 820
The Standard Deviation is 105.862
The Z Score is -0.968246
The Standard Deviation adjusted for ties is 105.862
The Z Score adjusted for ties is -0.968246
-0.968246 < 2.326 indicating no statistical significance at 1% level
-0.968246 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	0 (0%)
Pooled Mean	8.80336
Pooled Std Dev	3.06842
Compliance Meas.	41
Compliance Mean	9.19405
Compliance Std Dev	3.87545
Background Meas.	41
Background Mean	8.41268
Background Std Dev	1.93228

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	0	0	344.92

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	8.41268	1.93228	0.612695	1603	39.0976

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 8	41	0	0	376.956

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 8	9.19405	3.87545	0.781363	0.676304	1800	43.9024

Analysis of Variance Statistics

SS Wells	12.5158
SS Total	762.63

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1603
Background Rank Mean	39.0976
H Statistic	0.834465
H Adjusted for Ties	0.834465

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	8.26	36
	5/8/2013	8.96	44
	9/23/2013	7.87	29
	12/10/2013	9.15	46
	2/6/2014	11.34	69
	6/26/2014	7.05	24
	9/30/2014	7.46	28
	11/19/2014	10.86	66
	3/23/2015	8.52	39
	4/22/2015	7.97	31
	9/30/2015	7.03	22
	11/19/2015	7.04	23
	3/15/2016	7.21	26
	6/29/2016	3.29	3
	8/9/2016	4.98	6
	12/7/2016	10.2	62
	3/2/2017	4.31	5
	6/29/2017	9.21	48
	8/16/2017	6.58	16
	10/25/2017	8.32	37
	3/28/2018	9.18	47
	6/29/2018	6.37	14
	8/2/2018	5.82	9
	12/10/2018	11.48	71
	4/15/2019	7.89	30
	6/12/2019	8.73	42
	8/27/2019	8.51	38
	10/29/2019	9.21	49
	3/30/2020	8.61	41
	6/16/2020	10.36	63
	9/21/2020	6.92	19
	12/17/2020	10.68	64
	3/18/2021	9.54	56
	5/5/2021	8.53	40
	9/2/2021	6.93	20
	11/23/2021	11.34	70
	1/11/2022	11.29	68
	4/7/2022	9.26	50
	8/2/2022	7.98	32
	11/16/2022	9.45	53
	2/14/2023	11.23	67
GD 8	3/12/2013	11.73	76
	5/8/2013	1.72	1
	9/23/2013	3.9759	4

12/10/2013	13.33	79
2/6/2014	16.32	80
6/26/2014	6.64	18
9/30/2014	5.06	7
11/19/2014	9.01	45
3/23/2015	9.76	59
4/22/2015	11.71	74
9/30/2015	9.48	54
11/19/2015	23.3	82
3/15/2016	16.81	81
6/29/2016	6.6	17
8/9/2016	5.87	10
12/7/2016	8.84	43
3/2/2017	9.76	60
6/21/2017	6.5	15
8/17/2017	6.3	12
10/26/2017	8.25	35
3/27/2018	9.52	55
6/26/2018	5.74	8
8/1/2018	7.39	27
12/11/2018	11.71	75
4/17/2019	9.3	51
6/11/2019	2.94	2
8/28/2019	6.07	11
10/28/2019	8.22	34
3/31/2020	9.3	52
6/10/2020	7.13	25
9/21/2020	6.36	13
12/17/2020	11.68	73
3/18/2021	11.53	72
5/5/2021	9.62	57
9/2/2021	8.04	33
11/23/2021	10.73	65
1/10/2022	12.25	78
4/7/2022	9.94	61
8/3/2022	6.97	21
11/16/2022	9.74	58
2/13/2023	11.81	77

The Wilcoxon Statistic is 939
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is 0.908853
The Standard Deviation adjusted for ties is 107.828
The Z Score adjusted for ties is 0.908853
0.908853 < 2.326 indicating no statistical significance at 1% level
0.908853 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	20 (24.3902%)
Pooled Mean	0.405024
Pooled Std Dev	1.16596
Compliance Meas.	41
Compliance Mean	0.355146
Compliance Std Dev	1.07425
Background Meas.	41
Background Mean	0.454902
Background Std Dev	1.26245

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	15	36.5854	18.651

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	0.454902	1.26245	0.25099	1809.5	44.1341

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 8	41	5	12.1951	14.561

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 8	0.355146	1.07425	-0.0997561	0.258882	1593.5	38.8659

Analysis of Variance Statistics

SS Wells	0.204001
SS Total	110.116

Kruskal-Wallis Statistics

Non-Detect Rank	10.5
Background Rank Sum	1809.5
Background Rank Mean	44.1341
H Statistic	1.00319
H Adjusted for Ties	1.01792

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 20
Non detect rank is 10.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.54	73
	5/8/2013	0.15	32
	9/23/2013	ND<0	10.5
	12/10/2013	0.55	74
	2/6/2014	0.55	75
	6/26/2014	ND<0	10.5
	9/30/2014	ND<0	10.5
	11/19/2014	0.74	80
	3/23/2015	0.51	72
	4/22/2015	0.4	64
	9/30/2015	ND<0	10.5
	11/19/2015	0.401	65
	3/15/2016	0.454	69
	6/29/2016	ND<0	10.5
	8/9/2016	ND<0	10.5
	12/7/2016	0.413	66
	3/2/2017	0.671	79
	6/29/2017	ND<0	10.5
	8/16/2017	ND<0	10.5
	10/25/2017	0.368	61
	3/28/2018	0.633	78
	6/29/2018	0.312	59
	8/2/2018	0.296	57
	12/10/2018	0.259	52
	4/15/2019	0.39	63
	6/12/2019	ND<0	10.5
	8/27/2019	ND<0	10.5
	10/29/2019	0.129	26
	3/30/2020	0.462	71
	6/16/2020	ND<0	10.5
	9/21/2020	ND<0	10.5
	12/17/2020	0.577	77
	3/18/2021	0.263	53
	5/5/2021	0.122	25
	9/2/2021	0.458	70
	11/23/2021	ND<0	10.5
	1/11/2022	8.2	82
	4/7/2022	0.431	67
	8/2/2022	ND<0	10.5
	11/16/2022	ND<0	10.5
	2/14/2023	0.372	62
GD 8	3/12/2013	0.13	27
	5/8/2013	0.11	22
	9/23/2013	ND<0	10.5

12/10/2013	0.28	55
2/6/2014	0.25	50
6/26/2014	0.25	51
9/30/2014	0.14	31
11/19/2014	0.23	46
3/23/2015	0.22	44
4/22/2015	0.16	34
9/30/2015	0.184	38
11/19/2015	0.233	47
3/15/2016	0.131	28
6/29/2016	ND<0	10.5
8/9/2016	0.217	43
12/7/2016	0.308	58
3/2/2017	0.284	56
6/21/2017	ND<0	10.5
8/17/2017	0.132	29
10/26/2017	ND<0	10.5
3/27/2018	0.215	42
6/26/2018	0.15	33
8/1/2018	0.556	76
12/11/2018	0.326	60
4/17/2019	0.115	23
6/11/2019	0.181	37
8/28/2019	0.212	41
10/28/2019	0.435	68
3/31/2020	0.133	30
6/10/2020	0.211	40
9/21/2020	0.171	35
12/17/2020	0.273	54
3/18/2021	0.178	36
5/5/2021	7.03	81
9/2/2021	0.241	49
11/23/2021	ND<0	10.5
1/10/2022	0.222	45
4/7/2022	0.12	24
8/3/2022	0.189	39
11/16/2022	0.107	21
2/13/2023	0.237	48

The Wilcoxon Statistic is 732.5
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -1.00623
The Standard Deviation adjusted for ties is 107.045
The Z Score adjusted for ties is -1.01359
-1.00623 < 2.326 indicating no statistical significance at 1% level
-1.01359 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	50 (60.9756%)
Pooled Mean	0.0384512
Pooled Std Dev	0.0620631
Compliance Meas.	41
Compliance Mean	0.00353659
Compliance Std Dev	0.0135648
Background Meas.	41
Background Mean	0.0733659
Background Std Dev	0.0715328

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	12	29.2683	3.008

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	0.0733659	0.0715328	0.0289301	2261	55.1463

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 8	41	38	92.6829	0.145

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 8	0.00353659	0.0135648	-0.0698293	0.0113706	1142	27.8537

Analysis of Variance Statistics

SS Wells	0.0999606
SS Total	0.311998

Kruskal-Wallis Statistics

Non-Detect Rank	25.5
Background Rank Sum	2261
Background Rank Mean	55.1463
H Statistic	26.9238
H Adjusted for Ties	34.8145

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 50
Non detect rank is 25.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.11	71
	5/8/2013	0.063	62
	9/23/2013	0.053	60
	12/10/2013	0.21	81
	2/6/2014	0.11	72
	6/26/2014	ND<0	25.5
	9/30/2014	0.044	56
	11/19/2014	0.27	82
	3/23/2015	0.073	66
	4/22/2015	0.039	54
	9/30/2015	0.052	59
	11/19/2015	0.084	68
	3/15/2016	0.047	57
	6/29/2016	0.18	77
	8/9/2016	0.089	69
	12/7/2016	0.209	80
	3/2/2017	0.127	75
	6/29/2017	0.028	51
	8/16/2017	ND<0	25.5
	10/25/2017	0.121	73
	3/28/2018	0.106	70
	6/29/2018	0.121	74
	8/2/2018	0.145	76
	12/10/2018	ND<0	25.5
	4/15/2019	0.063	63
	6/12/2019	ND<0	25.5
	8/27/2019	ND<0	25.5
	10/29/2019	0.049	58
	3/30/2020	ND<0	25.5
	6/16/2020	0.031	52
	9/21/2020	ND<0	25.5
	12/17/2020	0.072	64
	3/18/2021	ND<0	25.5
	5/5/2021	ND<0	25.5
	9/2/2021	0.19	78
	11/23/2021	0.076	67
	1/11/2022	0.054	61
	4/7/2022	0.192	79
	8/2/2022	ND<0	25.5
	11/16/2022	ND<0	25.5
	2/14/2023	ND<0	25.5
GD 8	3/12/2013	ND<0	25.5
	5/8/2013	ND<0	25.5
	9/23/2013	ND<0	25.5

12/10/2013	0.04	55
2/6/2014	ND<0	25.5
6/26/2014	ND<0	25.5
9/30/2014	ND<0	25.5
11/19/2014	ND<0	25.5
3/23/2015	ND<0	25.5
4/22/2015	ND<0	25.5
9/30/2015	ND<0	25.5
11/19/2015	ND<0	25.5
3/15/2016	ND<0	25.5
6/29/2016	ND<0	25.5
8/9/2016	ND<0	25.5
12/7/2016	ND<0	25.5
3/2/2017	ND<0	25.5
6/21/2017	ND<0	25.5
8/17/2017	ND<0	25.5
10/26/2017	ND<0	25.5
3/27/2018	ND<0	25.5
6/26/2018	ND<0	25.5
8/1/2018	0.072	65
12/11/2018	ND<0	25.5
4/17/2019	ND<0	25.5
6/11/2019	ND<0	25.5
8/28/2019	ND<0	25.5
10/28/2019	ND<0	25.5
3/31/2020	ND<0	25.5
6/10/2020	ND<0	25.5
9/21/2020	ND<0	25.5
12/17/2020	ND<0	25.5
3/18/2021	ND<0	25.5
5/5/2021	ND<0	25.5
9/2/2021	ND<0	25.5
11/23/2021	ND<0	25.5
1/10/2022	ND<0	25.5
4/7/2022	ND<0	25.5
8/3/2022	ND<0	25.5
11/16/2022	0.033	53
2/13/2023	ND<0	25.5

The Wilcoxon Statistic is 281
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -5.19345
The Standard Deviation adjusted for ties is 94.8243
The Z Score adjusted for ties is -5.90566
-5.19345 < 2.326 indicating no statistical significance at 1% level
-5.90566 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	81
Total Non-Detects	0 (0%)
Pooled Mean	7.80025
Pooled Std Dev	0.767966
Compliance Meas.	40
Compliance Mean	7.685
Compliance Std Dev	0.982579
Background Meas.	41
Background Mean	7.91268
Background Std Dev	0.460413

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	0	0	324.42

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	7.91268	0.460413	0.175176	1696	41.3659

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 8	40	0	0	307.4

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 8	7.685	0.982579	-0.227683	0.169828	1625	40.625

Analysis of Variance Statistics

SS Wells	1.04959
SS Total	47.1818

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1696
Background Rank Mean	41.3659
H Statistic	0.0200773
H Adjusted for Ties	0.0200773

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	8.19	58
	5/8/2013	7.64	24
	9/23/2013	8.26	63
	12/10/2013	8.05	49
	2/6/2014	7.22	10
	6/26/2014	8.49	71
	9/30/2014	8.25	62
	11/19/2014	8.31	67
	3/23/2015	8.26	64
	4/22/2015	7.14	8
	9/30/2015	8.34	68
	11/19/2015	7.92	41
	3/15/2016	8.44	69
	6/29/2016	8.8	79
	8/9/2016	8.55	74
	12/7/2016	7.96	43
	3/2/2017	7.75	29
	6/29/2017	9.11	81
	8/16/2017	8.12	54
	10/25/2017	8.02	47
	3/28/2018	8.1	52
	6/29/2018	7.84	34
	8/2/2018	7.48	21
	12/10/2018	7.45	19
	4/15/2019	7.89	39
	6/12/2019	7.34	14
	8/27/2019	7.45	20
	10/29/2019	7.95	42
	3/30/2020	7.35	15
	6/16/2020	8.58	76
	9/21/2020	7.71	28
	12/17/2020	7.66	27
	3/18/2021	7.24	11
	5/5/2021	7.43	18
	9/2/2021	7.8	32
	11/23/2021	7.91	40
	1/11/2022	7.55	22
	4/7/2022	7.65	25
	8/2/2022	8.1	53
	11/16/2022	7.86	35
	2/14/2023	7.26	12
GD 8	3/12/2013	7.65	26
	5/8/2013	6.71	5
	9/23/2013	6.22	4

12/10/2013	6.04	3
2/6/2014	3.87	1
6/26/2014	8.19	59
9/30/2014	7.32	13
11/19/2014	5.16	2
3/23/2015	8.67	77
4/22/2015	7.4	17
9/30/2015	7.79	31
11/19/2015	6.94	7
3/15/2016	7.88	38
6/29/2016	8.5	72
8/9/2016	8.9	80
12/7/2016	7.75	30
3/2/2017	8.14	55
6/21/2017	8.73	78
8/17/2017	8.55	75
10/26/2017	8.17	57
3/27/2018	8.09	51
6/26/2018	8.5	73
8/1/2018	6.89	6
12/11/2018	7.87	36
4/17/2019	8.05	50
6/11/2019	7.19	9
8/28/2019	8.26	65
10/28/2019	7.83	33
3/31/2020	7.97	44
6/10/2020	7.97	45
9/21/2020	8.19	60
12/17/2020	8.3	66
3/18/2021	8.45	70
5/5/2021	8.01	46
11/23/2021	8.04	48
1/10/2022	7.6	23
4/7/2022	7.87	37
8/3/2022	8.14	56
11/16/2022	8.21	61
2/13/2023	7.39	16

The Wilcoxon Statistic is 805
The Expected value is is 820
The Standard Deviation is 105.862
The Z Score is -0.146418
The Standard Deviation adjusted for ties is 105.862
The Z Score adjusted for ties is -0.146418
-0.146418 < 2.326 indicating no statistical significance at 1% level
-0.146418 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	80
Total Non-Detects	0 (0%)
Pooled Mean	18.6208
Pooled Std Dev	7.24269
Compliance Meas.	40
Compliance Mean	18.2807
Compliance Std Dev	7.32004
Background Meas.	40
Background Mean	18.9608
Background Std Dev	7.2414

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	40	0	0	758.43

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	18.9608	7.2414	1.46933	1671	41.775

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 8	40	0	0	731.23

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 8	18.2807	7.32004	-0.68	1.62804	1569	39.225

Analysis of Variance Statistics

SS Wells	9.248
SS Total	4144.06

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1671
Background Rank Mean	41.775
H Statistic	0.240833
H Adjusted for Ties	0.240833

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	13.1	24
	5/8/2013	16	30
	9/23/2013	27.7	69
	12/10/2013	7.6	4
	2/6/2014	5.9	2
	9/30/2014	24.67	58
	11/19/2014	7.8	5
	3/23/2015	17.3	38
	4/22/2015	18.5	45
	9/30/2015	26.4	66
	11/19/2015	15.9	29
	3/15/2016	18.3	44
	6/29/2016	30.67	80
	8/9/2016	28.87	72
	12/7/2016	11.98	16
	3/2/2017	12.34	21
	6/29/2017	25.8	61
	8/16/2017	29.7	77
	10/25/2017	17.3	39
	3/28/2018	17.6	40
	6/29/2018	26.2	65
	8/2/2018	23.9	55
	12/10/2018	8	6
	4/15/2019	19.7	48
	6/12/2019	27.2	68
	8/27/2019	28.8	71
	10/29/2019	17.6	41
	3/30/2020	19.3	47
	6/16/2020	27	67
	9/21/2020	22.2	50
	12/17/2020	9.2	8
	3/18/2021	15.7	28
	5/5/2021	20.1	49
	9/2/2021	25.8	62
	11/23/2021	12.4	22
	1/11/2022	10.2	13
	4/7/2022	17.2	37
	8/2/2022	29.2	75
	11/16/2022	14.3	25
	2/14/2023	11	14
GD 8	3/12/2013	9.85	12
	5/8/2013	14.47	26
	9/23/2013	22.74	51
	12/10/2013	8.1	7

2/6/2014	6.48	3
6/26/2014	26.15	64
9/30/2014	23.19	54
11/19/2014	5.87	1
4/22/2015	17.7	43
9/30/2015	24.33	56
11/19/2015	15.13	27
3/15/2016	16.98	36
6/29/2016	29.3	76
8/9/2016	28.9	73
12/7/2016	12.1	17
3/2/2017	12.2	19
6/21/2017	25	60
8/17/2017	28.7	70
10/26/2017	16.3	32
3/27/2018	12.1	18
6/26/2018	29.7	78
8/1/2018	22.9	53
12/11/2018	9.2	9
4/17/2019	17.6	42
6/11/2019	25.84	63
8/28/2019	30.2	79
10/28/2019	16.2	31
3/31/2020	16.6	34
6/10/2020	24.9	59
9/21/2020	22.8	52
12/17/2020	9.4	11
3/18/2021	16.5	33
5/5/2021	18.5	46
9/2/2021	24.5	57
11/23/2021	12.5	23
1/10/2022	9.2	10
4/7/2022	16.8	35
8/3/2022	29	74
11/16/2022	12.2	20
2/13/2023	11.1	15

The Wilcoxon Statistic is 749
The Expected value is is 800
The Standard Deviation is 103.923
The Z Score is -0.495559
The Standard Deviation adjusted for ties is 103.923
The Z Score adjusted for ties is -0.495559
-0.495559 < 2.326 indicating no statistical significance at 1% level
-0.495559 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	14 (17.0732%)
Pooled Mean	0.400765
Pooled Std Dev	0.283178
Compliance Meas.	41
Compliance Mean	0.405529
Compliance Std Dev	0.250074
Background Meas.	41
Background Mean	0.396
Background Std Dev	0.315912

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	8	19.5122	16.236

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	0.396	0.315912	0.0791446	1656	40.3902

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 8	41	6	14.6341	16.6267

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 8	0.405529	0.250074	0.00952927	0.0629243	1747	42.6098

Analysis of Variance Statistics

SS Wells	0.00186154
SS Total	6.49538

Kruskal-Wallis Statistics

Non-Detect Rank	7.5
Background Rank Sum	1656
Background Rank Mean	40.3902
H Statistic	0.178057
H Adjusted for Ties	0.178943

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 14
Non detect rank is 7.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.34	30
	5/8/2013	0.42	48
	9/23/2013	0.8	77
	12/10/2013	0.47	52
	2/6/2014	0.5	60
	6/26/2014	0.31	26
	9/30/2014	0.61	68
	11/19/2014	0.55	66
	3/23/2015	ND<0	7.5
	4/22/2015	0.38	41
	9/30/2015	0.807	78
	11/19/2015	ND<0	7.5
	3/15/2016	ND<0	7.5
	6/29/2016	0.62	70
	8/9/2016	0.547	65
	12/7/2016	0.378	40
	3/2/2017	0.345	32
	6/29/2017	0.53	62
	8/16/2017	0.52	61
	10/25/2017	0.288	22
	3/28/2018	ND<0	7.5
	6/29/2018	0.67	74
	8/2/2018	0.495	59
	12/10/2018	0.336	29
	4/15/2019	0.36	39
	6/12/2019	ND<0	7.5
	8/27/2019	0.356	38
	10/29/2019	0.272	18
	3/30/2020	ND<0	7.5
	6/16/2020	0.485	58
	9/21/2020	ND<0	7.5
	12/17/2020	0.3	24
	3/18/2021	0.58	67
	5/5/2021	0.402	43
	9/2/2021	0.353	37
	11/23/2021	ND<0	7.5
	1/11/2022	1.8	82
	4/7/2022	0.544	64
	8/2/2022	0.281	20
	11/16/2022	0.306	25
	2/14/2023	0.281	21
GD 8	3/12/2013	0.25	16
	5/8/2013	0.38	42
	9/23/2013	0.41	47

12/10/2013	0.35	36
2/6/2014	0.13	15
6/26/2014	0.48	56
9/30/2014	0.42	49
11/19/2014	0.32	28
3/23/2015	ND<0	7.5
4/22/2015	ND<0	7.5
9/30/2015	0.483	57
11/19/2015	0.852	79
3/15/2016	0.47	53
6/29/2016	0.45	51
8/9/2016	0.668	73
12/7/2016	0.409	46
3/2/2017	0.342	31
6/21/2017	0.642	72
8/17/2017	0.541	63
10/26/2017	0.347	33
3/27/2018	ND<0	7.5
6/26/2018	0.67	75
8/1/2018	0.641	71
12/11/2018	0.406	44
4/17/2019	0.437	50
6/11/2019	0.948	80
8/28/2019	0.992	81
10/28/2019	0.255	17
3/31/2020	0.348	34
6/10/2020	ND<0	7.5
9/21/2020	0.29	23
12/17/2020	ND<0	7.5
3/18/2021	0.312	27
5/5/2021	0.796	76
9/2/2021	0.611	69
11/23/2021	ND<0	7.5
1/10/2022	0.2777	19
4/7/2022	0.349	35
8/3/2022	0.406	45
11/16/2022	0.472	54
2/13/2023	0.472	55

The Wilcoxon Statistic is 886
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is 0.417331
The Standard Deviation adjusted for ties is 107.561
The Z Score adjusted for ties is 0.418368
0.417331 < 2.326 indicating no statistical significance at 1% level
0.418368 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	54 (65.8537%)
Pooled Mean	0.0553293
Pooled Std Dev	0.0846283
Compliance Meas.	41
Compliance Mean	0.0140732
Compliance Std Dev	0.0384268
Background Meas.	41
Background Mean	0.0965854
Background Std Dev	0.0976581

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	18	43.9024	3.96

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	0.0965854	0.0976581	0.0335996	2109	51.439

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 8	41	36	87.8049	0.577

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 8	0.0140732	0.0384268	-0.0825122	0.0163899	1294	31.561

Analysis of Variance Statistics

SS Wells	0.139569
SS Total	0.580118

Kruskal-Wallis Statistics

Non-Detect Rank	27.5
Background Rank Sum	2109
Background Rank Mean	51.439
H Statistic	14.2821
H Adjusted for Ties	19.9898

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 54
Non detect rank is 27.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.11	58
	5/8/2013	ND<0	27.5
	9/23/2013	ND<0	27.5
	12/10/2013	0.26	80
	2/6/2014	0.13	65
	6/26/2014	ND<0	27.5
	9/30/2014	0.11	59
	11/19/2014	0.29	82
	3/23/2015	0.1	55
	4/22/2015	ND<0	27.5
	9/30/2015	0.135	69
	11/19/2015	0.134	67
	3/15/2016	ND<0	27.5
	6/29/2016	0.245	78
	8/9/2016	0.154	72
	12/7/2016	0.271	81
	3/2/2017	0.208	75
	6/29/2017	ND<0	27.5
	8/16/2017	0.111	60
	10/25/2017	0.151	71
	3/28/2018	ND<0	27.5
	6/29/2018	0.241	77
	8/2/2018	0.136	70
	12/10/2018	ND<0	27.5
	4/15/2019	ND<0	27.5
	6/12/2019	ND<0	27.5
	8/27/2019	0.161	73
	10/29/2019	0.134	68
	3/30/2020	ND<0	27.5
	6/16/2020	0.129	64
	9/21/2020	ND<0	27.5
	12/17/2020	ND<0	27.5
	3/18/2021	0.112	61
	5/5/2021	ND<0	27.5
	9/2/2021	0.218	76
	11/23/2021	0.165	74
	1/11/2022	ND<0	27.5
	4/7/2022	0.255	79
	8/2/2022	ND<0	27.5
	11/16/2022	ND<0	27.5
	2/14/2023	ND<0	27.5
GD 8	3/12/2013	ND<0	27.5
	5/8/2013	ND<0	27.5
	9/23/2013	ND<0	27.5

12/10/2013	ND<0	27.5
2/6/2014	ND<0	27.5
6/26/2014	ND<0	27.5
9/30/2014	ND<0	27.5
11/19/2014	ND<0	27.5
3/23/2015	ND<0	27.5
4/22/2015	ND<0	27.5
9/30/2015	ND<0	27.5
11/19/2015	0.1	56
3/15/2016	ND<0	27.5
6/29/2016	ND<0	27.5
8/9/2016	ND<0	27.5
12/7/2016	ND<0	27.5
3/2/2017	ND<0	27.5
6/21/2017	ND<0	27.5
8/17/2017	ND<0	27.5
10/26/2017	ND<0	27.5
3/27/2018	ND<0	27.5
6/26/2018	ND<0	27.5
8/1/2018	0.114	62
12/11/2018	ND<0	27.5
4/17/2019	ND<0	27.5
6/11/2019	ND<0	27.5
8/28/2019	ND<0	27.5
10/28/2019	0.109	57
3/31/2020	0.132	66
6/10/2020	ND<0	27.5
9/21/2020	ND<0	27.5
12/17/2020	ND<0	27.5
3/18/2021	ND<0	27.5
5/5/2021	ND<0	27.5
9/2/2021	ND<0	27.5
11/23/2021	ND<0	27.5
1/10/2022	0.122	63
4/7/2022	ND<0	27.5
8/3/2022	ND<0	27.5
11/16/2022	ND<0	27.5
2/13/2023	ND<0	27.5

The Wilcoxon Statistic is 433
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -3.7838
The Standard Deviation adjusted for ties is 91.143
The Z Score adjusted for ties is -4.47648
-3.7838 < 2.326 indicating no statistical significance at 1% level
-4.47648 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	82
Total Non-Detects	2 (2.43902%)
Pooled Mean	19.451
Pooled Std Dev	22.0319
Compliance Meas.	41
Compliance Mean	16.1441
Compliance Std Dev	20.5278
Background Meas.	41
Background Mean	22.7578
Background Std Dev	23.2194

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	0	0	933.07

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	22.7578	23.2194	5.07239	2076	50.6341

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 8	41	2	4.87805	661.91

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 8	16.1441	20.5278	-6.61366	4.84021	1327	32.3659

Analysis of Variance Statistics

SS Wells	896.68
SS Total	39317.9

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	2076
Background Rank Mean	50.6341
H Statistic	12.0625
H Adjusted for Ties	12.0627

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	16	49
	5/8/2013	14	43
	9/23/2013	15	45
	12/10/2013	21	64
	2/6/2014	23	65
	6/26/2014	13	39
	9/30/2014	34	72
	11/19/2014	19	58
	3/23/2015	14	44
	4/22/2015	18	54
	9/30/2015	15.3	48
	11/19/2015	23.2	66
	3/15/2016	17.7	52
	6/29/2016	20.3	61
	8/9/2016	12.6	35
	12/7/2016	17.7	53
	3/2/2017	15	46
	6/29/2017	18.3	56
	8/16/2017	12.7	36
	10/25/2017	16.9	50
	3/28/2018	19.8	60
	6/29/2018	23.3	67
	8/2/2018	29.5	69
	12/10/2018	31	70
	4/15/2019	35	74
	6/12/2019	9.67	27
	8/27/2019	7.1	19
	10/29/2019	11	29
	3/30/2020	13.3	42
	6/16/2020	11.4	31
	9/21/2020	9	25
	12/17/2020	20.9	63
	3/18/2021	90.4	80
	5/5/2021	34	73
	9/2/2021	35.8	76
	11/23/2021	12.7	37
	1/11/2022	17	51
	4/7/2022	140	82
	8/2/2022	6.3	13
	11/16/2022	7.9	22
	2/14/2023	11.3	30
GD 8	3/12/2013	4.5	9
	5/8/2013	19	59
	9/23/2013	9.6	26

12/10/2013	32	71
2/6/2014	13	40
6/26/2014	7.3	20
9/30/2014	6	12
11/19/2014	13	41
3/23/2015	4.8	10
4/22/2015	15	47
9/30/2015	6.77	16
11/19/2015	79.6	79
3/15/2016	8.3	23
6/29/2016	39.8	77
8/9/2016	6.3	14
12/7/2016	7	17
3/2/2017	3.6	4
6/21/2017	7	18
8/17/2017	8.9	24
10/26/2017	3.98	5
3/27/2018	6.5	15
6/26/2018	5.76	11
8/1/2018	53.2	78
12/11/2018	24.4	68
4/17/2019	ND<0	1.5
6/11/2019	4.1	6
8/28/2019	11.8	33
10/28/2019	12.9	38
3/31/2020	18	55
6/10/2020	ND<0	1.5
9/21/2020	7.4	21
12/17/2020	11.5	32
3/18/2021	102	81
5/5/2021	35.7	75
9/2/2021	18.3	57
11/23/2021	2.7	3
1/10/2022	20.8	62
4/7/2022	10.9	28
8/3/2022	12.1	34
11/16/2022	4.2	7
2/13/2023	4.2	8

The Wilcoxon Statistic is 466
The Expected value is is 840.5
The Standard Deviation is 107.828
The Z Score is -3.47776
The Standard Deviation adjusted for ties is 107.828
The Z Score adjusted for ties is -3.47777
-3.47776 < 2.326 indicating no statistical significance at 1% level
-3.47777 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	81
Total Non-Detects	2 (2.46914%)
Pooled Mean	26.4244
Pooled Std Dev	34.5078
Compliance Meas.	40
Compliance Mean	22.0767
Compliance Std Dev	36.0614
Background Meas.	41
Background Mean	30.6661
Background Std Dev	32.8072

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
SME 1	41	0	0	1257.31

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
SME 1	30.6661	32.8072	23.2546	1988	48.4878

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
GD 8	40	2	5	883.07

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
GD 8	22.0767	36.0614	-8.58935	7.65662	1333	33.325

Analysis of Variance Statistics

SS Wells	1493.75
SS Total	95262.9

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	1988
Background Rank Mean	48.4878
H Statistic	8.41008
H Adjusted for Ties	8.41018

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	13.1	27
	5/8/2013	24	58
	9/23/2013	14.2	33
	12/10/2013	46.3	74
	2/6/2014	61	76
	6/26/2014	14	30
	9/30/2014	27.6	61
	11/19/2014	40.1	71
	3/23/2015	21	54
	4/22/2015	29	64
	9/30/2015	15	37
	11/19/2015	50	75
	3/15/2016	26.2	60
	6/29/2016	21.2	55
	8/9/2016	15.3	39
	12/7/2016	31	68
	3/2/2017	14	31
	6/29/2017	19.2	48
	8/16/2017	10.6	18
	10/25/2017	5.4	5
	3/28/2018	19.3	49
	6/29/2018	20.7	53
	8/2/2018	28.5	62
	12/10/2018	32	69
	4/15/2019	42.2	72
	6/12/2019	12.2	25
	8/27/2019	135.2	79
	10/29/2019	14.5	36
	3/30/2020	13.3	28
	6/16/2020	11.6	22
	9/21/2020	13.8	29
	12/17/2020	23.19	56
	3/18/2021	14.1	32
	5/5/2021	28.83	63
	9/2/2021	23.89	57
	11/23/2021	18.42	45
	1/11/2022	161.2	80
	4/7/2022	112.9	77
	8/2/2022	12	24
	11/16/2022	5.78	6
	2/14/2023	15.5	40
GD 8	3/12/2013	6.6	9
	5/8/2013	18.7	46
	9/23/2013	17.8	44

12/10/2013	30.7	66
2/6/2014	15.5	41
6/26/2014	30.8	67
9/30/2014	11.9	23
11/19/2014	25.3	59
3/23/2015	10.6	19
4/22/2015	20.2	52
9/30/2015	8.99	15
11/19/2015	212	81
3/15/2016	11.4	21
6/29/2016	32.5	70
8/9/2016	12.7	26
12/7/2016	10.1	17
3/2/2017	19.7	51
6/21/2017	7.9	12
8/17/2017	6.8	11
10/26/2017	6.1	8
3/27/2018	8.9	14
6/26/2018	5.8	7
8/1/2018	45.8	73
12/11/2018	16	42
4/17/2019	6.7	10
6/11/2019	9.43	16
8/28/2019	14.2	34
10/28/2019	29.6	65
3/31/2020	19.3	50
6/10/2020	10.8	20
9/21/2020	ND<0.35	1.5
12/17/2020	17.5	43
3/18/2021	117	78
5/5/2021	3.7	3
11/23/2021	ND<0	1.5
1/10/2022	18.9	47
4/7/2022	8.2	13
8/3/2022	14.4	35
11/16/2022	5.2	4
2/13/2023	15	38

The Wilcoxon Statistic is 513
The Expected value is is 820
The Standard Deviation is 105.862
The Z Score is -2.90474
The Standard Deviation adjusted for ties is 105.861
The Z Score adjusted for ties is -2.90475
-2.90474 < 2.326 indicating no statistical significance at 1% level
-2.90475 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	44
Total Non-Detects	0 (0%)
Pooled Mean	8.01523
Pooled Std Dev	1.98201
Compliance Meas.	4
Compliance Mean	8.72
Compliance Std Dev	2.09372
Background Meas.	40
Background Mean	7.94475
Background Std Dev	1.98445

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 5	40	0	0	317.79

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 5	7.94475	1.98445	0	880	22

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 10	4	0	0	34.88

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 10	8.72	2.09372	0.77525	1.04485	110	27.5

Analysis of Variance Statistics

SS Wells	2.1855
SS Total	168.92

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	880
Background Rank Mean	22
H Statistic	0.666667
H Adjusted for Ties	0.666667

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 10

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	9.29	32
	5/20/2013	7.76	22
	9/23/2013	6.78	13
	12/10/2013	9.1	30
	2/6/2014	9.88	37
	6/26/2014	6.54	11
	9/30/2014	7.53	18
	3/23/2015	8.58	27
	4/22/2015	7.78	23
	9/30/2015	6.27	8
	11/19/2015	7.34	15
	3/15/2016	7.47	17
	6/29/2016	2.27	1
	8/9/2016	5.55	3
	12/7/2016	10.61	40
	3/2/2017	4.49	2
	7/5/2017	5.83	5
	8/16/2017	6.22	7
	10/25/2017	7.35	16
	3/28/2018	9.47	35
	6/29/2018	5.66	4
	8/2/2018	6.02	6
	12/10/2018	11.3	42
	4/15/2019	8.02	25
	6/12/2019	7.64	19
	8/27/2019	7.98	24
	10/29/2019	9.42	34
	3/30/2020	8.86	28
	6/16/2020	7.75	21
	9/21/2020	6.33	9
	12/17/2020	9.96	38
	3/18/2021	8.98	29
	5/5/2021	7.74	20
	9/2/2021	6.9	14
	11/23/2021	10.54	39
	1/11/2022	12.25	44
	4/7/2022	9.32	33
	8/2/2022	6.6	12
	11/16/2022	9.56	36
	2/14/2023	10.85	41
SME 10	4/7/2022	9.16	31
	8/3/2022	6.35	10
	11/16/2022	8.03	26
	2/13/2023	11.34	43

The Wilcoxon Statistic is 100
The Expected value is is 80
The Standard Deviation is 24.4949
The Z Score is 0.796084
The Standard Deviation adjusted for ties is 24.4949
The Z Score adjusted for ties is 0.796084
0.796084 < 2.326 indicating no statistical significance at 1% level
0.796084 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	27 (60%)
Pooled Mean	0.0649111
Pooled Std Dev	0.0880449
Compliance Meas.	4
Compliance Mean	0.04625
Compliance Std Dev	0.0925
Background Meas.	41
Background Mean	0.0667317
Background Std Dev	0.0885841

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 5	41	24	58.5366	2.736

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 5	0.0667317	0.0885841	0	952	23.2195

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 10	4	3	75	0.185

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 10	0.04625	0.0925	-0.0204817	0.0465484	83	20.75

Analysis of Variance Statistics

SS Wells	0.00152885
SS Total	0.341084

Kruskal-Wallis Statistics

Non-Detect Rank	14
Background Rank Sum	952
Background Rank Mean	23.2195
H Statistic	0.128844
H Adjusted for Ties	0.164302

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 10

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 27
Non detect rank is 14

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	0.26	44
	5/20/2013	ND<0	14
	9/23/2013	ND<0	14
	12/10/2013	0.1	28
	2/6/2014	0.17	40
	6/26/2014	ND<0	14
	9/30/2014	ND<0	14
	11/19/2014	0.11	29
	3/23/2015	0.12	31
	4/22/2015	0.14	37
	9/30/2015	ND<0	14
	11/19/2015	0.168	39
	3/15/2016	ND<0	14
	6/29/2016	ND<0	14
	8/9/2016	ND<0	14
	12/7/2016	ND<0	14
	3/2/2017	0.118	30
	7/5/2017	ND<0	14
	8/16/2017	ND<0	14
	10/25/2017	ND<0	14
	3/28/2018	0.127	33
	6/29/2018	ND<0	14
	8/2/2018	ND<0	14
	12/10/2018	ND<0	14
	4/15/2019	0.128	35
	6/12/2019	ND<0	14
	8/27/2019	ND<0	14
	10/29/2019	ND<0	14
	3/30/2020	0.13	36
	6/16/2020	ND<0	14
	9/21/2020	ND<0	14
	12/17/2020	0.122	32
	3/18/2021	0.127	34
	5/5/2021	0.204	42
	9/2/2021	ND<0	14
	11/23/2021	ND<0	14
	1/11/2022	0.3	45
	4/7/2022	0.157	38
	8/2/2022	ND<0	14
	11/16/2022	ND<0	14
	2/14/2023	0.255	43
SME 10	4/7/2022	ND<0	14
	8/3/2022	ND<0	14
	11/16/2022	ND<0	14

2/13/2023	0.185	41	

The Wilcoxon Statistic is 73
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is -0.37889
The Standard Deviation adjusted for ties is 22.2035
The Z Score adjusted for ties is -0.427861
-0.37889 < 2.326 indicating no statistical significance at 1% level
-0.427861 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	39 (86.6667%)
Pooled Mean	0.00711111
Pooled Std Dev	0.0199331
Compliance Meas.	4
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	41
Background Mean	0.00780488
Background Std Dev	0.0207728

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 5	41	35	85.3659	0.32

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 5	0.00780488	0.0207728	0	955	23.2927

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 10	4	4	100	0

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 10	0	0	-0.00780488	0.0104948	80	20

Analysis of Variance Statistics

SS Wells	0.000222005
SS Total	0.0174824

Kruskal-Wallis Statistics

Non-Detect Rank	20
Background Rank Sum	955
Background Rank Mean	23.2927
H Statistic	0.229056
H Adjusted for Ties	0.656052

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 10

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 39
Non detect rank is 20

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	ND<0	20
	5/20/2013	ND<0	20
	9/23/2013	0.027	40
	12/10/2013	0.088	45
	2/6/2014	0.038	41
	6/26/2014	ND<0	20
	9/30/2014	ND<0	20
	11/19/2014	0.051	43
	3/23/2015	ND<0	20
	4/22/2015	ND<0	20
	9/30/2015	ND<0	20
	11/19/2015	0.042	42
	3/15/2016	ND<0	20
	6/29/2016	0.074	44
	8/9/2016	ND<0	20
	12/7/2016	ND<0	20
	3/2/2017	ND<0	20
	7/5/2017	ND<0	20
	8/16/2017	ND<0	20
	10/25/2017	ND<0	20
	3/28/2018	ND<0	20
	6/29/2018	ND<0	20
	8/2/2018	ND<0	20
	12/10/2018	ND<0	20
	4/15/2019	ND<0	20
	6/12/2019	ND<0	20
	8/27/2019	ND<0	20
	10/29/2019	ND<0	20
	3/30/2020	ND<0	20
	6/16/2020	ND<0	20
	9/21/2020	ND<0	20
	12/17/2020	ND<0	20
	3/18/2021	ND<0	20
	5/5/2021	ND<0	20
	9/2/2021	ND<0	20
	11/23/2021	ND<0	20
	1/11/2022	ND<0	20
	4/7/2022	ND<0	20
	8/2/2022	ND<0	20
	11/16/2022	ND<0	20
	2/14/2023	ND<0	20
SME 10	4/7/2022	ND<0	20
	8/3/2022	ND<0	20
	11/16/2022	ND<0	20

2/13/2023	ND<0	20	

The Wilcoxon Statistic is 70
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is -0.49854
The Standard Deviation adjusted for ties is 14.8154
The Z Score adjusted for ties is -0.843719
-0.49854 < 2.326 indicating no statistical significance at 1% level
-0.843719 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	0 (0%)
Pooled Mean	7.77667
Pooled Std Dev	0.362542
Compliance Meas.	4
Compliance Mean	7.6
Compliance Std Dev	0.421742
Background Meas.	41
Background Mean	7.7939
Background Std Dev	0.357511

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 5	41	0	0	319.55

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 5	7.7939	0.357511	0	960	23.4146

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 10	4	0	0	30.4

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 10	7.6	0.421742	-0.193902	0.189814	75	18.75

Analysis of Variance Statistics

SS Wells	0.137024
SS Total	5.7832

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	960
Background Rank Mean	23.4146
H Statistic	0.459703
H Adjusted for Ties	0.459703

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 10

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	8.33	44
	5/20/2013	8.28	42
	9/23/2013	7.67	15
	12/10/2013	7.97	33
	2/6/2014	7.14	1
	6/26/2014	7.9	32
	9/30/2014	8.28	43
	11/19/2014	8.15	39
	3/23/2015	8.14	38
	4/22/2015	7.81	23
	9/30/2015	8.03	36
	11/19/2015	7.63	12
	3/15/2016	8.8	45
	6/29/2016	8.02	34
	8/9/2016	8.25	41
	12/7/2016	7.73	20
	3/2/2017	7.81	24
	7/5/2017	7.32	7
	8/16/2017	7.89	31
	10/25/2017	7.36	9
	3/28/2018	8.18	40
	6/29/2018	7.76	22
	8/2/2018	7.59	10
	12/10/2018	7.87	30
	4/15/2019	7.69	16
	6/12/2019	8.02	35
	8/27/2019	7.15	2
	10/29/2019	7.85	28
	3/30/2020	7.65	13
	6/16/2020	7.69	17
	9/21/2020	7.65	14
	12/17/2020	7.62	11
	3/18/2021	7.15	3
	5/5/2021	7.84	26
	9/2/2021	7.84	27
	11/23/2021	7.7	18
	1/11/2022	7.28	6
	4/7/2022	7.72	19
	8/2/2022	7.86	29
	11/16/2022	7.75	21
	2/14/2023	7.18	4
SME 10	4/7/2022	7.82	25
	8/3/2022	8.08	37
	11/16/2022	7.18	5

2/13/2023	7.32	8

The Wilcoxon Statistic is 65
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is -0.697956
The Standard Deviation adjusted for ties is 25.0732
The Z Score adjusted for ties is -0.697956
-0.697956 < 2.326 indicating no statistical significance at 1% level
-0.697956 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	44
Total Non-Detects	0 (0%)
Pooled Mean	19.1684
Pooled Std Dev	7.19801
Compliance Meas.	4
Compliance Mean	16.35
Compliance Std Dev	7.02116
Background Meas.	40
Background Mean	19.4503
Background Std Dev	7.24134

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 5	40	0	0	778.01

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 5	19.4503	7.24134	0	921	23.025

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 10	4	0	0	65.4

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 10	16.35	7.02116	-3.10025	3.78926	69	17.25

Analysis of Variance Statistics

SS Wells	34.9511
SS Total	2227.89

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	921
Background Rank Mean	23.025
H Statistic	0.735
H Adjusted for Ties	0.735

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 10

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	10.2	8
	5/20/2013	22.6	28
	9/23/2013	27.1	36
	12/10/2013	9.1	3
	2/6/2014	7.2	1
	9/30/2014	25.22	30
	11/19/2014	9.4	4
	3/23/2015	15.9	15
	4/22/2015	21.7	27
	9/30/2015	26.3	33
	11/19/2015	16.6	16
	3/15/2016	19.4	25
	6/29/2016	30.37	44
	8/9/2016	30.2	43
	12/7/2016	11.96	11
	3/2/2017	14.26	14
	7/5/2017	26.9	35
	8/16/2017	28	40
	10/25/2017	18.7	22
	3/28/2018	18.5	21
	6/29/2018	27.5	39
	8/2/2018	25.7	32
	12/10/2018	7.3	2
	4/15/2019	19.3	24
	6/12/2019	27.2	37
	8/27/2019	28.7	41
	10/29/2019	17.8	19
	3/30/2020	19.1	23
	6/16/2020	27.2	38
	9/21/2020	23.2	29
	12/17/2020	9.7	5
	3/18/2021	16.9	17
	5/5/2021	19.8	26
	9/2/2021	26.5	34
	11/23/2021	11.3	9
	1/11/2022	10.1	7
	4/7/2022	17.2	18
	8/2/2022	29.1	42
	11/16/2022	13.4	13
	2/14/2023	11.4	10
SME 10	4/7/2022	18	20
	8/3/2022	25.5	31
	11/16/2022	12.2	12
	2/13/2023	9.7	6

The Wilcoxon Statistic is 59
The Expected value is is 80
The Standard Deviation is 24.4949
The Z Score is -0.877734
The Standard Deviation adjusted for ties is 24.4949
The Z Score adjusted for ties is -0.877734
-0.877734 < 2.326 indicating no statistical significance at 1% level
-0.877734 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	8 (17.7778%)
Pooled Mean	0.399956
Pooled Std Dev	0.228476
Compliance Meas.	4
Compliance Mean	0.6765
Compliance Std Dev	0.219321
Background Meas.	41
Background Mean	0.372976
Background Std Dev	0.213119

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 5	41	8	19.5122	15.292

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 5	0.372976	0.213119	0	884	21.561

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 10	4	0	0	2.706

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 10	0.6765	0.219321	0.303524	0.111866	151	37.75

Analysis of Variance Statistics

SS Wells	0.335752
SS Total	2.29685

Kruskal-Wallis Statistics

Non-Detect Rank	4.5
Background Rank Sum	884
Background Rank Mean	21.561
H Statistic	5.53712
H Adjusted for Ties	5.56793

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 10

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 8
Non detect rank is 4.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	0.34	14
	5/20/2013	0.62	40
	9/23/2013	0.45	25
	12/10/2013	0.47	26
	2/6/2014	0.37	18
	6/26/2014	0.34	15
	9/30/2014	ND<0	4.5
	11/19/2014	0.43	23
	3/23/2015	0.34	16
	4/22/2015	0.65	41
	9/30/2015	0.557	36
	11/19/2015	ND<0	4.5
	3/15/2016	0.435	24
	6/29/2016	0.49	29
	8/9/2016	0.412	21
	12/7/2016	0.337	13
	3/2/2017	0.491	30
	7/5/2017	0.73	43
	8/16/2017	0.404	19
	10/25/2017	0.347	17
	3/28/2018	ND<0	4.5
	6/29/2018	0.689	42
	8/2/2018	0.332	12
	12/10/2018	0.523	35
	4/15/2019	0.411	20
	6/12/2019	ND<0	4.5
	8/27/2019	0.506	31
	10/29/2019	0.477	27
	3/30/2020	0.32	11
	6/16/2020	0.561	37
	9/21/2020	ND<0	4.5
	12/17/2020	0.422	22
	3/18/2021	0.6	38
	5/5/2021	ND<0	4.5
	9/2/2021	0.51	32
	11/23/2021	ND<0	4.5
	1/11/2022	0.51	33
	4/7/2022	0.3	9
	8/2/2022	ND<0	4.5
	11/16/2022	0.312	10
	2/14/2023	0.606	39
SME 10	4/7/2022	0.477	28
	8/3/2022	0.94	45
	11/16/2022	0.516	34

2/13/2023	0.773	44

The Wilcoxon Statistic is 141
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is 2.33317
The Standard Deviation adjusted for ties is 25.0038
The Z Score adjusted for ties is 2.33965
2.33317 > 2.326 indicating statistical significance at 1% level
2.33965 > 2.326 indicating statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	39 (86.6667%)
Pooled Mean	0.0419556
Pooled Std Dev	0.18227
Compliance Meas.	4
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	41
Background Mean	0.0460488
Background Std Dev	0.19066

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 5	41	35	85.3659	1.888

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 5	0.0460488	0.19066	0	955	23.2927

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 10	4	4	100	0

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 10	0	0	-0.0460488	0.0963253	80	20

Analysis of Variance Statistics

SS Wells	0.00772801
SS Total	1.46178

Kruskal-Wallis Statistics

Non-Detect Rank	20
Background Rank Sum	955
Background Rank Mean	23.2927
H Statistic	0.229056
H Adjusted for Ties	0.656052

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 10

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 39
Non detect rank is 20

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	ND<0	20
	5/20/2013	ND<0	20
	9/23/2013	ND<0	20
	12/10/2013	0.1	40
	2/6/2014	ND<0	20
	6/26/2014	ND<0	20
	9/30/2014	ND<0	20
	11/19/2014	ND<0	20
	3/23/2015	ND<0	20
	4/22/2015	ND<0	20
	9/30/2015	0.115	42
	11/19/2015	ND<0	20
	3/15/2016	ND<0	20
	6/29/2016	ND<0	20
	8/9/2016	ND<0	20
	12/7/2016	ND<0	20
	3/2/2017	ND<0	20
	7/5/2017	ND<0	20
	8/16/2017	ND<0	20
	10/25/2017	ND<0	20
	3/28/2018	ND<0	20
	6/29/2018	ND<0	20
	8/2/2018	ND<0	20
	12/10/2018	0.19	44
	4/15/2019	1.2	45
	6/12/2019	ND<0	20
	8/27/2019	0.17	43
	10/29/2019	ND<0	20
	3/30/2020	ND<0	20
	6/16/2020	ND<0	20
	9/21/2020	ND<0	20
	12/17/2020	0.113	41
	3/18/2021	ND<0	20
	5/5/2021	ND<0	20
	9/2/2021	ND<0	20
	11/23/2021	ND<0	20
	1/11/2022	ND<0	20
	4/7/2022	ND<0	20
	8/2/2022	ND<0	20
	11/16/2022	ND<0	20
	2/14/2023	ND<0	20
SME 10	4/7/2022	ND<0	20
	8/3/2022	ND<0	20
	11/16/2022	ND<0	20

2/13/2023	ND<0	20	

The Wilcoxon Statistic is 70
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is -0.49854
The Standard Deviation adjusted for ties is 14.8154
The Z Score adjusted for ties is -0.843719
-0.49854 < 2.326 indicating no statistical significance at 1% level
-0.843719 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	0 (0%)
Pooled Mean	14.748
Pooled Std Dev	8.6948
Compliance Meas.	4
Compliance Mean	3.875
Compliance Std Dev	0.763217
Background Meas.	41
Background Mean	15.8088
Background Std Dev	8.37498

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 5	41	0	0	648.16

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 5	15.8088	8.37498	0	1025	25

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 10	4	0	0	15.5

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 10	3.875	0.763217	-11.9338	4.23252	10	2.5

Analysis of Variance Statistics

SS Wells	519.024
SS Total	3326.38

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1025
Background Rank Mean	25
H Statistic	10.6957
H Adjusted for Ties	10.6957

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 10

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	9.6	16
	5/20/2013	9	13
	9/23/2013	8	10
	12/10/2013	18	33
	2/6/2014	17	31
	6/26/2014	12	20
	9/30/2014	18	34
	11/19/2014	26	40
	3/23/2015	15	28
	4/22/2015	13	23
	9/30/2015	17.3	32
	11/19/2015	42.8	45
	3/15/2016	13.2	25
	6/29/2016	15	29
	8/9/2016	11	18
	12/7/2016	6.8	7
	3/2/2017	13	24
	7/5/2017	22.7	39
	8/16/2017	9	14
	10/25/2017	14.6	27
	3/28/2018	6.06	5
	6/29/2018	19.6	35
	8/2/2018	26.4	41
	12/10/2018	22.3	38
	4/15/2019	29	42
	6/12/2019	9.33	15
	8/27/2019	10.9	17
	10/29/2019	21	37
	3/30/2020	12.1	21
	6/16/2020	7.4	8
	9/21/2020	7.9	9
	12/17/2020	19.8	36
	3/18/2021	30.6	43
	5/5/2021	36.8	44
	9/2/2021	16.1	30
	11/23/2021	8.8	12
	1/11/2022	12.1	22
	4/7/2022	14.4	26
	8/2/2022	6.4	6
	11/16/2022	8.67	11
	2/14/2023	11.5	19
SME 10	4/7/2022	2.8	1
	8/3/2022	4.1	3
	11/16/2022	4.6	4

The Wilcoxon Statistic is 0
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is -3.29036
The Standard Deviation adjusted for ties is 25.0732
The Z Score adjusted for ties is -3.29036
-3.29036 < 2.326 indicating no statistical significance at 1% level
-3.29036 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	0 (0%)
Pooled Mean	21.8596
Pooled Std Dev	17.6326
Compliance Meas.	4
Compliance Mean	11.035
Compliance Std Dev	5.89516
Background Meas.	41
Background Mean	22.9156
Background Std Dev	18.0703

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
GD 5	41	0	0	939.54

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
GD 5	22.9156	18.0703	0	986	24.0488

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 10	4	0	0	44.14

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 10	11.035	5.89516	-11.8806	9.16581	49	12.25

Analysis of Variance Statistics

SS Wells	514.409
SS Total	13680

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	986
Background Rank Mean	24.0488
H Statistic	2.94115
H Adjusted for Ties	2.94115

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 10

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	11.6	14
	5/20/2013	14	18
	9/23/2013	11.5	13
	12/10/2013	57.9	43
	2/6/2014	45.9	42
	6/26/2014	17	24
	9/30/2014	22.5	30
	11/19/2014	42.9	41
	3/23/2015	24	32
	4/22/2015	25	33
	9/30/2015	18	25
	11/19/2015	90	45
	3/15/2016	23.7	31
	6/29/2016	21	29
	8/9/2016	11.8	15
	12/7/2016	10	9
	3/2/2017	12.3	16
	7/5/2017	15	20
	8/16/2017	8	6
	10/25/2017	9.2	7
	3/28/2018	6.1	4
	6/29/2018	16.3	21
	8/2/2018	18.4	26
	12/10/2018	37.7	40
	4/15/2019	29.7	38
	6/12/2019	6	3
	8/27/2019	75.2	44
	10/29/2019	29	37
	3/30/2020	14.5	19
	6/16/2020	16.4	22
	9/21/2020	10.8	12
	12/17/2020	28.7	36
	3/18/2021	3.4	1
	5/5/2021	36.1	39
	9/2/2021	10.3	10
	11/23/2021	27.69	35
	1/11/2022	26.8	34
	4/7/2022	16.4	23
	8/2/2022	13	17
	11/16/2022	6.95	5
	2/14/2023	18.8	27
SME 10	4/7/2022	4.94	2
	8/3/2022	10.3	11
	11/16/2022	9.8	8

The Wilcoxon Statistic is 39
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is -1.73492
The Standard Deviation adjusted for ties is 25.0732
The Z Score adjusted for ties is -1.73492
-1.73492 < 2.326 indicating no statistical significance at 1% level
-1.73492 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: DO

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	0 (0%)
Pooled Mean	7.984
Pooled Std Dev	2.25728
Compliance Meas.	4
Compliance Mean	9.77
Compliance Std Dev	1.64481
Background Meas.	41
Background Mean	7.80976
Background Std Dev	2.24763

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
HB 3	41	0	0	320.2

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
HB 3	7.80976	2.24763	0	904	22.0488

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 9	4	0	0	39.08

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 9	9.77	1.64481	1.96024	1.15813	131	32.75

Analysis of Variance Statistics

SS Wells	14.004
SS Total	224.194

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	904
Background Rank Mean	22.0488
H Statistic	2.41941
H Adjusted for Ties	2.41941

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: SME 9

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
HB 3	3/12/2013	9.48	33
	5/20/2013	6.82	14
	9/23/2013	4.89	4
	12/10/2013	8.65	26
	2/6/2014	12.24	45
	6/26/2014	7.12	16
	9/30/2014	6.01	12
	11/19/2014	8.83	28
	3/23/2015	8.4	24
	4/22/2015	8.36	23
	9/30/2015	5.05	6
	11/19/2015	7.37	17
	3/15/2016	7.97	20
	6/29/2016	2.77	1
	8/9/2016	4.31	3
	12/7/2016	8.44	25
	3/2/2017	3.9	2
	7/5/2017	5.36	8
	8/16/2017	5.04	5
	10/25/2017	9.93	38
	3/28/2018	9.47	32
	6/29/2018	5.55	9
	8/2/2018	5.64	10
	12/10/2018	10.98	41
	4/15/2019	8.27	22
	6/12/2019	6.77	13
	8/27/2019	8.75	27
	10/29/2019	9.88	37
	3/30/2020	8.91	29
	6/16/2020	7.01	15
	9/21/2020	7.69	18
	12/17/2020	9.94	39
	3/18/2021	9.62	35
	5/5/2021	7.71	19
	9/2/2021	5.3	7
	11/23/2021	10.59	40
	1/11/2022	11.26	43
	4/7/2022	9.4	31
	8/2/2022	5.89	11
	11/16/2022	9.53	34
	2/14/2023	11.1	42
SME 9	4/7/2022	9.32	30
	8/3/2022	7.97	21
	11/16/2022	9.86	36

	2/13/2023	11.93	44

The Wilcoxon Statistic is 121
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is 1.5355
The Standard Deviation adjusted for ties is 25.0732
The Z Score adjusted for ties is 1.5355
1.5355 < 2.326 indicating no statistical significance at 1% level
1.5355 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	23 (51.1111%)
Pooled Mean	0.125222
Pooled Std Dev	0.148314
Compliance Meas.	4
Compliance Mean	0
Compliance Std Dev	0
Background Meas.	41
Background Mean	0.137439
Background Std Dev	0.149918

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
HB 3	41	19	46.3415	5.635

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
HB 3	0.137439	0.149918	0	987	24.0732

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 9	4	4	100	0

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 9	0	0	-0.137439	0.0757417	48	12

Analysis of Variance Statistics

SS Wells	0.0688417
SS Total	0.967864

Kruskal-Wallis Statistics

Non-Detect Rank	12
Background Rank Sum	987
Background Rank Mean	24.0732
H Statistic	3.07953
H Adjusted for Ties	3.55331

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: SME 9

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 23
Non detect rank is 12

Wilcoxon Ranks

Location	Date	Conc.	Rank
HB 3	3/12/2013	0.19	29
	5/20/2013	0.17	28
	9/23/2013	ND<0	12
	12/10/2013	ND<0	12
	2/6/2014	0.48	45
	6/26/2014	ND<0	12
	9/30/2014	ND<0	12
	11/19/2014	0.11	24
	3/23/2015	0.26	36
	4/22/2015	0.2	31
	9/30/2015	ND<0	12
	11/19/2015	0.377	43
	3/15/2016	0.295	38
	6/29/2016	ND<0	12
	8/9/2016	ND<0	12
	12/7/2016	0.111	25
	3/2/2017	0.334	39
	7/5/2017	ND<0	12
	8/16/2017	ND<0	12
	10/25/2017	ND<0	12
	3/28/2018	0.359	40
	6/29/2018	ND<0	12
	8/2/2018	ND<0	12
	12/10/2018	0.363	41
	4/15/2019	0.233	34
	6/12/2019	0.129	26
	8/27/2019	ND<0	12
	10/29/2019	ND<0	12
	3/30/2020	0.234	35
	6/16/2020	ND<0	12
	9/21/2020	ND<0	12
	12/17/2020	0.195	30
	3/18/2021	0.369	42
	5/5/2021	0.207	33
	9/2/2021	ND<0	12
	11/23/2021	0.137	27
	1/11/2022	0.2	32
	4/7/2022	0.268	37
	8/2/2022	ND<0	12
	11/16/2022	ND<0	12
	2/14/2023	0.414	44
SME 9	4/7/2022	ND<0	12
	8/3/2022	ND<0	12
	11/16/2022	ND<0	12

2/13/2023	ND<0	12	

The Wilcoxon Statistic is 38
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is -1.7748
The Standard Deviation adjusted for ties is 23.3419
The Z Score adjusted for ties is -1.90644
-1.7748 < 2.326 indicating no statistical significance at 1% level
-1.90644 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	37 (82.2222%)
Pooled Mean	0.0135111
Pooled Std Dev	0.032861
Compliance Meas.	4
Compliance Mean	0.0225
Compliance Std Dev	0.045
Background Meas.	41
Background Mean	0.0126341
Background Std Dev	0.0320482

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
HB 3	41	34	82.9268	0.518

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
HB 3	0.0126341	0.0320482	0	935	22.8049

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 9	4	3	75	0.09

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 9	0.0225	0.045	0.00986585	0.0173472	100	25

Analysis of Variance Statistics

SS Wells	0.000354732
SS Total	0.0475132

Kruskal-Wallis Statistics

Non-Detect Rank	19
Background Rank Sum	935
Background Rank Mean	22.8049
H Statistic	0.101803
H Adjusted for Ties	0.229147

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: SME 9

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 37
Non detect rank is 19

Wilcoxon Ranks

Location	Date	Conc.	Rank
HB 3	3/12/2013	0.081	41
	5/20/2013	ND<0	19
	9/23/2013	0.037	39
	12/10/2013	0.14	45
	2/6/2014	0.03	38
	6/26/2014	ND<0	19
	9/30/2014	ND<0	19
	11/19/2014	0.098	44
	3/23/2015	ND<0	19
	4/22/2015	ND<0	19
	9/30/2015	ND<0	19
	11/19/2015	0.045	40
	3/15/2016	0.087	42
	6/29/2016	ND<0	19
	8/9/2016	ND<0	19
	12/7/2016	ND<0	19
	3/2/2017	ND<0	19
	7/5/2017	ND<0	19
	8/16/2017	ND<0	19
	10/25/2017	ND<0	19
	3/28/2018	ND<0	19
	6/29/2018	ND<0	19
	8/2/2018	ND<0	19
	12/10/2018	ND<0	19
	4/15/2019	ND<0	19
	6/12/2019	ND<0	19
	8/27/2019	ND<0	19
	10/29/2019	ND<0	19
	3/30/2020	ND<0	19
	6/16/2020	ND<0	19
	9/21/2020	ND<0	19
	12/17/2020	ND<0	19
	3/18/2021	ND<0	19
	5/5/2021	ND<0	19
	9/2/2021	ND<0	19
	11/23/2021	ND<0	19
	1/11/2022	ND<0	19
	4/7/2022	ND<0	19
	8/2/2022	ND<0	19
	11/16/2022	ND<0	19
	2/14/2023	ND<0	19
SME 9	4/7/2022	ND<0	19
	8/3/2022	ND<0	19
	11/16/2022	ND<0	19

2/13/2023	0.09	43	

The Wilcoxon Statistic is 90
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is 0.299124
The Standard Deviation adjusted for ties is 16.7122
The Z Score adjusted for ties is 0.448774
0.299124 < 2.326 indicating no statistical significance at 1% level
0.448774 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	0 (0%)
Pooled Mean	7.74756
Pooled Std Dev	0.355657
Compliance Meas.	4
Compliance Mean	7.7025
Compliance Std Dev	0.305109
Background Meas.	41
Background Mean	7.75195
Background Std Dev	0.36323

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
HB 3	41	0	0	317.83

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
HB 3	7.75195	0.36323	0	953	23.2439

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 9	4	0	0	30.81

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 9	7.7025	0.305109	-0.0494512	0.188304	82	20.5

Analysis of Variance Statistics

SS Wells	0.00891221
SS Total	5.56563

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	953
Background Rank Mean	23.2439
H Statistic	0.159067
H Adjusted for Ties	0.159067

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: SME 9

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
HB 3	3/12/2013	7.54	13
	5/20/2013	8.21	42
	9/23/2013	8.02	34
	12/10/2013	7.9	29
	2/6/2014	7.22	3
	6/26/2014	8.2	41
	9/30/2014	8.05	36
	11/19/2014	7.85	27
	3/23/2015	8.21	43
	4/22/2015	7.91	30
	9/30/2015	7.89	28
	11/19/2015	7.83	26
	3/15/2016	8.52	45
	6/29/2016	8.02	35
	8/9/2016	7.91	31
	12/7/2016	7.93	32
	3/2/2017	7.75	20
	7/5/2017	7.29	5
	8/16/2017	7.35	7
	10/25/2017	6.64	1
	3/28/2018	7.99	33
	6/29/2018	7.67	17
	8/2/2018	7.4	8
	12/10/2018	7.55	14
	4/15/2019	7.73	19
	6/12/2019	8.13	40
	8/27/2019	8.21	44
	10/29/2019	7.82	25
	3/30/2020	7.79	23
	6/16/2020	7.33	6
	9/21/2020	7.8	24
	12/17/2020	8.07	38
	3/18/2021	7.47	10
	5/5/2021	7.5	11
	9/2/2021	7.61	15
	11/23/2021	7.15	2
	1/11/2022	7.75	21
	4/7/2022	7.61	16
	8/2/2022	8.05	37
	11/16/2022	7.71	18
	2/14/2023	7.25	4
SME 9	4/7/2022	7.78	22
	8/3/2022	8.1	39
	11/16/2022	7.5	12

	2/13/2023	7.43	9

The Wilcoxon Statistic is 72
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is -0.418773
The Standard Deviation adjusted for ties is 25.0732
The Z Score adjusted for ties is -0.418773
-0.418773 < 2.326 indicating no statistical significance at 1% level
-0.418773 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	44
Total Non-Detects	0 (0%)
Pooled Mean	19.5186
Pooled Std Dev	7.05578
Compliance Meas.	4
Compliance Mean	16.2
Compliance Std Dev	6.76461
Background Meas.	40
Background Mean	19.8505
Background Std Dev	7.08009

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
HB 3	40	0	0	794.02

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
HB 3	19.8505	7.08009	0	928	23.2

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 9	4	0	0	64.8

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 9	16.2	6.76461	-3.6505	3.70126	62	15.5

Analysis of Variance Statistics

SS Wells	48.4587
SS Total	2140.72

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	928
Background Rank Mean	23.2
H Statistic	1.30667
H Adjusted for Ties	1.30667

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: SME 9

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
HB 3	3/12/2013	13.9	13
	5/20/2013	27.8	40
	9/23/2013	25.7	32
	12/10/2013	10.1	5
	2/6/2014	5.9	1
	9/30/2014	24.78	29
	11/19/2014	8.8	3
	3/23/2015	24.2	28
	4/22/2015	21.9	25
	9/30/2015	25.7	33
	11/19/2015	17.4	17
	3/15/2016	19.1	23
	6/29/2016	30.61	44
	8/9/2016	30.19	43
	12/7/2016	12.81	11
	3/2/2017	14.33	14
	7/5/2017	27	37
	8/16/2017	27	38
	10/25/2017	18.5	21
	3/28/2018	17.6	18
	6/29/2018	26	34
	8/2/2018	25.1	30
	12/10/2018	7.9	2
	4/15/2019	19.6	24
	6/12/2019	26.6	36
	8/27/2019	29.1	42
	10/29/2019	18.3	20
	3/30/2020	18.5	22
	6/16/2020	26.3	35
	9/21/2020	23.5	27
	12/17/2020	9.1	4
	3/18/2021	16	15
	5/5/2021	22	26
	9/2/2021	27.1	39
	11/23/2021	11.2	7
	1/11/2022	12.8	10
	4/7/2022	18.1	19
	8/2/2022	28.9	41
	11/16/2022	12.9	12
	2/14/2023	11.7	8
SME 9	4/7/2022	17	16
	8/3/2022	25.4	31
	11/16/2022	12.2	9
	2/13/2023	10.2	6

The Wilcoxon Statistic is 52
The Expected value is is 80
The Standard Deviation is 24.4949
The Z Score is -1.16351
The Standard Deviation adjusted for ties is 24.4949
The Z Score adjusted for ties is -1.16351
-1.16351 < 2.326 indicating no statistical significance at 1% level
-1.16351 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	8 (17.7778%)
Pooled Mean	0.462711
Pooled Std Dev	0.279391
Compliance Meas.	4
Compliance Mean	0.4735
Compliance Std Dev	0.334088
Background Meas.	41
Background Mean	0.461659
Background Std Dev	0.278355

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
HB 3	41	7	17.0732	18.928

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
HB 3	0.461659	0.278355	0	936.5	22.8415

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 9	4	1	25	1.894

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 9	0.4735	0.334088	0.0118415	0.148032	98.5	24.625

Analysis of Variance Statistics

SS Wells	0.000511025
SS Total	3.43461

Kruskal-Wallis Statistics

Non-Detect Rank	4.5
Background Rank Sum	936.5
Background Rank Mean	22.8415
H Statistic	0.0672057
H Adjusted for Ties	0.0675797

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: SME 9

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 8
Non detect rank is 4.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
HB 3	3/12/2013	0.83	42
	5/20/2013	0.6	30
	9/23/2013	0.6	31
	12/10/2013	0.62	33
	2/6/2014	0.37	15
	6/26/2014	0.37	16
	9/30/2014	0.48	23
	11/19/2014	0.44	18
	3/23/2015	0.46	20
	4/22/2015	0.66	35
	9/30/2015	0.91	43
	11/19/2015	ND<0	4.5
	3/15/2016	ND<0	4.5
	6/29/2016	0.51	24
	8/9/2016	0.703	37
	12/7/2016	0.73	38
	3/2/2017	0.969	45
	7/5/2017	0.812	41
	8/16/2017	0.763	39
	10/25/2017	0.322	13
	3/28/2018	ND<0	4.5
	6/29/2018	0.464	21
	8/2/2018	0.952	44
	12/10/2018	0.426	17
	4/15/2019	ND<0	4.5
	6/12/2019	ND<0	4.5
	8/27/2019	0.634	34
	10/29/2019	0.517	25
	3/30/2020	0.452	19
	6/16/2020	0.299	12
	9/21/2020	0.279	11
	12/17/2020	0.588	29
	3/18/2021	0.252	9
	5/5/2021	ND<0	4.5
	9/2/2021	0.689	36
	11/23/2021	ND<0	4.5
	1/11/2022	0.55	27
	4/7/2022	0.329	14
	8/2/2022	0.273	10
	11/16/2022	0.604	32
	2/14/2023	0.471	22
SME 9	4/7/2022	0.529	26
	8/3/2022	0.582	28
	11/16/2022	ND<0	4.5

2/13/2023	0.783	40

The Wilcoxon Statistic is 88.5
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is 0.239299
The Standard Deviation adjusted for ties is 25.0038
The Z Score adjusted for ties is 0.239964
0.239299 < 2.326 indicating no statistical significance at 1% level
0.239964 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	36 (80%)
Pooled Mean	0.0288444
Pooled Std Dev	0.0591262
Compliance Meas.	4
Compliance Mean	0.03375
Compliance Std Dev	0.0675
Background Meas.	41
Background Mean	0.0283659
Background Std Dev	0.0591704

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
HB 3	41	33	80.4878	1.163

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
HB 3	0.0283659	0.0591704	0	939.5	22.9146

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 9	4	3	75	0.135

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 9	0.03375	0.0675	0.00538415	0.0313189	95.5	23.875

Analysis of Variance Statistics

SS Wells	0.000105649
SS Total	0.15382

Kruskal-Wallis Statistics

Non-Detect Rank	18.5
Background Rank Sum	939.5
Background Rank Mean	22.9146
H Statistic	0.0194857
H Adjusted for Ties	0.039918

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: SME 9

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 36
Non detect rank is 18.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
HB 3	3/12/2013	ND<0	18.5
	5/20/2013	ND<0	18.5
	9/23/2013	ND<0	18.5
	12/10/2013	0.15	42
	2/6/2014	ND<0	18.5
	6/26/2014	ND<0	18.5
	9/30/2014	ND<0	18.5
	11/19/2014	0.12	38
	3/23/2015	ND<0	18.5
	4/22/2015	ND<0	18.5
	9/30/2015	ND<0	18.5
	11/19/2015	ND<0	18.5
	3/15/2016	ND<0	18.5
	6/29/2016	ND<0	18.5
	8/9/2016	ND<0	18.5
	12/7/2016	0.126	39
	3/2/2017	0.115	37
	7/5/2017	ND<0	18.5
	8/16/2017	ND<0	18.5
	10/25/2017	ND<0	18.5
	3/28/2018	ND<0	18.5
	6/29/2018	ND<0	18.5
	8/2/2018	ND<0	18.5
	12/10/2018	0.141	41
	4/15/2019	ND<0	18.5
	6/12/2019	ND<0	18.5
	8/27/2019	0.179	45
	10/29/2019	0.166	43
	3/30/2020	0.166	44
	6/16/2020	ND<0	18.5
	9/21/2020	ND<0	18.5
	12/17/2020	ND<0	18.5
	3/18/2021	ND<0	18.5
	5/5/2021	ND<0	18.5
	9/2/2021	ND<0	18.5
	11/23/2021	ND<0	18.5
	1/11/2022	ND<0	18.5
	4/7/2022	ND<0	18.5
	8/2/2022	ND<0	18.5
	11/16/2022	ND<0	18.5
	2/14/2023	ND<0	18.5
SME 9	4/7/2022	0.135	40
	8/3/2022	ND<0	18.5
	11/16/2022	ND<0	18.5

2/13/2023	ND<0	18.5	

The Wilcoxon Statistic is 85.5
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is 0.11965
The Standard Deviation adjusted for ties is 17.518
The Z Score adjusted for ties is 0.171253
0.11965 < 2.326 indicating no statistical significance at 1% level
0.171253 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	2 (4.44444%)
Pooled Mean	21.9378
Pooled Std Dev	13.3452
Compliance Meas.	4
Compliance Mean	1.375
Compliance Std Dev	1.59243
Background Meas.	41
Background Mean	23.9439
Background Std Dev	12.2191

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
HB 3	41	0	0	981.7

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
HB 3	23.9439	12.2191	0	1025	25

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 9	4	2	50	5.5

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 9	1.375	1.59243	-22.5689	6.17727	10	2.5

Analysis of Variance Statistics

SS Wells	1856.32
SS Total	7836.21

Kruskal-Wallis Statistics

Non-Detect Rank	1.5
Background Rank Sum	1025
Background Rank Mean	25
H Statistic	10.6957
H Adjusted for Ties	10.6964

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: SME 9

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 2
Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
HB 3	3/12/2013	49	42
	5/20/2013	17	15
	9/23/2013	19	19
	12/10/2013	20	21
	2/6/2014	13	12
	6/26/2014	12	10
	9/30/2014	30	35
	11/19/2014	51	43
	3/23/2015	35	38
	4/22/2015	22	27
	9/30/2015	23	28
	11/19/2015	30.2	36
	3/15/2016	23.8	32
	6/29/2016	20.9	25
	8/9/2016	14.3	13
	12/7/2016	17	16
	3/2/2017	57.1	45
	7/5/2017	28.5	34
	8/16/2017	12.7	11
	10/25/2017	20.4	23
	3/28/2018	20.2	22
	6/29/2018	18.2	18
	8/2/2018	35.3	40
	12/10/2018	27.6	33
	4/15/2019	35.5	41
	6/12/2019	52.3	44
	8/27/2019	7.3	5
	10/29/2019	17.6	17
	3/30/2020	19	20
	6/16/2020	14.6	14
	9/21/2020	8.3	7
	12/17/2020	20.4	24
	3/18/2021	23	29
	5/5/2021	35.1	39
	9/2/2021	23.6	30
	11/23/2021	10.5	8
	1/11/2022	23.6	31
	4/7/2022	21	26
	8/2/2022	33.7	37
	11/16/2022	7.4	6
	2/14/2023	11.6	9
SME 9	4/7/2022	2.9	4
	8/3/2022	ND<0	1.5
	11/16/2022	ND<0	1.5

2/13/2023	2.6	3	

The Wilcoxon Statistic is 0
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is -3.29036
The Standard Deviation adjusted for ties is 25.0724
The Z Score adjusted for ties is -3.29047
-3.29036 < 2.326 indicating no statistical significance at 1% level
-3.29047 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total Measurements	45
Total Non-Detects	0 (0%)
Pooled Mean	23.5467
Pooled Std Dev	15.0122
Compliance Meas.	4
Compliance Mean	6.8925
Compliance Std Dev	3.45652
Background Meas.	41
Background Mean	25.1715
Background Std Dev	14.7161

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
HB 3	41	0	0	1032.03

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
HB 3	25.1715	14.7161	0	1019	24.8537

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
SME 9	4	0	0	27.57

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
SME 9	6.8925	3.45652	-18.279	7.45024	16	4

Analysis of Variance Statistics

SS Wells	1217.68
SS Total	9916.11

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	1019
Background Rank Mean	24.8537
H Statistic	9.1877
H Adjusted for Ties	9.1877

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: SME 9

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

Total non detects is 0
Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
HB 3	3/12/2013	33.3	40
	5/20/2013	14.5	15
	9/23/2013	21.3	22
	12/10/2013	48.4	41
	2/6/2014	32	38
	6/26/2014	12	10
	9/30/2014	29.5	35
	11/19/2014	56.1	44
	3/23/2015	27	29
	4/22/2015	25	27
	9/30/2015	22	23
	11/19/2015	32	39
	3/15/2016	28.8	34
	6/29/2016	17.3	19
	8/9/2016	11.3	8
	12/7/2016	16	18
	3/2/2017	50	42
	7/5/2017	23.1	25
	8/16/2017	13.7	14
	10/25/2017	11.7	9
	3/28/2018	13.2	13
	6/29/2018	14.6	16
	8/2/2018	28.3	32
	12/10/2018	24.8	26
	4/15/2019	22.4	24
	6/12/2019	12.4	12
	8/27/2019	78.1	45
	10/29/2019	28.2	31
	3/30/2020	8.88	4
	6/16/2020	20.4	21
	9/21/2020	12.1	11
	12/17/2020	31.16	36
	3/18/2021	1.8	1
	5/5/2021	28.31	33
	9/2/2021	19.2	20
	11/23/2021	51.55	43
	1/11/2022	26.9	28
	4/7/2022	27.8	30
	8/2/2022	31.2	37
	11/16/2022	10.73	7
	2/14/2023	15	17
SME 9	4/7/2022	5.17	3
	8/3/2022	9.2	5
	11/16/2022	2.9	2

	2/13/2023	10.3	6

The Wilcoxon Statistic is 6
The Expected value is is 82
The Standard Deviation is 25.0732
The Z Score is -3.05106
The Standard Deviation adjusted for ties is 25.0732
The Z Score adjusted for ties is -3.05106
-3.05106 < 2.326 indicating no statistical significance at 1% level
-3.05106 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Sen's Slope Analysis

Parameter: pH

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
5.08 (5/8/2013)	7.8 (3/12/2013)	(5.08 - 7.8)/(2 - 1)	-2.72
5.96 (9/23/2013)	7.8 (3/12/2013)	(5.96 - 7.8)/(3 - 1)	-0.92
5.32 (12/10/2013)	7.8 (3/12/2013)	(5.32 - 7.8)/(4 - 1)	-0.826667
4.06 (2/6/2014)	7.8 (3/12/2013)	(4.06 - 7.8)/(5 - 1)	-0.935
7.85 (6/26/2014)	7.8 (3/12/2013)	(7.85 - 7.8)/(6 - 1)	0.01
5.78 (9/30/2014)	7.8 (3/12/2013)	(5.78 - 7.8)/(7 - 1)	-0.336667
5.08 (11/19/2014)	7.8 (3/12/2013)	(5.08 - 7.8)/(8 - 1)	-0.388571
8.69 (3/23/2015)	7.8 (3/12/2013)	(8.69 - 7.8)/(9 - 1)	0.11125
6.93 (4/22/2015)	7.8 (3/12/2013)	(6.93 - 7.8)/(10 - 1)	-0.0966667
6.37 (9/30/2015)	7.8 (3/12/2013)	(6.37 - 7.8)/(11 - 1)	-0.143
7.38 (11/19/2015)	7.8 (3/12/2013)	(7.38 - 7.8)/(12 - 1)	-0.0381818
7.93 (3/15/2016)	7.8 (3/12/2013)	(7.93 - 7.8)/(13 - 1)	0.0108333
7.99 (6/29/2016)	7.8 (3/12/2013)	(7.99 - 7.8)/(14 - 1)	0.0146154
7.89 (8/9/2016)	7.8 (3/12/2013)	(7.89 - 7.8)/(15 - 1)	0.00642857
7.08 (12/7/2016)	7.8 (3/12/2013)	(7.08 - 7.8)/(16 - 1)	-0.048
8.14 (3/2/2017)	7.8 (3/12/2013)	(8.14 - 7.8)/(17 - 1)	0.02125
7.98 (6/21/2017)	7.8 (3/12/2013)	(7.98 - 7.8)/(18 - 1)	0.0105882
8.09 (8/17/2017)	7.8 (3/12/2013)	(8.09 - 7.8)/(19 - 1)	0.0161111
7.95 (10/26/2017)	7.8 (3/12/2013)	(7.95 - 7.8)/(20 - 1)	0.00789474
7.79 (3/27/2018)	7.8 (3/12/2013)	(7.79 - 7.8)/(21 - 1)	-0.0005
8.06 (6/26/2018)	7.8 (3/12/2013)	(8.06 - 7.8)/(22 - 1)	0.012381
7.33 (8/1/2018)	7.8 (3/12/2013)	(7.33 - 7.8)/(23 - 1)	-0.0213636
7.59 (12/11/2018)	7.8 (3/12/2013)	(7.59 - 7.8)/(24 - 1)	-0.00913043
7.63 (4/17/2019)	7.8 (3/12/2013)	(7.63 - 7.8)/(25 - 1)	-0.00708333
7.18 (6/11/2019)	7.8 (3/12/2013)	(7.18 - 7.8)/(26 - 1)	-0.0248
7.84 (8/28/2019)	7.8 (3/12/2013)	(7.84 - 7.8)/(27 - 1)	0.00153846
7.84 (10/28/2019)	7.8 (3/12/2013)	(7.84 - 7.8)/(28 - 1)	0.00148148
8.09 (3/31/2020)	7.8 (3/12/2013)	(8.09 - 7.8)/(29 - 1)	0.0103571
7.56 (6/10/2020)	7.8 (3/12/2013)	(7.56 - 7.8)/(30 - 1)	-0.00827586
8.08 (9/21/2020)	7.8 (3/12/2013)	(8.08 - 7.8)/(31 - 1)	0.00933333
7.91 (12/17/2020)	7.8 (3/12/2013)	(7.91 - 7.8)/(32 - 1)	0.00354839
7.82 (3/18/2021)	7.8 (3/12/2013)	(7.82 - 7.8)/(33 - 1)	0.000625
7.24 (5/5/2021)	7.8 (3/12/2013)	(7.24 - 7.8)/(34 - 1)	-0.0169697
8.13 (11/23/2021)	7.8 (3/12/2013)	(8.13 - 7.8)/(35 - 1)	0.00970588
7.39 (1/10/2022)	7.8 (3/12/2013)	(7.39 - 7.8)/(36 - 1)	-0.0117143
7.53 (4/7/2022)	7.8 (3/12/2013)	(7.53 - 7.8)/(37 - 1)	-0.0075
8.17 (8/3/2022)	7.8 (3/12/2013)	(8.17 - 7.8)/(38 - 1)	0.01
7.8 (11/16/2022)	7.8 (3/12/2013)	(7.8 - 7.8)/(39 - 1)	0
7.29 (2/13/2023)	7.8 (3/12/2013)	(7.29 - 7.8)/(40 - 1)	-0.0130769
5.96 (9/23/2013)	5.08 (5/8/2013)	(5.96 - 5.08)/(3 - 2)	0.88
5.32 (12/10/2013)	5.08 (5/8/2013)	(5.32 - 5.08)/(4 - 2)	0.12
4.06 (2/6/2014)	5.08 (5/8/2013)	(4.06 - 5.08)/(5 - 2)	-0.34
7.85 (6/26/2014)	5.08 (5/8/2013)	(7.85 - 5.08)/(6 - 2)	0.6925
5.78 (9/30/2014)	5.08 (5/8/2013)	(5.78 - 5.08)/(7 - 2)	0.14
5.08 (11/19/2014)	5.08 (5/8/2013)	(5.08 - 5.08)/(8 - 2)	0
8.69 (3/23/2015)	5.08 (5/8/2013)	(8.69 - 5.08)/(9 - 2)	0.515714
6.93 (4/22/2015)	5.08 (5/8/2013)	(6.93 - 5.08)/(10 - 2)	0.23125

6.37 (9/30/2015)	5.08 (5/8/2013)	(6.37 - 5.08)/(11 - 2)	0.143333
7.38 (11/19/2015)	5.08 (5/8/2013)	(7.38 - 5.08)/(12 - 2)	0.23
7.93 (3/15/2016)	5.08 (5/8/2013)	(7.93 - 5.08)/(13 - 2)	0.259091
7.99 (6/29/2016)	5.08 (5/8/2013)	(7.99 - 5.08)/(14 - 2)	0.2425
7.89 (8/9/2016)	5.08 (5/8/2013)	(7.89 - 5.08)/(15 - 2)	0.216154
7.08 (12/7/2016)	5.08 (5/8/2013)	(7.08 - 5.08)/(16 - 2)	0.142857
8.14 (3/2/2017)	5.08 (5/8/2013)	(8.14 - 5.08)/(17 - 2)	0.204
7.98 (6/21/2017)	5.08 (5/8/2013)	(7.98 - 5.08)/(18 - 2)	0.18125
8.09 (8/17/2017)	5.08 (5/8/2013)	(8.09 - 5.08)/(19 - 2)	0.177059
7.95 (10/26/2017)	5.08 (5/8/2013)	(7.95 - 5.08)/(20 - 2)	0.159444
7.79 (3/27/2018)	5.08 (5/8/2013)	(7.79 - 5.08)/(21 - 2)	0.142632
8.06 (6/26/2018)	5.08 (5/8/2013)	(8.06 - 5.08)/(22 - 2)	0.149
7.33 (8/1/2018)	5.08 (5/8/2013)	(7.33 - 5.08)/(23 - 2)	0.107143
7.59 (12/11/2018)	5.08 (5/8/2013)	(7.59 - 5.08)/(24 - 2)	0.114091
7.63 (4/17/2019)	5.08 (5/8/2013)	(7.63 - 5.08)/(25 - 2)	0.11087
7.18 (6/11/2019)	5.08 (5/8/2013)	(7.18 - 5.08)/(26 - 2)	0.0875
7.84 (8/28/2019)	5.08 (5/8/2013)	(7.84 - 5.08)/(27 - 2)	0.1104
7.84 (10/28/2019)	5.08 (5/8/2013)	(7.84 - 5.08)/(28 - 2)	0.106154
8.09 (3/31/2020)	5.08 (5/8/2013)	(8.09 - 5.08)/(29 - 2)	0.111481
7.56 (6/10/2020)	5.08 (5/8/2013)	(7.56 - 5.08)/(30 - 2)	0.0885714
8.08 (9/21/2020)	5.08 (5/8/2013)	(8.08 - 5.08)/(31 - 2)	0.103448
7.91 (12/17/2020)	5.08 (5/8/2013)	(7.91 - 5.08)/(32 - 2)	0.0943333
7.82 (3/18/2021)	5.08 (5/8/2013)	(7.82 - 5.08)/(33 - 2)	0.0883871
7.24 (5/5/2021)	5.08 (5/8/2013)	(7.24 - 5.08)/(34 - 2)	0.0675
8.13 (11/23/2021)	5.08 (5/8/2013)	(8.13 - 5.08)/(35 - 2)	0.0924242
7.39 (1/10/2022)	5.08 (5/8/2013)	(7.39 - 5.08)/(36 - 2)	0.0679412
7.53 (4/7/2022)	5.08 (5/8/2013)	(7.53 - 5.08)/(37 - 2)	0.07
8.17 (8/3/2022)	5.08 (5/8/2013)	(8.17 - 5.08)/(38 - 2)	0.0858333
7.8 (11/16/2022)	5.08 (5/8/2013)	(7.8 - 5.08)/(39 - 2)	0.0735135
7.29 (2/13/2023)	5.08 (5/8/2013)	(7.29 - 5.08)/(40 - 2)	0.0581579
5.32 (12/10/2013)	5.96 (9/23/2013)	(5.32 - 5.96)/(4 - 3)	-0.64
4.06 (2/6/2014)	5.96 (9/23/2013)	(4.06 - 5.96)/(5 - 3)	-0.95
7.85 (6/26/2014)	5.96 (9/23/2013)	(7.85 - 5.96)/(6 - 3)	0.63
5.78 (9/30/2014)	5.96 (9/23/2013)	(5.78 - 5.96)/(7 - 3)	-0.045
5.08 (11/19/2014)	5.96 (9/23/2013)	(5.08 - 5.96)/(8 - 3)	-0.176
8.69 (3/23/2015)	5.96 (9/23/2013)	(8.69 - 5.96)/(9 - 3)	0.455
6.93 (4/22/2015)	5.96 (9/23/2013)	(6.93 - 5.96)/(10 - 3)	0.138571
6.37 (9/30/2015)	5.96 (9/23/2013)	(6.37 - 5.96)/(11 - 3)	0.05125
7.38 (11/19/2015)	5.96 (9/23/2013)	(7.38 - 5.96)/(12 - 3)	0.157778
7.93 (3/15/2016)	5.96 (9/23/2013)	(7.93 - 5.96)/(13 - 3)	0.197
7.99 (6/29/2016)	5.96 (9/23/2013)	(7.99 - 5.96)/(14 - 3)	0.184545
7.89 (8/9/2016)	5.96 (9/23/2013)	(7.89 - 5.96)/(15 - 3)	0.160833
7.08 (12/7/2016)	5.96 (9/23/2013)	(7.08 - 5.96)/(16 - 3)	0.0861538
8.14 (3/2/2017)	5.96 (9/23/2013)	(8.14 - 5.96)/(17 - 3)	0.155714
7.98 (6/21/2017)	5.96 (9/23/2013)	(7.98 - 5.96)/(18 - 3)	0.134667
8.09 (8/17/2017)	5.96 (9/23/2013)	(8.09 - 5.96)/(19 - 3)	0.133125
7.95 (10/26/2017)	5.96 (9/23/2013)	(7.95 - 5.96)/(20 - 3)	0.117059
7.79 (3/27/2018)	5.96 (9/23/2013)	(7.79 - 5.96)/(21 - 3)	0.101667
8.06 (6/26/2018)	5.96 (9/23/2013)	(8.06 - 5.96)/(22 - 3)	0.110526
7.33 (8/1/2018)	5.96 (9/23/2013)	(7.33 - 5.96)/(23 - 3)	0.0685
7.59 (12/11/2018)	5.96 (9/23/2013)	(7.59 - 5.96)/(24 - 3)	0.077619
7.63 (4/17/2019)	5.96 (9/23/2013)	(7.63 - 5.96)/(25 - 3)	0.0759091
7.18 (6/11/2019)	5.96 (9/23/2013)	(7.18 - 5.96)/(26 - 3)	0.0530435
7.84 (8/28/2019)	5.96 (9/23/2013)	(7.84 - 5.96)/(27 - 3)	0.0783333
7.84 (10/28/2019)	5.96 (9/23/2013)	(7.84 - 5.96)/(28 - 3)	0.0752
8.09 (3/31/2020)	5.96 (9/23/2013)	(8.09 - 5.96)/(29 - 3)	0.0819231

7.56 (6/10/2020)	5.96 (9/23/2013)	(7.56 - 5.96)/(30 - 3)	0.0592593
8.08 (9/21/2020)	5.96 (9/23/2013)	(8.08 - 5.96)/(31 - 3)	0.0757143
7.91 (12/17/2020)	5.96 (9/23/2013)	(7.91 - 5.96)/(32 - 3)	0.0672414
7.82 (3/18/2021)	5.96 (9/23/2013)	(7.82 - 5.96)/(33 - 3)	0.062
7.24 (5/5/2021)	5.96 (9/23/2013)	(7.24 - 5.96)/(34 - 3)	0.0412903
8.13 (11/23/2021)	5.96 (9/23/2013)	(8.13 - 5.96)/(35 - 3)	0.0678125
7.39 (1/10/2022)	5.96 (9/23/2013)	(7.39 - 5.96)/(36 - 3)	0.0433333
7.53 (4/7/2022)	5.96 (9/23/2013)	(7.53 - 5.96)/(37 - 3)	0.0461765
8.17 (8/3/2022)	5.96 (9/23/2013)	(8.17 - 5.96)/(38 - 3)	0.0631429
7.8 (11/16/2022)	5.96 (9/23/2013)	(7.8 - 5.96)/(39 - 3)	0.0511111
7.29 (2/13/2023)	5.96 (9/23/2013)	(7.29 - 5.96)/(40 - 3)	0.0359459
4.06 (2/6/2014)	5.32 (12/10/2013)	(4.06 - 5.32)/(5 - 4)	-1.26
7.85 (6/26/2014)	5.32 (12/10/2013)	(7.85 - 5.32)/(6 - 4)	1.265
5.78 (9/30/2014)	5.32 (12/10/2013)	(5.78 - 5.32)/(7 - 4)	0.153333
5.08 (11/19/2014)	5.32 (12/10/2013)	(5.08 - 5.32)/(8 - 4)	-0.06
8.69 (3/23/2015)	5.32 (12/10/2013)	(8.69 - 5.32)/(9 - 4)	0.674
6.93 (4/22/2015)	5.32 (12/10/2013)	(6.93 - 5.32)/(10 - 4)	0.268333
6.37 (9/30/2015)	5.32 (12/10/2013)	(6.37 - 5.32)/(11 - 4)	0.15
7.38 (11/19/2015)	5.32 (12/10/2013)	(7.38 - 5.32)/(12 - 4)	0.2575
7.93 (3/15/2016)	5.32 (12/10/2013)	(7.93 - 5.32)/(13 - 4)	0.29
7.99 (6/29/2016)	5.32 (12/10/2013)	(7.99 - 5.32)/(14 - 4)	0.267
7.89 (8/9/2016)	5.32 (12/10/2013)	(7.89 - 5.32)/(15 - 4)	0.233636
7.08 (12/7/2016)	5.32 (12/10/2013)	(7.08 - 5.32)/(16 - 4)	0.146667
8.14 (3/2/2017)	5.32 (12/10/2013)	(8.14 - 5.32)/(17 - 4)	0.216923
7.98 (6/21/2017)	5.32 (12/10/2013)	(7.98 - 5.32)/(18 - 4)	0.19
8.09 (8/17/2017)	5.32 (12/10/2013)	(8.09 - 5.32)/(19 - 4)	0.184667
7.95 (10/26/2017)	5.32 (12/10/2013)	(7.95 - 5.32)/(20 - 4)	0.164375
7.79 (3/27/2018)	5.32 (12/10/2013)	(7.79 - 5.32)/(21 - 4)	0.145294
8.06 (6/26/2018)	5.32 (12/10/2013)	(8.06 - 5.32)/(22 - 4)	0.152222
7.33 (8/1/2018)	5.32 (12/10/2013)	(7.33 - 5.32)/(23 - 4)	0.105789
7.59 (12/11/2018)	5.32 (12/10/2013)	(7.59 - 5.32)/(24 - 4)	0.1135
7.63 (4/17/2019)	5.32 (12/10/2013)	(7.63 - 5.32)/(25 - 4)	0.11
7.18 (6/11/2019)	5.32 (12/10/2013)	(7.18 - 5.32)/(26 - 4)	0.0845455
7.84 (8/28/2019)	5.32 (12/10/2013)	(7.84 - 5.32)/(27 - 4)	0.109565
7.84 (10/28/2019)	5.32 (12/10/2013)	(7.84 - 5.32)/(28 - 4)	0.105
8.09 (3/31/2020)	5.32 (12/10/2013)	(8.09 - 5.32)/(29 - 4)	0.1108
7.56 (6/10/2020)	5.32 (12/10/2013)	(7.56 - 5.32)/(30 - 4)	0.0861538
8.08 (9/21/2020)	5.32 (12/10/2013)	(8.08 - 5.32)/(31 - 4)	0.102222
7.91 (12/17/2020)	5.32 (12/10/2013)	(7.91 - 5.32)/(32 - 4)	0.0925
7.82 (3/18/2021)	5.32 (12/10/2013)	(7.82 - 5.32)/(33 - 4)	0.0862069
7.24 (5/5/2021)	5.32 (12/10/2013)	(7.24 - 5.32)/(34 - 4)	0.064
8.13 (11/23/2021)	5.32 (12/10/2013)	(8.13 - 5.32)/(35 - 4)	0.0906452
7.39 (1/10/2022)	5.32 (12/10/2013)	(7.39 - 5.32)/(36 - 4)	0.0646875
7.53 (4/7/2022)	5.32 (12/10/2013)	(7.53 - 5.32)/(37 - 4)	0.0669697
8.17 (8/3/2022)	5.32 (12/10/2013)	(8.17 - 5.32)/(38 - 4)	0.0838235
7.8 (11/16/2022)	5.32 (12/10/2013)	(7.8 - 5.32)/(39 - 4)	0.0708571
7.29 (2/13/2023)	5.32 (12/10/2013)	(7.29 - 5.32)/(40 - 4)	0.0547222
7.85 (6/26/2014)	4.06 (2/6/2014)	(7.85 - 4.06)/(6 - 5)	3.79
5.78 (9/30/2014)	4.06 (2/6/2014)	(5.78 - 4.06)/(7 - 5)	0.86
5.08 (11/19/2014)	4.06 (2/6/2014)	(5.08 - 4.06)/(8 - 5)	0.34
8.69 (3/23/2015)	4.06 (2/6/2014)	(8.69 - 4.06)/(9 - 5)	1.1575
6.93 (4/22/2015)	4.06 (2/6/2014)	(6.93 - 4.06)/(10 - 5)	0.574
6.37 (9/30/2015)	4.06 (2/6/2014)	(6.37 - 4.06)/(11 - 5)	0.385
7.38 (11/19/2015)	4.06 (2/6/2014)	(7.38 - 4.06)/(12 - 5)	0.474286
7.93 (3/15/2016)	4.06 (2/6/2014)	(7.93 - 4.06)/(13 - 5)	0.48375

7.99 (6/29/2016)	4.06 (2/6/2014)	(7.99 - 4.06)/(14 - 5)	0.436667
7.89 (8/9/2016)	4.06 (2/6/2014)	(7.89 - 4.06)/(15 - 5)	0.383
7.08 (12/7/2016)	4.06 (2/6/2014)	(7.08 - 4.06)/(16 - 5)	0.274545
8.14 (3/2/2017)	4.06 (2/6/2014)	(8.14 - 4.06)/(17 - 5)	0.34
7.98 (6/21/2017)	4.06 (2/6/2014)	(7.98 - 4.06)/(18 - 5)	0.301538
8.09 (8/17/2017)	4.06 (2/6/2014)	(8.09 - 4.06)/(19 - 5)	0.287857
7.95 (10/26/2017)	4.06 (2/6/2014)	(7.95 - 4.06)/(20 - 5)	0.259333
7.79 (3/27/2018)	4.06 (2/6/2014)	(7.79 - 4.06)/(21 - 5)	0.233125
8.06 (6/26/2018)	4.06 (2/6/2014)	(8.06 - 4.06)/(22 - 5)	0.235294
7.33 (8/1/2018)	4.06 (2/6/2014)	(7.33 - 4.06)/(23 - 5)	0.181667
7.59 (12/11/2018)	4.06 (2/6/2014)	(7.59 - 4.06)/(24 - 5)	0.185789
7.63 (4/17/2019)	4.06 (2/6/2014)	(7.63 - 4.06)/(25 - 5)	0.1785
7.18 (6/11/2019)	4.06 (2/6/2014)	(7.18 - 4.06)/(26 - 5)	0.148571
7.84 (8/28/2019)	4.06 (2/6/2014)	(7.84 - 4.06)/(27 - 5)	0.171818
7.84 (10/28/2019)	4.06 (2/6/2014)	(7.84 - 4.06)/(28 - 5)	0.164348
8.09 (3/31/2020)	4.06 (2/6/2014)	(8.09 - 4.06)/(29 - 5)	0.167917
7.56 (6/10/2020)	4.06 (2/6/2014)	(7.56 - 4.06)/(30 - 5)	0.14
8.08 (9/21/2020)	4.06 (2/6/2014)	(8.08 - 4.06)/(31 - 5)	0.154615
7.91 (12/17/2020)	4.06 (2/6/2014)	(7.91 - 4.06)/(32 - 5)	0.142593
7.82 (3/18/2021)	4.06 (2/6/2014)	(7.82 - 4.06)/(33 - 5)	0.134286
7.24 (5/5/2021)	4.06 (2/6/2014)	(7.24 - 4.06)/(34 - 5)	0.109655
8.13 (11/23/2021)	4.06 (2/6/2014)	(8.13 - 4.06)/(35 - 5)	0.135667
7.39 (1/10/2022)	4.06 (2/6/2014)	(7.39 - 4.06)/(36 - 5)	0.107419
7.53 (4/7/2022)	4.06 (2/6/2014)	(7.53 - 4.06)/(37 - 5)	0.108438
8.17 (8/3/2022)	4.06 (2/6/2014)	(8.17 - 4.06)/(38 - 5)	0.124545
7.8 (11/16/2022)	4.06 (2/6/2014)	(7.8 - 4.06)/(39 - 5)	0.11
7.29 (2/13/2023)	4.06 (2/6/2014)	(7.29 - 4.06)/(40 - 5)	0.0922857
5.78 (9/30/2014)	7.85 (6/26/2014)	(5.78 - 7.85)/(7 - 6)	-2.07
5.08 (11/19/2014)	7.85 (6/26/2014)	(5.08 - 7.85)/(8 - 6)	-1.385
8.69 (3/23/2015)	7.85 (6/26/2014)	(8.69 - 7.85)/(9 - 6)	0.28
6.93 (4/22/2015)	7.85 (6/26/2014)	(6.93 - 7.85)/(10 - 6)	-0.23
6.37 (9/30/2015)	7.85 (6/26/2014)	(6.37 - 7.85)/(11 - 6)	-0.296
7.38 (11/19/2015)	7.85 (6/26/2014)	(7.38 - 7.85)/(12 - 6)	-0.0783333
7.93 (3/15/2016)	7.85 (6/26/2014)	(7.93 - 7.85)/(13 - 6)	0.0114286
7.99 (6/29/2016)	7.85 (6/26/2014)	(7.99 - 7.85)/(14 - 6)	0.0175
7.89 (8/9/2016)	7.85 (6/26/2014)	(7.89 - 7.85)/(15 - 6)	0.00444444
7.08 (12/7/2016)	7.85 (6/26/2014)	(7.08 - 7.85)/(16 - 6)	-0.077
8.14 (3/2/2017)	7.85 (6/26/2014)	(8.14 - 7.85)/(17 - 6)	0.0263636
7.98 (6/21/2017)	7.85 (6/26/2014)	(7.98 - 7.85)/(18 - 6)	0.0108333
8.09 (8/17/2017)	7.85 (6/26/2014)	(8.09 - 7.85)/(19 - 6)	0.0184615
7.95 (10/26/2017)	7.85 (6/26/2014)	(7.95 - 7.85)/(20 - 6)	0.00714286
7.79 (3/27/2018)	7.85 (6/26/2014)	(7.79 - 7.85)/(21 - 6)	-0.004
8.06 (6/26/2018)	7.85 (6/26/2014)	(8.06 - 7.85)/(22 - 6)	0.013125
7.33 (8/1/2018)	7.85 (6/26/2014)	(7.33 - 7.85)/(23 - 6)	-0.0305882
7.59 (12/11/2018)	7.85 (6/26/2014)	(7.59 - 7.85)/(24 - 6)	-0.0144444
7.63 (4/17/2019)	7.85 (6/26/2014)	(7.63 - 7.85)/(25 - 6)	-0.0115789
7.18 (6/11/2019)	7.85 (6/26/2014)	(7.18 - 7.85)/(26 - 6)	-0.0335
7.84 (8/28/2019)	7.85 (6/26/2014)	(7.84 - 7.85)/(27 - 6)	-0.00047619
7.84 (10/28/2019)	7.85 (6/26/2014)	(7.84 - 7.85)/(28 - 6)	-0.000454545
8.09 (3/31/2020)	7.85 (6/26/2014)	(8.09 - 7.85)/(29 - 6)	0.0104348
7.56 (6/10/2020)	7.85 (6/26/2014)	(7.56 - 7.85)/(30 - 6)	-0.0120833
8.08 (9/21/2020)	7.85 (6/26/2014)	(8.08 - 7.85)/(31 - 6)	0.0092
7.91 (12/17/2020)	7.85 (6/26/2014)	(7.91 - 7.85)/(32 - 6)	0.00230769
7.82 (3/18/2021)	7.85 (6/26/2014)	(7.82 - 7.85)/(33 - 6)	-0.00111111
7.24 (5/5/2021)	7.85 (6/26/2014)	(7.24 - 7.85)/(34 - 6)	-0.0217857
8.13 (11/23/2021)	7.85 (6/26/2014)	(8.13 - 7.85)/(35 - 6)	0.00965517

7.39 (1/10/2022)	7.85 (6/26/2014)	(7.39 - 7.85)/(36 - 6)	-0.0153333
7.53 (4/7/2022)	7.85 (6/26/2014)	(7.53 - 7.85)/(37 - 6)	-0.0103226
8.17 (8/3/2022)	7.85 (6/26/2014)	(8.17 - 7.85)/(38 - 6)	0.01
7.8 (11/16/2022)	7.85 (6/26/2014)	(7.8 - 7.85)/(39 - 6)	-0.00151515
7.29 (2/13/2023)	7.85 (6/26/2014)	(7.29 - 7.85)/(40 - 6)	-0.0164706
5.08 (11/19/2014)	5.78 (9/30/2014)	(5.08 - 5.78)/(8 - 7)	-0.7
8.69 (3/23/2015)	5.78 (9/30/2014)	(8.69 - 5.78)/(9 - 7)	1.455
6.93 (4/22/2015)	5.78 (9/30/2014)	(6.93 - 5.78)/(10 - 7)	0.383333
6.37 (9/30/2015)	5.78 (9/30/2014)	(6.37 - 5.78)/(11 - 7)	0.1475
7.38 (11/19/2015)	5.78 (9/30/2014)	(7.38 - 5.78)/(12 - 7)	0.32
7.93 (3/15/2016)	5.78 (9/30/2014)	(7.93 - 5.78)/(13 - 7)	0.358333
7.99 (6/29/2016)	5.78 (9/30/2014)	(7.99 - 5.78)/(14 - 7)	0.315714
7.89 (8/9/2016)	5.78 (9/30/2014)	(7.89 - 5.78)/(15 - 7)	0.26375
7.08 (12/7/2016)	5.78 (9/30/2014)	(7.08 - 5.78)/(16 - 7)	0.144444
8.14 (3/2/2017)	5.78 (9/30/2014)	(8.14 - 5.78)/(17 - 7)	0.236
7.98 (6/21/2017)	5.78 (9/30/2014)	(7.98 - 5.78)/(18 - 7)	0.2
8.09 (8/17/2017)	5.78 (9/30/2014)	(8.09 - 5.78)/(19 - 7)	0.1925
7.95 (10/26/2017)	5.78 (9/30/2014)	(7.95 - 5.78)/(20 - 7)	0.166923
7.79 (3/27/2018)	5.78 (9/30/2014)	(7.79 - 5.78)/(21 - 7)	0.143571
8.06 (6/26/2018)	5.78 (9/30/2014)	(8.06 - 5.78)/(22 - 7)	0.152
7.33 (8/1/2018)	5.78 (9/30/2014)	(7.33 - 5.78)/(23 - 7)	0.096875
7.59 (12/11/2018)	5.78 (9/30/2014)	(7.59 - 5.78)/(24 - 7)	0.106471
7.63 (4/17/2019)	5.78 (9/30/2014)	(7.63 - 5.78)/(25 - 7)	0.102778
7.18 (6/11/2019)	5.78 (9/30/2014)	(7.18 - 5.78)/(26 - 7)	0.0736842
7.84 (8/28/2019)	5.78 (9/30/2014)	(7.84 - 5.78)/(27 - 7)	0.103
7.84 (10/28/2019)	5.78 (9/30/2014)	(7.84 - 5.78)/(28 - 7)	0.0980952
8.09 (3/31/2020)	5.78 (9/30/2014)	(8.09 - 5.78)/(29 - 7)	0.105
7.56 (6/10/2020)	5.78 (9/30/2014)	(7.56 - 5.78)/(30 - 7)	0.0773913
8.08 (9/21/2020)	5.78 (9/30/2014)	(8.08 - 5.78)/(31 - 7)	0.0958333
7.91 (12/17/2020)	5.78 (9/30/2014)	(7.91 - 5.78)/(32 - 7)	0.0852
7.82 (3/18/2021)	5.78 (9/30/2014)	(7.82 - 5.78)/(33 - 7)	0.0784615
7.24 (5/5/2021)	5.78 (9/30/2014)	(7.24 - 5.78)/(34 - 7)	0.0540741
8.13 (11/23/2021)	5.78 (9/30/2014)	(8.13 - 5.78)/(35 - 7)	0.0839286
7.39 (1/10/2022)	5.78 (9/30/2014)	(7.39 - 5.78)/(36 - 7)	0.0555172
7.53 (4/7/2022)	5.78 (9/30/2014)	(7.53 - 5.78)/(37 - 7)	0.0583333
8.17 (8/3/2022)	5.78 (9/30/2014)	(8.17 - 5.78)/(38 - 7)	0.0770968
7.8 (11/16/2022)	5.78 (9/30/2014)	(7.8 - 5.78)/(39 - 7)	0.063125
7.29 (2/13/2023)	5.78 (9/30/2014)	(7.29 - 5.78)/(40 - 7)	0.0457576
8.69 (3/23/2015)	5.08 (11/19/2014)	(8.69 - 5.08)/(9 - 8)	3.61
6.93 (4/22/2015)	5.08 (11/19/2014)	(6.93 - 5.08)/(10 - 8)	0.925
6.37 (9/30/2015)	5.08 (11/19/2014)	(6.37 - 5.08)/(11 - 8)	0.43
7.38 (11/19/2015)	5.08 (11/19/2014)	(7.38 - 5.08)/(12 - 8)	0.575
7.93 (3/15/2016)	5.08 (11/19/2014)	(7.93 - 5.08)/(13 - 8)	0.57
7.99 (6/29/2016)	5.08 (11/19/2014)	(7.99 - 5.08)/(14 - 8)	0.485
7.89 (8/9/2016)	5.08 (11/19/2014)	(7.89 - 5.08)/(15 - 8)	0.401429
7.08 (12/7/2016)	5.08 (11/19/2014)	(7.08 - 5.08)/(16 - 8)	0.25
8.14 (3/2/2017)	5.08 (11/19/2014)	(8.14 - 5.08)/(17 - 8)	0.34
7.98 (6/21/2017)	5.08 (11/19/2014)	(7.98 - 5.08)/(18 - 8)	0.29
8.09 (8/17/2017)	5.08 (11/19/2014)	(8.09 - 5.08)/(19 - 8)	0.273636
7.95 (10/26/2017)	5.08 (11/19/2014)	(7.95 - 5.08)/(20 - 8)	0.239167
7.79 (3/27/2018)	5.08 (11/19/2014)	(7.79 - 5.08)/(21 - 8)	0.208462
8.06 (6/26/2018)	5.08 (11/19/2014)	(8.06 - 5.08)/(22 - 8)	0.212857
7.33 (8/1/2018)	5.08 (11/19/2014)	(7.33 - 5.08)/(23 - 8)	0.15
7.59 (12/11/2018)	5.08 (11/19/2014)	(7.59 - 5.08)/(24 - 8)	0.156875
7.63 (4/17/2019)	5.08 (11/19/2014)	(7.63 - 5.08)/(25 - 8)	0.15

7.18 (6/11/2019)	5.08 (11/19/2014)	(7.18 - 5.08)/(26 - 8)	0.116667
7.84 (8/28/2019)	5.08 (11/19/2014)	(7.84 - 5.08)/(27 - 8)	0.145263
7.84 (10/28/2019)	5.08 (11/19/2014)	(7.84 - 5.08)/(28 - 8)	0.138
8.09 (3/31/2020)	5.08 (11/19/2014)	(8.09 - 5.08)/(29 - 8)	0.143333
7.56 (6/10/2020)	5.08 (11/19/2014)	(7.56 - 5.08)/(30 - 8)	0.112727
8.08 (9/21/2020)	5.08 (11/19/2014)	(8.08 - 5.08)/(31 - 8)	0.130435
7.91 (12/17/2020)	5.08 (11/19/2014)	(7.91 - 5.08)/(32 - 8)	0.117917
7.82 (3/18/2021)	5.08 (11/19/2014)	(7.82 - 5.08)/(33 - 8)	0.1096
7.24 (5/5/2021)	5.08 (11/19/2014)	(7.24 - 5.08)/(34 - 8)	0.0830769
8.13 (11/23/2021)	5.08 (11/19/2014)	(8.13 - 5.08)/(35 - 8)	0.112963
7.39 (1/10/2022)	5.08 (11/19/2014)	(7.39 - 5.08)/(36 - 8)	0.0825
7.53 (4/7/2022)	5.08 (11/19/2014)	(7.53 - 5.08)/(37 - 8)	0.0844828
8.17 (8/3/2022)	5.08 (11/19/2014)	(8.17 - 5.08)/(38 - 8)	0.103
7.8 (11/16/2022)	5.08 (11/19/2014)	(7.8 - 5.08)/(39 - 8)	0.0877419
7.29 (2/13/2023)	5.08 (11/19/2014)	(7.29 - 5.08)/(40 - 8)	0.0690625
6.93 (4/22/2015)	8.69 (3/23/2015)	(6.93 - 8.69)/(10 - 9)	-1.76
6.37 (9/30/2015)	8.69 (3/23/2015)	(6.37 - 8.69)/(11 - 9)	-1.16
7.38 (11/19/2015)	8.69 (3/23/2015)	(7.38 - 8.69)/(12 - 9)	-0.436667
7.93 (3/15/2016)	8.69 (3/23/2015)	(7.93 - 8.69)/(13 - 9)	-0.19
7.99 (6/29/2016)	8.69 (3/23/2015)	(7.99 - 8.69)/(14 - 9)	-0.14
7.89 (8/9/2016)	8.69 (3/23/2015)	(7.89 - 8.69)/(15 - 9)	-0.133333
7.08 (12/7/2016)	8.69 (3/23/2015)	(7.08 - 8.69)/(16 - 9)	-0.23
8.14 (3/2/2017)	8.69 (3/23/2015)	(8.14 - 8.69)/(17 - 9)	-0.06875
7.98 (6/21/2017)	8.69 (3/23/2015)	(7.98 - 8.69)/(18 - 9)	-0.0788889
8.09 (8/17/2017)	8.69 (3/23/2015)	(8.09 - 8.69)/(19 - 9)	-0.06
7.95 (10/26/2017)	8.69 (3/23/2015)	(7.95 - 8.69)/(20 - 9)	-0.0672727
7.79 (3/27/2018)	8.69 (3/23/2015)	(7.79 - 8.69)/(21 - 9)	-0.075
8.06 (6/26/2018)	8.69 (3/23/2015)	(8.06 - 8.69)/(22 - 9)	-0.0484615
7.33 (8/1/2018)	8.69 (3/23/2015)	(7.33 - 8.69)/(23 - 9)	-0.0971429
7.59 (12/11/2018)	8.69 (3/23/2015)	(7.59 - 8.69)/(24 - 9)	-0.0733333
7.63 (4/17/2019)	8.69 (3/23/2015)	(7.63 - 8.69)/(25 - 9)	-0.06625
7.18 (6/11/2019)	8.69 (3/23/2015)	(7.18 - 8.69)/(26 - 9)	-0.0888235
7.84 (8/28/2019)	8.69 (3/23/2015)	(7.84 - 8.69)/(27 - 9)	-0.0472222
7.84 (10/28/2019)	8.69 (3/23/2015)	(7.84 - 8.69)/(28 - 9)	-0.0447368
8.09 (3/31/2020)	8.69 (3/23/2015)	(8.09 - 8.69)/(29 - 9)	-0.03
7.56 (6/10/2020)	8.69 (3/23/2015)	(7.56 - 8.69)/(30 - 9)	-0.0538095
8.08 (9/21/2020)	8.69 (3/23/2015)	(8.08 - 8.69)/(31 - 9)	-0.0277273
7.91 (12/17/2020)	8.69 (3/23/2015)	(7.91 - 8.69)/(32 - 9)	-0.033913
7.82 (3/18/2021)	8.69 (3/23/2015)	(7.82 - 8.69)/(33 - 9)	-0.03625
7.24 (5/5/2021)	8.69 (3/23/2015)	(7.24 - 8.69)/(34 - 9)	-0.058
8.13 (11/23/2021)	8.69 (3/23/2015)	(8.13 - 8.69)/(35 - 9)	-0.0215385
7.39 (1/10/2022)	8.69 (3/23/2015)	(7.39 - 8.69)/(36 - 9)	-0.0481481
7.53 (4/7/2022)	8.69 (3/23/2015)	(7.53 - 8.69)/(37 - 9)	-0.0414286
8.17 (8/3/2022)	8.69 (3/23/2015)	(8.17 - 8.69)/(38 - 9)	-0.017931
7.8 (11/16/2022)	8.69 (3/23/2015)	(7.8 - 8.69)/(39 - 9)	-0.0296667
7.29 (2/13/2023)	8.69 (3/23/2015)	(7.29 - 8.69)/(40 - 9)	-0.0451613
6.37 (9/30/2015)	6.93 (4/22/2015)	(6.37 - 6.93)/(11 - 10)	-0.56
7.38 (11/19/2015)	6.93 (4/22/2015)	(7.38 - 6.93)/(12 - 10)	0.225
7.93 (3/15/2016)	6.93 (4/22/2015)	(7.93 - 6.93)/(13 - 10)	0.333333
7.99 (6/29/2016)	6.93 (4/22/2015)	(7.99 - 6.93)/(14 - 10)	0.265
7.89 (8/9/2016)	6.93 (4/22/2015)	(7.89 - 6.93)/(15 - 10)	0.192
7.08 (12/7/2016)	6.93 (4/22/2015)	(7.08 - 6.93)/(16 - 10)	0.025
8.14 (3/2/2017)	6.93 (4/22/2015)	(8.14 - 6.93)/(17 - 10)	0.172857
7.98 (6/21/2017)	6.93 (4/22/2015)	(7.98 - 6.93)/(18 - 10)	0.13125
8.09 (8/17/2017)	6.93 (4/22/2015)	(8.09 - 6.93)/(19 - 10)	0.128889

7.95 (10/26/2017)	6.93 (4/22/2015)	(7.95 - 6.93)/(20 - 10)	0.102
7.79 (3/27/2018)	6.93 (4/22/2015)	(7.79 - 6.93)/(21 - 10)	0.0781818
8.06 (6/26/2018)	6.93 (4/22/2015)	(8.06 - 6.93)/(22 - 10)	0.0941667
7.33 (8/1/2018)	6.93 (4/22/2015)	(7.33 - 6.93)/(23 - 10)	0.0307692
7.59 (12/11/2018)	6.93 (4/22/2015)	(7.59 - 6.93)/(24 - 10)	0.0471429
7.63 (4/17/2019)	6.93 (4/22/2015)	(7.63 - 6.93)/(25 - 10)	0.0466667
7.18 (6/11/2019)	6.93 (4/22/2015)	(7.18 - 6.93)/(26 - 10)	0.015625
7.84 (8/28/2019)	6.93 (4/22/2015)	(7.84 - 6.93)/(27 - 10)	0.0535294
7.84 (10/28/2019)	6.93 (4/22/2015)	(7.84 - 6.93)/(28 - 10)	0.0505556
8.09 (3/31/2020)	6.93 (4/22/2015)	(8.09 - 6.93)/(29 - 10)	0.0610526
7.56 (6/10/2020)	6.93 (4/22/2015)	(7.56 - 6.93)/(30 - 10)	0.0315
8.08 (9/21/2020)	6.93 (4/22/2015)	(8.08 - 6.93)/(31 - 10)	0.0547619
7.91 (12/17/2020)	6.93 (4/22/2015)	(7.91 - 6.93)/(32 - 10)	0.0445455
7.82 (3/18/2021)	6.93 (4/22/2015)	(7.82 - 6.93)/(33 - 10)	0.0386957
7.24 (5/5/2021)	6.93 (4/22/2015)	(7.24 - 6.93)/(34 - 10)	0.0129167
8.13 (11/23/2021)	6.93 (4/22/2015)	(8.13 - 6.93)/(35 - 10)	0.048
7.39 (1/10/2022)	6.93 (4/22/2015)	(7.39 - 6.93)/(36 - 10)	0.0176923
7.53 (4/7/2022)	6.93 (4/22/2015)	(7.53 - 6.93)/(37 - 10)	0.0222222
8.17 (8/3/2022)	6.93 (4/22/2015)	(8.17 - 6.93)/(38 - 10)	0.0442857
7.8 (11/16/2022)	6.93 (4/22/2015)	(7.8 - 6.93)/(39 - 10)	0.03
7.29 (2/13/2023)	6.93 (4/22/2015)	(7.29 - 6.93)/(40 - 10)	0.012
7.38 (11/19/2015)	6.37 (9/30/2015)	(7.38 - 6.37)/(12 - 11)	1.01
7.93 (3/15/2016)	6.37 (9/30/2015)	(7.93 - 6.37)/(13 - 11)	0.78
7.99 (6/29/2016)	6.37 (9/30/2015)	(7.99 - 6.37)/(14 - 11)	0.54
7.89 (8/9/2016)	6.37 (9/30/2015)	(7.89 - 6.37)/(15 - 11)	0.38
7.08 (12/7/2016)	6.37 (9/30/2015)	(7.08 - 6.37)/(16 - 11)	0.142
8.14 (3/2/2017)	6.37 (9/30/2015)	(8.14 - 6.37)/(17 - 11)	0.295
7.98 (6/21/2017)	6.37 (9/30/2015)	(7.98 - 6.37)/(18 - 11)	0.23
8.09 (8/17/2017)	6.37 (9/30/2015)	(8.09 - 6.37)/(19 - 11)	0.215
7.95 (10/26/2017)	6.37 (9/30/2015)	(7.95 - 6.37)/(20 - 11)	0.175556
7.79 (3/27/2018)	6.37 (9/30/2015)	(7.79 - 6.37)/(21 - 11)	0.142
8.06 (6/26/2018)	6.37 (9/30/2015)	(8.06 - 6.37)/(22 - 11)	0.153636
7.33 (8/1/2018)	6.37 (9/30/2015)	(7.33 - 6.37)/(23 - 11)	0.08
7.59 (12/11/2018)	6.37 (9/30/2015)	(7.59 - 6.37)/(24 - 11)	0.0938462
7.63 (4/17/2019)	6.37 (9/30/2015)	(7.63 - 6.37)/(25 - 11)	0.09
7.18 (6/11/2019)	6.37 (9/30/2015)	(7.18 - 6.37)/(26 - 11)	0.054
7.84 (8/28/2019)	6.37 (9/30/2015)	(7.84 - 6.37)/(27 - 11)	0.091875
7.84 (10/28/2019)	6.37 (9/30/2015)	(7.84 - 6.37)/(28 - 11)	0.0864706
8.09 (3/31/2020)	6.37 (9/30/2015)	(8.09 - 6.37)/(29 - 11)	0.0955556
7.56 (6/10/2020)	6.37 (9/30/2015)	(7.56 - 6.37)/(30 - 11)	0.0626316
8.08 (9/21/2020)	6.37 (9/30/2015)	(8.08 - 6.37)/(31 - 11)	0.0855
7.91 (12/17/2020)	6.37 (9/30/2015)	(7.91 - 6.37)/(32 - 11)	0.0733333
7.82 (3/18/2021)	6.37 (9/30/2015)	(7.82 - 6.37)/(33 - 11)	0.0659091
7.24 (5/5/2021)	6.37 (9/30/2015)	(7.24 - 6.37)/(34 - 11)	0.0378261
8.13 (11/23/2021)	6.37 (9/30/2015)	(8.13 - 6.37)/(35 - 11)	0.0733333
7.39 (1/10/2022)	6.37 (9/30/2015)	(7.39 - 6.37)/(36 - 11)	0.0408
7.53 (4/7/2022)	6.37 (9/30/2015)	(7.53 - 6.37)/(37 - 11)	0.0446154
8.17 (8/3/2022)	6.37 (9/30/2015)	(8.17 - 6.37)/(38 - 11)	0.0666667
7.8 (11/16/2022)	6.37 (9/30/2015)	(7.8 - 6.37)/(39 - 11)	0.0510714
7.29 (2/13/2023)	6.37 (9/30/2015)	(7.29 - 6.37)/(40 - 11)	0.0317241
7.93 (3/15/2016)	7.38 (11/19/2015)	(7.93 - 7.38)/(13 - 12)	0.55
7.99 (6/29/2016)	7.38 (11/19/2015)	(7.99 - 7.38)/(14 - 12)	0.305
7.89 (8/9/2016)	7.38 (11/19/2015)	(7.89 - 7.38)/(15 - 12)	0.17
7.08 (12/7/2016)	7.38 (11/19/2015)	(7.08 - 7.38)/(16 - 12)	-0.075
8.14 (3/2/2017)	7.38 (11/19/2015)	(8.14 - 7.38)/(17 - 12)	0.152

7.98 (6/21/2017)	7.38 (11/19/2015)	(7.98 - 7.38)/(18 - 12)	0.1
8.09 (8/17/2017)	7.38 (11/19/2015)	(8.09 - 7.38)/(19 - 12)	0.101429
7.95 (10/26/2017)	7.38 (11/19/2015)	(7.95 - 7.38)/(20 - 12)	0.07125
7.79 (3/27/2018)	7.38 (11/19/2015)	(7.79 - 7.38)/(21 - 12)	0.0455556
8.06 (6/26/2018)	7.38 (11/19/2015)	(8.06 - 7.38)/(22 - 12)	0.068
7.33 (8/1/2018)	7.38 (11/19/2015)	(7.33 - 7.38)/(23 - 12)	-0.00454545
7.59 (12/11/2018)	7.38 (11/19/2015)	(7.59 - 7.38)/(24 - 12)	0.0175
7.63 (4/17/2019)	7.38 (11/19/2015)	(7.63 - 7.38)/(25 - 12)	0.0192308
7.18 (6/11/2019)	7.38 (11/19/2015)	(7.18 - 7.38)/(26 - 12)	-0.0142857
7.84 (8/28/2019)	7.38 (11/19/2015)	(7.84 - 7.38)/(27 - 12)	0.0306667
7.84 (10/28/2019)	7.38 (11/19/2015)	(7.84 - 7.38)/(28 - 12)	0.02875
8.09 (3/31/2020)	7.38 (11/19/2015)	(8.09 - 7.38)/(29 - 12)	0.0417647
7.56 (6/10/2020)	7.38 (11/19/2015)	(7.56 - 7.38)/(30 - 12)	0.01
8.08 (9/21/2020)	7.38 (11/19/2015)	(8.08 - 7.38)/(31 - 12)	0.0368421
7.91 (12/17/2020)	7.38 (11/19/2015)	(7.91 - 7.38)/(32 - 12)	0.0265
7.82 (3/18/2021)	7.38 (11/19/2015)	(7.82 - 7.38)/(33 - 12)	0.0209524
7.24 (5/5/2021)	7.38 (11/19/2015)	(7.24 - 7.38)/(34 - 12)	-0.00636364
8.13 (11/23/2021)	7.38 (11/19/2015)	(8.13 - 7.38)/(35 - 12)	0.0326087
7.39 (1/10/2022)	7.38 (11/19/2015)	(7.39 - 7.38)/(36 - 12)	0.000416667
7.53 (4/7/2022)	7.38 (11/19/2015)	(7.53 - 7.38)/(37 - 12)	0.006
8.17 (8/3/2022)	7.38 (11/19/2015)	(8.17 - 7.38)/(38 - 12)	0.0303846
7.8 (11/16/2022)	7.38 (11/19/2015)	(7.8 - 7.38)/(39 - 12)	0.0155556
7.29 (2/13/2023)	7.38 (11/19/2015)	(7.29 - 7.38)/(40 - 12)	-0.00321429
7.99 (6/29/2016)	7.93 (3/15/2016)	(7.99 - 7.93)/(14 - 13)	0.06
7.89 (8/9/2016)	7.93 (3/15/2016)	(7.89 - 7.93)/(15 - 13)	-0.02
7.08 (12/7/2016)	7.93 (3/15/2016)	(7.08 - 7.93)/(16 - 13)	-0.283333
8.14 (3/2/2017)	7.93 (3/15/2016)	(8.14 - 7.93)/(17 - 13)	0.0525
7.98 (6/21/2017)	7.93 (3/15/2016)	(7.98 - 7.93)/(18 - 13)	0.01
8.09 (8/17/2017)	7.93 (3/15/2016)	(8.09 - 7.93)/(19 - 13)	0.0266667
7.95 (10/26/2017)	7.93 (3/15/2016)	(7.95 - 7.93)/(20 - 13)	0.00285714
7.79 (3/27/2018)	7.93 (3/15/2016)	(7.79 - 7.93)/(21 - 13)	-0.0175
8.06 (6/26/2018)	7.93 (3/15/2016)	(8.06 - 7.93)/(22 - 13)	0.0144444
7.33 (8/1/2018)	7.93 (3/15/2016)	(7.33 - 7.93)/(23 - 13)	-0.06
7.59 (12/11/2018)	7.93 (3/15/2016)	(7.59 - 7.93)/(24 - 13)	-0.0309091
7.63 (4/17/2019)	7.93 (3/15/2016)	(7.63 - 7.93)/(25 - 13)	-0.025
7.18 (6/11/2019)	7.93 (3/15/2016)	(7.18 - 7.93)/(26 - 13)	-0.0576923
7.84 (8/28/2019)	7.93 (3/15/2016)	(7.84 - 7.93)/(27 - 13)	-0.00642857
7.84 (10/28/2019)	7.93 (3/15/2016)	(7.84 - 7.93)/(28 - 13)	-0.006
8.09 (3/31/2020)	7.93 (3/15/2016)	(8.09 - 7.93)/(29 - 13)	0.01
7.56 (6/10/2020)	7.93 (3/15/2016)	(7.56 - 7.93)/(30 - 13)	-0.0217647
8.08 (9/21/2020)	7.93 (3/15/2016)	(8.08 - 7.93)/(31 - 13)	0.00833333
7.91 (12/17/2020)	7.93 (3/15/2016)	(7.91 - 7.93)/(32 - 13)	-0.00105263
7.82 (3/18/2021)	7.93 (3/15/2016)	(7.82 - 7.93)/(33 - 13)	-0.0055
7.24 (5/5/2021)	7.93 (3/15/2016)	(7.24 - 7.93)/(34 - 13)	-0.0328571
8.13 (11/23/2021)	7.93 (3/15/2016)	(8.13 - 7.93)/(35 - 13)	0.00909091
7.39 (1/10/2022)	7.93 (3/15/2016)	(7.39 - 7.93)/(36 - 13)	-0.0234783
7.53 (4/7/2022)	7.93 (3/15/2016)	(7.53 - 7.93)/(37 - 13)	-0.0166667
8.17 (8/3/2022)	7.93 (3/15/2016)	(8.17 - 7.93)/(38 - 13)	0.0096
7.8 (11/16/2022)	7.93 (3/15/2016)	(7.8 - 7.93)/(39 - 13)	-0.005
7.29 (2/13/2023)	7.93 (3/15/2016)	(7.29 - 7.93)/(40 - 13)	-0.0237037
7.89 (8/9/2016)	7.99 (6/29/2016)	(7.89 - 7.99)/(15 - 14)	-0.1
7.08 (12/7/2016)	7.99 (6/29/2016)	(7.08 - 7.99)/(16 - 14)	-0.455
8.14 (3/2/2017)	7.99 (6/29/2016)	(8.14 - 7.99)/(17 - 14)	0.05
7.98 (6/21/2017)	7.99 (6/29/2016)	(7.98 - 7.99)/(18 - 14)	-0.0025
8.09 (8/17/2017)	7.99 (6/29/2016)	(8.09 - 7.99)/(19 - 14)	0.02

7.95 (10/26/2017)	7.99 (6/29/2016)	(7.95 - 7.99)/(20 - 14)	-0.00666667
7.79 (3/27/2018)	7.99 (6/29/2016)	(7.79 - 7.99)/(21 - 14)	-0.0285714
8.06 (6/26/2018)	7.99 (6/29/2016)	(8.06 - 7.99)/(22 - 14)	0.00875
7.33 (8/1/2018)	7.99 (6/29/2016)	(7.33 - 7.99)/(23 - 14)	-0.0733333
7.59 (12/11/2018)	7.99 (6/29/2016)	(7.59 - 7.99)/(24 - 14)	-0.04
7.63 (4/17/2019)	7.99 (6/29/2016)	(7.63 - 7.99)/(25 - 14)	-0.0327273
7.18 (6/11/2019)	7.99 (6/29/2016)	(7.18 - 7.99)/(26 - 14)	-0.0675
7.84 (8/28/2019)	7.99 (6/29/2016)	(7.84 - 7.99)/(27 - 14)	-0.0115385
7.84 (10/28/2019)	7.99 (6/29/2016)	(7.84 - 7.99)/(28 - 14)	-0.0107143
8.09 (3/31/2020)	7.99 (6/29/2016)	(8.09 - 7.99)/(29 - 14)	0.00666667
7.56 (6/10/2020)	7.99 (6/29/2016)	(7.56 - 7.99)/(30 - 14)	-0.026875
8.08 (9/21/2020)	7.99 (6/29/2016)	(8.08 - 7.99)/(31 - 14)	0.00529412
7.91 (12/17/2020)	7.99 (6/29/2016)	(7.91 - 7.99)/(32 - 14)	-0.00444444
7.82 (3/18/2021)	7.99 (6/29/2016)	(7.82 - 7.99)/(33 - 14)	-0.00894737
7.24 (5/5/2021)	7.99 (6/29/2016)	(7.24 - 7.99)/(34 - 14)	-0.0375
8.13 (11/23/2021)	7.99 (6/29/2016)	(8.13 - 7.99)/(35 - 14)	0.00666667
7.39 (1/10/2022)	7.99 (6/29/2016)	(7.39 - 7.99)/(36 - 14)	-0.0272727
7.53 (4/7/2022)	7.99 (6/29/2016)	(7.53 - 7.99)/(37 - 14)	-0.02
8.17 (8/3/2022)	7.99 (6/29/2016)	(8.17 - 7.99)/(38 - 14)	0.0075
7.8 (11/16/2022)	7.99 (6/29/2016)	(7.8 - 7.99)/(39 - 14)	-0.0076
7.29 (2/13/2023)	7.99 (6/29/2016)	(7.29 - 7.99)/(40 - 14)	-0.0269231
7.08 (12/7/2016)	7.89 (8/9/2016)	(7.08 - 7.89)/(16 - 15)	-0.81
8.14 (3/2/2017)	7.89 (8/9/2016)	(8.14 - 7.89)/(17 - 15)	0.125
7.98 (6/21/2017)	7.89 (8/9/2016)	(7.98 - 7.89)/(18 - 15)	0.03
8.09 (8/17/2017)	7.89 (8/9/2016)	(8.09 - 7.89)/(19 - 15)	0.05
7.95 (10/26/2017)	7.89 (8/9/2016)	(7.95 - 7.89)/(20 - 15)	0.012
7.79 (3/27/2018)	7.89 (8/9/2016)	(7.79 - 7.89)/(21 - 15)	-0.0166667
8.06 (6/26/2018)	7.89 (8/9/2016)	(8.06 - 7.89)/(22 - 15)	0.0242857
7.33 (8/1/2018)	7.89 (8/9/2016)	(7.33 - 7.89)/(23 - 15)	-0.07
7.59 (12/11/2018)	7.89 (8/9/2016)	(7.59 - 7.89)/(24 - 15)	-0.0333333
7.63 (4/17/2019)	7.89 (8/9/2016)	(7.63 - 7.89)/(25 - 15)	-0.026
7.18 (6/11/2019)	7.89 (8/9/2016)	(7.18 - 7.89)/(26 - 15)	-0.0645455
7.84 (8/28/2019)	7.89 (8/9/2016)	(7.84 - 7.89)/(27 - 15)	-0.00416667
7.84 (10/28/2019)	7.89 (8/9/2016)	(7.84 - 7.89)/(28 - 15)	-0.00384615
8.09 (3/31/2020)	7.89 (8/9/2016)	(8.09 - 7.89)/(29 - 15)	0.0142857
7.56 (6/10/2020)	7.89 (8/9/2016)	(7.56 - 7.89)/(30 - 15)	-0.022
8.08 (9/21/2020)	7.89 (8/9/2016)	(8.08 - 7.89)/(31 - 15)	0.011875
7.91 (12/17/2020)	7.89 (8/9/2016)	(7.91 - 7.89)/(32 - 15)	0.00117647
7.82 (3/18/2021)	7.89 (8/9/2016)	(7.82 - 7.89)/(33 - 15)	-0.00388889
7.24 (5/5/2021)	7.89 (8/9/2016)	(7.24 - 7.89)/(34 - 15)	-0.0342105
8.13 (11/23/2021)	7.89 (8/9/2016)	(8.13 - 7.89)/(35 - 15)	0.012
7.39 (1/10/2022)	7.89 (8/9/2016)	(7.39 - 7.89)/(36 - 15)	-0.0238095
7.53 (4/7/2022)	7.89 (8/9/2016)	(7.53 - 7.89)/(37 - 15)	-0.0163636
8.17 (8/3/2022)	7.89 (8/9/2016)	(8.17 - 7.89)/(38 - 15)	0.0121739
7.8 (11/16/2022)	7.89 (8/9/2016)	(7.8 - 7.89)/(39 - 15)	-0.00375
7.29 (2/13/2023)	7.89 (8/9/2016)	(7.29 - 7.89)/(40 - 15)	-0.024
8.14 (3/2/2017)	7.08 (12/7/2016)	(8.14 - 7.08)/(17 - 16)	1.06
7.98 (6/21/2017)	7.08 (12/7/2016)	(7.98 - 7.08)/(18 - 16)	0.45
8.09 (8/17/2017)	7.08 (12/7/2016)	(8.09 - 7.08)/(19 - 16)	0.336667
7.95 (10/26/2017)	7.08 (12/7/2016)	(7.95 - 7.08)/(20 - 16)	0.2175
7.79 (3/27/2018)	7.08 (12/7/2016)	(7.79 - 7.08)/(21 - 16)	0.142
8.06 (6/26/2018)	7.08 (12/7/2016)	(8.06 - 7.08)/(22 - 16)	0.163333
7.33 (8/1/2018)	7.08 (12/7/2016)	(7.33 - 7.08)/(23 - 16)	0.0357143
7.59 (12/11/2018)	7.08 (12/7/2016)	(7.59 - 7.08)/(24 - 16)	0.06375
7.63 (4/17/2019)	7.08 (12/7/2016)	(7.63 - 7.08)/(25 - 16)	0.0611111

7.18 (6/11/2019)	7.08 (12/7/2016)	(7.18 - 7.08)/(26 - 16)	0.01
7.84 (8/28/2019)	7.08 (12/7/2016)	(7.84 - 7.08)/(27 - 16)	0.0690909
7.84 (10/28/2019)	7.08 (12/7/2016)	(7.84 - 7.08)/(28 - 16)	0.0633333
8.09 (3/31/2020)	7.08 (12/7/2016)	(8.09 - 7.08)/(29 - 16)	0.0776923
7.56 (6/10/2020)	7.08 (12/7/2016)	(7.56 - 7.08)/(30 - 16)	0.0342857
8.08 (9/21/2020)	7.08 (12/7/2016)	(8.08 - 7.08)/(31 - 16)	0.0666667
7.91 (12/17/2020)	7.08 (12/7/2016)	(7.91 - 7.08)/(32 - 16)	0.051875
7.82 (3/18/2021)	7.08 (12/7/2016)	(7.82 - 7.08)/(33 - 16)	0.0435294
7.24 (5/5/2021)	7.08 (12/7/2016)	(7.24 - 7.08)/(34 - 16)	0.00888889
8.13 (11/23/2021)	7.08 (12/7/2016)	(8.13 - 7.08)/(35 - 16)	0.0552632
7.39 (1/10/2022)	7.08 (12/7/2016)	(7.39 - 7.08)/(36 - 16)	0.0155
7.53 (4/7/2022)	7.08 (12/7/2016)	(7.53 - 7.08)/(37 - 16)	0.0214286
8.17 (8/3/2022)	7.08 (12/7/2016)	(8.17 - 7.08)/(38 - 16)	0.0495455
7.8 (11/16/2022)	7.08 (12/7/2016)	(7.8 - 7.08)/(39 - 16)	0.0313043
7.29 (2/13/2023)	7.08 (12/7/2016)	(7.29 - 7.08)/(40 - 16)	0.00875
7.98 (6/21/2017)	8.14 (3/2/2017)	(7.98 - 8.14)/(18 - 17)	-0.16
8.09 (8/17/2017)	8.14 (3/2/2017)	(8.09 - 8.14)/(19 - 17)	-0.025
7.95 (10/26/2017)	8.14 (3/2/2017)	(7.95 - 8.14)/(20 - 17)	-0.0633333
7.79 (3/27/2018)	8.14 (3/2/2017)	(7.79 - 8.14)/(21 - 17)	-0.0875
8.06 (6/26/2018)	8.14 (3/2/2017)	(8.06 - 8.14)/(22 - 17)	-0.016
7.33 (8/1/2018)	8.14 (3/2/2017)	(7.33 - 8.14)/(23 - 17)	-0.135
7.59 (12/11/2018)	8.14 (3/2/2017)	(7.59 - 8.14)/(24 - 17)	-0.0785714
7.63 (4/17/2019)	8.14 (3/2/2017)	(7.63 - 8.14)/(25 - 17)	-0.06375
7.18 (6/11/2019)	8.14 (3/2/2017)	(7.18 - 8.14)/(26 - 17)	-0.106667
7.84 (8/28/2019)	8.14 (3/2/2017)	(7.84 - 8.14)/(27 - 17)	-0.03
7.84 (10/28/2019)	8.14 (3/2/2017)	(7.84 - 8.14)/(28 - 17)	-0.0272727
8.09 (3/31/2020)	8.14 (3/2/2017)	(8.09 - 8.14)/(29 - 17)	-0.00416667
7.56 (6/10/2020)	8.14 (3/2/2017)	(7.56 - 8.14)/(30 - 17)	-0.0446154
8.08 (9/21/2020)	8.14 (3/2/2017)	(8.08 - 8.14)/(31 - 17)	-0.00428571
7.91 (12/17/2020)	8.14 (3/2/2017)	(7.91 - 8.14)/(32 - 17)	-0.0153333
7.82 (3/18/2021)	8.14 (3/2/2017)	(7.82 - 8.14)/(33 - 17)	-0.02
7.24 (5/5/2021)	8.14 (3/2/2017)	(7.24 - 8.14)/(34 - 17)	-0.0529412
8.13 (11/23/2021)	8.14 (3/2/2017)	(8.13 - 8.14)/(35 - 17)	-0.000555556
7.39 (1/10/2022)	8.14 (3/2/2017)	(7.39 - 8.14)/(36 - 17)	-0.0394737
7.53 (4/7/2022)	8.14 (3/2/2017)	(7.53 - 8.14)/(37 - 17)	-0.0305
8.17 (8/3/2022)	8.14 (3/2/2017)	(8.17 - 8.14)/(38 - 17)	0.00142857
7.8 (11/16/2022)	8.14 (3/2/2017)	(7.8 - 8.14)/(39 - 17)	-0.0154545
7.29 (2/13/2023)	8.14 (3/2/2017)	(7.29 - 8.14)/(40 - 17)	-0.0369565
8.09 (8/17/2017)	7.98 (6/21/2017)	(8.09 - 7.98)/(19 - 18)	0.11
7.95 (10/26/2017)	7.98 (6/21/2017)	(7.95 - 7.98)/(20 - 18)	-0.015
7.79 (3/27/2018)	7.98 (6/21/2017)	(7.79 - 7.98)/(21 - 18)	-0.0633333
8.06 (6/26/2018)	7.98 (6/21/2017)	(8.06 - 7.98)/(22 - 18)	0.02
7.33 (8/1/2018)	7.98 (6/21/2017)	(7.33 - 7.98)/(23 - 18)	-0.13
7.59 (12/11/2018)	7.98 (6/21/2017)	(7.59 - 7.98)/(24 - 18)	-0.065
7.63 (4/17/2019)	7.98 (6/21/2017)	(7.63 - 7.98)/(25 - 18)	-0.05
7.18 (6/11/2019)	7.98 (6/21/2017)	(7.18 - 7.98)/(26 - 18)	-0.1
7.84 (8/28/2019)	7.98 (6/21/2017)	(7.84 - 7.98)/(27 - 18)	-0.0155556
7.84 (10/28/2019)	7.98 (6/21/2017)	(7.84 - 7.98)/(28 - 18)	-0.014
8.09 (3/31/2020)	7.98 (6/21/2017)	(8.09 - 7.98)/(29 - 18)	0.01
7.56 (6/10/2020)	7.98 (6/21/2017)	(7.56 - 7.98)/(30 - 18)	-0.035
8.08 (9/21/2020)	7.98 (6/21/2017)	(8.08 - 7.98)/(31 - 18)	0.00769231
7.91 (12/17/2020)	7.98 (6/21/2017)	(7.91 - 7.98)/(32 - 18)	-0.005
7.82 (3/18/2021)	7.98 (6/21/2017)	(7.82 - 7.98)/(33 - 18)	-0.0106667
7.24 (5/5/2021)	7.98 (6/21/2017)	(7.24 - 7.98)/(34 - 18)	-0.04625
8.13 (11/23/2021)	7.98 (6/21/2017)	(8.13 - 7.98)/(35 - 18)	0.00882353

7.39 (1/10/2022)	7.98 (6/21/2017)	(7.39 - 7.98)/(36 - 18)	-0.0327778
7.53 (4/7/2022)	7.98 (6/21/2017)	(7.53 - 7.98)/(37 - 18)	-0.0236842
8.17 (8/3/2022)	7.98 (6/21/2017)	(8.17 - 7.98)/(38 - 18)	0.0095
7.8 (11/16/2022)	7.98 (6/21/2017)	(7.8 - 7.98)/(39 - 18)	-0.00857143
7.29 (2/13/2023)	7.98 (6/21/2017)	(7.29 - 7.98)/(40 - 18)	-0.0313636
7.95 (10/26/2017)	8.09 (8/17/2017)	(7.95 - 8.09)/(20 - 19)	-0.14
7.79 (3/27/2018)	8.09 (8/17/2017)	(7.79 - 8.09)/(21 - 19)	-0.15
8.06 (6/26/2018)	8.09 (8/17/2017)	(8.06 - 8.09)/(22 - 19)	-0.01
7.33 (8/1/2018)	8.09 (8/17/2017)	(7.33 - 8.09)/(23 - 19)	-0.19
7.59 (12/11/2018)	8.09 (8/17/2017)	(7.59 - 8.09)/(24 - 19)	-0.1
7.63 (4/17/2019)	8.09 (8/17/2017)	(7.63 - 8.09)/(25 - 19)	-0.0766667
7.18 (6/11/2019)	8.09 (8/17/2017)	(7.18 - 8.09)/(26 - 19)	-0.13
7.84 (8/28/2019)	8.09 (8/17/2017)	(7.84 - 8.09)/(27 - 19)	-0.03125
7.84 (10/28/2019)	8.09 (8/17/2017)	(7.84 - 8.09)/(28 - 19)	-0.0277778
8.09 (3/31/2020)	8.09 (8/17/2017)	(8.09 - 8.09)/(29 - 19)	0
7.56 (6/10/2020)	8.09 (8/17/2017)	(7.56 - 8.09)/(30 - 19)	-0.0481818
8.08 (9/21/2020)	8.09 (8/17/2017)	(8.08 - 8.09)/(31 - 19)	-0.000833333
7.91 (12/17/2020)	8.09 (8/17/2017)	(7.91 - 8.09)/(32 - 19)	-0.0138462
7.82 (3/18/2021)	8.09 (8/17/2017)	(7.82 - 8.09)/(33 - 19)	-0.0192857
7.24 (5/5/2021)	8.09 (8/17/2017)	(7.24 - 8.09)/(34 - 19)	-0.0566667
8.13 (11/23/2021)	8.09 (8/17/2017)	(8.13 - 8.09)/(35 - 19)	0.0025
7.39 (1/10/2022)	8.09 (8/17/2017)	(7.39 - 8.09)/(36 - 19)	-0.0411765
7.53 (4/7/2022)	8.09 (8/17/2017)	(7.53 - 8.09)/(37 - 19)	-0.0311111
8.17 (8/3/2022)	8.09 (8/17/2017)	(8.17 - 8.09)/(38 - 19)	0.00421053
7.8 (11/16/2022)	8.09 (8/17/2017)	(7.8 - 8.09)/(39 - 19)	-0.0145
7.29 (2/13/2023)	8.09 (8/17/2017)	(7.29 - 8.09)/(40 - 19)	-0.0380952
7.79 (3/27/2018)	7.95 (10/26/2017)	(7.79 - 7.95)/(21 - 20)	-0.16
8.06 (6/26/2018)	7.95 (10/26/2017)	(8.06 - 7.95)/(22 - 20)	0.055
7.33 (8/1/2018)	7.95 (10/26/2017)	(7.33 - 7.95)/(23 - 20)	-0.206667
7.59 (12/11/2018)	7.95 (10/26/2017)	(7.59 - 7.95)/(24 - 20)	-0.09
7.63 (4/17/2019)	7.95 (10/26/2017)	(7.63 - 7.95)/(25 - 20)	-0.064
7.18 (6/11/2019)	7.95 (10/26/2017)	(7.18 - 7.95)/(26 - 20)	-0.128333
7.84 (8/28/2019)	7.95 (10/26/2017)	(7.84 - 7.95)/(27 - 20)	-0.0157143
7.84 (10/28/2019)	7.95 (10/26/2017)	(7.84 - 7.95)/(28 - 20)	-0.01375
8.09 (3/31/2020)	7.95 (10/26/2017)	(8.09 - 7.95)/(29 - 20)	0.0155556
7.56 (6/10/2020)	7.95 (10/26/2017)	(7.56 - 7.95)/(30 - 20)	-0.039
8.08 (9/21/2020)	7.95 (10/26/2017)	(8.08 - 7.95)/(31 - 20)	0.0118182
7.91 (12/17/2020)	7.95 (10/26/2017)	(7.91 - 7.95)/(32 - 20)	-0.00333333
7.82 (3/18/2021)	7.95 (10/26/2017)	(7.82 - 7.95)/(33 - 20)	-0.01
7.24 (5/5/2021)	7.95 (10/26/2017)	(7.24 - 7.95)/(34 - 20)	-0.0507143
8.13 (11/23/2021)	7.95 (10/26/2017)	(8.13 - 7.95)/(35 - 20)	0.012
7.39 (1/10/2022)	7.95 (10/26/2017)	(7.39 - 7.95)/(36 - 20)	-0.035
7.53 (4/7/2022)	7.95 (10/26/2017)	(7.53 - 7.95)/(37 - 20)	-0.0247059
8.17 (8/3/2022)	7.95 (10/26/2017)	(8.17 - 7.95)/(38 - 20)	0.0122222
7.8 (11/16/2022)	7.95 (10/26/2017)	(7.8 - 7.95)/(39 - 20)	-0.00789474
7.29 (2/13/2023)	7.95 (10/26/2017)	(7.29 - 7.95)/(40 - 20)	-0.033
8.06 (6/26/2018)	7.79 (3/27/2018)	(8.06 - 7.79)/(22 - 21)	0.27
7.33 (8/1/2018)	7.79 (3/27/2018)	(7.33 - 7.79)/(23 - 21)	-0.23
7.59 (12/11/2018)	7.79 (3/27/2018)	(7.59 - 7.79)/(24 - 21)	-0.0666667
7.63 (4/17/2019)	7.79 (3/27/2018)	(7.63 - 7.79)/(25 - 21)	-0.04
7.18 (6/11/2019)	7.79 (3/27/2018)	(7.18 - 7.79)/(26 - 21)	-0.122
7.84 (8/28/2019)	7.79 (3/27/2018)	(7.84 - 7.79)/(27 - 21)	0.00833333
7.84 (10/28/2019)	7.79 (3/27/2018)	(7.84 - 7.79)/(28 - 21)	0.00714286
8.09 (3/31/2020)	7.79 (3/27/2018)	(8.09 - 7.79)/(29 - 21)	0.0375

7.56 (6/10/2020)	7.79 (3/27/2018)	(7.56 - 7.79)/(30 - 21)	-0.0255556
8.08 (9/21/2020)	7.79 (3/27/2018)	(8.08 - 7.79)/(31 - 21)	0.029
7.91 (12/17/2020)	7.79 (3/27/2018)	(7.91 - 7.79)/(32 - 21)	0.0109091
7.82 (3/18/2021)	7.79 (3/27/2018)	(7.82 - 7.79)/(33 - 21)	0.0025
7.24 (5/5/2021)	7.79 (3/27/2018)	(7.24 - 7.79)/(34 - 21)	-0.0423077
8.13 (11/23/2021)	7.79 (3/27/2018)	(8.13 - 7.79)/(35 - 21)	0.0242857
7.39 (1/10/2022)	7.79 (3/27/2018)	(7.39 - 7.79)/(36 - 21)	-0.0266667
7.53 (4/7/2022)	7.79 (3/27/2018)	(7.53 - 7.79)/(37 - 21)	-0.01625
8.17 (8/3/2022)	7.79 (3/27/2018)	(8.17 - 7.79)/(38 - 21)	0.0223529
7.8 (11/16/2022)	7.79 (3/27/2018)	(7.8 - 7.79)/(39 - 21)	0.000555556
7.29 (2/13/2023)	7.79 (3/27/2018)	(7.29 - 7.79)/(40 - 21)	-0.0263158
7.33 (8/1/2018)	8.06 (6/26/2018)	(7.33 - 8.06)/(23 - 22)	-0.73
7.59 (12/11/2018)	8.06 (6/26/2018)	(7.59 - 8.06)/(24 - 22)	-0.235
7.63 (4/17/2019)	8.06 (6/26/2018)	(7.63 - 8.06)/(25 - 22)	-0.143333
7.18 (6/11/2019)	8.06 (6/26/2018)	(7.18 - 8.06)/(26 - 22)	-0.22
7.84 (8/28/2019)	8.06 (6/26/2018)	(7.84 - 8.06)/(27 - 22)	-0.044
7.84 (10/28/2019)	8.06 (6/26/2018)	(7.84 - 8.06)/(28 - 22)	-0.0366667
8.09 (3/31/2020)	8.06 (6/26/2018)	(8.09 - 8.06)/(29 - 22)	0.00428571
7.56 (6/10/2020)	8.06 (6/26/2018)	(7.56 - 8.06)/(30 - 22)	-0.0625
8.08 (9/21/2020)	8.06 (6/26/2018)	(8.08 - 8.06)/(31 - 22)	0.00222222
7.91 (12/17/2020)	8.06 (6/26/2018)	(7.91 - 8.06)/(32 - 22)	-0.015
7.82 (3/18/2021)	8.06 (6/26/2018)	(7.82 - 8.06)/(33 - 22)	-0.0218182
7.24 (5/5/2021)	8.06 (6/26/2018)	(7.24 - 8.06)/(34 - 22)	-0.0683333
8.13 (11/23/2021)	8.06 (6/26/2018)	(8.13 - 8.06)/(35 - 22)	0.00538462
7.39 (1/10/2022)	8.06 (6/26/2018)	(7.39 - 8.06)/(36 - 22)	-0.0478571
7.53 (4/7/2022)	8.06 (6/26/2018)	(7.53 - 8.06)/(37 - 22)	-0.0353333
8.17 (8/3/2022)	8.06 (6/26/2018)	(8.17 - 8.06)/(38 - 22)	0.006875
7.8 (11/16/2022)	8.06 (6/26/2018)	(7.8 - 8.06)/(39 - 22)	-0.0152941
7.29 (2/13/2023)	8.06 (6/26/2018)	(7.29 - 8.06)/(40 - 22)	-0.0427778
7.59 (12/11/2018)	7.33 (8/1/2018)	(7.59 - 7.33)/(24 - 23)	0.26
7.63 (4/17/2019)	7.33 (8/1/2018)	(7.63 - 7.33)/(25 - 23)	0.15
7.18 (6/11/2019)	7.33 (8/1/2018)	(7.18 - 7.33)/(26 - 23)	-0.05
7.84 (8/28/2019)	7.33 (8/1/2018)	(7.84 - 7.33)/(27 - 23)	0.1275
7.84 (10/28/2019)	7.33 (8/1/2018)	(7.84 - 7.33)/(28 - 23)	0.102
8.09 (3/31/2020)	7.33 (8/1/2018)	(8.09 - 7.33)/(29 - 23)	0.126667
7.56 (6/10/2020)	7.33 (8/1/2018)	(7.56 - 7.33)/(30 - 23)	0.0328571
8.08 (9/21/2020)	7.33 (8/1/2018)	(8.08 - 7.33)/(31 - 23)	0.09375
7.91 (12/17/2020)	7.33 (8/1/2018)	(7.91 - 7.33)/(32 - 23)	0.0644444
7.82 (3/18/2021)	7.33 (8/1/2018)	(7.82 - 7.33)/(33 - 23)	0.049
7.24 (5/5/2021)	7.33 (8/1/2018)	(7.24 - 7.33)/(34 - 23)	-0.00818182
8.13 (11/23/2021)	7.33 (8/1/2018)	(8.13 - 7.33)/(35 - 23)	0.0666667
7.39 (1/10/2022)	7.33 (8/1/2018)	(7.39 - 7.33)/(36 - 23)	0.00461538
7.53 (4/7/2022)	7.33 (8/1/2018)	(7.53 - 7.33)/(37 - 23)	0.0142857
8.17 (8/3/2022)	7.33 (8/1/2018)	(8.17 - 7.33)/(38 - 23)	0.056
7.8 (11/16/2022)	7.33 (8/1/2018)	(7.8 - 7.33)/(39 - 23)	0.029375
7.29 (2/13/2023)	7.33 (8/1/2018)	(7.29 - 7.33)/(40 - 23)	-0.00235294
7.63 (4/17/2019)	7.59 (12/11/2018)	(7.63 - 7.59)/(25 - 24)	0.04
7.18 (6/11/2019)	7.59 (12/11/2018)	(7.18 - 7.59)/(26 - 24)	-0.205
7.84 (8/28/2019)	7.59 (12/11/2018)	(7.84 - 7.59)/(27 - 24)	0.0833333
7.84 (10/28/2019)	7.59 (12/11/2018)	(7.84 - 7.59)/(28 - 24)	0.0625
8.09 (3/31/2020)	7.59 (12/11/2018)	(8.09 - 7.59)/(29 - 24)	0.1
7.56 (6/10/2020)	7.59 (12/11/2018)	(7.56 - 7.59)/(30 - 24)	-0.005
8.08 (9/21/2020)	7.59 (12/11/2018)	(8.08 - 7.59)/(31 - 24)	0.07
7.91 (12/17/2020)	7.59 (12/11/2018)	(7.91 - 7.59)/(32 - 24)	0.04

7.82 (3/18/2021)	7.59 (12/11/2018)	(7.82 - 7.59)/(33 - 24)	0.0255556
7.24 (5/5/2021)	7.59 (12/11/2018)	(7.24 - 7.59)/(34 - 24)	-0.035
8.13 (11/23/2021)	7.59 (12/11/2018)	(8.13 - 7.59)/(35 - 24)	0.0490909
7.39 (1/10/2022)	7.59 (12/11/2018)	(7.39 - 7.59)/(36 - 24)	-0.0166667
7.53 (4/7/2022)	7.59 (12/11/2018)	(7.53 - 7.59)/(37 - 24)	-0.00461538
8.17 (8/3/2022)	7.59 (12/11/2018)	(8.17 - 7.59)/(38 - 24)	0.0414286
7.8 (11/16/2022)	7.59 (12/11/2018)	(7.8 - 7.59)/(39 - 24)	0.014
7.29 (2/13/2023)	7.59 (12/11/2018)	(7.29 - 7.59)/(40 - 24)	-0.01875
7.18 (6/11/2019)	7.63 (4/17/2019)	(7.18 - 7.63)/(26 - 25)	-0.45
7.84 (8/28/2019)	7.63 (4/17/2019)	(7.84 - 7.63)/(27 - 25)	0.105
7.84 (10/28/2019)	7.63 (4/17/2019)	(7.84 - 7.63)/(28 - 25)	0.07
8.09 (3/31/2020)	7.63 (4/17/2019)	(8.09 - 7.63)/(29 - 25)	0.115
7.56 (6/10/2020)	7.63 (4/17/2019)	(7.56 - 7.63)/(30 - 25)	-0.014
8.08 (9/21/2020)	7.63 (4/17/2019)	(8.08 - 7.63)/(31 - 25)	0.075
7.91 (12/17/2020)	7.63 (4/17/2019)	(7.91 - 7.63)/(32 - 25)	0.04
7.82 (3/18/2021)	7.63 (4/17/2019)	(7.82 - 7.63)/(33 - 25)	0.02375
7.24 (5/5/2021)	7.63 (4/17/2019)	(7.24 - 7.63)/(34 - 25)	-0.0433333
8.13 (11/23/2021)	7.63 (4/17/2019)	(8.13 - 7.63)/(35 - 25)	0.05
7.39 (1/10/2022)	7.63 (4/17/2019)	(7.39 - 7.63)/(36 - 25)	-0.0218182
7.53 (4/7/2022)	7.63 (4/17/2019)	(7.53 - 7.63)/(37 - 25)	-0.00833333
8.17 (8/3/2022)	7.63 (4/17/2019)	(8.17 - 7.63)/(38 - 25)	0.0415385
7.8 (11/16/2022)	7.63 (4/17/2019)	(7.8 - 7.63)/(39 - 25)	0.0121429
7.29 (2/13/2023)	7.63 (4/17/2019)	(7.29 - 7.63)/(40 - 25)	-0.0226667
7.84 (8/28/2019)	7.18 (6/11/2019)	(7.84 - 7.18)/(27 - 26)	0.66
7.84 (10/28/2019)	7.18 (6/11/2019)	(7.84 - 7.18)/(28 - 26)	0.33
8.09 (3/31/2020)	7.18 (6/11/2019)	(8.09 - 7.18)/(29 - 26)	0.303333
7.56 (6/10/2020)	7.18 (6/11/2019)	(7.56 - 7.18)/(30 - 26)	0.095
8.08 (9/21/2020)	7.18 (6/11/2019)	(8.08 - 7.18)/(31 - 26)	0.18
7.91 (12/17/2020)	7.18 (6/11/2019)	(7.91 - 7.18)/(32 - 26)	0.121667
7.82 (3/18/2021)	7.18 (6/11/2019)	(7.82 - 7.18)/(33 - 26)	0.0914286
7.24 (5/5/2021)	7.18 (6/11/2019)	(7.24 - 7.18)/(34 - 26)	0.0075
8.13 (11/23/2021)	7.18 (6/11/2019)	(8.13 - 7.18)/(35 - 26)	0.105556
7.39 (1/10/2022)	7.18 (6/11/2019)	(7.39 - 7.18)/(36 - 26)	0.021
7.53 (4/7/2022)	7.18 (6/11/2019)	(7.53 - 7.18)/(37 - 26)	0.0318182
8.17 (8/3/2022)	7.18 (6/11/2019)	(8.17 - 7.18)/(38 - 26)	0.0825
7.8 (11/16/2022)	7.18 (6/11/2019)	(7.8 - 7.18)/(39 - 26)	0.0476923
7.29 (2/13/2023)	7.18 (6/11/2019)	(7.29 - 7.18)/(40 - 26)	0.00785714
7.84 (10/28/2019)	7.84 (8/28/2019)	(7.84 - 7.84)/(28 - 27)	0
8.09 (3/31/2020)	7.84 (8/28/2019)	(8.09 - 7.84)/(29 - 27)	0.125
7.56 (6/10/2020)	7.84 (8/28/2019)	(7.56 - 7.84)/(30 - 27)	-0.0933333
8.08 (9/21/2020)	7.84 (8/28/2019)	(8.08 - 7.84)/(31 - 27)	0.06
7.91 (12/17/2020)	7.84 (8/28/2019)	(7.91 - 7.84)/(32 - 27)	0.014
7.82 (3/18/2021)	7.84 (8/28/2019)	(7.82 - 7.84)/(33 - 27)	-0.00333333
7.24 (5/5/2021)	7.84 (8/28/2019)	(7.24 - 7.84)/(34 - 27)	-0.0857143
8.13 (11/23/2021)	7.84 (8/28/2019)	(8.13 - 7.84)/(35 - 27)	0.03625
7.39 (1/10/2022)	7.84 (8/28/2019)	(7.39 - 7.84)/(36 - 27)	-0.05
7.53 (4/7/2022)	7.84 (8/28/2019)	(7.53 - 7.84)/(37 - 27)	-0.031
8.17 (8/3/2022)	7.84 (8/28/2019)	(8.17 - 7.84)/(38 - 27)	0.03
7.8 (11/16/2022)	7.84 (8/28/2019)	(7.8 - 7.84)/(39 - 27)	-0.00333333
7.29 (2/13/2023)	7.84 (8/28/2019)	(7.29 - 7.84)/(40 - 27)	-0.0423077
8.09 (3/31/2020)	7.84 (10/28/2019)	(8.09 - 7.84)/(29 - 28)	0.25
7.56 (6/10/2020)	7.84 (10/28/2019)	(7.56 - 7.84)/(30 - 28)	-0.14
8.08 (9/21/2020)	7.84 (10/28/2019)	(8.08 - 7.84)/(31 - 28)	0.08

7.91 (12/17/2020)	7.84 (10/28/2019)	(7.91 - 7.84)/(32 - 28)	0.0175
7.82 (3/18/2021)	7.84 (10/28/2019)	(7.82 - 7.84)/(33 - 28)	-0.004
7.24 (5/5/2021)	7.84 (10/28/2019)	(7.24 - 7.84)/(34 - 28)	-0.1
8.13 (11/23/2021)	7.84 (10/28/2019)	(8.13 - 7.84)/(35 - 28)	0.0414286
7.39 (1/10/2022)	7.84 (10/28/2019)	(7.39 - 7.84)/(36 - 28)	-0.05625
7.53 (4/7/2022)	7.84 (10/28/2019)	(7.53 - 7.84)/(37 - 28)	-0.0344444
8.17 (8/3/2022)	7.84 (10/28/2019)	(8.17 - 7.84)/(38 - 28)	0.033
7.8 (11/16/2022)	7.84 (10/28/2019)	(7.8 - 7.84)/(39 - 28)	-0.00363636
7.29 (2/13/2023)	7.84 (10/28/2019)	(7.29 - 7.84)/(40 - 28)	-0.0458333
7.56 (6/10/2020)	8.09 (3/31/2020)	(7.56 - 8.09)/(30 - 29)	-0.53
8.08 (9/21/2020)	8.09 (3/31/2020)	(8.08 - 8.09)/(31 - 29)	-0.005
7.91 (12/17/2020)	8.09 (3/31/2020)	(7.91 - 8.09)/(32 - 29)	-0.06
7.82 (3/18/2021)	8.09 (3/31/2020)	(7.82 - 8.09)/(33 - 29)	-0.0675
7.24 (5/5/2021)	8.09 (3/31/2020)	(7.24 - 8.09)/(34 - 29)	-0.17
8.13 (11/23/2021)	8.09 (3/31/2020)	(8.13 - 8.09)/(35 - 29)	0.00666667
7.39 (1/10/2022)	8.09 (3/31/2020)	(7.39 - 8.09)/(36 - 29)	-0.1
7.53 (4/7/2022)	8.09 (3/31/2020)	(7.53 - 8.09)/(37 - 29)	-0.07
8.17 (8/3/2022)	8.09 (3/31/2020)	(8.17 - 8.09)/(38 - 29)	0.00888889
7.8 (11/16/2022)	8.09 (3/31/2020)	(7.8 - 8.09)/(39 - 29)	-0.029
7.29 (2/13/2023)	8.09 (3/31/2020)	(7.29 - 8.09)/(40 - 29)	-0.0727273
8.08 (9/21/2020)	7.56 (6/10/2020)	(8.08 - 7.56)/(31 - 30)	0.52
7.91 (12/17/2020)	7.56 (6/10/2020)	(7.91 - 7.56)/(32 - 30)	0.175
7.82 (3/18/2021)	7.56 (6/10/2020)	(7.82 - 7.56)/(33 - 30)	0.0866667
7.24 (5/5/2021)	7.56 (6/10/2020)	(7.24 - 7.56)/(34 - 30)	-0.08
8.13 (11/23/2021)	7.56 (6/10/2020)	(8.13 - 7.56)/(35 - 30)	0.114
7.39 (1/10/2022)	7.56 (6/10/2020)	(7.39 - 7.56)/(36 - 30)	-0.0283333
7.53 (4/7/2022)	7.56 (6/10/2020)	(7.53 - 7.56)/(37 - 30)	-0.00428571
8.17 (8/3/2022)	7.56 (6/10/2020)	(8.17 - 7.56)/(38 - 30)	0.07625
7.8 (11/16/2022)	7.56 (6/10/2020)	(7.8 - 7.56)/(39 - 30)	0.0266667
7.29 (2/13/2023)	7.56 (6/10/2020)	(7.29 - 7.56)/(40 - 30)	-0.027
7.91 (12/17/2020)	8.08 (9/21/2020)	(7.91 - 8.08)/(32 - 31)	-0.17
7.82 (3/18/2021)	8.08 (9/21/2020)	(7.82 - 8.08)/(33 - 31)	-0.13
7.24 (5/5/2021)	8.08 (9/21/2020)	(7.24 - 8.08)/(34 - 31)	-0.28
8.13 (11/23/2021)	8.08 (9/21/2020)	(8.13 - 8.08)/(35 - 31)	0.0125
7.39 (1/10/2022)	8.08 (9/21/2020)	(7.39 - 8.08)/(36 - 31)	-0.138
7.53 (4/7/2022)	8.08 (9/21/2020)	(7.53 - 8.08)/(37 - 31)	-0.0916667
8.17 (8/3/2022)	8.08 (9/21/2020)	(8.17 - 8.08)/(38 - 31)	0.0128571
7.8 (11/16/2022)	8.08 (9/21/2020)	(7.8 - 8.08)/(39 - 31)	-0.035
7.29 (2/13/2023)	8.08 (9/21/2020)	(7.29 - 8.08)/(40 - 31)	-0.0877778
7.82 (3/18/2021)	7.91 (12/17/2020)	(7.82 - 7.91)/(33 - 32)	-0.09
7.24 (5/5/2021)	7.91 (12/17/2020)	(7.24 - 7.91)/(34 - 32)	-0.335
8.13 (11/23/2021)	7.91 (12/17/2020)	(8.13 - 7.91)/(35 - 32)	0.0733333
7.39 (1/10/2022)	7.91 (12/17/2020)	(7.39 - 7.91)/(36 - 32)	-0.13
7.53 (4/7/2022)	7.91 (12/17/2020)	(7.53 - 7.91)/(37 - 32)	-0.076
8.17 (8/3/2022)	7.91 (12/17/2020)	(8.17 - 7.91)/(38 - 32)	0.0433333
7.8 (11/16/2022)	7.91 (12/17/2020)	(7.8 - 7.91)/(39 - 32)	-0.0157143
7.29 (2/13/2023)	7.91 (12/17/2020)	(7.29 - 7.91)/(40 - 32)	-0.0775
7.24 (5/5/2021)	7.82 (3/18/2021)	(7.24 - 7.82)/(34 - 33)	-0.58
8.13 (11/23/2021)	7.82 (3/18/2021)	(8.13 - 7.82)/(35 - 33)	0.155
7.39 (1/10/2022)	7.82 (3/18/2021)	(7.39 - 7.82)/(36 - 33)	-0.143333
7.53 (4/7/2022)	7.82 (3/18/2021)	(7.53 - 7.82)/(37 - 33)	-0.0725
8.17 (8/3/2022)	7.82 (3/18/2021)	(8.17 - 7.82)/(38 - 33)	0.07

7.8 (11/16/2022)	7.82 (3/18/2021)	(7.8 - 7.82)/(39 - 33)	-0.00333333
7.29 (2/13/2023)	7.82 (3/18/2021)	(7.29 - 7.82)/(40 - 33)	-0.0757143
8.13 (11/23/2021)	7.24 (5/5/2021)	(8.13 - 7.24)/(35 - 34)	0.89
7.39 (1/10/2022)	7.24 (5/5/2021)	(7.39 - 7.24)/(36 - 34)	0.075
7.53 (4/7/2022)	7.24 (5/5/2021)	(7.53 - 7.24)/(37 - 34)	0.0966667
8.17 (8/3/2022)	7.24 (5/5/2021)	(8.17 - 7.24)/(38 - 34)	0.2325
7.8 (11/16/2022)	7.24 (5/5/2021)	(7.8 - 7.24)/(39 - 34)	0.112
7.29 (2/13/2023)	7.24 (5/5/2021)	(7.29 - 7.24)/(40 - 34)	0.00833333
7.39 (1/10/2022)	8.13 (11/23/2021)	(7.39 - 8.13)/(36 - 35)	-0.74
7.53 (4/7/2022)	8.13 (11/23/2021)	(7.53 - 8.13)/(37 - 35)	-0.3
8.17 (8/3/2022)	8.13 (11/23/2021)	(8.17 - 8.13)/(38 - 35)	0.0133333
7.8 (11/16/2022)	8.13 (11/23/2021)	(7.8 - 8.13)/(39 - 35)	-0.0825
7.29 (2/13/2023)	8.13 (11/23/2021)	(7.29 - 8.13)/(40 - 35)	-0.168
7.53 (4/7/2022)	7.39 (1/10/2022)	(7.53 - 7.39)/(37 - 36)	0.14
8.17 (8/3/2022)	7.39 (1/10/2022)	(8.17 - 7.39)/(38 - 36)	0.39
7.8 (11/16/2022)	7.39 (1/10/2022)	(7.8 - 7.39)/(39 - 36)	0.136667
7.29 (2/13/2023)	7.39 (1/10/2022)	(7.29 - 7.39)/(40 - 36)	-0.025
8.17 (8/3/2022)	7.53 (4/7/2022)	(8.17 - 7.53)/(38 - 37)	0.64
7.8 (11/16/2022)	7.53 (4/7/2022)	(7.8 - 7.53)/(39 - 37)	0.135
7.29 (2/13/2023)	7.53 (4/7/2022)	(7.29 - 7.53)/(40 - 37)	-0.08
7.8 (11/16/2022)	8.17 (8/3/2022)	(7.8 - 8.17)/(39 - 38)	-0.37
7.29 (2/13/2023)	8.17 (8/3/2022)	(7.29 - 8.17)/(40 - 38)	-0.44
7.29 (2/13/2023)	7.8 (11/16/2022)	(7.29 - 7.8)/(40 - 39)	-0.51

Number of Q values = 780

Ordered Q Values

n	Q
1	-2.72
2	-2.07
3	-1.76
4	-1.385
5	-1.26
6	-1.16
7	-0.95
8	-0.935
9	-0.92
10	-0.826667
11	-0.81
12	-0.74
13	-0.73
14	-0.7
15	-0.64
16	-0.58
17	-0.56
18	-0.53
19	-0.51
20	-0.455
21	-0.45
22	-0.44

23	-0.436667
24	-0.388571
25	-0.37
26	-0.34
27	-0.336667
28	-0.335
29	-0.3
30	-0.296
31	-0.283333
32	-0.28
33	-0.235
34	-0.23
35	-0.23
36	-0.23
37	-0.22
38	-0.206667
39	-0.205
40	-0.19
41	-0.19
42	-0.176
43	-0.17
44	-0.17
45	-0.168
46	-0.16
47	-0.16
48	-0.15
49	-0.143333
50	-0.143333
51	-0.143
52	-0.14
53	-0.14
54	-0.14
55	-0.138
56	-0.135
57	-0.133333
58	-0.13
59	-0.13
60	-0.13
61	-0.13
62	-0.128333
63	-0.122
64	-0.106667
65	-0.1
66	-0.1
67	-0.1
68	-0.1
69	-0.1
70	-0.0971429
71	-0.0966667
72	-0.0933333
73	-0.0916667
74	-0.09
75	-0.09
76	-0.0888235
77	-0.0877778
78	-0.0875
79	-0.0857143

80	-0.0825
81	-0.08
82	-0.08
83	-0.0788889
84	-0.0785714
85	-0.0783333
86	-0.0775
87	-0.077
88	-0.0766667
89	-0.076
90	-0.0757143
91	-0.075
92	-0.075
93	-0.0733333
94	-0.0733333
95	-0.0727273
96	-0.0725
97	-0.07
98	-0.07
99	-0.06875
100	-0.0683333
101	-0.0675
102	-0.0675
103	-0.0672727
104	-0.0666667
105	-0.06625
106	-0.065
107	-0.0645455
108	-0.064
109	-0.06375
110	-0.0633333
111	-0.0633333
112	-0.0625
113	-0.06
114	-0.06
115	-0.06
116	-0.06
117	-0.058
118	-0.0576923
119	-0.0566667
120	-0.05625
121	-0.0538095
122	-0.0529412
123	-0.0507143
124	-0.05
125	-0.05
126	-0.05
127	-0.0484615
128	-0.0481818
129	-0.0481481
130	-0.048
131	-0.0478571
132	-0.0472222
133	-0.04625
134	-0.0458333
135	-0.0451613
136	-0.045

137	-0.0447368
138	-0.0446154
139	-0.044
140	-0.0433333
141	-0.0427778
142	-0.0423077
143	-0.0423077
144	-0.0414286
145	-0.0411765
146	-0.04
147	-0.04
148	-0.0394737
149	-0.039
150	-0.0381818
151	-0.0380952
152	-0.0375
153	-0.0369565
154	-0.0366667
155	-0.03625
156	-0.0353333
157	-0.035
158	-0.035
159	-0.035
160	-0.035
161	-0.0344444
162	-0.0342105
163	-0.033913
164	-0.0335
165	-0.0333333
166	-0.033
167	-0.0328571
168	-0.0327778
169	-0.0327273
170	-0.0313636
171	-0.03125
172	-0.0311111
173	-0.031
174	-0.0309091
175	-0.0305882
176	-0.0305
177	-0.03
178	-0.03
179	-0.0296667
180	-0.029
181	-0.0285714
182	-0.0283333
183	-0.0277778
184	-0.0277273
185	-0.0272727
186	-0.0272727
187	-0.027
188	-0.0269231
189	-0.026875
190	-0.0266667
191	-0.0263158
192	-0.026
193	-0.0255556

194	-0.025
195	-0.025
196	-0.025
197	-0.0248
198	-0.0247059
199	-0.024
200	-0.0238095
201	-0.0237037
202	-0.0236842
203	-0.0234783
204	-0.0226667
205	-0.022
206	-0.0218182
207	-0.0218182
208	-0.0217857
209	-0.0217647
210	-0.0215385
211	-0.0213636
212	-0.02
213	-0.02
214	-0.02
215	-0.0192857
216	-0.01875
217	-0.017931
218	-0.0175
219	-0.0169697
220	-0.0166667
221	-0.0166667
222	-0.0166667
223	-0.0164706
224	-0.0163636
225	-0.01625
226	-0.016
227	-0.0157143
228	-0.0157143
229	-0.0155556
230	-0.0154545
231	-0.0153333
232	-0.0153333
233	-0.0152941
234	-0.015
235	-0.015
236	-0.0145
237	-0.0144444
238	-0.0142857
239	-0.014
240	-0.014
241	-0.0138462
242	-0.01375
243	-0.0130769
244	-0.0120833
245	-0.0117143
246	-0.0115789
247	-0.0115385
248	-0.0107143
249	-0.0106667
250	-0.0103226

251	-0.01
252	-0.01
253	-0.00913043
254	-0.00894737
255	-0.00857143
256	-0.00833333
257	-0.00827586
258	-0.00818182
259	-0.00789474
260	-0.0076
261	-0.0075
262	-0.00708333
263	-0.00666667
264	-0.00642857
265	-0.00636364
266	-0.006
267	-0.0055
268	-0.005
269	-0.005
270	-0.005
271	-0.005
272	-0.00461538
273	-0.00454545
274	-0.00444444
275	-0.00428571
276	-0.00428571
277	-0.00416667
278	-0.00416667
279	-0.004
280	-0.004
281	-0.00388889
282	-0.00384615
283	-0.00375
284	-0.00363636
285	-0.00333333
286	-0.00333333
287	-0.00333333
288	-0.00333333
289	-0.00321429
290	-0.0025
291	-0.00235294
292	-0.00151515
293	-0.00111111
294	-0.00105263
295	-0.000833333
296	-0.000555556
297	-0.0005
298	-0.00047619
299	-0.000454545
300	0
301	0
302	0
303	0
304	0.000416667
305	0.000555556
306	0.000625
307	0.00117647

308	0.00142857
309	0.00148148
310	0.00153846
311	0.00222222
312	0.00230769
313	0.0025
314	0.0025
315	0.00285714
316	0.00354839
317	0.00421053
318	0.00428571
319	0.00444444
320	0.00461538
321	0.00529412
322	0.00538462
323	0.006
324	0.00642857
325	0.00666667
326	0.00666667
327	0.00666667
328	0.006875
329	0.00714286
330	0.00714286
331	0.0075
332	0.0075
333	0.00769231
334	0.00785714
335	0.00789474
336	0.00833333
337	0.00833333
338	0.00833333
339	0.00875
340	0.00875
341	0.00882353
342	0.00888889
343	0.00888889
344	0.00909091
345	0.0092
346	0.00933333
347	0.0095
348	0.0096
349	0.00965517
350	0.00970588
351	0.01
352	0.01
353	0.01
354	0.01
355	0.01
356	0.01
357	0.01
358	0.01
359	0.0103571
360	0.0104348
361	0.0105882
362	0.0108333
363	0.0108333
364	0.0109091

365	0.0114286
366	0.0118182
367	0.011875
368	0.012
369	0.012
370	0.012
371	0.012
372	0.0121429
373	0.0121739
374	0.0122222
375	0.012381
376	0.0125
377	0.0128571
378	0.0129167
379	0.013125
380	0.0133333
381	0.014
382	0.014
383	0.0142857
384	0.0142857
385	0.0144444
386	0.0146154
387	0.0155
388	0.0155556
389	0.0155556
390	0.015625
391	0.0161111
392	0.0175
393	0.0175
394	0.0175
395	0.0176923
396	0.0184615
397	0.0192308
398	0.02
399	0.02
400	0.0209524
401	0.021
402	0.02125
403	0.0214286
404	0.0222222
405	0.0223529
406	0.02375
407	0.0242857
408	0.0242857
409	0.025
410	0.0255556
411	0.0263636
412	0.0265
413	0.0266667
414	0.0266667
415	0.02875
416	0.029
417	0.029375
418	0.03
419	0.03
420	0.03
421	0.0303846

422	0.0306667
423	0.0307692
424	0.0313043
425	0.0315
426	0.0317241
427	0.0318182
428	0.0326087
429	0.0328571
430	0.033
431	0.0342857
432	0.0357143
433	0.0359459
434	0.03625
435	0.0368421
436	0.0375
437	0.0378261
438	0.0386957
439	0.04
440	0.04
441	0.04
442	0.0408
443	0.0412903
444	0.0414286
445	0.0414286
446	0.0415385
447	0.0417647
448	0.0433333
449	0.0433333
450	0.0435294
451	0.0442857
452	0.0445455
453	0.0446154
454	0.0455556
455	0.0457576
456	0.0461765
457	0.0466667
458	0.0471429
459	0.0476923
460	0.048
461	0.049
462	0.0490909
463	0.0495455
464	0.05
465	0.05
466	0.05
467	0.0505556
468	0.0510714
469	0.0511111
470	0.05125
471	0.051875
472	0.0525
473	0.0530435
474	0.0535294
475	0.054
476	0.0540741
477	0.0547222
478	0.0547619

479	0.055
480	0.0552632
481	0.0555172
482	0.056
483	0.0581579
484	0.0583333
485	0.0592593
486	0.06
487	0.06
488	0.0610526
489	0.0611111
490	0.062
491	0.0625
492	0.0626316
493	0.063125
494	0.0631429
495	0.0633333
496	0.06375
497	0.064
498	0.0644444
499	0.0646875
500	0.0659091
501	0.0666667
502	0.0666667
503	0.0666667
504	0.0669697
505	0.0672414
506	0.0675
507	0.0678125
508	0.0679412
509	0.068
510	0.0685
511	0.0690625
512	0.0690909
513	0.07
514	0.07
515	0.07
516	0.07
517	0.0708571
518	0.07125
519	0.0733333
520	0.0733333
521	0.0733333
522	0.0735135
523	0.0736842
524	0.075
525	0.075
526	0.0752
527	0.0757143
528	0.0759091
529	0.07625
530	0.0770968
531	0.0773913
532	0.077619
533	0.0776923
534	0.0781818
535	0.0783333

536	0.0784615
537	0.08
538	0.08
539	0.0819231
540	0.0825
541	0.0825
542	0.0830769
543	0.0833333
544	0.0838235
545	0.0839286
546	0.0844828
547	0.0845455
548	0.0852
549	0.0855
550	0.0858333
551	0.0861538
552	0.0861538
553	0.0862069
554	0.0864706
555	0.0866667
556	0.0875
557	0.0877419
558	0.0883871
559	0.0885714
560	0.09
561	0.0906452
562	0.0914286
563	0.091875
564	0.0922857
565	0.0924242
566	0.0925
567	0.09375
568	0.0938462
569	0.0941667
570	0.0943333
571	0.095
572	0.0955556
573	0.0958333
574	0.0966667
575	0.096875
576	0.0980952
577	0.1
578	0.1
579	0.101429
580	0.101667
581	0.102
582	0.102
583	0.102222
584	0.102778
585	0.103
586	0.103
587	0.103448
588	0.105
589	0.105
590	0.105
591	0.105556
592	0.105789

593	0.106154
594	0.106471
595	0.107143
596	0.107419
597	0.108438
598	0.109565
599	0.1096
600	0.109655
601	0.11
602	0.11
603	0.11
604	0.1104
605	0.110526
606	0.1108
607	0.11087
608	0.11125
609	0.111481
610	0.112
611	0.112727
612	0.112963
613	0.1135
614	0.114
615	0.114091
616	0.115
617	0.116667
618	0.117059
619	0.117917
620	0.12
621	0.121667
622	0.124545
623	0.125
624	0.125
625	0.126667
626	0.1275
627	0.128889
628	0.130435
629	0.13125
630	0.133125
631	0.134286
632	0.134667
633	0.135
634	0.135667
635	0.136667
636	0.138
637	0.138571
638	0.14
639	0.14
640	0.14
641	0.142
642	0.142
643	0.142
644	0.142593
645	0.142632
646	0.142857
647	0.143333
648	0.143333
649	0.143571

650	0.144444
651	0.145263
652	0.145294
653	0.146667
654	0.1475
655	0.148571
656	0.149
657	0.15
658	0.15
659	0.15
660	0.15
661	0.152
662	0.152
663	0.152222
664	0.153333
665	0.153636
666	0.154615
667	0.155
668	0.155714
669	0.156875
670	0.157778
671	0.159444
672	0.160833
673	0.163333
674	0.164348
675	0.164375
676	0.166923
677	0.167917
678	0.17
679	0.171818
680	0.172857
681	0.175
682	0.175556
683	0.177059
684	0.1785
685	0.18
686	0.18125
687	0.181667
688	0.184545
689	0.184667
690	0.185789
691	0.19
692	0.192
693	0.1925
694	0.197
695	0.2
696	0.204
697	0.208462
698	0.212857
699	0.215
700	0.216154
701	0.216923
702	0.2175
703	0.225
704	0.23
705	0.23
706	0.23125

707	0.2325
708	0.233125
709	0.233636
710	0.235294
711	0.236
712	0.239167
713	0.2425
714	0.25
715	0.25
716	0.2575
717	0.259091
718	0.259333
719	0.26
720	0.26375
721	0.265
722	0.267
723	0.268333
724	0.27
725	0.273636
726	0.274545
727	0.28
728	0.287857
729	0.29
730	0.29
731	0.295
732	0.301538
733	0.303333
734	0.305
735	0.315714
736	0.32
737	0.33
738	0.333333
739	0.336667
740	0.34
741	0.34
742	0.34
743	0.358333
744	0.38
745	0.383
746	0.383333
747	0.385
748	0.39
749	0.401429
750	0.43
751	0.436667
752	0.45
753	0.455
754	0.474286
755	0.48375
756	0.485
757	0.515714
758	0.52
759	0.54
760	0.55
761	0.57
762	0.574
763	0.575

764	0.63
765	0.64
766	0.66
767	0.674
768	0.6925
769	0.78
770	0.86
771	0.88
772	0.89
773	0.925
774	1.01
775	1.06
776	1.1575
777	1.265
778	1.455
779	3.61
780	3.79

Sen's Estimator (Median Q) is 0.0158681

Tied Group	Value	Members
1	7.8	2
2	5.08	2
3	8.09	2
4	7.84	2

Time Period	Observations
3/12/2013	1
5/8/2013	1
9/23/2013	1
12/10/2013	1
2/6/2014	1
6/26/2014	1
9/30/2014	1
11/19/2014	1
3/23/2015	1
4/22/2015	1
9/30/2015	1
11/19/2015	1
3/15/2016	1
6/29/2016	1
8/9/2016	1
12/7/2016	1
3/2/2017	1
6/21/2017	1
8/17/2017	1
10/26/2017	1
3/27/2018	1
6/26/2018	1
8/1/2018	1
12/11/2018	1
4/17/2019	1
6/11/2019	1
8/28/2019	1
10/28/2019	1
3/31/2020	1
6/10/2020	1
9/21/2020	1

12/17/2020	1
3/18/2021	1
5/5/2021	1
11/23/2021	1
1/10/2022	1
4/7/2022	1
8/3/2022	1
11/16/2022	1
2/13/2023	1

There are 0 time periods with multiple data

A = 72
B = 0
C = 0
D = 0
E = 8
F = 0
a = 132600
b = 533520
c = 3120
Group Variance = 7362.67
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 141.138
M1 = (780 - 141.138)/2.0 = 319.431
M2 = (780 + 141.138)/2.0 + 1 = 461.569
Lower limit is 0.00444444 = Q(319)
Upper limit is 0.0490909 = Q(462)
0.00444444 > 0 indicating an upward trend in data.

Sen's Slope Analysis

Parameter: TKN

Location: SME 10

Original Data (Not Transformed)

Non-Detects Replaced with 1/2 DL

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
0.94 (8/3/2022)	0.477 (4/7/2022)	(0.94 - 0.477)/(2 - 1)	0.463
0.516 (11/16/2022)	0.477 (4/7/2022)	(0.516 - 0.477)/(3 - 1)	0.0195
0.773 (2/13/2023)	0.477 (4/7/2022)	(0.773 - 0.477)/(4 - 1)	0.0986667
0.516 (11/16/2022)	0.94 (8/3/2022)	(0.516 - 0.94)/(3 - 2)	-0.424
0.773 (2/13/2023)	0.94 (8/3/2022)	(0.773 - 0.94)/(4 - 2)	-0.0835
0.773 (2/13/2023)	0.516 (11/16/2022)	(0.773 - 0.516)/(4 - 3)	0.257

Number of Q values = 6

Ordered Q Values

n	Q
1	-0.424
2	-0.0835
3	0.0195
4	0.0986667
5	0.257
6	0.463

Sen's Estimator (Median Q) is 0.0590833

Time Period	Observations
4/7/2022	1
8/3/2022	1
11/16/2022	1
2/13/2023	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 156
b = 216
c = 24
Group Variance = 8.66667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 4.84232
M1 = (6 - 4.84232)/2.0 = 0.578842
M2 = (6 + 4.84232)/2.0 + 1 = 6.42116
Lower limit is -0.424 = Q(1)
Upper limit is 0.463 = Q(6)
-0.424 < 0 < 0.463 indicating no trend in data.

Appendix C – Monitoring Reports

Monitoring Report Second Quarter 2022
Gadsden Alabama Urbanized Area
Phase II Small MS4
NPDES General Permit ALR040000
Gadsden, Etowah County, Alabama
S&ME Project No. 219054

PREPARED FOR:

Gadsden-Etowah MS4 Steering Committee

PREPARED BY:

S&ME, Inc.
360D Quality Circle NW, Ste 450
Huntsville, AL 35806

October 25, 2022

October 25, 2022

Attention: Gadsden-Etowah MS4 Steering Committee

Reference: **Quarterly Report: April 1, 2022 – June 31, 2022**
Gadsden- Etowah MS4 Entities
Gadsden, Etowah County, Alabama
S&ME Project No. 219054

Dear Gadsden-Etowah MS4 Steering Committee:

S&ME, Inc. has prepared the attached Quarterly Report (April 1, 2022 – June 31, 2022 reporting period) for the Gadsden-Etowah Phase II Small Municipal Separate Storm Sewer System in accordance with S&ME Proposal No. 219054, dated September 18, 2020.

S&ME, Inc. appreciates the opportunity to provide our services to the City of Gadsden, Rainbow City, City of Hokes Buff, City of Southside, City of Glencoe, City of Attalla, and Etowah County. If you should have questions concerning this report, or if additional information is required, please contact us.

Sincerely,

S&ME, Inc.

Nathanael A. Wade, E.I.
Staff Professional

Deborah J. Jones, P.E.
Senior Engineer

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Appendix III

Laboratory Report No. L1480173, dated April 20, 2022
Laboratory Report No. L1480172, dated April 20, 2022

1.0 Introduction

S&ME, Inc. has prepared this Monitoring Report for the Gadsden, Alabama Urbanized Area Phase II Small MS4 in accordance with S&ME Proposal No. 219054.

1.1 NPDES Permit

The Storm Water Phase II Final Rule issued by the United States Environmental Protection Agency (USEPA) in 1999 requires nationwide coverage of all operators of small MS4s located within the boundaries of an "urbanized area" as defined by the latest decennial Census. Based on the results of the 2010 census, the Bureau of the Census designated The City of Gadsden, Rainbow City, City of Southside, City of Glencoe, City of Hokes Bluff, City of Attalla, and portions of unincorporated Etowah County as the *Gadsden, Alabama Urbanized Area*. A map outlining the approximate boundary of the *Gadsden, Alabama Urbanized Area* is included as **Figure 1** in **Appendix I**. The regulated small municipal separate storm sewer system (MS4) for the urbanized area is collectively referred to as the Gadsden-Etowah MS4.

In 2016, the Alabama Department of Environmental Management (ADEM) issued National Pollutant Discharge Elimination System (NPDES) General Permit ALR040000 for discharges from regulated small municipal separate storm sewer systems to the Gadsden-Etowah MS4 with an effective date of October 1, 2016. Permit numbers for each entity are provided in Table. 1.2.

Table 1-1: Permit Numbers for MS4 Entities

Entity	ADEM Permit Number
City of Attalla	ALR040052
City of Gadsden	ALR040053
City of Glencoe	ALR040054
City of Hokes Bluff	ALR040055
City of Rainbow City	ALR040056
City of Southside	ALR040057
Etowah County	ALR040009

1.2 Water Quality Concerns

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987, and EPA's Water Quality Planning and Management Regulations (40CFR130) require states to identify waterbodies not in compliance with the water quality standards applicable to their designated use classifications. Section 303(d) then requires that total maximum daily loads (TMDLs) be determined for all pollutants causing violation of applicable water quality standards in each identified segment.

Neely Henry Lake is the primary receiving water for the Gadsden-Etowah MS4. In 1996, the ADEM identified five of the six reservoirs on the Coosa River within the State of Alabama's borders as being impaired, including Neely

Henry Lake. In 2008 the EPA approved TMDLs for Neely Henry Lake related to Nutrients (Total Phosphorous), pH, and Dissolved Oxygen. The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus loading.

1.3 Monitoring Program

Part III.B of the NPDES General Permit requires that the Permittee develop and implement a Storm Water Management Program Plan (SWMPP). Part IV.D of the NPDES General Permit requires that the SWMPP include monitoring provisions to document that the waste load allocations prescribed in the TMDL are being achieved.

Section 2 of the SWMPP, dated April 1, 2022, provides the specific details of the monitoring program. The intent of the monitoring program is to document that discharges from the MS4 meet the permit requirements. Where deviations are documented and/or expected, the collected monitoring data will be used to determine the extent and cause of the pollutant of concern.

2.0 Rainfall Data

The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus discharge loading. The largest loading of phosphorous to the Coosa River from the Gadsden-Etowah MS4 is expected to occur during runoff events; therefore, the SWMPP requires that monitoring be conducted within 72 hours of a qualifying rain event of 0.75 inch.

On April 5 and 6, a rain event was observed at four weather stations located in the vicinity of the urbanized area. The locations of the weather stations are identified on **Figure 2** in **Appendix I**.

Table 2-1 Quarterly Rainfall Data

Gauge Name	Location	Lat.	Long.	Precip 4/5/22	Precip 4/6/22
KGAD	Gadsden Municipal Airport	33.973°	-86.088°	0.12 in.	1.19 in.
KALHOKES2	Hokes Bluff Hokes Bluff, AL	33.993°	-85.806°	1.06 in.	0.00 in.
KALGADSD3	Noccalula Falls Gadsden, AL	34.056°	-85.994°	1.34 in.	0.01 in.
KALRAINB19	Rainbow City, AL	33.942°	-86.030°	1.05 in.	0.00 in.

3.0 Monitoring Event

On April 7, 2022, S&ME personnel mobilized to conduct storm water monitoring at the land and boat access monitoring points for the second quarter of 2022.

Land and boat access monitoring was successfully sampled on April 7, 2022. The quarterly monitoring events are carried out in accordance with Section 3 of the Gadsden-Etowah MS4 Wet-Weather Monitoring Program (SWMPP), dated April 2022.

3.1 Monitoring Locations

The primary monitoring locations selected for determining compliance of the Gadsden-Etowah MS4 with the 2008 phosphorous TMDL are identified on **Figure 2** in **Appendix I**. Coordinates for each point are listed in Table 3-1.

Table 3-1 Monitoring Point Coordinates

Outfall ID	Latitude	Longitude	Access	Waterbody Evaluated
AT 5	34.006446°	-86.069061°	LAND	Big Wills Creek / Little Wills Creek
GD 8	33.999535°	-86.024463°	LAND	Black Creek
RC 2	33.967683°	-86.039476°	LAND	Horton Creek
SS 13	33.891352°	-86.049229°	LAND	Neely Henry Lake
SS 14	33.885921°	-86.030683°	LAND	U.T. to Neely Henry Lake
GD 12	33.952567°	-86.003495°	LAND	U.T. to Neely Henry Lake
GD 6	34.015350°	-85.995617°	LAND	Town Creek
CO 15	33.972280°	-85.965354°	LAND	U.T. to Neely Henry Lake
SME 7	34.006225°	-86.111277°	LAND	Big Wills Creek
SME 9	34.002807°	-85.871879°	LAND	U.T. to Neely Henry Lake
SME 10	33.985669°	-85.878605°	LAND	U.T. to Big Cove Creek (exiting Hokes Bluff)
HB 3	34.002129°	-85.882808°	BOAT	U.T. to Neely Henry Lake
SME 4	34.001667°	-85.883342°	BOAT	Northern end of the Coosa River Channel
GD 5	34.014324°	-85.924013°	BOAT	Big Cove Creek / Little Cove Creek
SME 3	34.009698°	-85.956230°	BOAT	Coal Creek
GD 7	34.008361°	-85.999777°	BOAT	Storm sewer outfall to Coosa River
GD 9	33.989718°	-85.998472°	BOAT	U.T. to Coosa River (East Gadsden)
SME 1	33.990184°	-86.004048°	BOAT	Big Wills Creek / Black Creek
SS 5	33.941329°	-86.021569°	BOAT	U.T. to Coosa River
SME 5	33.940514°	-86.029885°	BOAT	Central portion of the Coosa River Channel
SME 6	33.852125°	-86.049695°	BOAT	Confluence of Greens Creek and Coosa River Channel
RC 14	33.905786°	-86.111656°	BOAT	Rook Creek / Dry Creek

Following evaluation of the monitoring program for the Annual Report in May of 2020, monitoring points CO 14, SME 3, and GD 3 were removed from the monitoring program and monitoring points SME 4, SME 5, SME 6, SME 7, and SME 8 were added. The changes to the monitoring program were implemented beginning with the 2020 fourth quarter sampling event. SME 3 has been reinstated as part of the monitoring program beginning with the 2021 third quarter sampling event.

Following evaluation of the monitoring program for the April 2022 version of the Wet-Weather Monitoring Program, monitoring points SME 2 and SME 8 were removed from the monitoring program and monitoring points SME 9 and SME 10 were added. The changes to the monitoring program were implemented beginning with the 2022 second quarter sampling event.

3.2 Sampling Procedures

Samples accessible by land were obtained using a stainless-steel bucket. Samples accessible by boat were obtained using a horizontal Van Dorn sampler. The bucket and Van Dorn sampler were decontaminated prior to use and in between samples.

3.3 Field Documentation

The following observations were documented in the field at each monitoring location:

- Monitoring point ID
- Date and time
- Person conducting the sampling
- Equipment used
- Depth of sample collection
- Weather conditions
- Waterbody conditions

The following parameters were measured in the field at the time of sample collection:

- Turbidity
- pH
- Dissolved Oxygen (DO)
- Temperature

Field parameters were measured using a combination of the following instruments:

- YSI Pro DSS Multi-Probe Meter

The recorded field observations are included on **Table B.1** in **Appendix II**. The recorded field parameters are included on **Table B.2** in **Appendix II**.

3.4 Quality Assurance / Quality Control

The following handling procedures were employed in general accordance with EPA and ADEM guidance to safeguard the quality of the collected samples.

3.4.1 Sample Containers and Preservation

All samples were collected in new laboratory-provided containers containing analyte-appropriate preservatives as listed below:

Table 3-2 Sample Containers and Preservation

Parameter	Container	Preservative	Hold Time
Total Suspended Solids (TSS)	HDPE - 1 L	NONE	7 days
Total Phosphorous	HDPE - 250 mL	H_2SO_4	48 hours
Orthophosphate	AMB - 100 mL	NONE	48 hours
Nitrate-Nitrite	HDPE - 250 mL	H_2SO_4	28 days
Total Kjeldahl Nitrogen (TKN)	HDPE - 250 mL	H_2SO_4	28 days

Prior to filling, sample containers were labeled with the following information in waterproof ink:

- Project number
- Sample location
- Collection date and time
- Preservative
- Analysis to be performed

3.4.2 Quality Assurance

Three duplicate samples were submitted to the laboratory. One duplicate sample of monitoring point AT 5 was collected by the land team during the sampling event and labeled as SME 12. One duplicate sample of monitoring point SME 9 was collected by the land team during the sampling event and labeled as SME 13. One duplicate sample of monitoring point HB 3 was collected by the boat team during the sampling event and labeled as SME 11.

3.4.3 Sample Shipment

After filling, the sample containers were sealed and immediately placed on ice in a protective container for shipment to the analytical laboratory. A Chain of Custody form was completed and accompanied the samples from the field to the laboratory. A copy of the Chain of Custody is included in **Appendix III**.

4.0 Analytical Results

The laboratory analytical results for the April 7, 2022 quarterly monitoring event are included on **Table B.2** in **Appendix II**. Historical monitoring data is included in Appendix II as **Tables B.3 to B.21**. The laboratory reports and Chain of Custody are included in **Appendix III**.

5.0 Recordkeeping

Each quarterly monitoring report will be incorporated into the Annual Update of the Storm Water Management Plan. Monitoring reports will be retained by each municipality for a minimum of 3 years.

The Storm Water Steering Committee is responsible for the coordination and implementation of the Storm Water Management Plan. Current membership of the Storm Water Steering Committee is as follows:

Table 5-0 Storm Water Steering Committee

Entity	Contact	Phone No.	Email
City of Gadsden	Jeramy Ward	256-549-4527	jward@cityofgadsden.com
City of Gadsden	Heath Williamson	256-549-4520	hwilliamson@cityofgadsden.com
City of Attalla	Jason Nicholson	256-441-9200	jason.attalla@gmail.com
City of Rainbow City	Joel Garmon	256-413-1230	jgarmon@rbcalabama.com
City of Southside	Judd Rich	256-442-9775	juddrich@cityofsouthside.com
City of Glencoe	Todd Means	256-492-1424	toddmeans@cityofglencoe.net
City of Hokes Bluff	Lisa Johnson	256-492-2414	hbcity@cityofhokesbluff.net
Etowah County	Tim Graves	256-549-5358	tgraves@etowahcounty.org
Etowah County	Robert Nail	256-549-5358	rnail@etowahcounty.org

One copy of this Monitoring Report has been provided to each member of the Storm Water Steering Committee.

6.0 Certification of the Monitoring Report

I certify under penalty of law that this document and all attachments were prepared under my directions or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment for knowing violations.

Signature of Responsible Official	Date
Print Name and Title	MS4 Entity

7.0 Acknowledgement

S&ME certifies that the information provided in this monitoring report reflects the conditions reported, encountered, and discovered at the time of report preparation. When performing this scope of services, S&ME observed the degree of care and skill generally exercised by other consultants undertaking similar studies at the same time, under similar circumstances and conditions, and in the same geographic area.

8.0 Closing

S&ME sincerely appreciates the opportunity to provide watershed monitoring services for the Gadsden-Etowah MS4. Should questions remain or if additional information is required, please do not hesitate to contact the undersigned.

S&ME, Inc.

Nathanael A. Wade, E.I.
Staff Professional

Deborah J. Jones, P.E.
Senior Engineer

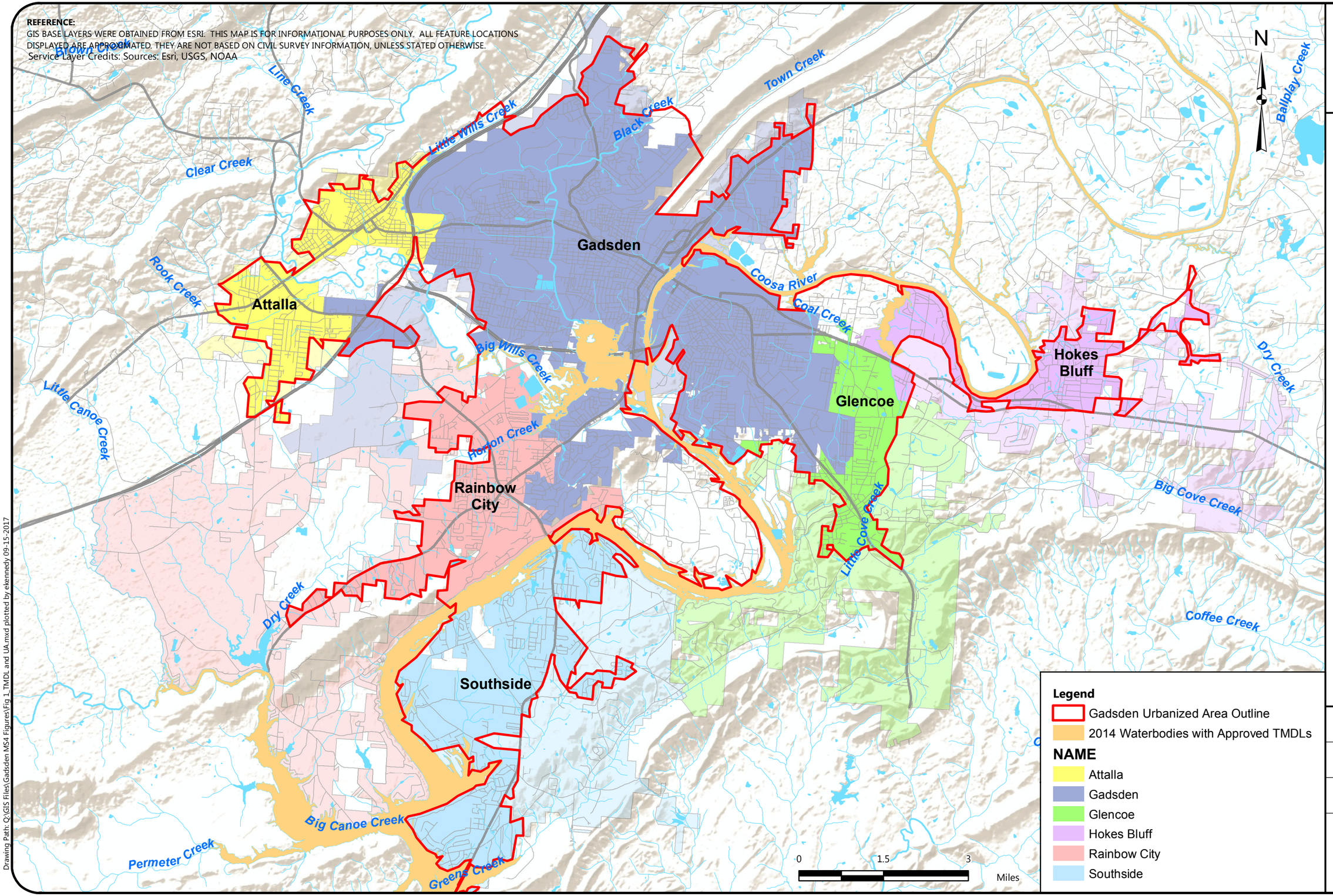
Appendices

Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



Legend

Gadsden Urbanized Area Outline

2014 Waterbodies with Approved TMDLs

NAME

- Attalla
- Gadsden
- Glencoe
- Hokes Bluff
- Rainbow City
- Southside

GADSDEN-ETOWAH MS4 BOUNDARIES

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

SCALE: 1:100,000

DATE: 09-15-17

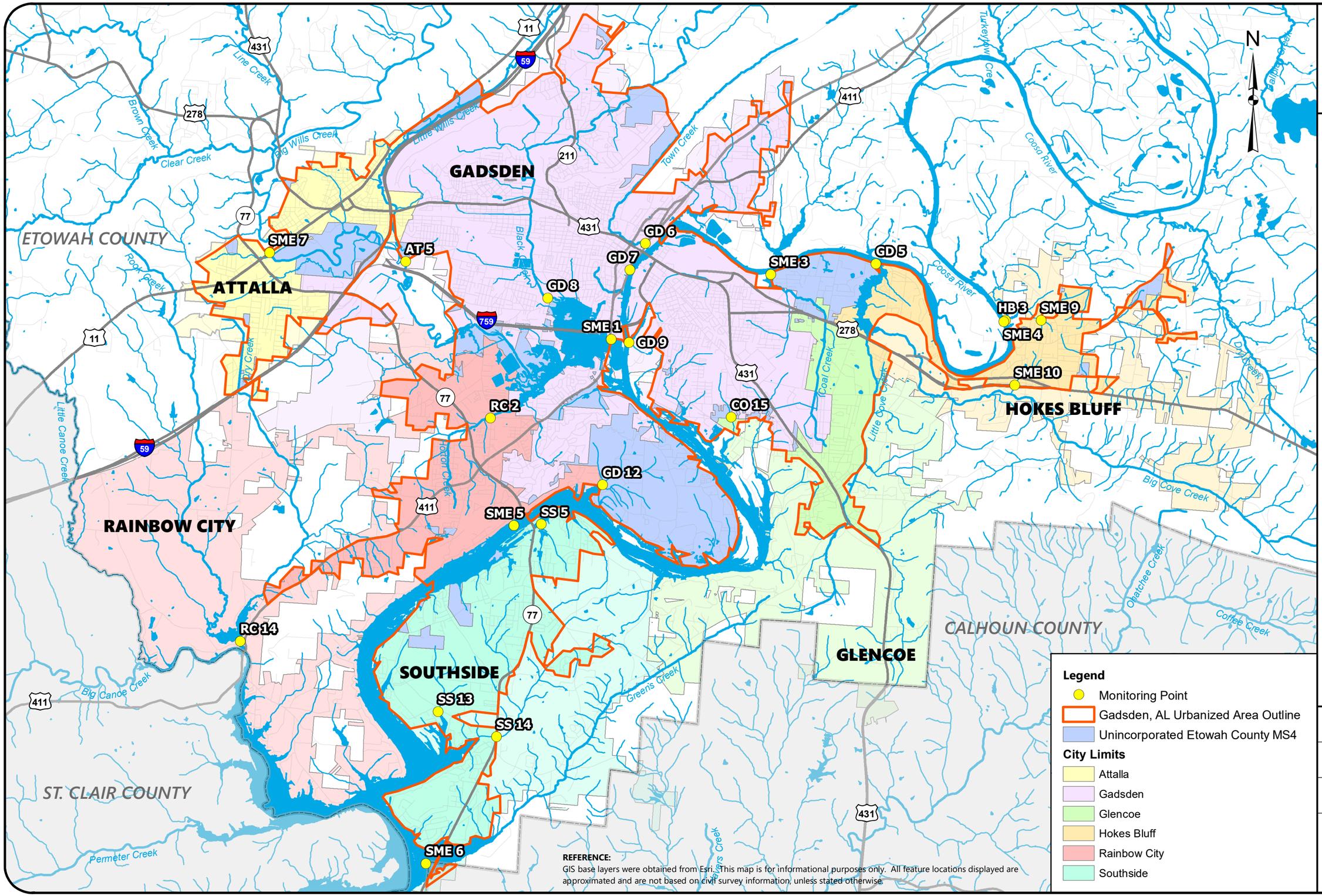
PROJECT NUMBER 4482-16-056

FIGURE NO. 1

Drawing Path: Q:\GIS Files\Gadsden MS4 Figures\Fig 1_TMDL and UA.mxd plotted by ekennedy 09-15-2017

WET-WEATHER MONITORING LOCATIONS

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009



REFERENCE:
GIS base layers were obtained from Esri. This map is for informational purposes only. All feature locations displayed are approximated and are not based on civil survey information, unless stated otherwise.

SCALE:	1:100,000
DATE:	03/23/2022
PROJECT NUMBER	215660
FIGURE NO.	2

Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.26 – Historical Analytical Data

TABLE B.1 - FIELD OBSERVATIONS

GADSDEN-ETOWAH MS4 MONITORING

MONITORING POINT ID	DATE	TIME	DEPTH (FT)	PERSONNEL	WEATHER CONDITIONS	WATERBODY CONDITIONS
AT 5	4/7/2022	12:35	-2'	NW/JE	Sunny	Fast Flowing
GD 8	4/7/2022	12:20	-2'	NW/JE	Sunny	Fast Flowing
RC 2	4/7/2022	12:10	-2'	NW/JE	Sunny	Fast Flowing
SS 13	4/7/2022	11:30	-2'	NW/JE	Sunny	Fast Flowing
SS 14	4/7/2022	11:40	-2'	NW/JE	Sunny	Fast Flowing
GD 12	4/7/2022	11:55	-2'	NW/JE	Sunny	Fast Flowing
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SME 2	Removed monitoring point from Stormwater Monitoring Program in April 2022					
GD 6	4/7/2022	11:00	-2'	NW/JE	Sunny	Fast Flowing
CO 15	4/7/2022	10:00	-2'	NW/JE	Sunny	Fast Flowing
SME 7	4/7/2022	9:30	-2'	NW/JE	Sunny	Fast Flowing
SME 8	Removed monitoring point from Stormwater Monitoring Program in April 2022					
SME 9	4/7/2022	10:20	-2'	NW/JE	Sunny	Fast Flowing
SME 10	4/7/2022	10:40	-2'	NW/JE	Sunny	Fast Flowing
HB 3	4/7/2022	10:25	-5'	GW	Sunny	Smooth
SME 4	4/7/2022	10:40	-5'	GW	Sunny	Smooth
GD 5	4/7/2022	11:00	-5'	GW	Sunny	Smooth
SME 3	4/7/2022	11:10	-5'	GW	Sunny	Smooth
GD 7	4/7/2022	11:21	-5'	GW	Sunny	Smooth
GD 9	4/7/2022	11:32	-5'	GW	Sunny	Smooth
SME 1	4/7/2022	11:42	-5'	GW	Sunny	Smooth
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SS 5	4/7/2022	12:41	-5'	GW	Sunny	Rough
SME 5	4/7/2022	12:35	-5'	GW	Sunny	Rough
SME 6	4/7/2022	13:30	-5'	GW	Sunny	Rough
RC 14	4/7/2022	13:44	-5'	GW	Sunny	Smooth

TABLE B.2 - ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	**DATE**	**TURBIDITY (NTU)**	**pH**	**DO (mg/L)**	**TEMP (°C)**	**NITRATE-NITRITE (mg/L)**	**ORTHO-PHOSPHATE (mg/L)**	**TOTAL P (mg/L)**	**TKN (mg/L)**	**TSS (mg/L)**
AT 5	4/7/2022	21.90	7.53	9.30	16.6	0.509	0.1010	0.121	0.380	33.8
GD 8	4/7/2022	8.20	7.87	9.94	16.8	0.120	<0.0300	<0.100	0.349	10.9
RC 2	4/7/2022	10.96	7.41	9.02	17.5	0.186	<0.0300	0.144	0.386	5.00
SS 13	4/7/2022	6.68	7.40	8.72	**18.2**	0.304	<0.0300	<0.100	0.886	5.30
SS 14	4/7/2022	4.40	6.82	9.83	17.8	0.402	0.0330	<0.100	0.566	2.90
GD 12	4/7/2022	6.19	7.51	**9.97**	17.0	0.177	0.0740	<0.100	0.522	3.40
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 2	Removed monitoring point from Stormwater Monitoring Program in April 2022									
GD 6	4/7/2022	13.63	7.70	8.85	17.2	0.160	<0.0300	<0.100	0.433	9.90
CO 15	4/7/2022	16.50	7.48	9.75	17.3	<0.100	0.0710	<0.100	0.853	11.7
SME 7	4/7/2022	*	7.10	9.27	18.0	0.549	<0.0300	**0.264**	**1.37**	37.2
SME 8	Removed monitoring point from Stormwater Monitoring Program in April 2022									
SME 9	4/7/2022	5.17	7.78	9.32	17.0	<0.100	<0.0300	0.135	0.529	2.90
SME 10	4/7/2022	4.94	7.82	9.16	18.0	<0.100	<0.0300	<0.100	0.477	2.80
SME 12	4/7/2022	DUPLICATE OF AT 5				**0.519**	0.0770	0.142	0.451	33.8
SME 13	4/7/2022	DUPLICATE OF SME 9				<0.100	<0.0300	<0.100	0.322	2.70
HB 3	4/7/2022	27.8	7.61	9.40	18.1	0.268	<0.0300	<0.100	0.329	21.0
SME 4	4/7/2022	21.6	7.55	9.30	16.7	0.273	0.0600	<0.100	0.254	20.9
GD 5	4/7/2022	16.4	7.72	9.32	17.2	0.157	<0.0300	<0.100	0.300	14.4
SME 3	4/7/2022	32.3	7.69	8.99	16.6	0.181	<0.0300	<0.100	0.406	27.0
GD 7	4/7/2022	17.4	7.61	9.33	17.2	0.280	<0.0300	0.162	0.361	23.4
GD 9	4/7/2022	14.0	7.60	8.79	**18.2**	0.236	<0.0300	0.124	0.306	15.1
SME 1	4/7/2022	**112.9**	7.65	9.26	17.2	0.431	**0.192**	0.255	0.544	140
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SS 5	4/7/2022	20.7	7.80	8.85	17.9	0.122	<0.0300	<0.100	0.516	15.6
SME 5	4/7/2022	55.4	**7.99**	9.43	17.4	0.290	<0.0300	<0.100	0.385	25.4
SME 6	4/7/2022	31.4	7.95	9.63	18.0	0.270	<0.0300	<0.100	0.373	28.8
RC 14	4/7/2022	99.0	7.76	8.27	17.6	<0.100	<0.0300	0.101	0.548	**178**
SME 11	4/7/2022	DUPLICATE OF HB 3				0.261	<0.0300	0.129	0.335	23.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled (Dry)

Bold - maximum reading for constituent

NA - not availabe at this time

* - value unknown due to equipment malfuction

TABLE B.3 - ANALYTICAL DATA - AT 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	3/12/2013	15	7.80	11.04	12.55	0.61	0.150	0.14	0.37	20.0
AT 5	5/8/2013	25	5.08	2.59	14.69	0.31	0.099	0.11	0.56	19.0
AT 5	9/23/2013	21	5.96	3.95	22.88	1.30	0.400	0.35	0.37	22.0
AT 5	12/10/2013	68	5.32	11.43	8.21	0.79	0.290	0.34	0.97	64.0
AT 5	2/6/2014	40	4.06	15.29	7.28	0.80	0.130	0.13	0.35	32.0
AT 5	6/26/2014	70	7.85	7.61	23.89	0.77	0.340	0.28	0.38	19.0
AT 5	9/30/2014	15	5.78	6.63	21.03	0.94	0.490	0.54	<0.25	14.0
AT 5	11/19/2014	47	5.08	10.23	6.91	1.30	0.410	0.39	0.50	27.0
AT 5	3/23/2015	17	8.69	9.39	14.5	0.71	0.130	0.14	0.27	15.0
AT5	4/22/2015	53	6.93	11.13	18.4	0.69	0.110	0.13	<0.25	76.0
AT5	9/30/2015	15	6.37	9.45	21.63	1.82	0.664	0.86	<0.25	16.4
AT5	11/19/2015	934	7.38	19.33	14.98	0.67	0.261	0.31	1.47	74.6
AT 5	3/15/2016	30.2	7.93	20.43	16.86	0.578	0.068	<0.100	0.772	26.7
AT 5	6/29/2016	18.1	7.99	6.57	25.4	0.800	0.598	0.71	<0.250	14.5
AT 5	8/9/2016	17.1	7.89	6.47	25.8	0.975	0.482	0.502	0.268	18.3
AT5	12/7/2016	26.5	7.08	10.19	11.3	0.663	0.450	0.474	<0.250	16.9
AT5	3/2/2017	50.8	8.14	8.86	13.4	1.08	0.267	0.373	0.529	44.6
AT 5	6/21/2017	11.7	7.98	6.74	23.3	0.616	0.226	0.366	0.544	70.0
AT 5	8/17/2017	9.5	8.09	6.77	26.0	0.890	0.258	0.283	0.690	12.0
AT 5	10/26/2017	9.8	7.95	8.25	15.7	0.936	0.226	0.250	<0.250	9.4
AT 5	3/27/2018	14.5	7.79	9.03	12.9	0.849	0.162	0.148	<0.250	15.9
AT 5	6/26/2018	16.4	8.06	6.89	25.5	0.849	0.230	0.246	0.411	25.2
AT 5	8/1/2018	77.9	7.33	7.16	22.3	0.510	0.285	0.401	0.680	107.0

TABLE B.3 - ANALYTICAL DATA - AT 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	12/11/2018	29.2	7.59	10.73	9.4	1.09	0.066	0.204	0.579	46.2
AT 5	4/17/2019	12.2	7.63	8.99	17.9	0.638	0.061	<0.100	<0.250	14.4
AT 5	6/11/2019	24.6	7.18	3.48	22.2	0.822	0.206	0.290	0.486	15.9
AT 5	8/28/2019	20.7	7.84	7.42	27.1	0.534	0.404	0.485	1.070	23.5
AT 5	10/28/2019	22.5	7.84	8.45	15.1	0.665	0.523	0.499	<0.250	17.0
AT 5	3/31/2020	23.1	8.09	9.07	16.6	0.657	0.0320	0.102	<0.250	27.1
AT 5	6/10/2020	19.4	7.56	7.35	23.2	0.825	0.248	0.243	<0.250	22.8
AT 5	9/21/2020	NS	8.08	8.21	20.6	0.603	0.491	0.399	<0.250	11.3
AT 5	12/17/2020	28.7	7.91	11.21	9.6	0.831	0.087	<0.100	<0.250	18.6
AT 5	3/18/2021	119.0	7.82	10.68	17.2	0.310	0.050	<0.100	<0.250	55.6
AT 5	5/5/2021	6.5	7.24	8.45	18.1	6.86	0.121	0.157	1.37	43.7
AT 5	9/2/2021	*	*	7.75	23.4	0.482	0.131	0.262	0.969	67.4
AT 5	11/23/2021	<1.0	8.13	11.09	12.9	0.343	<0.0300	0.253	<0.250	2.6
AT 5	1/10/2022	20.8	7.39	11.46	10.0	0.769	0.126	0.184	0.279	29.7
AT 5	4/7/2022	21.9	7.53	9.30	16.6	0.509	0.101	0.121	0.380	33.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.4 - ANALYTICAL DATA - GD 8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 8	3/12/2013	6.6	7.65	11.73	9.85	0.13	<0.025	<0.100	0.25	4.5
GD 8	5/8/2013	18.7	6.71	1.72	14.47	0.11	<0.025	<0.100	0.38	19.0
GD 8	9/23/2013	17.8	6.22	3.98	22.74	<0.100	<0.025	<0.100	0.41	9.6
GD 8	12/10/2013	30.7	6.04	13.33	8.10	0.28	0.040	<0.100	0.35	32.0
GD 8	2/6/2014	15.5	3.87	16.32	6.48	0.25	<0.025	<0.100	0.13	13.0
GD 8	6/26/2014	30.8	8.19	6.64	26.15	0.25	<0.025	<0.100	0.48	7.3
GD 8	9/30/2014	11.9	7.32	5.06	23.19	0.14	<0.025	<0.100	0.42	6.0
GD 8	11/19/2014	25.3	5.16	9.01	5.87	0.23	<0.025	<0.100	0.32	13.0
GD 8	3/23/2015	10.6	8.67	9.76	14.8	0.22	<0.025	<0.100	<0.25	4.8
GD 8	4/22/2015	20.2	7.40	11.71	17.70	0.16	<0.025	<0.100	<0.25	15.0
GD 8	9/30/2015	9.0	7.79	9.48	24.33	0.184	<0.025	<0.100	0.483	6.8
GD 8	11/19/2015	212	6.94	23.30	15.13	0.233	<0.025	0.101	0.852	79.6
GD 8	3/15/2016	11.4	7.88	16.81	16.98	0.131	<0.025	<0.100	0.470	8.3
GD 8	6/29/2016	32.5	8.50	6.60	29.3	<0.100	<0.025	<0.100	0.450	39.8
GD 8	8/9/2016	12.7	8.90	5.87	28.9	0.217	<0.025	<0.100	0.668	6.3
GD 8	12/7/2016	10.1	7.75	8.84	12.1	0.308	<0.025	<0.100	0.409	7.0
GD 8	3/2/2017	19.7	8.14	9.76	12.2	0.284	<0.025	<0.100	0.342	3.6
GD 8	6/21/2017	7.9	8.73	6.50	25.0	<0.100	<0.025	<0.100	0.642	7.0
GD 8	8/17/2017	6.8	8.55	6.30	28.7	0.132	<0.025	<0.100	0.541	8.9
GD 8	10/26/2017	6.1	8.17	8.25	16.3	<0.100	<0.025	<0.100	0.347	4.0
GD 8	3/27/2018	8.9	8.09	9.52	12.1	0.215	<0.025	<0.100	<0.25	6.5
GD 8	6/26/2018	5.8	8.50	5.74	29.7	0.150	<0.025	<0.100	0.670	5.8
GD 8	8/1/2018	45.8	6.89	7.39	22.9	0.556	0.072	0.114	0.641	53.2

TABLE B.4 - ANALYTICAL DATA - GD 8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 8	12/11/2018	16.0	7.87	11.71	9.2	0.326	<0.025	<0.100	0.406	24.4
GD 8	4/17/2019	6.7	8.05	9.30	17.6	0.115	<0.025	<0.100	0.437	<5.00
GD 8	6/11/2019	9.4	7.19	2.94	25.8	0.181	<0.025	<0.100	0.948	4.1
GD 8	8/28/2019	14.2	8.26	6.07	30.2	0.212	<0.025	<0.100	0.992	11.8
GD 8	10/28/2019	29.6	7.83	8.22	16.2	0.435	<0.025	0.109	0.255	12.9
GD 8	3/31/2020	19.3	7.97	9.30	16.6	0.133	<0.025	0.132	0.348	18.0
GD 8	6/10/2020	10.8	7.97	7.13	24.9	0.211	<0.030	<0.100	<0.25	8.0
GD 8	9/21/2020	NS	8.19	6.36	22.8	0.171	<0.030	<0.100	0.290	7.4
GD 8	12/17/2020	17.5	8.30	11.68	9.4	0.273	<0.030	<0.100	<0.25	11.5
GD 8	3/18/2021	117.0	8.15	11.53	16.5	0.178	<0.030	<0.100	0.312	102.0
GD 8	5/5/2021	3.7	8.01	9.62	18.5	7.03	<0.030	<0.100	0.796	35.7
GD 8	9/2/2021	*	*	8.04	24.5	0.241	<0.030	<0.100	0.611	18.3
GD 8	11/23/2021	<1.0	8.04	10.73	12.5	<0.100	<0.0300	<0.100	<0.250	2.7
GD 8	1/10/2022	18.9	7.60	12.25	9.2	0.222	<0.0300	0.122	0.277	20.8
GD 8	4/7/2022	8.2	7.87	9.94	16.8	0.120	<0.0300	<0.100	0.349	10.9

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.5 - ANALYTICAL DATA - RC 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 2	3/12/2013	29.1	7.73	9.83	10.53	0.12	0.088	<0.100	0.75	14.0
RC 2	5/8/2013	18.9	6.16	3.06	16.36	0.19	<0.025	<0.100	0.55	12.0
RC 2	9/23/2013	11.4	6.24	3.00	23.61	<0.100	<0.025	<0.100	0.43	6.3
RC 2	12/10/2013	33.6	6.07	11.71	8.38	0.11	0.062	<0.100	0.54	10.0
RC 2	2/6/2014	30.4	3.89	17.28	5.62	0.26	<0.025	<0.100	0.43	9.6
RC 2	6/26/2014	17.6	7.90	6.81	24.81	0.15	<0.025	<0.100	0.44	7.2
RC 2	9/30/2014	3.4	7.27	5.55	22.25	<0.100	<0.025	<0.100	0.40	2.5
RC 2	11/19/2014	27.4	5.65	7.14	5.72	0.17	<0.025	<0.100	0.43	11.0
RC 2	3/23/2015	45.0	8.23	9.07	16.00	0.15	0.044	<0.100	0.81	18.0
RC 2	4/22/2015	14.1	7.64	11.42	18.40	0.26	<0.025	<0.100	<0.25	4.8
RC 2	9/30/2015	7.1	5.93	9.28	23.33	<0.100	<0.025	<0.100	<0.25	4.6
RC 2	11/19/2015	114.0	7.36	21.94	15.29	0.271	<0.025	0.133	0.75	14.4
RC 2	3/15/2016	14.5	7.62	16.67	14.61	0.181	<0.025	<0.100	0.43	6.0
RC 2	6/29/2016	12.1	7.78	4.31	28.30	<0.100	0.077	<0.100	0.35	10.9
RC 2	8/9/2016	24.5	8.12	5.05	26.50	0.140	<0.025	<0.100	0.45	9.9
RC 2	12/7/2016	17.2	7.86	7.47	12.0	0.200	<0.025	<0.100	0.53	11.9
RC 2	3/2/2017	25.3	7.71	7.74	13.10	0.166	<0.025	<0.100	0.45	8.0
RC 2	6/21/2017	14.2	7.91	5.61	23.7	<0.100	<0.025	<0.100	0.51	12.3
RC 2	8/17/2017	18.2	8.08	4.94	27.90	<0.100	<0.025	0.133	0.72	72.2
RC 2	10/26/2017	18.1	7.57	7.05	15.2	<0.100	<0.025	<0.100	0.27	17.5
RC 2	3/27/2018	18.2	7.91	8.43	12.4	0.146	<0.025	<0.100	<0.25	12.5
RC 2	6/26/2018	18.8	7.94	6.19	26.5	0.101	<0.025	<0.100	0.802	13.0
RC 2	8/1/2018	56.8	7.40	7.10	22.4	<0.100	<0.025	<0.100	0.506	84.4

TABLE B.5 - ANALYTICAL DATA - RC 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 2	12/11/2018	16.0	7.54	11.41	7.7	0.316	<0.025	<0.100	0.479	3.1
RC 2	4/17/2019	7.0	7.77	8.67	18.9	0.165	<0.025	<0.100	0.288	<5.00
RC 2	6/11/2019	14.3	6.83	3.78	23.0	<0.100	<0.025	<0.100	0.520	5.2
RC 2	8/28/2019	14.4	8.01	7.30	28.0	<0.100	<0.025	<0.100	0.748	4.8
RC 2	10/28/2019	11.4	7.55	9.42	14.9	0.132	<0.025	0.197	<0.250	3.4
RC 2	3/31/2020	84.5	7.90	9.10	15.7	0.190	0.0290	0.118	0.574	90.0
RC 2	6/10/2020	20.5	7.87	6.37	25.6	0.210	<0.030	<0.100	0.330	10.8
RC 2	9/21/2020	NS	7.24	7.03	19.6	<0.100	<0.030	<0.100	<0.250	5.2
RC 2	12/17/2020	28.1	7.91	11.23	8.9	0.218	<0.030	<0.100	0.396	5.4
RC 2	3/18/2021	67.5	7.90	8.68	16.7	0.145	<0.030	<0.100	0.611	26.8
RC 2	5/5/2021	2.8	7.31	8.95	19.1	7.91	<0.030	<0.100	0.892	15.6
RC 2	9/2/2021	*	*	6.52	25.0	0.122	<0.030	<0.100	0.802	3.4
RC 2	11/23/2021	3.5	7.66	8.33	12.2	0.124	<0.0300	<0.100	0.340	19.2
RC 2	1/10/2022	32.1	7.27	11.50	8.4	0.185	<0.0300	<0.100	0.501	9.0
RC 2	4/7/2022	10.96	7.41	9.02	17.5	0.186	<0.0300	0.144	0.386	5.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.6 - ANALYTICAL DATA - SS 13

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 13	3/12/2013	8	7.04	9.85	11.45	0.34	0.032	<0.10	0.78	4.7
SS 13	5/8/2013	10	6.68	2.94	18.75	0.36	<0.050	<0.10	0.72	5.7
SS 13	9/23/2013	12	7.04	3.38	25.31	<0.10	0.028	<0.10	0.84	9.6
SS 13	12/10/2013	12.2	6.14	10.93	8.99	0.33	0.077	0.12	0.67	5.6
SS 13	2/6/2014	7.2	4.26	17.50	5.14	0.42	<0.025	<0.100	0.44	4.1
SS 13	6/26/2014	23.2	8.33	8.09	28.44	<0.100	<0.025	0.12	0.52	5.4
SS 13	9/30/2014	12.4	7.41	4.26	24.77	<0.100	<0.025	<0.100	0.44	12.0
SS 13	11/19/2014	13.4	6.31	6.08	6.44	0.22	0.044	<0.100	0.40	4.8
SS 13	3/23/2015	15.9	7.33	8.57	15.4	0.22	0.029	<0.100	0.71	7.6
SS 13	4/22/2015	15.3	6.60	8.93	20.8	0.32	<0.025	<0.100	0.67	10.0
SS 13	9/30/2015	9.5	7.33	11.54	25.95	<0.100	<0.025	<0.100	0.52	9.0
SS 13	11/19/2015	35.8	7.07	18.48	15.31	0.242	<0.025	0.181	0.97	4.8
SS 13	3/15/2016	9.1	6.61	12.42	17.37	0.323	<0.025	<0.100	<0.25	4.7
SS 13	6/29/2016	9.7	7.86	6.15	30.6	<0.100	<0.025	<0.100	0.53	9.8
SS 13	8/9/2016	20.3	7.77	5.92	29.1	<0.100	<0.025	<0.100	0.73	24.0
SS 13	12/7/2016	4.8	7.39	6.97	12.5	0.108	<0.025	<0.100	0.45	3.6
SS 13	3/2/2017	12.0	6.64	7.19	13.4	0.249	<0.025	<0.100	0.75	4.6
SS 13	6/21/2017	8.7	7.54	5.82	26.1	<0.100	<0.025	<0.100	0.82	12.8
SS 13	8/17/2017	9.3	7.93	6.54	30.9	<0.100	<0.025	<0.100	0.81	18.6
SS 13	10/26/2017	5.2	6.70	7.41	15.4	0.122	<0.025	<0.100	0.60	7.2
SS 13	3/27/2018	6.4	8.19	8.23	12.4	0.495	<0.025	<0.100	<0.25	16.2
SS 13	6/26/2018	6.8	7.36	5.67	29.5	<0.100	<0.025	0.140	0.998	10.2
SS 13	8/1/2018	24.2	6.75	6.86	21.9	0.226	0.206	0.308	1.180	20.2

TABLE B.6 - ANALYTICAL DATA - SS 13

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 13	12/11/2018	8.2	7.37	10.79	7.4	0.451	<0.025	<0.100	0.655	8.6
SS 13	4/17/2019	6.4	7.42	9.23	19.1	<0.100	<0.025	<0.100	0.624	6.8
SS 13	6/11/2019	8.9	6.59	3.12	23.4	<0.100	<0.025	<0.100	0.929	<6.25
SS 13	8/28/2019	6.7	7.93	7.33	29.7	<0.100	<0.025	<0.100	1.170	24.4
SS 13	10/28/2019	12.3	6.25	3.61	16.0	0.211	0.031	<0.100	0.739	3.7
SS 13	3/31/2020	60.4	6.95	8.64	14.9	0.233	0.0580	0.147	0.928	92.0
SS 13	6/10/2020	10.1	7.27	7.08	28.2	<0.100	<0.030	<0.100	0.492	21.2
SS 13	9/21/2020	NS	7.36	6.58	21.9	<0.100	<0.030	0.200	<0.250	7.8
SS 13	12/17/2020	12.3	8.04	10.83	8.3	0.405	<0.030	<0.100	0.432	5.3
SS 13	3/18/2021	26.8	7.61	9.23	16.9	0.163	<0.030	<0.100	0.926	16.5
SS 13	5/5/2021	0.5	7.77	8.13	18.2	7.64	0.0960	0.160	1.41	10.5
SS 13	9/2/2021	*	*	8.50	28.7	0.189	<0.030	0.108	1.33	13.4
SS 13	11/23/2021	<1.0	7.11	8.26	14.8	0.16	<0.0300	<0.100	0.331	5.30
SS 13	1/10/2022	9.1	7.71	11.23	8.8	0.295	<0.0300	<0.100	0.725	7.0
SS 13	4/7/2022	6.68	7.40	8.72	18.2	0.304	<0.0300	<0.100	0.886	5.30

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.7 - ANALYTICAL DATA - SS 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 14	3/12/2013	9.7	7.40	11.23	10.93	0.40	0.087	0.11	0.77	4.7
SS 14	5/8/2013	10.3	6.47	2.75	16.42	0.45	0.041	<0.100	0.53	5.0
SS 14	9/23/2013	3.1	6.76	6.49	21.77	0.38	0.036	<0.100	0.45	<2.5
SS 14	12/10/2013	17.6	5.63	11.33	8.56	0.28	0.160	0.19	0.66	9.2
SS 14	2/6/2014	12.4	4.19	17.56	5.16	0.62	0.074	<0.100	0.50	14.0
SS 14	6/26/2014	7.9	8.18	7.58	24.14	0.67	0.080	0.16	0.89	<2.5
SS 14	9/30/2014	7.9	7.42	3.67	22.35	<0.100	0.031	<0.100	0.52	6.1
SS 14	11/19/2014	16.0	6.27	7.50	5.48	0.75	0.075	0.22	0.46	9.2
SS 14	3/23/2015	21.3	7.75	9.53	16.5	0.27	0.110	0.14	1.10	11.0
SS 14	4/22/2015	12.3	7.43	12.29	17.5	0.620	<0.025	<0.100	0.58	6.3
SS 14	9/30/2015	7.3	7.16	12.79	24.02	<0.10	0.088	0.176	0.514	6.6
SS 14	11/19/2015	27.0	6.49	20.71	15.16	0.442	0.131	0.183	0.996	23.3
SS 14	3/15/2016	11.3	7.18	12.11	16.01	0.50	0.056	<0.100	0.834	8.1
SS 14	6/29/2016	6.0	7.62	3.61	27.2	<0.100	0.103	0.160	0.650	6.0
SS 14	8/9/2016	22.3	7.71	5.99	26.9	0.164	0.062	0.119	0.871	12.7
SS 14	12/7/2016	7.6	7.27	7.72	11.9	0.885	0.078	0.147	0.705	<2.5
SS 14	3/2/2017	12.6	7.60	8.76	12.2	0.475	0.092	0.153	0.842	9.2
SS 14	6/21/2017	21.5	7.74	6.24	23.7	0.249	0.030	0.109	0.725	63.7
SS 14	8/17/2017	6.0	8.12	7.11	31.4	0.118	0.070	<0.100	0.827	24.8
SS 14	10/26/2017	4.3	7.39	7.66	13.9	0.699	0.054	<0.100	0.582	3.6
SS 14	3/27/2018	8.8	7.34	8.96	11.9	0.673	0.044	0.148	<0.25	8.2
SS 14	6/26/2018	7.7	8.47	10.65	29.3	0.206	0.044	0.148	1.010	18.7
SS 14	8/1/2018	42.9	6.35	7.04	22.5	0.109	0.233	0.276	0.885	60.0

TABLE B.7 - ANALYTICAL DATA - SS 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 14	12/11/2018	8.4	6.95	11.53	7.4	0.812	0.057	0.117	0.635	4.3
SS 14	4/17/2019	6.6	7.60	8.28	22.1	0.598	0.042	<0.100	0.414	6.7
SS 14	6/11/2019	12.6	6.78	3.47	23.8	0.444	0.077	<0.100	0.928	5.9
SS 14	8/28/2019	8.1	7.96	8.18	27.9	<0.100	<0.025	0.174	1.050	8.5
SS 14	10/28/2019	10.9	6.97	7.83	15.1	0.458	0.048	0.167	0.381	2.7
SS 14	3/31/2020	62.4	6.67	9.31	15.2	0.190	0.235	0.348	0.934	145
SS 14	6/10/2020	17.0	7.32	7.20	29.1	0.246	0.078	0.128	0.897	40.4
SS 14	9/21/2020	NS	7.62	7.59	20.7	0.345	0.075	<0.100	0.281	8.4
SS 14	12/17/2020	11.4	7.94	11.72	8.6	0.546	0.050	<0.100	0.540	5.4
SS 14	3/18/2021	31.4	7.73	9.77	16.8	0.189	0.048	<0.100	0.670	19.8
SS 14	5/5/2021	1.2	6.98	8.62	19.4	7.85	0.073	<0.100	1.06	6.27
SS 14	9/2/2021	*	*	7.80	26.3	0.552	0.980	0.128	0.935	3.0
SS 14	11/23/2021	<1.0	7.46	10.28	12.7	0.315	0.108	0.178	0.370	2.6
SS 14	1/10/2022	9.8	7.12	11.84	8.8	0.385	0.068	0.136	0.674	4.4
SS 14	4/7/2022	4.4	6.82	9.83	17.8	0.402	0.033	<0.100	0.566	2.9

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.8 - ANALYTICAL DATA - GD 12

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 12	3/12/2013	8.5	7.41	10.93	13.43	0.25	0.030	<0.100	0.54	3.9
GD 12	5/8/2013	15.0	6.73	2.35	16.53	0.21	0.030	<0.100	0.40	7.5
GD 12	9/23/2013	9.8	6.76	3.94	26.07	<0.10	0.026	<0.100	0.48	9.0
GD 12	12/10/2013	18.8	6.15	10.09	10.18	0.22	0.079	0.11	0.45	5.9
GD 12	2/6/2014	12.3	4.17	16.99	5.76	0.31	<0.025	<0.100	0.28	3.9
GD 12	6/26/2014	28.5	8.38	9.40	26.72	0.11	0.035	0.12	0.62	32.0
GD 12	9/30/2014	10.6	7.68	5.77	24.68	<0.100	<0.025	<0.100	0.39	11.0
GD 12	11/19/2014	14.7	6.95	5.93	5.85	0.28	<0.025	0.13	0.39	6.6
GD 12	3/23/2015	17.6	7.80	9.56	16.80	0.24	<0.025	<0.100	0.59	8.1
GD 12	4/22/2015	17.3	7.45	11.04	19.80	0.25	<0.025	<0.100	0.43	14.0
GD 12	9/30/2015	7.4	7.30	11.07	24.67	<0.100	<0.025	<0.100	0.695	8.5
GD 12	11/19/2015	22.9	7.07	19.14	14.68	0.281	0.100	0.15	0.769	12.0
GD 12	3/15/2016	9.8	7.43	13.14	16.05	0.254	0.032	<0.100	0.434	4.6
GD 12	6/29/2016	12.9	8.22	7.68	31.20	<0.100	0.036	<0.100	0.380	12.0
GD 12	8/9/2016	22.1	7.57	4.39	27.60	<0.100	<0.025	<0.100	0.629	13.3
GD 12	12/7/2016	10.3	7.18	6.65	11.4	0.142	<0.025	<0.100	0.599	4.0
GD 12	3/2/2017	15.4	7.79	10.12	11.70	0.223	<0.025	0.12	0.583	6.1
GD 12	6/21/2017	16.1	7.43	5.12	24.3	<0.100	<0.025	<0.100	0.770	16.8
GD 12	8/17/2017	6.3	8.13	5.80	29.90	<0.100	<0.025	<0.100	0.583	13.3
GD 12	10/26/2017	9.8	6.74	7.53	13.2	0.19	<0.025	<0.100	0.312	7.8
GD 12	3/27/2018	6.3	7.71	9.24	11.5	0.356	<0.025	<0.100	<0.25	4.2
GD 12	6/26/2018	9.9	7.44	4.35	26.1	0.102	<0.025	<0.100	0.528	13.2
GD 12	8/1/2018	42.3	7.05	7.33	22.7	0.108	0.159	0.286	1.230	43.8

TABLE B.8 - ANALYTICAL DATA - GD 12

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 12	12/11/2018	9.5	6.68	11.46	7.8	0.313	<0.025	<0.100	0.574	4.3
GD 12	4/17/2019	9.1	7.45	9.20	17.5	0.257	<0.025	<0.100	0.272	4.0
GD 12	6/11/2019	19.0	7.20	3.25	22.0	0.223	0.066	0.121	0.820	8.2
GD 12	8/28/2019	11.0	7.83	7.61	28.2	<0.100	<0.025	0.103	0.764	9.4
GD 12	10/28/2019	18.9	5.34	6.65	14.7	0.197	0.044	<0.100	0.387	12.3
GD 12	3/31/2020	76.3	6.71	9.44	14.5	0.177	0.0650	0.167	1.00	143
GD 12	6/10/2020	12.3	6.46	6.44	25.8	<0.100	<0.030	<0.100	0.438	11.4
GD 12	9/21/2020	NS	7.18	7.15	19.9	0.103	<0.030	<0.100	<0.250	7.6
GD 12	12/17/2020	13.1	8.03	11.10	8.5	0.268	<0.030	<0.100	<0.250	3.7
GD 12	3/18/2021	36.2	7.92	10.04	17.1	0.163	<0.030	<0.100	0.621	17.6
GD 12	5/5/2021	4.1	7.49	8.97	18.9	7.26	<0.030	<0.100	0.610	16.4
GD 12	9/2/2021	*	*	7.34	24.4	0.245	<0.030	<0.100	0.779	3.5
GD 12	11/23/2021	<1.0	7.80	11.27	12.5	<0.100	<0.0300	<0.100	<0.250	2.8
GD 12	1/10/2022	10.7	7.29	12.18	8.5	0.230	<0.0300	<0.100	0.325	3.7
GD 12	4/7/2022	6.19	7.51	9.97	17.0	0.177	0.0740	<0.100	0.522	3.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.9 - ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 14	3/12/2013	8.2	6.88	9.65	12.92	0.32	<0.025	<0.100	0.42	3.5
CO 14	5/8/2013	13.0	6.61	3.02	16.37	0.34	<0.12	<0.100	0.74	6.7
CO 14	9/23/2013	15.0	6.70	3.78	22.58	<0.100	0.036	<0.100	0.30	9.6
CO 14	12/10/2013	14.4	5.82	11.15	9.37	0.11	0.027	<0.100	0.55	9.7
CO 14	2/6/2014	13.7	4.02	16.69	5.08	0.58	<0.025	<0.100	0.41	9.1
CO 14	6/26/2014	19.7	8.25	8.19	22.33	0.34	<0.025	<0.100	0.86	9.0
CO 14	9/30/2014	***	***	***	***	***	***	***	***	***
CO 14	11/19/2014	9.84	6.70	3.86	7.90	<0.100	<0.025	<0.100	0.26	2.8
CO 14	3/23/2015	18.9	6.85	8.78	17.20	0.25	<0.025	<0.100	0.67	10.0
CO 14	4/22/2015	13.8	6.23	11.19	18.00	0.49	<0.025	<0.100	0.60	8.6
CO 14	9/30/2015	***	***	***	***	***	***	***	***	***
CO 14	11/19/2015	24.30	6.64	16.06	15.25	<0.100	<0.025	<0.100	1.27	5.9
CO 14	3/15/2016	15.80	6.33	13.05	16.42	0.468	<0.025	<0.100	0.713	9.7
CO 14	6/29/2016	***	***	***	***	***	***	***	***	***
CO 14	8/9/2016	***	***	***	***	***	***	***	***	***
CO 14	12/7/2016	***	***	***	***	***	***	***	***	***
CO 14	3/2/2017	19	6.34	8.58	13.60	0.106	<0.025	<0.100	0.601	5.2
CO 14	6/21/2017	9.0	6.57	6.49	22.9	<0.100	<0.025	<0.100	0.758	19.0
CO 14	8/17/2017	13.8	7.83	6.22	28.0	<0.100	<0.025	<0.100	0.851	50.6
CO 14	10/26/2017	8.1	6.43	8.40	14.2	<0.100	<0.025	<0.100	0.440	4.7
CO 14	3/27/2018	8.2	7.63	9.45	11.4	0.601	<0.025	<0.100	<0.25	9.5
CO 14	6/26/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS
CO 14	8/1/2018	40.2	6.99	7.42	22.1	<0.100	<0.025	<0.100	0.764	28.3

TABLE B.9 - ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 14	12/11/2018	7.6	7.38	10.74	7.7	0.184	<0.025	<0.100	0.567	4.9
CO 14	4/17/2019	9.3	7.91	8.99	19.0	0.460	<0.025	<0.100	2.96	9.4
CO 14	6/11/2019	17.5	7.07	3.56	22.4	<0.100	<0.025	0.14	0.773	5.6
CO 14	8/28/2019	***	***	***	***	***	***	***	***	***
CO 14	10/28/2019	***	***	***	***	***	***	***	***	***
CO 14	3/31/2020	77.6	7.84	9.07	15.0	0.402	<0.025	<0.100	0.532	106
CO 14	6/10/2020	13.8	7.64	7.20	24.4	0.244	<0.030	<0.100	0.482	5.6
CO 14	9/21/2020	***	***	***	***	***	***	***	***	***
CO 14	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

*** - outfall was dry

TABLE B.10 - ANALYTICAL DATA - SME 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 2	3/12/2013	6.0	7.12	9.28	14.17	0.28	0.032	<0.100	0.47	8.1
SME 2	5/8/2013	26.2	7.67	6.46	21.40	0.24	0.042	<0.100	0.92	21.0
SME 2	9/23/2013	7.3	6.92	5.51	26.24	<0.100	0.039	<0.100	0.34	7.1
SME 2	12/10/2013	11.8	5.71	11.05	11.01	0.31	0.100	0.15	0.42	7.0
SME 2	2/6/2014	19.9	4.21	14.38	6.13	0.39	0.053	<0.100	0.59	14.0
SME 2	6/26/2014	14.8	8.16	7.22	26.98	0.11	<0.025	<0.100	0.38	8.7
SME 2	9/30/2014	6.0	7.97	5.33	26.53	<0.100	<0.025	<0.100	0.52	7.4
SME 2	11/19/2014	9.5	7.06	3.53	10.20	0.14	0.039	0.16	<0.25	6.8
SME 2	3/23/2015	11.1	7.96	9.34	17.60	0.24	<0.025	<0.100	0.45	10.0
SME 2	4/22/2015	8.8	7.93	11.46	24.50	0.13	<0.025	<0.100	0.48	9.1
SME 2	9/30/2015	7.4	7.62	12.67	25.91	0.10	<0.025	0.101	0.497	8.7
SME 2	11/19/2015	22.0	6.55	14.30	19.12	0.22	0.062	0.219	1.21	82.3
SME 2	3/15/2016	8.2	7.86	13.43	20.73	<0.100	<0.025	<0.100	0.486	6.3
SME 2	6/29/2016	7.6	8.23	7.24	30.4	0.19	<0.025	<0.100	0.290	8.0
SME 2	8/9/2016	10.3	8.01	6.58	30.6	<0.100	<0.025	<0.100	0.585	8.2
SME 2	12/7/2016	6.0	7.52	6.86	12.7	<0.100	<0.025	0.101	0.469	5.8
SME 2	3/2/2017	11.8	8.03	8.55	15.2	0.267	<0.025	<0.100	0.720	11.4
SME 2	6/21/2017	5.2	7.18	4.64	26.6	<0.100	<0.025	<0.100	0.886	11.4
SME 2	8/17/2017	6.5	7.76	6.43	30.6	<0.100	<0.025	<0.100	0.729	15.3
SME 2	10/26/2017	5.2	7.03	6.87	17.6	<0.100	<0.025	<0.100	0.382	8.5
SME 2	3/27/2018	11.1	7.44	8.64	12.9	0.161	<0.025	<0.100	<0.25	17.5
SME 2	6/26/2018	10.8	7.97	6.43	29.6	0.111	<0.025	<0.100	0.731	9.9
SME 2	8/1/2018	29.6	7.39	6.46	23.4	0.371	0.099	0.128	0.423	24.8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	**DATE**	**TURBIDITY (NTU)**	**pH**	**DO (mg/L)**	**TEMP (°C)**	**NITRATE-NITRITE (mg/L)**	**ORTHO-PHOSPHATE (mg/L)**	**TOTAL P (mg/L)**	**TKN (mg/L)**	**TSS (mg/L)**
SME 2	12/11/2018	9.7	7.82	9.99	7.9	0.212	<0.025	0.166	0.368	5.1
SME 2	4/17/2019	5.0	7.82	7.80	20.5	0.105	<0.025	<0.100	0.783	6.0
SME 2	6/11/2019	12.3	6.68	3.43	24.4	<0.100	<0.025	<0.100	0.676	9.2
SME 2	8/28/2019	6.6	7.83	6.26	29.2	<0.100	<0.025	<0.100	0.452	5.9
SME 2	10/28/2019	24.9	7.64	7.42	16.8	<0.100	<0.025	0.107	0.341	18.2
SME 2	3/31/2020	9.5	7.02	7.31	18.2	<0.100	<0.025	<0.100	0.521	10.2
SME 2	6/10/2020	10.4	7.81	6.40	27.0	0.117	<0.030	<0.100	0.367	8.0
SME 2	9/21/2020	NS	7.84	8.02	23.6	<0.100	<0.030	<0.100	<0.250	11.0
SME 2	12/17/2020	13.3	8.04	9.04	9.2	0.272	0.041	<0.100	0.342	6.7
SME 2	3/18/2021	27.3	8.20	12.80	18.4	0.193	0.033	<0.100	0.528	13.8
SME 2	5/5/2021	0.0	7.29	6.72	21.2	0.560	0.039	<0.100	0.768	6.80
SME 2	9/2/2021	*	*	6.31	27.5	0.134	<0.030	<0.100	0.562	11.8
SME 2	11/23/2021	<1.0	7.98	10.03	14.6	0.170	<0.0300	<0.100	<0.250	9.2
SME 2	1/10/2022	14.5	7.84	11.04	8.8	0.338	<0.0300	0.117	0.672	16.1
SME 2	Removed Monitoring Point from Stormwater Monitoring Program April 2022									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.11 - ANALYTICAL DATA - GD 6

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 6	3/12/2013	10.3	8.03	9.65	11.90	0.21	0.036	<0.100	0.29	5.8
GD 6	5/8/2013	18.5	6.81	2.35	19.02	0.23	0.033	<0.100	0.40	8.3
GD 6	9/23/2013	6.0	7.28	5.17	26.93	<0.100	<0.025	<0.100	0.36	5.8
GD 6	12/10/2013	26.4	5.98	11.41	10.64	0.37	0.041	<0.100	0.17	8.6
GD 6	2/6/2014	15.5	4.34	15.80	6.85	0.26	0.057	<0.100	0.16	5.5
GD 6	6/26/2014	14.4	8.31	8.95	27.29	<0.100	<0.025	<0.100	0.42	7.0
GD 6	9/30/2014	7.1	8.35	6.53	26.78	<0.100	<0.025	<0.100	0.55	7.0
GD 6	11/19/2014	13.4	7.17	3.36	9.67	0.22	<0.025	0.28	0.38	9.8
GD 6	3/23/2015	16.5	7.95	8.95	18.40	0.22	<0.025	<0.100	0.26	8.2
GD 6	4/22/2015	14.9	7.59	10.82	19.80	0.22	<0.025	<0.100	0.28	8.0
GD 6	9/30/2015	14.1	8.19	12.31	25.47	<0.100	<0.025	0.103	0.974	12.4
GD 6	11/19/2015	42.5	6.97	15.87	17.75	0.468	0.037	0.131	0.768	16.0
GD 6	3/15/2016	16.1	7.68	11.58	19.98	0.124	0.043	<0.100	0.500	7.9
GD 6	6/29/2016	10.4	8.86	9.64	31.50	<0.100	<0.025	<0.100	0.400	11.2
GD 6	8/9/2016	10.4	8.26	6.98	30.70	<0.100	<0.025	<0.100	0.621	10.3
GD 6	12/7/2016	11.5	7.43	8.13	14.3	0.365	<0.025	<0.100	0.485	7.5
GD 6	3/2/2017	14.3	8.05	8.02	14.70	0.250	<0.025	<0.100	0.509	9.0
GD 6	6/21/2017	7.7	7.67	4.99	26.8	<0.100	<0.025	0.11	0.926	21.0
GD 6	8/17/2017	7.0	8.02	7.72	31.2	<0.100	<0.025	<0.100	0.677	13.2
GD 6	10/26/2017	8.3	6.25	7.84	15.8	0.126	<0.025	<0.100	0.385	12.0
GD 6	3/27/2018	10.1	7.97	9.00	12.1	0.233	<0.025	1.76	<0.25	10.9
GD 6	6/26/2018	8.0	8.02	6.78	29.6	0.108	<0.025	<0.100	0.782	9.6
GD 6	8/1/2018	25.4	7.66	7.52	22.7	0.335	0.090	0.138	0.636	21.9

TABLE B.11 - ANALYTICAL DATA - GD 6

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 6	12/11/2018	13.8	7.97	10.92	8.2	0.397	<0.025	<0.100	0.362	5.8
GD 6	4/17/2019	9.0	7.10	8.00	20.5	0.198	<0.025	<0.100	0.624	9.6
GD 6	6/11/2019	17.9	7.07	3.68	23.8	<0.100	<0.025	<0.100	0.728	12.4
GD 6	8/28/2019	9.1	7.94	6.32	28.5	<0.100	<0.025	<0.100	0.607	6.5
GD 6	10/28/2019	18.4	7.48	6.63	16.4	0.198	<0.025	<0.100	0.467	9.9
GD 6	3/31/2020	16.0	6.06	8.86	16.1	0.212	<0.025	0.127	<0.250	8.40
GD 6	6/10/2020	7.4	7.04	6.36	26.5	0.127	<0.030	<0.100	0.832	10.4
GD 6	9/21/2020	NS	7.96	8.48	21.4	<0.100	<0.030	<0.100	<0.250	8.60
GD 6	12/17/2020	0.5	7.96	10.08	9.0	0.309	<0.030	<0.100	0.377	7.40
GD 6	3/18/2021	75.6	7.97	9.21	17.0	0.241	<0.030	0.183	0.364	31.6
GD 6	5/5/2021	5.7	7.55	8.62	19.2	7.95	<0.030	0.124	0.542	12.3
GD 6	9/2/2021	*	*	6.24	27.1	0.139	<0.030	0.305	3.44	25.4
GD 6	11/23/2021	<1.0	7.61	8.28	15.6	0.132	<0.0300	0.102	0.350	8.50
GD 6	1/10/2022	14.2	8.05	10.58	9.5	0.238	0.037	0.147	0.850	10.20
GD 6	4/7/2022	13.63	7.70	8.85	17.2	0.160	<0.0300	<0.100	0.433	9.90

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.12 - ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 15	3/12/2013	32	7.41	8.91	14.40	<0.10	0.097	<0.100	0.53	9.0
CO 15	5/8/2013	27	7.51	8.04	18.10	0.10	<0.12	<0.100	0.59	11.0
CO 15	9/23/2013	13	7.09	4.01	27.18	<0.10	0.027	<0.100	0.34	11.0
CO 15	12/10/2013	42	6.09	11.25	9.83	0.18	0.068	<0.100	0.56	13.0
CO 15	2/6/2014	32	4.22	16.10	6.28	0.21	<0.025	<0.100	0.46	12.0
CO 15	6/26/2014	105	8.16	7.00	25.55	<0.100	0.140	<0.100	0.59	46.0
CO 15	9/30/2014	8	7.88	6.67	23.28	<0.100	<0.025	<0.100	<0.25	8.6
CO 15	11/19/2014	44	7.38	3.68	9.43	0.20	0.030	<0.100	0.32	12.0
CO 15	3/23/2015	56	7.85	9.53	18.50	0.14	0.067	<0.100	0.61	19.0
CO 15	4/22/2015	26	7.62	10.14	21.90	0.14	<0.025	<0.100	0.40	11.0
CO 15	9/30/2015	15	7.68	12.73	22.88	<0.100	<0.025	<0.100	0.75	11.8
CO 15	11/19/2015	50	7.30	19.45	16.98	0.24	0.042	0.183	0.42	17.5
CO 15	3/15/2016	29	7.66	12.39	19.83	<0.100	<0.025	<0.100	0.78	12.4
CO 15	6/29/2016	***	***	***	***	***	***	***	***	***
CO 15	8/9/2016	38	8.03	6.78	29.6	<0.100	<0.025	<0.100	<0.25	22.0
CO 15	12/7/2016	13.6	7.50	9.78	12.1	<0.100	<0.025	<0.100	0.67	14.8
CO 15	3/2/2017	38.2	7.77	8.32	16.0	0.15	<0.025	<0.100	0.52	17.4
CO 15	6/21/2017	6.4	7.56	5.12	26.7	<0.100	<0.025	<0.100	0.97	18.3
CO 15	8/17/2017	21.7	8.29	6.47	30.1	<0.100	<0.025	<0.100	0.69	12.4
CO 15	10/26/2017	10.8	4.43	8.24	13.6	<0.100	<0.025	<0.100	0.39	6.4
CO 15	3/27/2018	14.5	7.87	9.33	12.1	<0.100	<0.025	<0.100	<0.25	8.0
CO 15	6/26/2018	13.8	7.87	7.33	26.5	<0.100	<0.025	0.270	0.573	12.4
CO 15	8/1/2018	58.8	7.25	7.12	23.0	<0.100	0.040	0.122	0.852	71.5

TABLE B.12 - ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 15	12/11/2018	111.3	8.73	11.94	7.0	0.168	<0.025	0.107	1.16	10.1
CO 15	4/17/2019	17.0	7.80	9.17	19.1	0.144	<0.025	<0.100	0.574	11.5
CO 15	6/11/2019	21.9	6.56	3.10	22.8	<0.100	<0.025	<0.100	1.00	9.8
CO 15	8/28/2019	70.8	8.07	7.52	25.7	0.166	0.026	0.130	1.54	20.4
CO 15	10/28/2019	30.7	7.31	9.63	15.0	0.120	<0.025	<0.100	0.61	10.2
CO 15	3/31/2020	61.8	6.46	9.25	15.7	0.102	0.0320	0.158	0.625	72.4
CO 15	6/10/2020	18.7	6.24	6.22	25.0	0.148	<0.030	<0.100	0.456	10.4
CO 15	9/21/2020	NS	7.31	8.18	17.9	<0.100	<0.030	<0.100	<0.250	5.6
CO 15	12/17/2020	2.8	8.98	10.87	10.0	0.161	<0.030	<0.100	0.685	15.6
CO 15	3/18/2021	63.1	8.46	15.75	19.8	0.193	<0.030	<0.100	0.554	26.0
CO 15	5/5/2021	3.8	7.47	9.06	19.3	7.78	<0.030	0.200	1.17	10.9
CO 15	9/2/2021	*	*	7.81	24.3	<0.100	<0.030	<0.100	0.926	13.8
CO 15	11/23/2021	2.0	7.87	10.67	15.2	<0.100	<0.030	<0.100	0.270	25.9
CO 15	1/10/2022	24.3	7.90	11.64	9.8	0.196	<0.0300	<0.100	<2.50	9.6
CO 15	4/7/2022	16.5	7.48	9.75	17.3	<0.100	0.0710	<0.100	0.853	11.7

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

*** - outfall was dry

* - meter malfunctioned in field

TABLE B.13 - ANALYTICAL DATA - SME 7

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 7	12/17/2020	16.8	8.10	11.01	11.5	0.884	0.094	<0.100	0.541	19.4
SME 7	3/18/2021	111.0	8.93	10.25	18.3	0.429	0.093	0.270	0.407	78.2
SME 7	5/5/2021	8.2	6.06	8.01	18.4	1.090	0.112	0.244	1.240	36.4
SME 7	9/2/2021	*	*	7.91	22.6	0.491	0.179	0.275	2.490	77.6
SME 7	11/23/2021	<1.0	7.78	10.45	12.2	0.367	0.472	0.516	<0.250	<2.50
SME 7	1/10/2022	19.2	7.97	10.98	11.9	0.823	0.140	0.211	0.805	34.7
SME 7	4/7/2022	*	7.10	9.27	18.0	0.549	<0.0300	0.264	1.37	37.2

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.14 - ANALYTICAL DATA - SME 8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 8	12/17/2020	0.30	7.72	11.22	9.10	0.312	<0.030	<0.100	<0.25	25.9
SME 8	3/18/2021	48.8	8.17	9.47	18.0	0.183	<0.030	<0.100	0.460	17.7
SME 8	5/5/2021	3.3	7.11	9.39	18.5	0.597	<0.030	0.118	0.366	60.3
SME 8	9/2/2021	*	*	7.87	25.9	0.150	<0.030	<0.100	0.269	39.2
SME 8	1/10/2022	9.5	7.42	11.82	9.2	0.328	<0.0300	<0.100	0.832	33.5
SME 8	Removed from Stormwater Management Program April 2022									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.15 - ANALYTICAL DATA - SME 9

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 9	4/7/2022	5.17	7.78	9.32	17.0	<0.100	<0.0300	0.135	0.529	2.90

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.16 - ANALYTICAL DATA - SME 10

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 10	4/7/2022	4.94	7.82	9.16	18.0	<0.100	<0.0300	<0.100	0.477	2.80

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.17 - ANALYTICAL DATA - HB 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
HB 3	3/12/2013	33.3	7.54	9.48	13.90	0.19	0.081	<0.100	0.83	49.0
HB 3	5/20/2013	14.5	8.21	6.82	27.80	0.17	<0.025	<0.100	0.60	17.0
HB 3	9/23/2013	21.3	8.02	4.89	25.70	<0.100	0.037	<0.100	0.60	19.0
HB 3	12/10/2013	48.4	7.90	8.65	10.10	<0.100	0.140	0.15	0.62	20.0
HB 3	2/6/2014	32.0	7.22	12.24	5.90	0.48	0.030	<0.100	0.37	13.0
HB 3	6/26/2014	12.0	8.20	7.12	NS	<0.100	<0.025	<0.100	0.37	12.0
HB 3	9/30/2014	29.5	8.05	6.01	24.78	<0.100	<0.025	<0.100	0.48	30.0
HB 3	11/19/2014	56.1	7.85	8.83	8.80	0.11	0.098	0.12	0.44	51.0
HB 3	3/23/2015	27.0	8.21	8.40	24.20	0.26	<0.025	<0.100	0.46	35.0
HB 3	4/22/2015	25.0	7.91	8.36	21.90	0.20	<0.025	<0.100	0.66	22.0
HB 3	9/30/2015	22.0	7.89	5.05	25.70	<0.100	<0.025	<0.100	0.91	23.0
HB 3	11/19/2015	32.0	7.83	7.37	17.40	0.377	0.045	<0.100	<0.25	30.2
HB 3	3/15/2016	28.8	8.52	7.97	19.10	0.295	0.087	<0.100	<0.25	23.8
HB 3	6/29/2016	17.3	8.02	2.77	30.61	<0.100	<0.025	<0.100	0.51	20.9
HB 3	8/9/2016	11.3	7.91	4.31	30.19	<0.100	<0.025	<0.100	0.703	14.3
HB 3	12/7/2016	16.0	7.93	8.44	12.81	0.111	<0.025	0.126	0.730	17.0
HB 3	3/2/2017	50.0	7.75	3.90	14.33	0.334	<0.025	0.115	0.969	57.1
HB 3	7/5/2017	23.1	7.29	5.36	27.00	<0.100	<0.025	<0.100	0.812	28.5
HB 3	8/16/2017	13.7	7.35	5.04	27.00	<0.100	<0.025	<0.100	0.763	12.7
HB 3	10/25/2017	11.7	6.64	9.93	18.5	<0.100	<0.025	<0.100	0.322	20.4
HB 3	3/28/2018	13.2	7.99	9.47	17.6	0.359	<0.025	<0.100	<0.25	20.2
HB 3	6/29/2018	14.6	7.67	5.55	26.0	<0.100	<0.025	<0.100	0.464	18.2
HB 3	8/2/2018	28.3	7.40	5.64	25.1	<0.100	<0.025	<0.100	0.952	35.3

TABLE B.17 - ANALYTICAL DATA - HB 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
HB 3	12/10/2018	24.8	7.55	10.98	7.9	0.363	<0.025	0.141	0.426	27.6
HB 3	4/15/2019	22.4	7.73	8.27	19.6	0.233	<0.025	<0.100	<0.250	35.5
HB 3	6/12/2019	12.4	8.13	6.77	26.6	0.129	<0.025	<0.100	<0.250	52.3
HB 3	8/27/2019	78.1	8.21	8.75	29.1	<0.100	<0.025	0.179	0.634	7.3
HB 3	10/29/2019	28.2	7.82	9.88	18.3	<0.100	<0.025	0.166	0.517	17.6
HB 3	3/30/2020	8.9	7.79	8.91	18.5	0.234	<0.025	<0.100	1.20	18.4
HB 3	6/16/2020	20.4	7.33	7.01	26.3	<0.100	<0.030	<0.100	0.30	14.6
HB 3	9/21/2020	12.1	7.80	7.69	23.5	<0.100	<0.030	<0.100	0.28	8.3
HB 3	12/17/2020	31.16	8.07	9.94	9.1	0.195	<0.030	<0.100	0.588	20.4
HB 3	3/18/2021	1.80	7.47	9.62	16.0	0.369	<0.030	<0.100	0.252	23.0
HB 3	5/5/2021	28.31	7.50	7.71	22.0	0.207	<0.030	<0.100	<0.250	35.1
HB 3	9/2/2021	19.2	7.61	5.30	27.4	<0.100	<0.030	<0.100	0.689	23.6
HB 3	11/23/2021	51.55	7.15	10.59	11.2	0.137	<0.0300	<0.100	<0.250	10.5
HB 3	1/11/2022	26.9	7.75	11.26	12.8	0.200	<0.0300	<0.10	0.550	23.6
HB 3	4/7/2022	27.8	7.61	9.40	18.1	0.268	<0.0300	<0.100	0.329	21.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.18 - ANALYTICAL DATA - SME 4

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 4	12/17/2020	17.70	7.69	10.82	9.80	0.387	<0.03	<0.10	0.263	17.8
SME 4	3/18/2021	2.20	7.25	9.20	17.60	0.319	<0.030	<0.100	0.331	21.6
SME 4	5/5/2021	20.02	7.86	7.81	21.0	0.213	<0.030	<0.100	<0.250	27.5
SME 4	11/23/2021	48.51	7.64	10.41	10.6	0.164	<0.0300	<0.100	<0.250	9.2
SME 4	1/11/2022	17.30	7.39	11.35	13.40	0.44	<0.0300	<0.10	0.97	15.6
SME 4	4/7/2022	21.6	7.55	9.30	16.7	0.273	0.060	<0.100	0.254	20.9

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.19 - ANALYTICAL DATA - GD 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 5	3/13/2013	11.6	8.33	9.29	10.20	0.26	<0.025	<0.10	0.34	9.6
GD 5	5/20/2013	14.0	8.28	7.76	22.60	<0.100	<0.025	<0.10	0.62	9.0
GD 5	9/23/2013	11.5	7.67	6.78	27.10	<0.100	0.027	<0.10	0.45	8.0
GD 5	12/10/2013	57.9	7.97	9.10	9.10	0.10	0.088	0.10	0.47	18.0
GD 5	2/6/2014	45.9	7.14	9.88	7.20	0.17	0.038	<0.100	0.37	17.0
GD 5	6/26/2014	17.0	7.90	6.54	NS	<0.100	<0.025	<0.100	0.34	12.0
GD 5	9/30/2014	22.5	8.28	7.53	25.22	<0.100	<0.025	<0.100	<0.25	18.0
GD 5	11/19/2014	42.9	8.15	9.30	9.40	0.11	0.051	<0.100	0.43	26.0
GD 5	3/23/2015	24.0	8.14	8.58	15.90	0.12	<0.025	<0.100	0.34	15.0
GD 5	4/22/2015	25.0	7.81	7.78	21.70	0.14	<0.025	<0.100	0.65	13.0
GD 5	9/30/2015	18.0	8.03	6.27	26.30	<0.100	<0.025	0.115	0.557	17.3
GD 5	11/19/2015	90.0	7.63	7.34	16.60	0.168	0.042	<0.100	<0.250	42.8
GD 5	3/15/2016	23.7	8.80	7.47	19.40	<0.100	<0.025	<0.100	0.435	13.2
GD 5	6/29/2016	21.0	8.02	2.27	30.37	<0.100	0.074	<0.100	0.490	15.0
GD 5	8/9/2016	11.8	8.25	5.55	30.20	<0.100	<0.025	<0.100	0.412	11.0
GD 5	12/7/2016	10.0	7.73	10.61	11.96	<0.100	<0.025	<0.100	0.337	6.8
GD 5	3/2/2017	12.3	7.81	4.49	14.26	0.118	<0.025	<0.100	0.491	13.0
GD 5	7/5/2017	15.0	7.32	5.83	26.9	<0.100	<0.025	<0.100	0.730	22.7
GD 5	8/16/2017	8.0	7.89	6.22	28.0	<0.100	<0.025	<0.100	0.404	9.0
GD 5	10/25/2017	9.2	7.36	7.35	18.7	<0.100	<0.025	<0.100	0.347	14.6
GD 5	3/28/2018	6.1	8.18	9.47	18.5	0.127	<0.025	<0.100	<0.250	6.06
GD 5	6/29/2018	16.3	7.76	5.66	27.5	<0.100	<0.025	<0.100	0.689	19.60
GD 5	8/2/2018	18.4	7.59	6.02	25.7	<0.100	<0.025	<0.100	0.332	26.40

TABLE B.19 - ANALYTICAL DATA - GD 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 5	12/10/2018	37.7	7.87	11.30	7.3	<0.100	<0.025	0.190	0.523	22.3
GD 5	4/15/2019	29.7	7.69	8.02	19.3	0.128	<0.025	1.20	0.411	29.0
GD 5	6/12/2019	6.0	8.02	7.64	27.2	<0.100	<0.025	<0.100	<0.250	9.3
GD 5	8/27/2019	75.2	7.15	7.98	28.7	<0.100	<0.025	0.165	0.506	10.9
GD 5	10/29/2019	29.0	7.85	9.42	17.8	<0.100	<0.025	<0.100	0.477	21.0
GD 5	3/30/2020	14.5	7.65	8.86	19.1	0.130	<0.025	<0.100	0.320	12.1
GD 5	6/16/2020	16.4	7.69	7.75	27.2	<0.100	<0.030	<0.100	0.561	7.4
GD 5	9/21/2020	10.8	7.65	6.33	23.2	<0.100	<0.030	<0.100	<0.250	7.9
GD 5	12/17/2020	28.7	7.62	9.96	9.7	0.122	<0.030	0.113	0.422	19.8
GD 5	3/18/2021	3.4	7.15	8.98	16.9	0.127	<0.030	<0.100	0.600	30.6
GD 5	5/5/2021	36.10	7.84	7.74	19.8	0.204	<0.030	<0.100	<0.250	36.8
GD 5	9/2/2021	10.28	7.84	6.90	26.5	<0.100	<0.030	<0.100	0.510	16.1
GD 5	11/23/2021	27.7	7.70	10.54	11.3	<0.100	<0.0300	<0.100	<0.250	8.8
GD 5	1/11/2022	26.8	7.28	12.25	10.1	0.300	<0.0300	<0.10	0.510	12.1
GD 5	4/7/2022	16.4	7.72	9.32	17.2	0.157	<0.0300	<0.100	0.300	14.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.20 - ANALYTICAL DATA - GD 7

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 7	3/12/2013	9.7	7.98	11.63	15.27	0.39	0.037	<0.100	0.31	8.8
GD 7	5/8/2013	26.1	7.72	7.46	18.40	0.24	0.063	<0.100	<0.56	20.0
GD 7	9/23/2013	10.9	7.05	6.31	26.50	<0.100	0.026	<0.100	0.54	9.6
GD 7	12/10/2013	41.9	8.02	9.68	7.50	0.34	0.084	0.11	0.32	40.0
GD 7	2/6/2014	28.0	7.27	13.32	4.40	0.52	0.034	<0.100	0.61	13.0
GD 7	6/26/2014	6.2	8.45	7.04	NS	<0.100	<0.025	<0.100	0.52	8.7
GD 7	9/30/2014	11.9	7.87	6.32	24.39	<0.100	<0.025	<0.100	0.41	13.0
GD 7	11/19/2014	19.6	8.53	10.10	9.60	0.14	<0.025	0.13	0.46	15.0
GD 7	3/23/2015	13.0	8.28	8.87	15.40	0.27	<0.025	<0.100	0.35	10.0
GD 7	4/22/2015	28.0	7.99	6.40	20.20	0.24	<0.025	<0.100	0.47	24.0
GD 7	9/30/2015	8.3	7.89	5.18	24.90	<0.100	<0.025	<0.100	0.59	9.1
GD 7	11/19/2015	45.0	7.78	8.23	15.60	0.344	0.051	<0.100	<0.250	34.3
GD 7	3/15/2016	17.2	8.46	8.51	17.80	0.261	<0.025	<0.100	0.397	13.9
GD 7	6/29/2016	10.7	7.90	2.22	30.32	<0.100	0.048	<0.100	0.490	8.6
GD 7	8/9/2016	6.5	7.97	4.08	29.31	<0.100	<0.025	<0.100	0.471	5.7
GD 7	12/7/2016	9.5	7.88	10.14	12.39	<0.100	<0.025	<0.100	0.355	7.8
GD 7	3/2/2017	10.8	7.80	4.57	13.35	0.36	<0.025	<0.100	0.514	14.4
GD 7	6/29/2017	9.4	8.18	6.59	26.4	<0.100	<0.025	<0.100	0.440	13.4
GD 7	8/16/2017	8.5	7.84	5.66	29.0	<0.100	<0.025	<0.100	0.358	15.3
GD 7	10/25/2017	9.9	7.73	6.93	19.8	<0.10	<0.025	<0.100	0.416	18.4
GD 7	3/28/2018	7.6	8.16	9.33	14.9	0.350	<0.025	<0.100	<0.250	9.19
GD 7	6/29/2018	14.2	7.79	5.56	27.5	<0.100	<0.025	<0.100	0.625	14.60
GD 7	8/2/2018	18.5	7.62	5.51	27.0	<0.100	0.027	<0.100	0.450	32.10

TABLE B.20 - ANALYTICAL DATA - GD 7

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 7	12/10/2018	40.8	7.06	11.05	8.0	0.378	<0.025	0.149	0.390	48.7
GD 7	4/15/2019	30.1	7.83	7.85	19.2	0.230	<0.025	<0.100	<0.250	12.0
GD 7	6/12/2019	7.4	7.24	6.68	27.2	0.132	<0.025	<0.100	<0.250	9.3
GD 7	8/27/2019	45.3	7.35	9.35	29.1	<0.100	<0.025	0.156	0.604	6.3
GD 7	10/29/2019	17.6	7.77	8.14	17.2	<0.100	<0.025	<0.100	0.414	17.0
GD 7	3/30/2020	7.8	7.77	10.38	21.1	<0.100	<0.025	<0.100	0.343	12.8
GD 7	6/16/2020	9.1	8.12	8.25	27.3	<0.100	<0.030	<0.100	0.322	8.3
GD 7	9/21/2020	13.6	7.42	12.45	23.7	<0.100	<0.030	<0.100	<0.250	9.60
GD 7	12/17/2020	14.4	7.75	10.21	9.5	0.373	<0.030	<0.100	<0.250	18.20
GD 7	3/18/2021	1.2	7.37	9.75	15.4	0.312	<0.030	<0.100	0.387	23.00
GD 7	5/5/2021	19.74	7.59	7.64	21.4	<0.100	<0.030	<0.100	0.661	40.3
GD 7	9/2/2021	13.57	7.75	6.38	27.6	0.107	<0.030	0.122	0.324	34.40
GD 7	11/23/2021	25.2	7.62	11.21	11.7	0.197	<0.0300	<0.100	<0.250	11.10
GD 7	1/11/2022	46.0	7.38	12.59	9.7	0.410	<0.0300	<0.10	<0.50	15.20
GD 7	4/7/2022	17.4	7.61	9.33	17.2	0.280	<0.0300	0.162	0.361	23.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.21 - ANALYTICAL DATA - GD 9

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 9	2/6/2014	33.6	7.20	11.27	5.50	0.40	0.063	0.12	0.60	14.0
GD 9	6/26/2014	45.0	8.22	6.08	NS	<0.100	0.029	0.12	0.41	34.0
GD 9	9/30/2014	12.4	8.30	6.93	24.61	<0.100	<0.025	<0.100	0.30	15.0
GD 9	11/19/2014	22.8	8.13	9.38	9.30	0.16	0.082	0.25	0.74	15.0
GD 9	3/23/2015	25.0	8.16	7.58	15.80	0.15	<0.025	<0.100	0.64	18.0
GD 9	4/22/2015	18.0	7.58	5.58	20.70	0.15	<0.025	<0.100	0.65	14.0
GD 9	9/30/2015	9.6	7.93	5.37	25.70	<0.100	<0.025	<0.100	0.64	10.8
GD 9	11/19/2015	40.0	7.67	NS	16.50	0.254	0.096	0.116	<0.250	16.7
GD 9	3/15/2016	14.8	8.49	7.66	17.30	0.33	0.044	<0.100	<0.250	12.1
GD 9	6/29/2016	43.7	8.20	1.76	29.77	<0.100	<0.025	<0.100	0.65	67.2
GD 9	8/9/2016	11.0	8.07	4.14	29.00	<0.100	<0.025	<0.100	0.468	9.4
GD 9	12/7/2016	26.0	7.99	8.01	11.99	<0.100	<0.025	0.13	0.378	38.3
GD 9	3/2/2017	10.7	7.70	4.26	13.60	0.269	<0.025	<0.100	0.673	11.2
GD 9	6/29/2017	15.8	8.37	5.85	26.4	<0.100	<0.025	<0.100	0.722	15.7
GD 9	8/16/2017	11.3	7.82	5.52	29.60	<0.100	<0.025	<0.100	0.384	18.2
GD 9	10/25/2017	18.9	7.50	6.68	18.9	<0.100	0.025	<0.100	0.375	29.7
GD 9	3/28/2018	10.2	8.21	9.75	15.8	0.230	<0.025	<0.100	<0.250	12.4
GD 9	6/29/2018	11.0	7.73	5.45	27.6	<0.100	<0.025	<0.100	0.507	13.9
GD 9	8/2/2018	13.0	7.55	5.17	26.0	0.110	0.067	<0.100	0.600	20.8
GD 9	12/10/2018	26.4	7.90	11.05	7.9	0.292	0.047	0.244	0.442	22.8
GD 9	4/15/2019	221.5	7.51	8.09	20.0	0.194	0.034	<0.100	<0.250	178
GD 9	6/12/2019	7.3	7.21	8.61	27.0	0.116	<0.025	<0.100	<0.250	29.0
GD 9	8/27/2019	76.5	7.81	8.22	28.8	<0.100	<0.025	0.146	0.385	9.3

TABLE B.21 - ANALYTICAL DATA - GD 9

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 9	10/29/2019	22.3	7.35	8.91	17.9	<0.100	<0.025	<0.100	0.491	15.0
GD 9	3/30/2020	18.3	7.56	8.54	18.4	0.243	<0.025	0.121	<0.250	16.4
GD 9	6/16/2020	11.4	8.15	7.94	27.1	<0.100	<0.030	<0.100	0.352	11.5
GD 9	9/21/2020	11.6	7.38	6.41	23.3	<0.100	<0.030	<0.100	<0.250	9.0
GD 9	12/17/2020	12.33	7.71	10.62	9.7	0.336	<0.030	<0.100	0.261	13.1
GD 9	3/18/2021	1.70	7.24	8.83	15.5	0.189	<0.030	<0.100	0.576	18.6
GD 9	5/5/2021	23.76	7.68	7.08	21.0	0.176	0.036	<0.100	0.564	29.0
GD 9	9/2/2021	13.46	7.73	6.29	27.9	<0.100	<0.030	<0.100	0.311	25.8
GD 9	11/23/2021	39.41	7.84	10.71	13.9	0.113	<0.0300	0.124	<0.250	33.9
GD 9	1/11/2022	271.50	7.42	11.43	10.4	0.360	<0.030	<0.10	0.760	13.3
GD 9	4/7/2022	14.0	7.60	8.79	18.2	0.236	<0.0300	0.124	0.306	15.1

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.22 - ANALYTICAL DATA - SME 1

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 1	3/12/2013	13.1	8.19	8.26	13.10	0.54	0.110	0.11	0.34	16.0
SME 1	5/8/2013	24.0	7.64	8.96	16.00	0.15	0.063	<0.100	0.42	14.0
SME 1	9/23/2013	14.2	8.26	7.87	27.70	<0.100	0.053	<0.100	0.80	15.0
SME 1	12/10/2013	46.3	8.05	9.15	7.60	0.55	0.210	0.26	0.47	21.0
SME 1	2/6/2014	61.0	7.22	11.34	5.90	0.55	0.110	0.13	0.50	23.0
SME 1	6/26/2014	14.0	8.49	7.05	NS	<0.100	<0.025	<0.100	0.31	13.0
SME 1	9/30/2014	27.6	8.25	7.46	24.67	<0.100	0.044	0.11	0.61	34.0
SME 1	11/19/2014	40.1	8.31	10.86	7.80	0.74	0.270	0.29	0.55	19.0
SME 1	3/23/2015	21.0	8.26	8.52	17.30	0.51	0.073	0.10	<0.250	14.0
SME 1	4/22/2015	29.0	7.14	7.97	18.50	0.40	0.039	<0.100	0.38	18.0
SME 1	9/30/2015	15.0	8.34	7.03	26.40	<0.100	0.052	0.135	0.807	15.3
SME 1	11/19/2015	50.0	7.92	7.04	15.90	0.401	0.084	0.134	<0.250	23.2
SME 1	3/15/2016	26.2	8.44	7.21	18.30	0.454	0.047	<0.100	<0.250	17.7
SME 1	6/29/2016	21.2	8.80	3.29	30.67	<0.100	0.180	0.245	0.620	20.3
SME 1	8/9/2016	15.3	8.55	4.98	28.87	<0.100	0.089	0.154	0.547	12.6
SME 1	12/7/2016	31.0	7.96	10.20	11.98	0.413	0.209	0.271	0.378	17.7
SME 1	3/2/2017	14.0	7.75	4.31	12.34	0.671	0.127	0.208	0.345	15.0
SME 1	6/29/2017	19.2	9.11	9.21	25.8	<0.100	0.028	0.000	0.530	18.3
SME 1	8/16/2017	10.6	8.12	6.58	29.7	<0.100	<0.025	0.111	0.520	12.7
SME 1	10/25/2017	5.4	8.02	8.32	17.3	0.368	0.121	0.151	0.288	16.9
SME 1	3/28/2018	19.3	8.10	9.18	17.6	0.633	0.106	0.000	<0.250	19.8
SME 1	6/29/2018	20.7	7.84	6.37	26.2	0.312	0.121	0.241	0.670	23.3
SME 1	8/2/2018	28.5	7.48	5.82	23.9	0.296	0.145	0.136	0.495	29.5

TABLE B.22 - ANALYTICAL DATA - SME 1

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 1	12/10/2018	32.0	7.45	11.48	8.0	0.259	<0.025	<0.100	0.336	31.0
SME 1	4/15/2019	42.2	7.89	7.89	19.7	0.390	0.063	<0.100	0.360	35.0
SME 1	6/12/2019	12.2	7.34	8.73	27.2	<0.100	<0.025	<0.100	<0.250	9.7
SME 1	8/27/2019	135.2	7.45	8.51	28.8	<0.100	<0.025	0.161	0.356	7.1
SME 1	10/29/2019	14.5	7.95	9.21	17.6	0.129	0.049	0.134	0.272	11.0
SME 1	3/30/2020	13.3	7.35	8.61	19.3	0.462	<0.025	<0.100	<0.250	13.3
SME 1	6/16/2020	11.6	8.58	10.36	27.0	<0.100	0.031	0.129	0.485	11.4
SME 1	9/21/2020	13.8	7.71	6.92	22.2	<0.100	<0.030	<0.100	<0.250	9.0
SME 1	12/17/2020	23.19	7.66	10.68	9.2	0.577	0.072	<0.100	0.300	20.9
SME 1	3/18/2021	14.10	7.24	9.54	15.7	0.263	0.112	<0.100	0.580	90.4
SME 1	5/5/2021	28.83	7.43	8.53	20.1	0.122	<0.030	<0.100	0.402	34.0
SME 1	9/2/2021	23.89	7.80	6.93	25.8	0.458	0.190	0.218	0.353	35.8
SME 1	11/23/2021	18.42	7.91	11.34	12.4	<0.100	0.076	0.165	<0.250	12.7
SME 1	1/11/2022	161.2	7.55	11.29	10.2	8.200	0.054	<0.10	1.800	17.0
SME 1	4/7/2022	112.9	7.65	9.26	17.2	0.431	0.192	0.255	0.544	140

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.23 - ANALYTICAL DATA - GD 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 3	3/13/2013	11.6	8.00	9.28	10.70	0.29	0.028	<0.100	0.44	11.0
GD 3	5/20/2013	11.7	8.09	7.01	23.40	0.15	0.026	<0.100	0.63	13.0
GD 3	9/23/2013	12.4	7.80	6.50	26.40	<0.100	0.025	<0.100	0.58	10.0
GD 3	12/10/2013	45.7	7.85	9.23	9.30	0.21	0.085	0.14	0.64	23.0
GD 3	2/6/2014	90.2	7.13	10.58	6.10	0.21	<0.025	0.12	0.68	27.0
GD 3	6/26/2014	15.0	8.13	8.00	NS	0.12	<0.025	<0.100	0.40	14.0
GD 3	9/30/2014	19.5	8.11	6.69	25.06	<0.100	<0.025	<0.100	0.32	19.0
GD 3	11/19/2014	18.1	8.36	10.88	9.3	<0.100	<0.025	<0.100	0.26	15.0
GD 3	3/23/2015	13.0	8.32	7.84	16.5	0.22	<0.025	<0.100	0.34	10.0
GD 3	4/22/2015	26.0	7.86	6.74	20.6	0.18	0.079	<0.100	0.36	21.0
GD 3	9/30/2015	10.0	7.94	4.91	24.9	0.103	<0.025	0.126	0.74	11.5
GD 3	11/19/2015	40.0	7.61	7.74	16.0	0.250	<0.025	0.101	<0.250	22.0
GD 3	3/15/2016	25.5	8.04	8.62	18.7	0.420	0.071	<0.100	<0.250	11.7
GD 3	6/29/2016	6.0	7.84	2.78	29.94	<0.100	0.088	<0.100	<0.250	10.7
GD 3	8/9/2016	8.3	7.98	5.09	30.01	<0.100	<0.025	<0.100	0.393	10.0
GD 3	12/7/2016	5.9	7.91	10.55	12.0	<0.100	<0.025	<0.100	0.356	8.1
GD 3	3/2/2017	14.0	8.21	5.01	14.35	0.237	<0.025	0.135	0.649	15.6
GD 3	7/5/2017	11.2	7.48	6.23	27.3	<0.100	<0.025	<0.100	0.560	14.4
GD 3	8/16/2017	7.4	8.01	6.24	28.8	<0.100	<0.025	<0.100	0.387	8.5
GD 3	10/25/2017	8.9	7.54	7.25	19.1	<0.100	<0.025	<0.100	0.390	13.6
GD 3	3/28/2018	9.1	8.06	9.34	16.6	0.241	<0.025	<0.100	<0.250	10.8
GD 3	6/29/2018	12.9	7.68	5.63	27.3	<0.100	<0.025	<0.100	0.511	12.7
GD 3	8/2/2018	13.4	7.69	5.72	26.6	<0.100	<0.025	<0.100	0.569	20.8

TABLE B.23 - ANALYTICAL DATA - GD 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 3	12/10/2018	41.4	7.40	11.09	6.8	<0.100	<0.025	0.128	0.519	31.3
GD 3	4/15/2019	15.3	7.71	8.02	19.9	0.233	<0.025	<0.100	<0.250	14.7
GD 3	6/12/2019	9.6	7.24	8.31	27.3	<0.100	<0.025	<0.100	<0.250	13.0
GD 3	8/27/2019	202.8	7.18	8.33	28.8	<0.100	<0.025	0.159	0.434	6.5
GD 3	10/29/2019	26.2	7.84	9.63	17.2	<0.100	<0.025	<0.100	0.453	13.0
GD 3	3/30/2020	17.4	7.58	8.83	18.8	0.216	<0.025	<0.100	0.281	18.0
GD 3	6/16/2020	11.6	8.03	8.20	27.5	<0.100	<0.030	<0.100	0.363	9.5
GD 3	9/21/2020	13.5	7.51	6.73	23.4	<0.100	<0.030	0.106	<0.250	9.8
GD3	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.24 - ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 3	3/13/2013	17.1	7.84	7.44	11.30	0.20	0.038	<0.100	0.69	15.0
SME 3	5/20/2013	18.5	8.11	6.09	23.60	0.17	0.028	<0.100	0.69	19.0
SME 3	9/23/2013	15.3	*	5.32	26.50	<0.100	0.029	<0.100	0.53	13.0
SME 3	12/10/2013	48.3	7.69	8.85	9.60	<0.100	0.086	<0.100	0.62	20.0
SME 3	2/6/2014	82.7	7.09	10.62	6.30	0.25	<0.025	<0.100	0.69	33.0
SME 3	6/26/2014	50.0	8.04	7.03	NS	<0.100	0.047	<0.100	0.53	30.0
SME 3	9/30/2014	17.3	8.08	5.98	25.33	<0.100	<0.025	<0.100	0.66	18.0
SME 3	11/19/2014	22.4	8.30	10.40	9.30	0.12	0.035	<0.100	<0.250	19.0
SME 3	3/23/2015	25.0	8.13	7.72	21.20	0.24	0.026	<0.100	0.46	16.0
SME 3	4/22/2015	12.0	7.76	6.70	21.80	0.15	<0.025	<0.100	0.45	14.0
SME 3	9/30/2015	18.0	7.96	6.19	25.60	0.125	<0.025	0.129	0.42	24.4
SME 3	11/19/2015	65.0	7.56	7.44	15.80	0.253	0.032	<0.100	<0.250	37.8
SME 3	3/15/2016	68.4	8.35	7.51	19.20	0.295	<0.025	<0.100	<0.250	78.8
SME 3	6/29/2016	17.7	7.80	2.56	30.16	<0.100	0.062	<0.100	0.37	15.3
SME 3	8/9/2016	14.8	7.52	3.43	29.53	<0.100	<0.025	<0.100	0.564	10.8
SME 3	12/7/2016	8.5	7.90	10.91	11.85	<0.100	<0.025	0.147	1.780	9.4
SME 3	3/2/2017	14.6	7.95	4.60	13.64	0.272	<0.025	<0.100	0.733	17.0
SME 3	7/5/2017	12.5	7.54	5.88	27.3	<0.100	0.039	<0.100	0.628	16.3
SME 3	8/16/2017	11.5	7.86	5.00	28.1	<0.100	0.07	<0.100	0.446	18.5
SME 3	10/25/2017	15.3	7.42	8.23	19.4	<0.100	0.053	0.106	0.376	49.7
SME 3	3/28/2018	8.9	7.98	9.44	17.4	0.220	<0.025	<0.100	<0.250	11.2
SME 3	6/29/2018	15.8	7.53	5.39	26.9	<0.100	<0.025	<0.100	0.800	115.0
SME 3	8/2/2018	30.0	7.59	5.66	26.4	<0.100	<0.025	0.108	0.981	56.0

TABLE B.24 - ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 3	12/10/2018	33.1	7.21	10.68	7.0	<0.100	<0.025	0.127	0.433	27.1
SME 3	4/15/2019	552.6	7.78	7.65	19.7	0.234	<0.025	0.285	0.271	371
SME 3	6/12/2019	7.8	7.48	6.87	27.1	<0.100	<0.025	<0.100	<0.250	10.7
SME 3	8/27/2019	55.3	7.91	8.41	29.2	<0.100	<0.025	0.149	0.389	7.0
SME 3	10/29/2019	22.4	7.77	8.44	17.2	<0.100	<0.025	<0.100	0.390	15.4
SME 3	3/30/2020	14.4	7.51	8.91	18.8	0.239	<0.025	<0.100	0.657	18.2
SME 3	6/16/2020	9.2	8.06	7.95	27.1	<0.100	<0.030	0.102	0.466	10.1
SME 3	9/21/2020	15.3	7.67	6.50	23.0	<0.100	<0.030	<0.100	0.660	10.7
SME 3	9/2/2021	102.33	7.75	5.64	26.3	<0.100	0.057	0.234	1.24	267
SME 3	1/11/2022	109.4	7.58	11.17	9.9	0.390	<0.0300	<0.10	0.520	15.4
SME 3	4/7/2022	32.3	7.69	8.99	16.6	0.181	<0.0300	<0.100	0.406	27.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.25 - ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 5	3/12/2013	5.98	8.38	9.87	10.80	0.30	0.031	<0.100	0.39	7.2
SS 5	5/8/2013	24.4	7.38	7.19	16.80	0.16	<0.12	<0.100	0.62	21.0
SS 5	9/23/2013	13.8	8.00	5.44	25.80	<0.100	0.029	<0.100	1.30	15.0
SS 5	12/10/2013	22.8	8.25	9.10	7.70	0.24	0.043	0.11	0.67	13.0
SS 5	2/6/2014	27.5	7.20	12.09	5.40	0.39	<0.025	<0.100	0.86	12.0
SS 5	6/26/2014	11.0	8.53	7.01	NS	<0.100	<0.025	<0.100	0.40	11.0
SS 5	9/30/2014	11.2	7.64	6.82	24.44	<0.100	<0.025	<0.100	0.45	11.0
SS 5	11/19/2014	14.1	8.96	13.13	8.50	<0.100	<0.025	<0.100	0.35	9.6
SS 5	3/23/2015	18.0	8.50	8.99	17.70	0.26	<0.025	<0.100	0.46	11.0
SS 5	4/22/2015	19.0	7.76	6.71	20.20	0.15	<0.025	<0.100	0.47	13.0
SS 5	9/30/2015	11.0	8.26	6.61	25.30	<0.100	<0.025	<0.100	0.606	9.9
SS 5	11/19/2015	19.0	7.86	8.47	15.90	0.239	<0.025	<0.100	<0.250	11.0
SS 5	3/15/2016	20.0	8.37	8.47	17.20	0.264	<0.025	0.225	0.279	9.5
SS 5	6/29/2016	14.7	8.01	3.81	29.77	<0.100	0.066	<0.100	0.480	13.2
SS 5	8/9/2016	11.6	7.86	3.16	29.40	<0.100	<0.025	<0.100	0.464	12.6
SS 5	12/7/2016	6.6	7.94	6.70	12.30	<0.100	<0.025	0.12	0.420	8.0
SS 5	3/2/2017	14.0	7.78	3.92	12.77	0.334	<0.025	<0.100	0.766	16.0
SS 5	7/5/2017	8.4	7.77	7.19	28.90	<0.100	<0.025	<0.100	0.474	12.0
SS 5	8/16/2017	10.2	8.10	4.83	29.90	<0.100	<0.025	<0.100	0.493	15.1
SS 5	10/25/2017	7.5	8.24	8.36	19.2	<0.100	<0.025	<0.100	0.531	11.8
SS 5	3/28/2018	7.0	8.53	10.23	18.5	0.248	<0.025	<0.100	<0.250	8.33
SS 5	6/29/2018	10.4	7.93	5.50	27.5	<0.100	<0.025	<0.100	0.605	13.3
SS 5	8/2/2018	13.5	7.58	6.04	25.8	<0.100	<0.025	<0.100	0.554	12.8

TABLE B.25 - ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 5	12/10/2018	21.9	7.01	11.15	7.3	0.146	<0.025	<0.100	0.522	16.7
SS 5	4/15/2019	15.5	7.35	7.77	19.4	0.168	<0.025	<0.100	0.374	11.7
SS 5	6/12/2019	10.0	8.44	8.78	26.6	<0.100	<0.025	<0.100	<0.250	11.0
SS 5	8/27/2019	24.5	8.66	9.02	28.9	<0.100	<0.025	0.168	0.508	7.1
SS 5	10/29/2019	18.7	8.20	9.33	18.1	0.105	<0.025	0.198	0.631	10.4
SS 5	3/30/2020	9.2	8.35	11.07	20.8	0.127	<0.025	<0.100	0.399	10.6
SS 5	6/16/2020	10.5	8.41	7.99	27.9	<0.100	<0.030	<0.100	0.534	9.7
SS 5	9/21/2020	16.5	7.36	11.45	22.6	<0.100	<0.030	<0.100	0.512	11.0
SS 5	12/17/2020	8.64	8.02	11.24	9.6	0.200	<0.030	<0.100	0.428	10.1
SS 5	3/18/2021	0.60	7.36	9.03	15.7	0.191	<0.030	<0.100	0.570	14.6
SS 5	5/5/2021	38.40	7.55	7.72	20.5	0.108	<0.030	<0.100	0.576	32.2
SS 5	9/2/2021	9.62	8.00	8.54	28.6	<0.100	<0.030	<0.100	0.431	14.4
SS 5	11/23/2021	10.84	7.40	10.89	13.7	0.126	<0.0300	<0.100	<0.250	7.7
SS 5	1/11/2022	46.0	7.64	11.13	11.1	0.320	<0.0300	<0.10	1.300	10.4
SS 5	4/7/2022	20.7	7.80	8.85	17.9	0.122	<0.0300	<0.100	0.516	15.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.26 - ANALYTICAL DATA - SME 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 5	12/17/2020	15.24	7.80	10.94	10.00	0.371	<0.030	<0.100	0.258	17.7
SME 5	3/18/2021	1.70	7.83	9.59	15.90	0.316	<0.030	<0.100	0.317	23.0
SME 5	5/5/2021	50.11	7.80	7.96	21.2	<0.100	<0.030	<0.100	0.410	60.6
SME 5	9/2/2021	15.15	8.02	6.42	28.2	0.128	<0.030	<0.100	0.325	31.8
SME 5	11/23/2021	68.29	7.78	10.42	14.9	0.231	<0.0300	<0.100	<0.250	14.0
SME 5	1/11/2022	24.90	7.66	10.46	14.7	0.450	0.035	<0.10	1.50	16.6
SME 5	4/7/2022	55.4	7.99	9.43	17.4	0.290	<0.0300	<0.100	0.385	25.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.27 - ANALYTICAL DATA - SME 6

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 6	12/17/2020	13.6	7.96	10.89	10.10	0.368	<0.03	<0.10	<0.25	16.7
SME 6	3/18/2021	3.3	7.65	9.84	15.50	0.358	<0.030	<0.100	0.618	47.2
SME 6	5/5/2021	62.32	7.75	7.80	19.9	0.183	<0.030	<0.100	0.403	82.8
SME 6	9/2/2021	13.32	8.19	6.72	27.7	0.131	<0.030	0.430	0.353	19.0
SME 6	11/23/2021	9.79	7.68	10.35	15.1	0.231	<0.0300	<0.100	<0.250	11.2
SME 6	1/11/2022	24.4	7.72	11.24	10.2	0.450	<0.0300	<0.10	2.40	16.9
SME 6	4/7/2022	31.4	7.95	9.63	18.0	0.270	<0.0300	<0.100	0.373	28.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.28 - ANALYTICAL DATA - RC 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 14	3/12/2013	28.3	8.23	7.53	10.3	<0.100	0.088	<0.100	0.61	21.0
RC 14	5/8/2013	29.5	6.72	1.78	21.4	0.14	<0.12	<0.100	0.63	16.0
RC 14	9/23/2013	18.4	7.86	6.68	24.7	<0.100	<0.025	<0.100	0.58	13.0
RC 14	12/10/2013	40.0	8.45	9.50	8.2	<0.100	0.100	0.11	0.69	16.0
RC 14	2/6/2014	66.6	7.15	10.94	4.9	0.16	0.036	0.11	0.70	18.0
RC 14	6/26/2014	6.2	8.21	6.30	NS	<0.100	<0.025	<0.100	0.39	5.9
RC 14	9/30/2014	12.4	7.20	6.20	23.5	<0.100	<0.025	<0.100	0.40	12.0
RC 14	9/19/2014	50.3	8.20	10.10	7.5	<0.100	0.085	0.13	0.52	28.0
RC 14	3/23/2015	70.0	8.03	7.80	18.2	0.26	0.070	<0.100	1.10	34.0
RC 14	4/22/2015	30.0	7.77	7.25	18.1	0.20	<0.025	<0.100	0.40	15.0
RC 14	9/30/2015	17.0	8.28	5.63	24.4	<0.100	<0.025	<0.100	0.454	12.6
RC 14	11/19/2015	95.0	7.32	6.07	17.71	0.137	<0.025	0.135	0.633	36.0
RC 14	3/15/2016	85.0	8.13	7.73	18.5	0.106	<0.025	0.304	0.434	69.6
RC 14	6/29/2016	17.2	7.58	2.17	28.53	<0.100	0.037	<0.100	0.460	17.5
RC 14	8/9/2016	10.4	7.05	2.35	28.53	<0.100	<0.025	<0.100	0.547	8.5
RC 14	12/7/2016	7.9	7.21	6.47	11.62	<0.100	<0.025	<0.100	0.252	8.6
RC 14	3/2/2017	18.0	7.32	3.55	12.69	0.12	<0.025	<0.100	0.608	14.6
RC 14	7/5/2017	17.7	7.55	6.56	25.7	0.279	0.041	<0.100	0.357	35.0
RC 14	8/16/2017	9.8	7.72	5.54	26.7	0.21	0.042	<0.100	0.400	12.4
RC 14	10/25/2017	18.7	7.64	7.26	17.1	0.24	0.088	0.149	0.465	27.2
RC 14	3/28/2018	9.9	8.03	9.00	18.3	0.148	<0.025	<0.100	<0.25	10.9
RC 14	6/29/2018	12.9	7.64	5.89	27.1	<0.100	<0.025	<0.100	0.722	13.8
RC 14	8/2/2018	21.7	7.30	5.56	23.7	<0.100	0.055	<0.100	0.848	17.3

TABLE B.28 - ANALYTICAL DATA - RC 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 14	12/10/2018	35.1	7.13	10.63	7.3	<0.100	0.038	0.169	1.400	16.9
RC 14	4/15/2019	45.8	7.68	7.67	19.5	0.108	<0.025	<0.100	0.403	36.0
RC 14	6/12/2019	11.0	8.03	7.39	25.3	0.120	<0.025	<0.100	0.250	12.3
RC 14	8/27/2019	76.4	8.36	8.78	28.4	<0.100	<0.025	0.141	0.391	8.8
RC 14	10/29/2019	17.4	7.90	9.83	17.7	<0.100	<0.025	<0.100	0.478	10.6
RC 14	3/30/2020	12.9	8.10	10.01	21.9	<0.100	<0.025	<0.100	0.451	15.7
RC 14	6/16/2020	11.5	6.79	8.01	26.9	0.141	<0.030	<0.100	0.560	11.4
RC 14	9/21/2020	13.7	7.49	9.65	21.9	<0.100	<0.030	0.202	0.307	8.2
RC 14	12/17/2020	25.8	7.72	10.40	9.3	0.261	<0.030	<0.100	0.497	14.4
RC 14	3/18/2021	25.8	7.72	10.40	9.3	0.261	<0.030	<0.100	0.497	14.4
RC 14	5/5/2021	33.45	7.68	7.99	20.9	<0.100	<0.030	<0.100	0.566	30.4
RC 14	9/2/2021	16.75	7.87	7.11	25.7	0.210	0.040	<0.100	0.350	23.2
RC 14	11/23/2021	24.6	7.96	10.57	13.3	<0.100	<0.0300	0.103	<0.250	40.2
RC 14	1/11/2022	66.4	7.40	11.82	10.4	0.170	<0.0300	<0.10	1.500	20.6
RC 14	4/7/2022	99.0	7.76	8.27	17.6	<0.100	<0.0300	0.101	0.548	178

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

Appendix III

Laboratory Report No. L1480172, dated April 20, 2022

Laboratory Report No. L1480173, dated April 20, 2022

ANALYTICAL REPORT

April 20, 2022

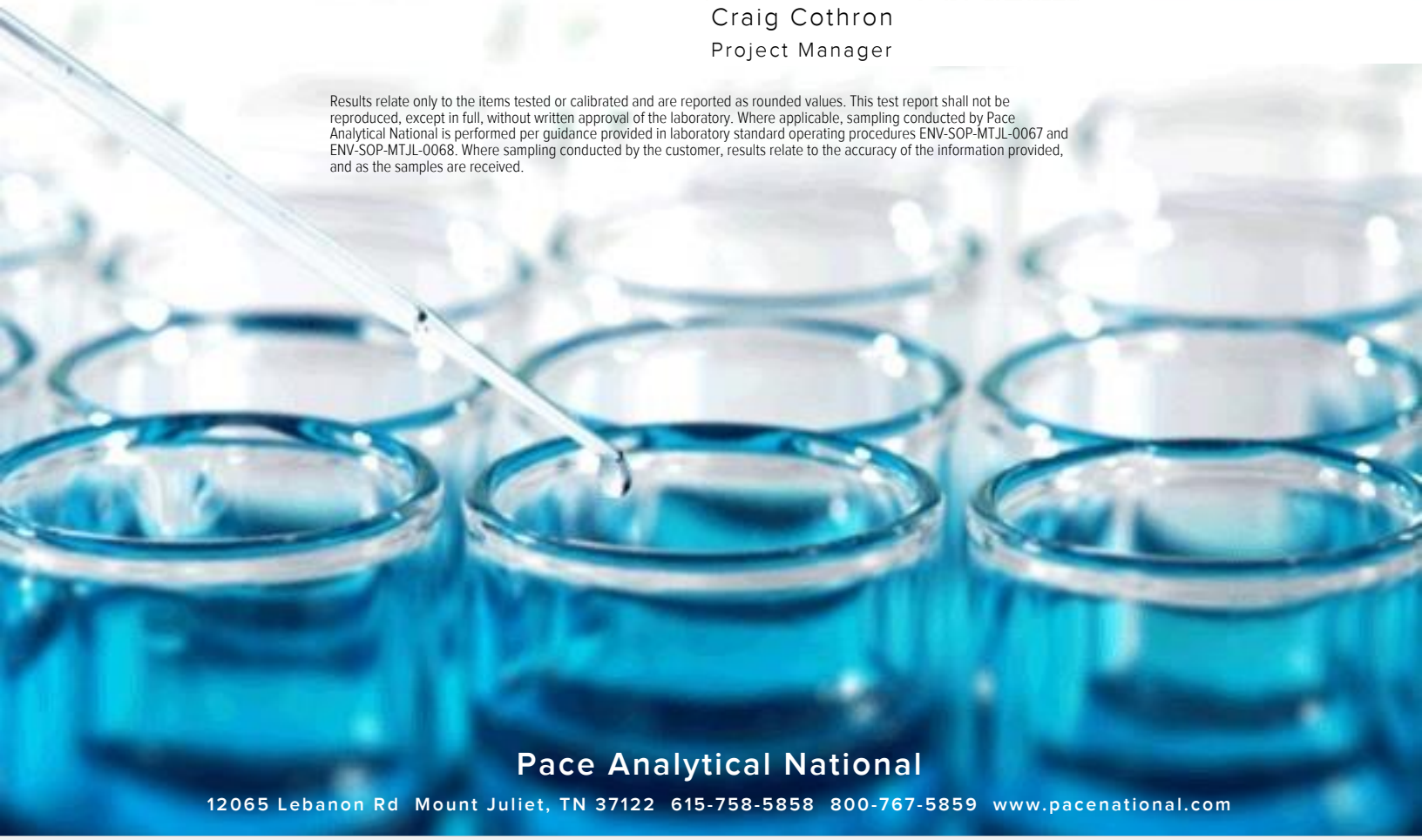
S&ME - Huntsville

Sample Delivery Group:	L1480172
Samples Received:	04/08/2022
Project Number:	44872-20-0044
Description:	
Site:	BOAT
Report To:	Ms. Sara Yeldell 360 D Quality Circle NW Suite 450 Huntsville, AL 35806

Entire Report Reviewed By:

Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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HB-3 L1480172-01 WW

Collected by: Grant Williams | Collected date/time: 04/07/22 10:25 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848416	1	04/18/22 10:54	04/19/22 17:24	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 00:39	04/12/22 00:39	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850776	1	04/18/22 10:54	04/19/22 11:32	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845677	1	04/09/22 09:30	04/09/22 09:30	JAR	Mt. Juliet, TN

SME-4 L1480172-02 WW

Collected by: Grant Williams | Collected date/time: 04/07/22 10:40 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848416	1	04/18/22 10:54	04/19/22 17:26	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 00:44	04/12/22 00:44	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850776	1	04/18/22 10:54	04/19/22 11:33	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845677	1	04/09/22 09:31	04/09/22 09:31	JAR	Mt. Juliet, TN

GD-5 L1480172-03 WW

Collected by: Grant Williams | Collected date/time: 04/07/22 11:00 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848416	1	04/18/22 10:54	04/19/22 17:30	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 00:45	04/12/22 00:45	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850776	1	04/18/22 10:54	04/19/22 11:38	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:00	04/09/22 11:00	JAR	Mt. Juliet, TN

GD-7 L1480172-04 WW

Collected by: Grant Williams | Collected date/time: 04/07/22 11:21 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848416	1	04/18/22 10:54	04/19/22 17:31	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 00:47	04/12/22 00:47	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850776	1	04/18/22 10:54	04/19/22 11:40	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:01	04/09/22 11:01	JAR	Mt. Juliet, TN

GD-9 L1480172-05 WW

Collected by: Grant Williams | Collected date/time: 04/07/22 11:32 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 18:46	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 00:52	04/12/22 00:52	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:34	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:01	04/09/22 11:01	JAR	Mt. Juliet, TN

SME-1 L1480172-06 WW

Collected by: Grant Williams | Collected date/time: 04/07/22 11:42 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 18:51	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 00:53	04/12/22 00:53	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:35	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:01	04/09/22 11:01	JAR	Mt. Juliet, TN

SS-5 L1480172-07 WW

Collected by: Grant Williams | Collected date/time: 04/07/22 12:41 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 18:53	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 00:54	04/12/22 00:54	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:36	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:02	04/09/22 11:02	JAR	Mt. Juliet, TN

SME-5 L1480172-08 WW

Collected by: Grant Williams | Collected date/time: 04/07/22 12:35 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 18:54	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 00:56	04/12/22 00:56	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:37	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:02	04/09/22 11:02	JAR	Mt. Juliet, TN

SME-6 L1480172-09 WW

Collected by: Grant Williams | Collected date/time: 04/07/22 13:30 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 18:55	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 00:57	04/12/22 00:57	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:39	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:03	04/09/22 11:03	JAR	Mt. Juliet, TN

RC-14 L1480172-10 WW

Collected by: Grant Williams | Collected date/time: 04/07/22 13:44 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 18:59	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 00:58	04/12/22 00:58	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:40	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:03	04/09/22 11:03	JAR	Mt. Juliet, TN

SME 11 L1480172-11 WW

Collected by: Grant Williams
Collected date/time: 04/07/22 10:29
Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:01	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 01:02	04/12/22 01:02	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:41	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845677	1	04/09/22 09:31	04/09/22 09:31	JAR	Mt. Juliet, TN

SME 3 L1480172-12 WW

Collected by: Grant Williams
Collected date/time: 04/07/22 11:10
Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:02	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 01:03	04/12/22 01:03	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:45	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:03	04/09/22 11:03	JAR	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Craig Cothron
Project Manager

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	21.0		5.00	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.329		0.250	1	04/19/2022 17:24	WG1848416

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.268		0.100	1	04/12/2022 00:39	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/19/2022 11:32	WG1850776

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 09:30	WG1845677

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	20.9		2.50	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.254	J5 P1	0.250	1	04/19/2022 17:26	WG1848416

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.273		0.100	1	04/12/2022 00:44	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/19/2022 11:33	WG1850776

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0600		0.0300	1	04/09/2022 09:31	WG1845677

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	14.4		3.33	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.300		0.250	1	04/19/2022 17:30	WG1848416

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.157		0.100	1	04/12/2022 00:45	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/19/2022 11:38	WG1850776

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 11:00	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	23.4		5.00	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.361		0.250	1	04/19/2022 17:31	WG1848416

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.280		0.100	1	04/12/2022 00:47	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.162		0.100	1	04/19/2022 11:40	WG1850776

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 11:01	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	15.1		2.50	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.306	J5	0.250	1	04/19/2022 18:46	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.236		0.100	1	04/12/2022 00:52	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.124		0.100	1	04/20/2022 10:34	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 11:01	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	140	J3	10.0	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.544		0.250	1	04/19/2022 18:51	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.431		0.100	1	04/12/2022 00:53	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.255		0.100	1	04/20/2022 10:35	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.192		0.0300	1	04/09/2022 11:01	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	15.6		5.00	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.516		0.250	1	04/19/2022 18:53	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.122		0.100	1	04/12/2022 00:54	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/20/2022 10:36	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 11:02	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	25.4		5.00	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.385		0.250	1	04/19/2022 18:54	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.290		0.100	1	04/12/2022 00:56	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/20/2022 10:37	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 11:02	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	28.8		5.00	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.373		0.250	1	04/19/2022 18:55	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.270		0.100	1	04/12/2022 00:57	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/20/2022 10:39	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 11:03	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	178		10.0	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.548		0.250	1	04/19/2022 18:59	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	04/12/2022 00:58	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.101		0.100	1	04/20/2022 10:40	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 11:03	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	23.4		5.00	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.335		0.250	1	04/19/2022 19:01	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.261		0.100	1	04/12/2022 01:02	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.129		0.100	1	04/20/2022 10:41	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 09:31	WG1845677

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	27.0		5.00	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.406		0.250	1	04/19/2022 19:02	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.181		0.100	1	04/12/2022 01:03	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/20/2022 10:45	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND	J5	0.0300	1	04/09/2022 11:03	WG1845673

Method Blank (MB)

(MB) R3779238-1 04/09/22 05:27

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1480172-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-06 04/09/22 05:27 • (DUP) R3779238-3 04/09/22 05:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	140	147	1	5.03	J3	5

L1480173-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1480173-01 04/09/22 05:27 • (DUP) R3779238-4 04/09/22 05:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	33.8	34.6	1	2.34		5

Laboratory Control Sample (LCS)

(LCS) R3779238-2 04/09/22 05:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	796	103	85.7-114	

Method Blank (MB)

(MB) R3782851-1 04/19/22 17:08

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1479809-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1479809-01 04/19/22 17:13 • (DUP) R3782851-3 04/19/22 17:15

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.606	0.648	1	6.70		20

L1480172-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-02 04/19/22 17:26 • (DUP) R3782851-6 04/19/22 17:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.254	0.399	1	44.4	P1	20

Laboratory Control Sample (LCS)

(LCS) R3782851-2 04/19/22 17:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	12.7	13.4	106	75.2-120	

L1479809-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1479809-01 04/19/22 17:13 • (MS) R3782851-4 04/19/22 17:16 • (MSD) R3782851-5 04/19/22 17:17

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	0.606	6.24	6.27	113	113	1	90.0-110	J5	J5	0.480	20

L1480172-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1480172-02 04/19/22 17:26 • (MS) R3782851-7 04/19/22 17:28

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	0.254	6.14	118	1	90.0-110	J5

QUALITY CONTROL SUMMARY

L1480172-05,06,07,08,09,10,11,12

Method Blank (MB)

(MB) R3782860-1 04/19/22 18:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1480172-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-05 04/19/22 18:46 • (DUP) R3782860-3 04/19/22 18:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.306	0.331	1	7.85		20

L1480173-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1480173-02 04/19/22 19:05 • (DUP) R3782860-6 04/19/22 19:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.349	0.357	1	2.27		20

Laboratory Control Sample (LCS)

(LCS) R3782860-2 04/19/22 18:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	12.7	13.8	109	75.2-120	

L1480172-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480172-05 04/19/22 18:46 • (MS) R3782860-4 04/19/22 18:49 • (MSD) R3782860-5 04/19/22 18:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	0.306	6.25	6.17	119	117	1	90.0-110	J5	J5	1.29	20

L1480173-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1480173-02 04/19/22 19:05 • (MS) R3782860-7 04/19/22 19:08

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	0.349	5.95	112	1	90.0-110	J5

QUALITY CONTROL SUMMARY

L1480172-01,02,03,04,05,06,07,08,09,10,11,12

Method Blank (MB)

(MB) R3779886-1 04/12/22 00:37

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1480172-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-01 04/12/22 00:39 • (DUP) R3779886-3 04/12/22 00:40

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.268	0.265	1	1.13		20

L1480172-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-10 04/12/22 00:58 • (DUP) R3779886-6 04/12/22 00:59

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3779886-2 04/12/22 00:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.55	102	90.0-110	

L1480172-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480172-01 04/12/22 00:39 • (MS) R3779886-4 04/12/22 00:42 • (MSD) R3779886-5 04/12/22 00:43

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50	0.268	2.73	2.74	98.5	98.9	1	90.0-110			0.366	20

L1480172-10 Original Sample (OS) • Matrix Spike (MS)

(OS) L1480172-10 04/12/22 00:58 • (MS) R3779886-7 04/12/22 01:01

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	ND	2.53	97.8	1	90.0-110	

Method Blank (MB)

(MB) R3782615-1 04/19/22 11:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1479809-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1479809-01 04/19/22 11:24 • (DUP) R3782615-3 04/19/22 11:26

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.927	0.984	1	5.97		20

L1480172-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-02 04/19/22 11:33 • (DUP) R3782615-6 04/19/22 11:37

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3782615-2 04/19/22 11:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	3.64	96.3	83.2-116	

L1479809-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1479809-01 04/19/22 11:24 • (MS) R3782615-4 04/19/22 11:27 • (MSD) R3782615-5 04/19/22 11:28

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	0.927	3.26	3.26	93.3	93.3	1	90.0-110			0.000	20

Method Blank (MB)

(MB) R3783075-1 04/20/22 10:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1480173-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1480173-09 04/20/22 10:57 • (DUP) R3783075-3 04/20/22 11:31

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

L1480173-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1480173-10 04/20/22 11:34 • (DUP) R3783075-6 04/20/22 11:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.264	0.186	1	34.7	P1	20

Laboratory Control Sample (LCS)

(LCS) R3783075-2 04/20/22 10:31

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	3.74	98.9	83.2-116	

L1480173-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480173-09 04/20/22 10:57 • (MS) R3783075-4 04/20/22 11:32 • (MSD) R3783075-5 04/20/22 11:33

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	ND	2.45	2.45	95.6	95.6	1	90.0-110			0.000	20

QUALITY CONTROL SUMMARY

L1480172-03,04,05,06,07,08,09,10,12

Method Blank (MB)

(MB) R3779216-1 04/09/22 11:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1480172-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-05 04/09/22 11:01 • (DUP) R3779216-3 04/09/22 11:01

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

L1480173-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1480173-02 04/09/22 11:04 • (DUP) R3779216-6 04/09/22 11:05

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3779216-2 04/09/22 11:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.252	103	85.0-115	

L1480172-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480172-12 04/09/22 11:03 • (MS) R3779216-4 04/09/22 11:04 • (MSD) R3779216-5 04/09/22 11:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	ND	0.620	0.593	121	115	1	80.0-120	J5		4.45	20

QUALITY CONTROL SUMMARY

L1480172-01,02,11

Method Blank (MB)

(MB) R3779202-1 04/09/22 09:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1480172-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-01 04/09/22 09:30 • (DUP) R3779202-3 04/09/22 09:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3779202-2 04/09/22 09:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.266	109	85.0-115	

L1480173-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480173-10 04/09/22 09:32 • (MS) R3779202-4 04/09/22 09:32 • (MSD) R3779202-5 04/09/22 09:32

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	ND	0.603	0.629	117	122	1	80.0-120		J5	4.22	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville. AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Report to:
Ms. Sara Yeldell

Email To: **syeldell@smeinc.com**

Project Description:

City/State Collected:

Please Circle: PT MT CT ET

Phone: **256-837-8882**

Client Project #
44872-20-0044

Lab Project #
QOREHAL-448220044B

Collected by (print): Grant Williams

Site/Facility ID #
BOAT

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Pres Chk

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres						Remarks	Sample # (lab only)
								2	2								
HB-3	Grab	WW	SFC	4/7/22	10:25	4	X	X	X	X							-01
SME-4		WW			10:40	4	X	X	X	X							-02
GD-5		WW			11:0	4	X	X	X	X							-03
GD-7		WW			11:21	4	X	X	X	X							-04
GD-9		WW			11:32	4	X	X	X	X							-05
SME-1		WW			11:42	4	X	X	X	X							-06
SS-5		WW			12:41	4	X	X	X	X							-07
SME-5		WW			12:35	4	X	X	X	X							-08
SME-6		WW			13:30	4	X	X	X	X							-09
RC-14		WW			13:44	4	X	X	X	X							-10

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1480172
H157

Acctnum: **QOREHAL**
Template: **T203454**
Prelogin: **P914986**
PM: 034 - Craig Cothron
PB: BW 3/28

Shipped Via: **FedEX Ground**

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: ✓Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	4/7/22	15:00		0
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: 48
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4/8/22 Time: 0930

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville. AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Report to:
Ms. Sara Yeldell

Email To: **syeldell@smeinc.com**

Project Description:

City/State Collected:

Please Circle: PT MT CT ET

Phone: **256-837-8882**

Client Project #
44872-20-0044

Lab Project #
QOREHAL-448220044B

Collected by (print):
Grant Williams

Site/Facility ID #
BOAT

P.O. #

Collected by (Signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Immediately
Packed on Ice N ___ Y J

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres						Remarks	Sample # (lab only)
SME 11	Grab	WW	5ft	4/7/22	10:29	4	X	X	X	X							-11
SME 3	Grab	WW	5ft	4/7/22	11:10	4	X	X	X	X							-12
		WW				4	X	X	X	X							

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1480172

Table #

Acctnum: **QOREHAL**
Template: **T203454**
Prelogin: **P914986**
PM: **034 - Craig Cothron**
PB: BW 3/28

Shipped Via: **FedEX Ground**

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
	4/7/22	13:00			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4/8/22 Time: 0830	Hold: / Condition: NCF / OK

L1480172

Tracking Numbers	Temperature
5719 6175 0783	1.9
5719 6175 0794	0.7

ANALYTICAL REPORT

April 20, 2022

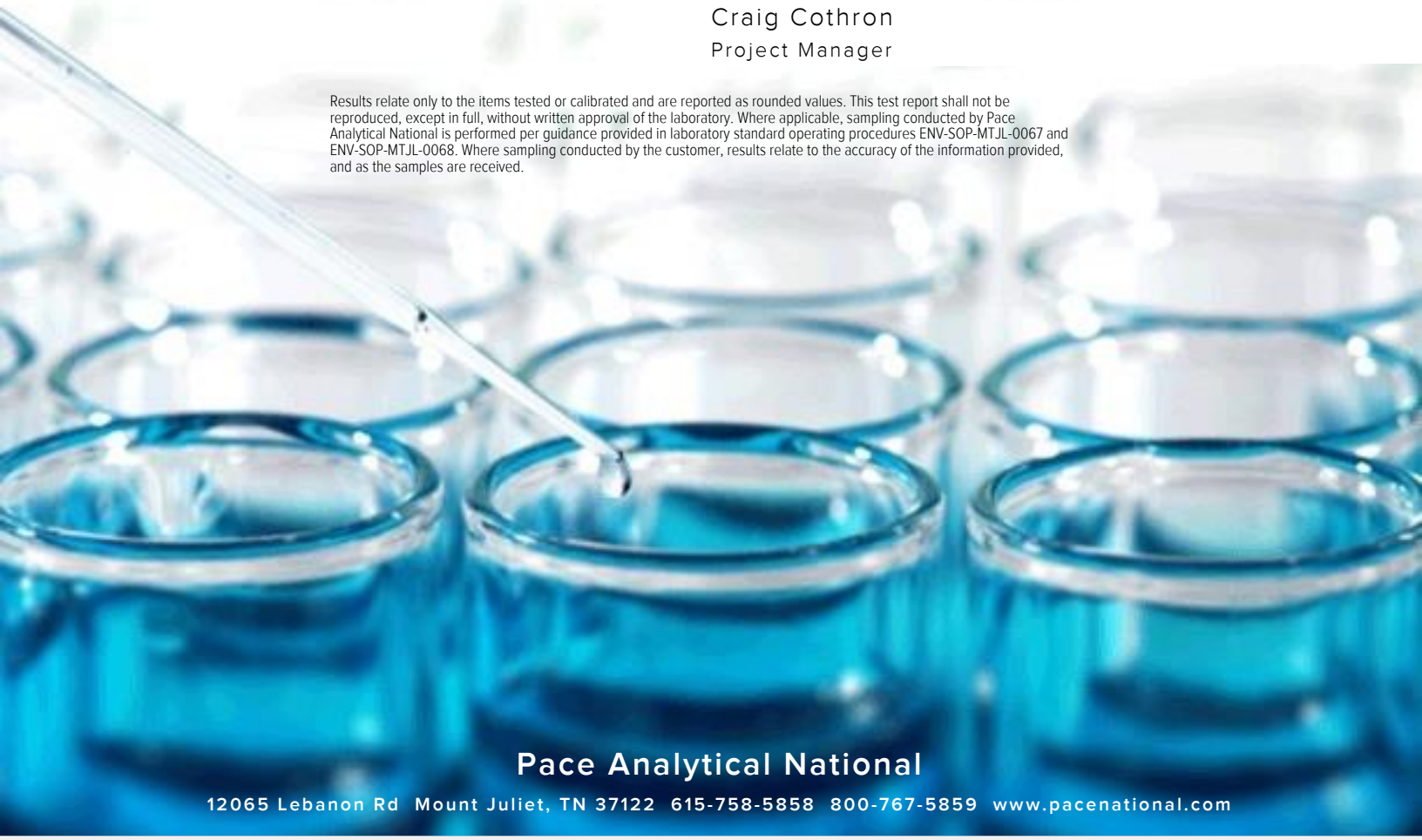
S&ME - Huntsville

Sample Delivery Group:	L1480173
Samples Received:	04/08/2022
Project Number:	4482-20-044
Description:	
Site:	LAND
Report To:	Ms. Sarah Yeldell 360 D Quality Circle NW Suite 450 Huntsville, AL 35806

Entire Report Reviewed By:

Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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AT 5 L1480173-01 WW

Collected by: Nathanael Wade | Collected date/time: 04/07/22 12:35 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:04	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 01:08	04/12/22 01:08	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:46	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:04	04/09/22 11:04	JAR	Mt. Juliet, TN

GD 8 L1480173-02 WW

Collected by: Nathanael Wade | Collected date/time: 04/07/22 12:20 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:05	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 01:10	04/12/22 01:10	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:48	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:04	04/09/22 11:04	JAR	Mt. Juliet, TN

RC 2 L1480173-03 WW

Collected by: Nathanael Wade | Collected date/time: 04/07/22 12:10 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:09	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 01:11	04/12/22 01:11	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:49	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:05	04/09/22 11:05	JAR	Mt. Juliet, TN

SS 13 L1480173-04 WW

Collected by: Nathanael Wade | Collected date/time: 04/07/22 11:30 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:10	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 01:12	04/12/22 01:12	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:50	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:05	04/09/22 11:05	JAR	Mt. Juliet, TN

SS 14 L1480173-05 WW

Collected by: Nathanael Wade | Collected date/time: 04/07/22 11:40 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:12	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 01:14	04/12/22 01:14	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:51	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:05	04/09/22 11:05	JAR	Mt. Juliet, TN

GD 12 L1480173-06 WW

Collected by: Nathanael Wade | Collected date/time: 04/07/22 11:55 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:16	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 01:15	04/12/22 01:15	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:53	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:06	04/09/22 11:06	JAR	Mt. Juliet, TN

SME 12 L1480173-07 WW

Collected by: Nathanael Wade | Collected date/time: 04/07/22 12:40 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:17	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1846739	1	04/12/22 01:16	04/12/22 01:16	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:54	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:12	04/09/22 11:12	JAR	Mt. Juliet, TN

GD 6 L1480173-08 WW

Collected by: Nathanael Wade | Collected date/time: 04/07/22 11:00 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1845746	1	04/09/22 02:14	04/09/22 05:27	SJF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:19	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1847313	1	04/13/22 19:38	04/13/22 19:38	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:55	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845673	1	04/09/22 11:13	04/09/22 11:13	JAR	Mt. Juliet, TN

CO 15 L1480173-09 WW

Collected by: Nathanael Wade | Collected date/time: 04/07/22 10:00 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1846015	1	04/09/22 19:58	04/09/22 21:25	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:20	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1847313	1	04/13/22 19:43	04/13/22 19:43	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 10:57	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845677	1	04/09/22 09:31	04/09/22 09:31	JAR	Mt. Juliet, TN

SME 7 L1480173-10 WW

Collected by: Nathanael Wade | Collected date/time: 04/07/22 09:30 | Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1846015	1	04/09/22 19:58	04/09/22 21:25	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:21	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1847313	1	04/13/22 19:45	04/13/22 19:45	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 11:34	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845677	1	04/09/22 09:32	04/09/22 09:32	JAR	Mt. Juliet, TN

SME 13 L1480173-11 WW

Collected by: Nathanael Wade
Collected date/time: 04/07/22 10:25
Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1846015	1	04/09/22 19:58	04/09/22 21:25	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:23	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1847313	1	04/13/22 19:50	04/13/22 19:50	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850852	1	04/18/22 09:19	04/19/22 13:20	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845677	1	04/09/22 09:33	04/09/22 09:33	JAR	Mt. Juliet, TN

SME 9 L1480173-12 WW

Collected by: Nathanael Wade
Collected date/time: 04/07/22 10:20
Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1846015	1	04/09/22 19:58	04/09/22 21:25	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848423	1	04/18/22 09:19	04/19/22 19:24	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1847313	1	04/13/22 19:51	04/13/22 19:51	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850933	1	04/19/22 18:03	04/20/22 11:37	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845677	1	04/09/22 09:33	04/09/22 09:33	JAR	Mt. Juliet, TN

SME 10 L1480173-13 WW

Collected by: Nathanael Wade
Collected date/time: 04/07/22 10:40
Received date/time: 04/08/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1846015	1	04/09/22 19:58	04/09/22 21:25	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1848425	1	04/18/22 18:30	04/19/22 10:08	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1847313	1	04/13/22 19:52	04/13/22 19:52	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1850692	1	04/18/22 18:30	04/19/22 10:14	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1845677	1	04/09/22 09:33	04/09/22 09:33	JAR	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Craig Cothron
Project Manager

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	33.8		5.00	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.380		0.250	1	04/19/2022 19:04	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.509		0.100	1	04/12/2022 01:08	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.121		0.100	1	04/20/2022 10:46	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.101		0.0300	1	04/09/2022 11:04	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	10.9		2.50	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.349	J5	0.250	1	04/19/2022 19:05	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.120		0.100	1	04/12/2022 01:10	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/20/2022 10:48	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 11:04	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	5.00		2.50	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.386		0.250	1	04/19/2022 19:09	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.186		0.100	1	04/12/2022 01:11	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.144		0.100	1	04/20/2022 10:49	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 11:05	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	5.30		2.50	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.886		0.250	1	04/19/2022 19:10	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.304		0.100	1	04/12/2022 01:12	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/20/2022 10:50	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 11:05	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	2.90		2.50	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.566		0.250	1	04/19/2022 19:12	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.402		0.100	1	04/12/2022 01:14	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/20/2022 10:51	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0330		0.0300	1	04/09/2022 11:05	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	3.40		2.50	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.522		0.250	1	04/19/2022 19:16	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.177		0.100	1	04/12/2022 01:15	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/20/2022 10:53	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0740		0.0300	1	04/09/2022 11:06	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	33.8		5.00	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.451		0.250	1	04/19/2022 19:17	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.519		0.100	1	04/12/2022 01:16	WG1846739

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.142		0.100	1	04/20/2022 10:54	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0770		0.0300	1	04/09/2022 11:12	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	9.90		2.50	1	04/09/2022 05:27	WG1845746

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.433		0.250	1	04/19/2022 19:19	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.160		0.100	1	04/13/2022 19:38	WG1847313

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/20/2022 10:55	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 11:13	WG1845673

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	11.7		2.50	1	04/09/2022 21:25	WG1846015

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.853		0.250	1	04/19/2022 19:20	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	04/13/2022 19:43	WG1847313

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/20/2022 10:57	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0710		0.0300	1	04/09/2022 09:31	WG1845677

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	37.2		3.33	1	04/09/2022 21:25	WG1846015

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	1.37		0.250	1	04/19/2022 19:21	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.549		0.100	1	04/13/2022 19:45	WG1847313

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.264	P1	0.100	1	04/20/2022 11:34	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND	J5	0.0300	1	04/09/2022 09:32	WG1845677

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	2.70		2.50	1	04/09/2022 21:25	WG1846015

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.322		0.250	1	04/19/2022 19:23	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	04/13/2022 19:50	WG1847313

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/19/2022 13:20	WG1850852

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 09:33	WG1845677

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	2.90		2.50	1	04/09/2022 21:25	WG1846015

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.529		0.250	1	04/19/2022 19:24	WG1848423

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	04/13/2022 19:51	WG1847313

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.135		0.100	1	04/20/2022 11:37	WG1850933

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 09:33	WG1845677

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	2.80		2.50	1	04/09/2022 21:25	WG1846015

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.477		0.250	1	04/19/2022 10:08	WG1848425

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	04/13/2022 19:52	WG1847313

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	04/19/2022 10:14	WG1850692

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	04/09/2022 09:33	WG1845677

Method Blank (MB)

(MB) R3779238-1 04/09/22 05:27

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1480172-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-06 04/09/22 05:27 • (DUP) R3779238-3 04/09/22 05:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	140	147	1	5.03	J3	5

L1480173-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1480173-01 04/09/22 05:27 • (DUP) R3779238-4 04/09/22 05:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	33.8	34.6	1	2.34		5

Laboratory Control Sample (LCS)

(LCS) R3779238-2 04/09/22 05:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	796	103	85.7-114	

Method Blank (MB)

(MB) R3779732-1 04/09/22 21:25

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1480338-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1480338-02 04/09/22 21:25 • (DUP) R3779732-3 04/09/22 21:25

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	112	119	1	5.89	J3	5

L1480342-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1480342-02 04/09/22 21:25 • (DUP) R3779732-4 04/09/22 21:25

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	36.0	38.4	1	6.45	P1	5

Laboratory Control Sample (LCS)

(LCS) R3779732-2 04/09/22 21:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	792	102	85.7-114	

QUALITY CONTROL SUMMARY

L1480173-01,02,03,04,05,06,07,08,09,10,11,12

Method Blank (MB)

(MB) R3782860-1 04/19/22 18:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1480172-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-05 04/19/22 18:46 • (DUP) R3782860-3 04/19/22 18:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.306	0.331	1	7.85		20

L1480173-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1480173-02 04/19/22 19:05 • (DUP) R3782860-6 04/19/22 19:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.349	0.357	1	2.27		20

Laboratory Control Sample (LCS)

(LCS) R3782860-2 04/19/22 18:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	12.7	13.8	109	75.2-120	

L1480172-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480172-05 04/19/22 18:46 • (MS) R3782860-4 04/19/22 18:49 • (MSD) R3782860-5 04/19/22 18:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	0.306	6.25	6.17	119	117	1	90.0-110	J5	J5	1.29	20

L1480173-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1480173-02 04/19/22 19:05 • (MS) R3782860-7 04/19/22 19:08

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	0.349	5.95	112	1	90.0-110	J5

QUALITY CONTROL SUMMARY

L1480173-13

Method Blank (MB)

(MB) R3782600-1 04/19/22 10:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1480208-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1480208-01 04/19/22 11:05 • (DUP) R3782600-9 04/19/22 11:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	36.2	35.8	2	1.11		20

L1480210-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1480210-01 04/19/22 11:07 • (DUP) R3782600-10 04/19/22 11:09

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	36.4	36.4	2	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3782600-2 04/19/22 10:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	12.7	13.1	103	75.2-120	

L1480208-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480208-01 04/19/22 10:09 • (MS) R3782600-4 04/19/22 10:12 • (MSD) R3782600-6 04/19/22 10:13

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	25.3	26.0	25.9	14.0	12.0	1	90.0-110	E V	E V	0.385	20

L1480210-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1480210-01 04/19/22 10:14 • (MS) R3782600-8 04/19/22 10:20

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	25.4	26.3	18.0	1	90.0-110	E V

Method Blank (MB)

(MB) R3779886-1 04/12/22 00:37

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1480172-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-01 04/12/22 00:39 • (DUP) R3779886-3 04/12/22 00:40

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.268	0.265	1	1.13		20

L1480172-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-10 04/12/22 00:58 • (DUP) R3779886-6 04/12/22 00:59

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3779886-2 04/12/22 00:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.55	102	90.0-110	

L1480172-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480172-01 04/12/22 00:39 • (MS) R3779886-4 04/12/22 00:42 • (MSD) R3779886-5 04/12/22 00:43

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50	0.268	2.73	2.74	98.5	98.9	1	90.0-110			0.366	20

L1480172-10 Original Sample (OS) • Matrix Spike (MS)

(OS) L1480172-10 04/12/22 00:58 • (MS) R3779886-7 04/12/22 01:01

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	ND	2.53	97.8	1	90.0-110	

Method Blank (MB)

(MB) R3780767-1 04/13/22 19:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1480173-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1480173-08 04/13/22 19:38 • (DUP) R3780767-3 04/13/22 19:40

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.160	0.157	1	1.89		20

L1480343-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1480343-02 04/13/22 19:59 • (DUP) R3780767-6 04/13/22 20:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3780767-2 04/13/22 19:36

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.54	102	90.0-110	

L1480173-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480173-08 04/13/22 19:38 • (MS) R3780767-4 04/13/22 19:41 • (MSD) R3780767-5 04/13/22 19:42

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50	0.160	2.68	2.66	101	100	1	90.0-110			0.749	20

L1480343-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1480343-02 04/13/22 19:59 • (MS) R3780767-7 04/13/22 20:01

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	ND	2.48	99.2	1	90.0-110	

Method Blank (MB)

(MB) R3782550-1 04/19/22 10:09

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0510	J	0.0350	0.100

L1480208-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1480208-01 04/19/22 10:37 • (DUP) R3782550-7 04/19/22 10:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	6.80	6.74	2	0.886		20

Laboratory Control Sample (LCS)

(LCS) R3782550-2 04/19/22 10:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	4.12	109	83.2-116	

L1480208-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480208-01 04/19/22 10:15 • (MS) R3782550-5 04/19/22 10:18 • (MSD) R3782550-6 04/19/22 10:19

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	6.81	9.15	9.10	93.6	91.6	1	90.0-110	E	E	0.548	20

Method Blank (MB)

(MB) R3782667-1 04/19/22 12:44

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.129		0.0350	0.100

Laboratory Control Sample (LCS)

(LCS) R3782667-2 04/19/22 12:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	3.74	98.9	83.2-116	

Method Blank (MB)

(MB) R3783075-1 04/20/22 10:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1480173-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1480173-09 04/20/22 10:57 • (DUP) R3783075-3 04/20/22 11:31

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

L1480173-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1480173-10 04/20/22 11:34 • (DUP) R3783075-6 04/20/22 11:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.264	0.186	1	34.7	P1	20

Laboratory Control Sample (LCS)

(LCS) R3783075-2 04/20/22 10:31

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	3.74	98.9	83.2-116	

L1480173-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480173-09 04/20/22 10:57 • (MS) R3783075-4 04/20/22 11:32 • (MSD) R3783075-5 04/20/22 11:33

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	ND	2.45	2.45	95.6	95.6	1	90.0-110			0.000	20

QUALITY CONTROL SUMMARY

L1480173-01,02,03,04,05,06,07,08

Method Blank (MB)

(MB) R3779216-1 04/09/22 11:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1480172-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-05 04/09/22 11:01 • (DUP) R3779216-3 04/09/22 11:01

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

L1480173-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1480173-02 04/09/22 11:04 • (DUP) R3779216-6 04/09/22 11:05

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3779216-2 04/09/22 11:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.252	103	85.0-115	

L1480172-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480172-12 04/09/22 11:03 • (MS) R3779216-4 04/09/22 11:04 • (MSD) R3779216-5 04/09/22 11:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	ND	0.620	0.593	121	115	1	80.0-120	J5		4.45	20

QUALITY CONTROL SUMMARY

L1480173-09,10,11,12,13

Method Blank (MB)

(MB) R3779202-1 04/09/22 09:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1480172-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1480172-01 04/09/22 09:30 • (DUP) R3779202-3 04/09/22 09:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3779202-2 04/09/22 09:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.266	109	85.0-115	

L1480173-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1480173-10 04/09/22 09:32 • (MS) R3779202-4 04/09/22 09:32 • (MSD) R3779202-5 04/09/22 09:32

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	ND	0.603	0.629	117	122	1	80.0-120		J5	4.22	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V	The sample concentration is too high to evaluate accurate spike recoveries.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Pres Chk

Report to:
Ms. Sarah Yeldell

Email To: syeldell@smeinc.com

Project Description:

City/State Collected: Gadsden, AL

Please Circle: PT MT CT ET

Phone: 256-837-8882

Client Project #
4482-20-044

Lab Project #
QOREHAL-448220044

Collected by (print):
Nathanael Wade

Site/Facility ID #
LAND

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y V

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

No. of Cntrs

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres							
AT 5	Grab	WW	Surf	4-7	12:35	4	X	X	X	X							-01
GD 8		WW			12:20	4	X	X	X	X							-02
RC 2		WW			12:10	4	X	X	X	X							-03
SS 13		WW			11:30	4	X	X	X	X							-04
SS 14		WW			11:40	4	X	X	X	X							-05
GD 12		WW			11:55	4	X	X	X	X							-06
~~SME2~~ SME12		WW			12:40	4	X	X	X	X							-07
GD 6		WW			11:00	4	X	X	X	X							-08
CO 15		WW			10:00	4	X	X	X	X							-09
SME 7		WW			9:30	4	X	X	X	X							-10

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1480173
H158
T
Acctnum: QOREHAL
Template: T181690
Prelogin: P914978
PM: 034 - Craig Cothron
PB: 3/22/22
Shipped Via: FedEX Ground

Remarks | Sample # (lab only)

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:
Please update with new sample number

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N
RAD Screen <0.5 mR/hr: Y N

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
Nathanael Wade	4-7	1330		0
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: 52
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4/8/22 Time: 0930

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Company Name/Address:
S&ME - Huntsville
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Pres Chk

Report to: Ms. Sarah Yeldell

Email To: syeldell@smeinc.com

Project Description:

City/State Collected:

Please Circle: PT MT CT ET

Phone: 256-837-8882

Client Project # 4482-20-044

Lab Project # QOREHAL-448220044

Collected by (print):

Site/Facility ID # LAND

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Immediately Packed on Ice N ___ Y ___

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L480173

Table #

Acctnum: QOREHAL
Template: T181690
Prelogin: P914978
PM: 034 - Craig Cothron
PB: 3/28/22 [illegible]
Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres	Remarks	Sample # (lab only)
~~SME 8~~ SME13	Grab	WW	45cm	4-7	10:25	4	X	X	X	X		-11
SME 9	|	WW	|	|	10:20	4	X	X	X	X		-12
SME 10	|	WW	|	|	10:40	4	X	X	X	X		-13
		~~WW~~				~~4~~	~~X~~	~~X~~	~~X~~	~~X~~		
		~~WW~~				~~4~~	~~X~~	~~X~~	~~X~~	~~X~~		

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: ✓Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 4/8/22 Time: 0930	Hold: Condition: NCF / OK

L1480173

Tracking Numbers		Temperature
1790 3021 472		0.7
1603 5671 2698		2.0

Monitoring Report Third Quarter 2022
Gadsden Alabama Urbanized Area
Phase II Small MS4
NPDES General Permit ALR040000
Gadsden, Etowah County, Alabama
S&ME Project No. 219054

PREPARED FOR:

Gadsden-Etowah MS4 Steering Committee

PREPARED BY:

S&ME, Inc.
360D Quality Circle NW, Ste 450
Huntsville, AL 35806

October 25, 2022

October 25, 2022

Attention: Gadsden-Etowah MS4 Steering Committee

Reference: **Quarterly Report: July 1, 2022 – September 30, 2022**
Gadsden- Etowah MS4 Entities
Gadsden, Etowah County, Alabama
S&ME Project No. 219054

Dear Gadsden-Etowah MS4 Steering Committee:

S&ME, Inc. has prepared the attached Quarterly Report (July 1, 2022 – September 30, 2022 reporting period) for the Gadsden-Etowah Phase II Small Municipal Separate Storm Sewer System in accordance with S&ME Proposal No. 219054, dated September 18, 2020.

S&ME, Inc. appreciates the opportunity to provide our services to the City of Gadsden, Rainbow City, City of Hokes Buff, City of Southside, City of Glencoe, City of Attalla, and Etowah County. If you should have questions concerning this report, or if additional information is required, please contact us.

Sincerely,

S&ME, Inc.

Nathanael A. Wade, E.I.
Staff Professional

Deborah J. Jones, P.E.
Senior Engineer

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Appendix II

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Appendix III

Laboratory Report No. L1521087, dated August 24, 2022
Laboratory Report No. L1521589, dated August 25, 2022

1.0 Introduction

S&ME, Inc. has prepared this Monitoring Report for the Gadsden, Alabama Urbanized Area Phase II Small MS4 in accordance with S&ME Proposal No. 219054.

1.1 NPDES Permit

The Storm Water Phase II Final Rule issued by the United States Environmental Protection Agency (USEPA) in 1999 requires nationwide coverage of all operators of small MS4s located within the boundaries of an "urbanized area" as defined by the latest decennial Census. Based on the results of the 2010 census, the Bureau of the Census designated The City of Gadsden, Rainbow City, City of Southside, City of Glencoe, City of Hokes Bluff, City of Attalla, and portions of unincorporated Etowah County as the *Gadsden, Alabama Urbanized Area*. A map outlining the approximate boundary of the *Gadsden, Alabama Urbanized Area* is included as **Figure 1** in **Appendix I**. The regulated small municipal separate storm sewer system (MS4) for the urbanized area is collectively referred to as the Gadsden-Etowah MS4.

In 2016, the Alabama Department of Environmental Management (ADEM) issued National Pollutant Discharge Elimination System (NPDES) General Permit ALR040000 for discharges from regulated small municipal separate storm sewer systems to the Gadsden-Etowah MS4 with an effective date of October 1, 2016. Permit numbers for each entity are provided in Table. 1.2.

Table 1-1: Permit Numbers for MS4 Entities

Entity	ADEM Permit Number
City of Attalla	ALR0400052
City of Gadsden	ALR0400053
City of Glencoe	ALR0400054
City of Hokes Bluff	ALR0400055
City of Rainbow City	ALR0400056
City of Southside	ALR0400057
Etowah County	ALR0400009

1.2 Water Quality Concerns

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987, and EPA's Water Quality Planning and Management Regulations (40CFR130) require states to identify waterbodies not in compliance with the water quality standards applicable to their designated use classifications. Section 303(d) then requires that total maximum daily loads (TMDLs) be determined for all pollutants causing violation of applicable water quality standards in each identified segment.

Neely Henry Lake is the primary receiving water for the Gadsden-Etowah MS4. In 1996, the ADEM identified five of the six reservoirs on the Coosa River within the State of Alabama's borders as being impaired, including Neely

Henry Lake. In 2008 the EPA approved TMDLs for Neely Henry Lake related to Nutrients (Total Phosphorous), pH, and Dissolved Oxygen. The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus loading.

1.3 Monitoring Program

Part III.B of the NPDES General Permit requires that the Permittee develop and implement a Storm Water Management Program Plan (SWMPP). Part IV.D of the NPDES General Permit requires that the SWMPP include monitoring provisions to document that the waste load allocations prescribed in the TMDL are being achieved.

Section 2 of the SWMPP, dated April 1, 2022, provides the specific details of the monitoring program. The intent of the monitoring program is to document that discharges from the MS4 meet the permit requirements. Where deviations are documented and/or expected, the collected monitoring data will be used to determine the extent and cause of the pollutant of concern.

2.0 Rainfall Data

The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus discharge loading. The largest loading of phosphorous to the Coosa River from the Gadsden-Etowah MS4 is expected to occur during runoff events; therefore, the SWMPP requires that monitoring be conducted within 72 hours of a qualifying rain event of 0.75 inch.

On July 29-31, a rain event was observed at four weather stations located in the vicinity of the urbanized area. The locations of the weather stations are identified on **Figure 2** in **Appendix I**.

Table 2-1 Quarterly Rainfall Data

Gauge Name	Location	Lat.	Long.	Precip 7/29/22	Precip 7/30/22	Precip 7/31/22
KALATTAL13	Attalla, AL	33.989°	-86.109°	1.05 in	0.27 in	0.24 in
KALHOKES2	Hokes Bluff, AL	33.993°	-85.806°	4.54 in	0.43 in	0.65 in
KALGADSD3	Noccalula Falls Gadsden, AL	34.056°	-85.994°	1.13 in	0.37 in	0.09 in
KALRAINB19	Glencoe, AL	33.922°	-85.981°	1.37 in	0.28 in	0.13 in

3.0 Monitoring Event

On August 2-3, 2022, S&ME personnel mobilized to conduct storm water monitoring at the land and boat access monitoring points for the third quarter of 2022.

Land and boat access monitoring was successfully sampled on August 2-3, 2022. The quarterly monitoring events are carried out in accordance with Section 3 of the Gadsden-Etowah MS4 Wet-Weather Monitoring Program (SWMPP), dated April 2022.

3.1 Monitoring Locations

The primary monitoring locations selected for determining compliance of the Gadsden-Etowah MS4 with the 2008 phosphorous TMDL are identified on **Figure 2** in **Appendix I**. Coordinates for each point are listed in Table 3-1.

Table 3-1 Monitoring Point Coordinates

Outfall ID	Latitude	Longitude	Access	Waterbody Evaluated
AT 5	34.006446°	-86.069061°	LAND	Big Wills Creek / Little Wills Creek
GD 8	33.999535°	-86.024463°	LAND	Black Creek
RC 2	33.967683°	-86.039476°	LAND	Horton Creek
SS 13	33.891352°	-86.049229°	LAND	Neely Henry Lake
SS 14	33.885921°	-86.030683°	LAND	U.T. to Neely Henry Lake
GD 12	33.952567°	-86.003495°	LAND	U.T. to Neely Henry Lake
GD 6	34.015350°	-85.995617°	LAND	Town Creek
CO 15	33.972280°	-85.965354°	LAND	U.T. to Neely Henry Lake
SME 7	34.006225°	-86.111277°	LAND	Big Wills Creek
SME 9	34.002807°	-85.871879°	LAND	U.T. to Neely Henry Lake
SME 10	33.985669°	-85.878605°	LAND	U.T. to Big Cove Creek (exiting Hokes Bluff)
HB 3	34.002129°	-85.882808°	BOAT	U.T. to Neely Henry Lake
SME 4	34.001667°	-85.883342°	BOAT	Northern end of the Coosa River Channel
GD 5	34.014324°	-85.924013°	BOAT	Big Cove Creek / Little Cove Creek
SME 3	34.009698°	-85.956230°	BOAT	Coal Creek
GD 7	34.008361°	-85.999777°	BOAT	Storm sewer outfall to Coosa River
GD 9	33.989718°	-85.998472°	BOAT	U.T. to Coosa River (East Gadsden)
SME 1	33.990184°	-86.004048°	BOAT	Big Wills Creek / Black Creek
SS 5	33.941329°	-86.021569°	BOAT	U.T. to Coosa River
SME 5	33.940514°	-86.029885°	BOAT	Central portion of the Coosa River Channel
SME 6	33.852125°	-86.049695°	BOAT	Confluence of Greens Creek and Coosa River Channel
RC 14	33.905786°	-86.111656°	BOAT	Rook Creek / Dry Creek

Following evaluation of the monitoring program for the Annual Report in May of 2020, monitoring points CO 14, SME 3, and GD 3 were removed from the monitoring program and monitoring points SME 4, SME 5, SME 6, SME 7, and SME 8 were added. The changes to the monitoring program were implemented beginning with the 2020 fourth quarter sampling event. SME 3 has been reinstated as part of the monitoring program beginning with the 2021 third quarter sampling event.

Following evaluation of the monitoring program for the April 2022 version of the Wet-Weather Monitoring Program, monitoring points SME 2 and SME 8 were removed from the monitoring program and monitoring points SME 9 and SME 10 were added. The changes to the monitoring program were implemented beginning with the 2022 second quarter sampling event.

3.2 Sampling Procedures

Samples accessible by land were obtained using a stainless-steel bucket. Samples accessible by boat were obtained using a horizontal Van Dorn sampler. The bucket and Van Dorn sampler were decontaminated prior to use and in between samples.

3.3 Field Documentation

The following observations were documented in the field at each monitoring location:

- Monitoring point ID
- Date and time
- Person conducting the sampling
- Equipment used
- Depth of sample collection
- Weather conditions
- Waterbody conditions

The following parameters were measured in the field at the time of sample collection:

- Turbidity
- pH
- Dissolved Oxygen (DO)
- Temperature

Field parameters were measured using a combination of the following instruments:

- YSI Pro DSS Multi-Probe Meter

The recorded field observations are included on **Table B.1** in **Appendix II**. The recorded field parameters are included on **Table B.2** in **Appendix II**.

3.4 Quality Assurance / Quality Control

The following handling procedures were employed in general accordance with EPA and ADEM guidance to safeguard the quality of the collected samples.

3.4.1 Sample Containers and Preservation

All samples were collected in new laboratory-provided containers containing analyte-appropriate preservatives as listed below:

Table 3-2 Sample Containers and Preservation

Parameter	Container	Preservative	Hold Time
Total Suspended Solids (TSS)	HDPE - 1 L	NONE	7 days
Total Phosphorous	HDPE - 250 mL	H_2SO_4	48 hours
Orthophosphate	AMB - 100 mL	NONE	48 hours
Nitrate-Nitrite	HDPE - 250 mL	H_2SO_4	28 days
Total Kjeldahl Nitrogen (TKN)	HDPE - 250 mL	H_2SO_4	28 days

Prior to filling, sample containers were labeled with the following information in waterproof ink:

- Project number
- Sample location
- Collection date and time
- Preservative
- Analysis to be performed

3.4.2 Quality Assurance

Three duplicate samples were submitted to the laboratory. One duplicate sample of monitoring point AT 5 was collected by the land team during the sampling event and labeled as SME 12. One duplicate sample of monitoring point SME 7 was collected by the land team during the sampling event and labeled as SME 13. One duplicate sample of monitoring point SME 4 was collected by the boat team during the sampling event and labeled as SME 11.

3.4.3 Sample Shipment

After filling, the sample containers were sealed and immediately placed on ice in a protective container for shipment to the analytical laboratory. A Chain of Custody form was completed and accompanied the samples from the field to the laboratory. A copy of the Chain of Custody is included in **Appendix III**.

4.0 Analytical Results

The laboratory analytical results for the August 2-3, 2022 quarterly monitoring event are included on **Table B.2** in **Appendix II**. Historical monitoring data is included in Appendix II as **Tables B.3 to B.21**. The laboratory reports and Chain of Custody are included in **Appendix III**.

5.0 Recordkeeping

Each quarterly monitoring report will be incorporated into the Annual Update of the Storm Water Management Plan. Monitoring reports will be retained by each municipality for a minimum of 3 years.

The Storm Water Steering Committee is responsible for the coordination and implementation of the Storm Water Management Plan. Current membership of the Storm Water Steering Committee is as follows:

Table 5-0 Storm Water Steering Committee

Entity	Contact	Phone No.	Email
City of Gadsden	Jeramy Ward	256-549-4527	jward@cityofgadsden.com
City of Gadsden	Heath Williamson	256-549-4520	hwilliamson@cityofgadsden.com
City of Attalla	Jason Nicholson	256-441-9200	jason.attalla@gmail.com
City of Rainbow City	Joel Garmon	256-413-1240	jgarmon@rbcalabama.com
City of Southside	Judd Rich	256-442-9775	juddrich@cityofsouthside.com
City of Glencoe	Todd Means	256-492-1424	toddmeans@cityofglencoe.net
City of Hokes Bluff	Lisa Johnson	256-492-2414	hbcity@cityofhokesbluff.net
Etowah County	Tim Graves	256-549-5358	tgraves@etowahcounty.org
Etowah County	Robert Nail	256-549-5358	rnail@etowahcounty.org

One copy of this Monitoring Report has been provided to each member of the Storm Water Steering Committee.

6.0 Certification of the Monitoring Report

I certify under penalty of law that this document and all attachments were prepared under my directions or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment for knowing violations.

Signature of Responsible Official	Date
Print Name and Title	MS4 Entity

7.0 Acknowledgement

S&ME certifies that the information provided in this monitoring report reflects the conditions reported, encountered, and discovered at the time of report preparation. When performing this scope of services, S&ME observed the degree of care and skill generally exercised by other consultants undertaking similar studies at the same time, under similar circumstances and conditions, and in the same geographic area.

8.0 Closing

S&ME sincerely appreciates the opportunity to provide watershed monitoring services for the Gadsden-Etowah MS4. Should questions remain or if additional information is required, please do not hesitate to contact the undersigned.

S&ME, Inc.

Nathanael A. Wade, E.I.
Staff Professional

Deborah J. Jones, P.E.
Senior Engineer

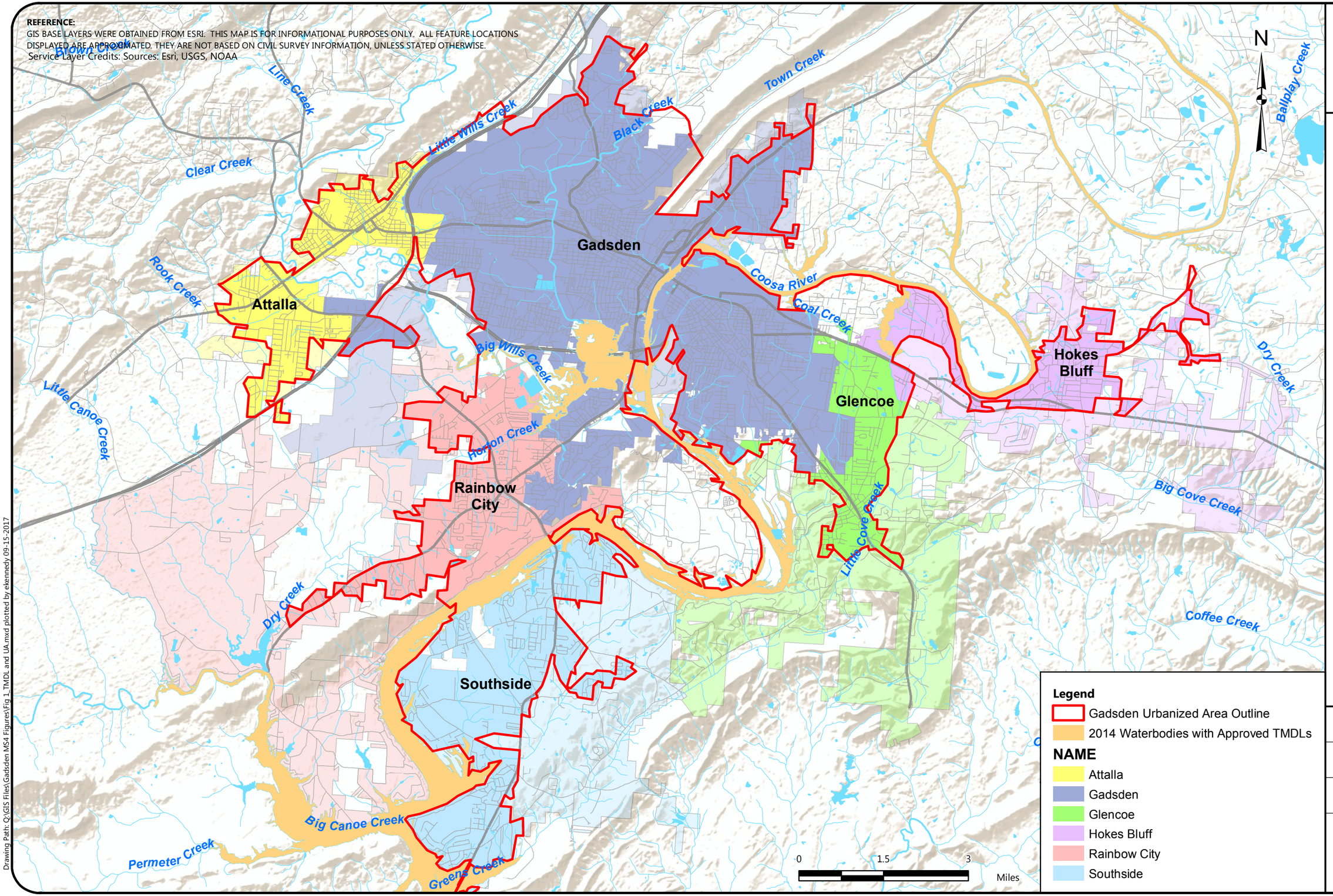
Appendices

Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



Legend

Gadsden Urbanized Area Outline

2014 Waterbodies with Approved TMDLs

NAME

- Attalla
- Gadsden
- Glencoe
- Hokes Bluff
- Rainbow City
- Southside

GADSDEN-ETOWAH MS4 BOUNDARIES

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

SCALE: 1:100,000

DATE: 09-15-17

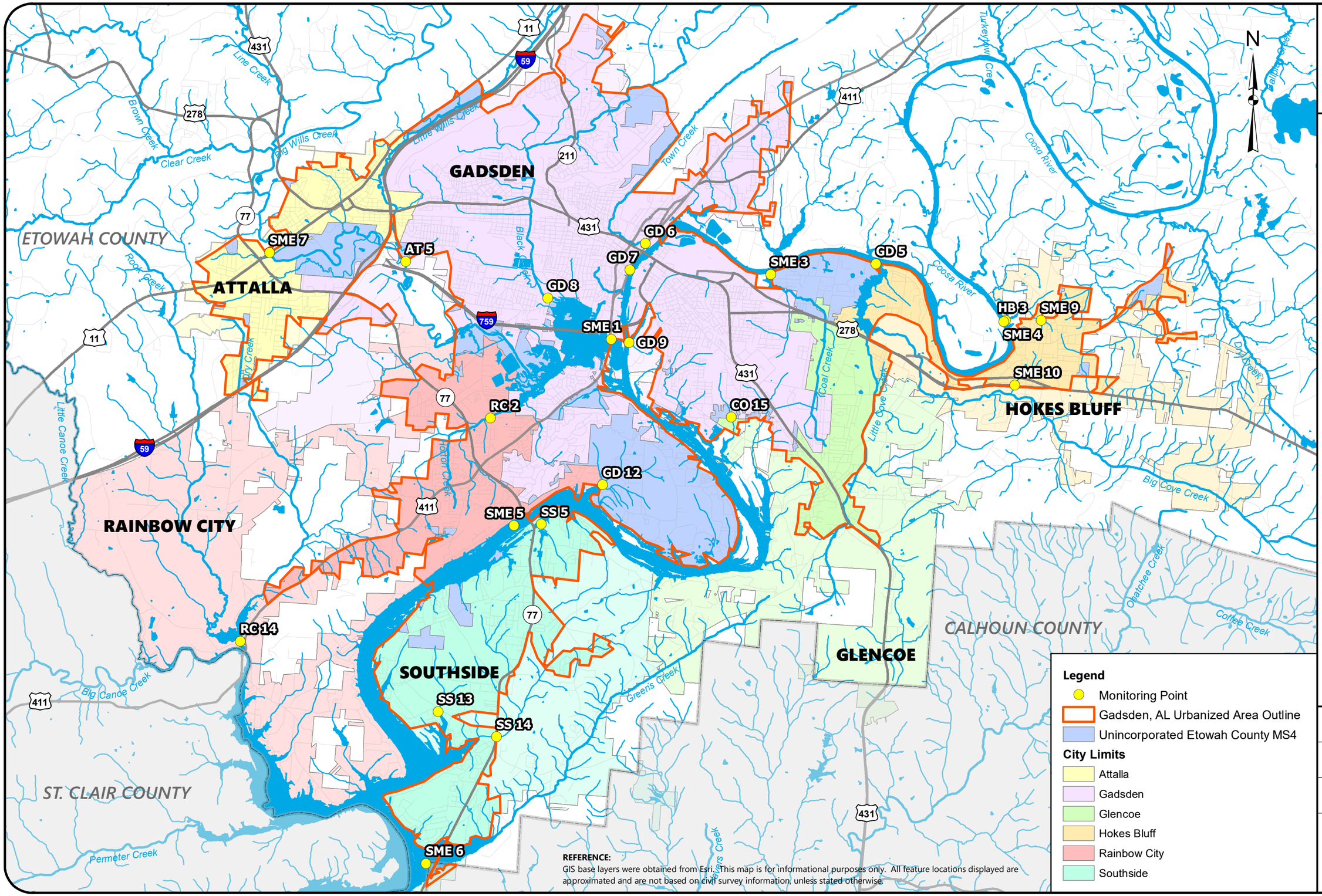
PROJECT NUMBER 4482-16-056

FIGURE NO. 1

Drawing Path: Q:\GIS Files\Gadsden MS4 Figures\Fig 1_TMDL and UA.mxd plotted by ekennedy 09-15-2017

WET-WEATHER MONITORING LOCATIONS

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009



REFERENCE:
GIS base layers were obtained from Esri. This map is for informational purposes only. All feature locations displayed are approximated and are not based on civil survey information, unless stated otherwise.

SCALE:	1:100,000
DATE:	03/23/2022
PROJECT NUMBER	215660
FIGURE NO.	2

Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.26 – Historical Analytical Data

TABLE B.1 - FIELD OBSERVATIONS

GADSDEN-ETOWAH MS4 MONITORING

MONITORING POINT ID	DATE	TIME	DEPTH (FT)	PERSONNEL	WEATHER CONDITIONS	WATERBODY CONDITIONS
AT 5	8/3/2022	12:40	-2'	NW/PC	Cloudy	Fast Flowing
GD 8	8/3/2022	12:30	-2'	NW/PC	Cloudy	Smooth
RC 2	8/3/2022	12:20	-2'	NW/PC	Cloudy	Smooth
SS 13	8/3/2022	11:30	-2'	NW/PC	Cloudy	Smooth
SS 14	8/3/2022	11:45	-2'	NW/PC	Cloudy	Smooth
GD 12	8/3/2022	12:05	-2'	NW/PC	Cloudy	Smooth
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SME 2	Removed monitoring point from Stormwater Monitoring Program in April 2022					
GD 6	8/3/2022	11:05	-2'	NW/PC	Cloudy	Smooth
CO 15	8/3/2022	10:20	Surface	NW/PC	Cloudy	Smooth
SME 7	8/3/2022	9:45	-2'	NW/PC	Cloudy	Fast Flowing
SME 8	Removed monitoring point from Stormwater Monitoring Program in April 2022					
SME 9	8/3/2022	10:40	Surface	NW/PC	Cloudy	Smooth
SME 10	8/3/2022	10:45	Surface	NW/PC	Cloudy	Smooth
HB 3	8/2/2022	10:00	-5'	NW	Cloudy	Smooth
SME 4	8/2/2022	10:10	-5'	NW	Cloudy	Smooth
GD 5	8/2/2022	10:30	-5'	NW	Cloudy	Smooth
SME 3	8/2/2022	10:50	-5'	NW	Cloudy	Smooth
GD 7	8/2/2022	11:00	-5'	NW	Cloudy	Smooth
GD 9	8/2/2022	11:15	-5'	NW	Cloudy	Smooth
SME 1	8/2/2022	11:25	-5'	NW	Cloudy	Smooth
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SS 5	8/2/2022	12:15	-5'	NW	Cloudy	Smooth
SME 5	8/2/2022	12:25	-5'	NW	Cloudy	Smooth
SME 6	8/2/2022	12:40	-5'	NW	Cloudy	Smooth
RC 14	8/2/2022	13:00	-5'	NW	Cloudy	Smooth

TABLE B.2 - ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	**DATE**	**TURBIDITY (NTU)**	**pH**	**DO (mg/L)**	**TEMP (°C)**	**NITRATE-NITRITE (mg/L)**	**ORTHO-PHOSPHATE (mg/L)**	**TOTAL P (mg/L)**	**TKN (mg/L)**	**TSS (mg/L)**
AT 5	8/3/2022	21.7	8.17	7.50	26.0	0.715	0.271	0.323	0.702	30.8
GD 8	8/3/2022	14.4	8.14	6.97	29.0	0.189	<0.0300	<0.100	0.406	12.1
RC 2	8/3/2022	15.1	8.26	7.41	27.1	0.175	<0.0300	<0.100	0.352	13.8
SS 13	8/3/2022	14.2	7.92	7.03	31.4	<0.100	<0.0300	<0.100	**1.65**	**44.4**
SS 14	8/3/2022	10.0	8.03	7.77	30.2	0.176	<0.0300	0.123	0.723	6.50
GD 12	8/3/2022	11.8	8.09	8.02	**31.5**	<0.100	<0.0300	0.142	0.999	6.40
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 2	Removed monitoring point from Stormwater Monitoring Program in April 2022									
GD 6	8/3/2022	10.1	7.71	7.21	29.7	<0.100	<0.0300	<0.100	0.588	5.30
CO 15	8/3/2022	12.8	8.15	7.92	27.0	0.131	<0.0300	<0.100	0.424	4.20
SME 7	8/3/2022	24.8	8.32	7.69	24.6	**0.742**	0.314	0.373	0.844	31.0
SME 8	Removed monitoring point from Stormwater Monitoring Program in April 2022									
SME 9	8/3/2022	9.2	8.10	7.97	25.4	<0.100	<0.0300	<0.100	0.582	<2.5
SME 10	8/3/2022	10.3	8.08	6.35	25.5	<0.100	<0.0300	<0.100	0.940	4.10
SME 12	8/3/2022	DUPLICATE OF AT 5				0.711	0.285	0.310	0.461	27.6
SME 13	8/3/2022	DUPLICATE OF SME 9				0.739	**0.344**	**0.389**	0.951	33.3
HB 3	8/2/2022	**31.2**	8.05	5.89	28.9	<0.100	<0.0300	<0.100	0.273	33.7
SME 4	8/2/2022	14.0	7.79	6.24	29.1	0.102	<0.0300	<0.100	0.274	6.00
GD 5	8/2/2022	13.0	7.86	6.60	29.1	<0.100	<0.0300	<0.100	<0.250	6.40
SME 3	8/2/2022	11.0	7.81	6.35	29.2	<0.100	<0.0300	<0.100	<0.250	5.60
GD 7	8/2/2022	10.2	7.86	6.29	29.3	<0.100	<0.0300	<0.100	<0.250	4.30
GD 9	8/2/2022	10.4	7.89	6.62	29.1	<0.100	<0.0300	<0.100	<0.250	7.40
SME 1	8/2/2022	12.0	8.10	7.98	29.2	<0.100	<0.0300	<0.100	0.281	6.30
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SS 5	8/2/2022	11.9	**8.38**	7.32	30.6	<0.100	<0.0300	<0.100	0.812	7.80
SME 5	8/2/2022	12.0	8.26	7.16	30.4	0.102	<0.0300	<0.100	0.277	7.30
SME 6	8/2/2022	11.1	8.25	**8.26**	30.9	<0.100	<0.0300	<0.100	<0.250	8.40
RC 14	8/2/2022	12.9	8.29	7.67	30.2	<0.100	<0.0300	<0.100	0.332	11.1
SME 11	8/2/2022	DUPLICATE OF SME 4				<0.100	<0.0300	<0.100	0.411	4.60

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled (Dry)

Bold - maximum reading for constituent

NA - not availabe at this time

* - value unknown due to equipment malfuction

TABLE B.3 - ANALYTICAL DATA - AT 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	3/12/2013	15	7.80	11.04	12.55	0.61	0.150	0.14	0.37	20.0
AT 5	5/8/2013	25	5.08	2.59	14.69	0.31	0.099	0.11	0.56	19.0
AT 5	9/23/2013	21	5.96	3.95	22.88	1.30	0.400	0.35	0.37	22.0
AT 5	12/10/2013	68	5.32	11.43	8.21	0.79	0.290	0.34	0.97	64.0
AT 5	2/6/2014	40	4.06	15.29	7.28	0.80	0.130	0.13	0.35	32.0
AT 5	6/26/2014	70	7.85	7.61	23.89	0.77	0.340	0.28	0.38	19.0
AT 5	9/30/2014	15	5.78	6.63	21.03	0.94	0.490	0.54	<0.25	14.0
AT 5	11/19/2014	47	5.08	10.23	6.91	1.30	0.410	0.39	0.50	27.0
AT 5	3/23/2015	17	8.69	9.39	14.5	0.71	0.130	0.14	0.27	15.0
AT5	4/22/2015	53	6.93	11.13	18.4	0.69	0.110	0.13	<0.25	76.0
AT5	9/30/2015	15	6.37	9.45	21.63	1.82	0.664	0.86	<0.25	16.4
AT5	11/19/2015	934	7.38	19.33	14.98	0.67	0.261	0.31	1.47	74.6
AT 5	3/15/2016	30.2	7.93	20.43	16.86	0.578	0.068	<0.100	0.772	26.7
AT 5	6/29/2016	18.1	7.99	6.57	25.4	0.800	0.598	0.71	<0.250	14.5
AT 5	8/9/2016	17.1	7.89	6.47	25.8	0.975	0.482	0.502	0.268	18.3
AT5	12/7/2016	26.5	7.08	10.19	11.3	0.663	0.450	0.474	<0.250	16.9
AT5	3/2/2017	50.8	8.14	8.86	13.4	1.08	0.267	0.373	0.529	44.6
AT 5	6/21/2017	11.7	7.98	6.74	23.3	0.616	0.226	0.366	0.544	70.0
AT 5	8/17/2017	9.5	8.09	6.77	26.0	0.890	0.258	0.283	0.690	12.0
AT 5	10/26/2017	9.8	7.95	8.25	15.7	0.936	0.226	0.250	<0.250	9.4
AT 5	3/27/2018	14.5	7.79	9.03	12.9	0.849	0.162	0.148	<0.250	15.9
AT 5	6/26/2018	16.4	8.06	6.89	25.5	0.849	0.230	0.246	0.411	25.2
AT 5	8/1/2018	77.9	7.33	7.16	22.3	0.510	0.285	0.401	0.680	107.0

TABLE B.3 - ANALYTICAL DATA - AT 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	12/11/2018	29.2	7.59	10.73	9.4	1.09	0.066	0.204	0.579	46.2
AT 5	4/17/2019	12.2	7.63	8.99	17.9	0.638	0.061	<0.100	<0.250	14.4
AT 5	6/11/2019	24.6	7.18	3.48	22.2	0.822	0.206	0.290	0.486	15.9
AT 5	8/28/2019	20.7	7.84	7.42	27.1	0.534	0.404	0.485	1.070	23.5
AT 5	10/28/2019	22.5	7.84	8.45	15.1	0.665	0.523	0.499	<0.250	17.0
AT 5	3/31/2020	23.1	8.09	9.07	16.6	0.657	0.0320	0.102	<0.250	27.1
AT 5	6/10/2020	19.4	7.56	7.35	23.2	0.825	0.248	0.243	<0.250	22.8
AT 5	9/21/2020	NS	8.08	8.21	20.6	0.603	0.491	0.399	<0.250	11.3
AT 5	12/17/2020	28.7	7.91	11.21	9.6	0.831	0.087	<0.100	<0.250	18.6
AT 5	3/18/2021	119.0	7.82	10.68	17.2	0.310	0.050	<0.100	<0.250	55.6
AT 5	5/5/2021	6.5	7.24	8.45	18.1	6.86	0.121	0.157	1.37	43.7
AT 5	9/2/2021	*	*	7.75	23.4	0.482	0.131	0.262	0.969	67.4
AT 5	11/23/2021	<1.0	8.13	11.09	12.9	0.343	<0.0300	0.253	<0.250	2.6
AT 5	1/10/2022	20.8	7.39	11.46	10.0	0.769	0.126	0.184	0.279	29.7
AT 5	4/7/2022	21.9	7.53	9.30	16.6	0.509	0.101	0.121	0.380	33.8
AT 5	8/3/2022	21.7	8.17	7.50	26.0	0.715	0.271	0.323	0.702	30.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.4 - ANALYTICAL DATA - GD 8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 8	3/12/2013	6.6	7.65	11.73	9.85	0.13	<0.025	<0.100	0.25	4.5
GD 8	5/8/2013	18.7	6.71	1.72	14.47	0.11	<0.025	<0.100	0.38	19.0
GD 8	9/23/2013	17.8	6.22	3.98	22.74	<0.100	<0.025	<0.100	0.41	9.6
GD 8	12/10/2013	30.7	6.04	13.33	8.10	0.28	0.040	<0.100	0.35	32.0
GD 8	2/6/2014	15.5	3.87	16.32	6.48	0.25	<0.025	<0.100	0.13	13.0
GD 8	6/26/2014	30.8	8.19	6.64	26.15	0.25	<0.025	<0.100	0.48	7.3
GD 8	9/30/2014	11.9	7.32	5.06	23.19	0.14	<0.025	<0.100	0.42	6.0
GD 8	11/19/2014	25.3	5.16	9.01	5.87	0.23	<0.025	<0.100	0.32	13.0
GD 8	3/23/2015	10.6	8.67	9.76	14.8	0.22	<0.025	<0.100	<0.25	4.8
GD 8	4/22/2015	20.2	7.40	11.71	17.70	0.16	<0.025	<0.100	<0.25	15.0
GD 8	9/30/2015	9.0	7.79	9.48	24.33	0.184	<0.025	<0.100	0.483	6.8
GD 8	11/19/2015	212	6.94	23.30	15.13	0.233	<0.025	0.101	0.852	79.6
GD 8	3/15/2016	11.4	7.88	16.81	16.98	0.131	<0.025	<0.100	0.470	8.3
GD 8	6/29/2016	32.5	8.50	6.60	29.3	<0.100	<0.025	<0.100	0.450	39.8
GD 8	8/9/2016	12.7	8.90	5.87	28.9	0.217	<0.025	<0.100	0.668	6.3
GD 8	12/7/2016	10.1	7.75	8.84	12.1	0.308	<0.025	<0.100	0.409	7.0
GD 8	3/2/2017	19.7	8.14	9.76	12.2	0.284	<0.025	<0.100	0.342	3.6
GD 8	6/21/2017	7.9	8.73	6.50	25.0	<0.100	<0.025	<0.100	0.642	7.0
GD 8	8/17/2017	6.8	8.55	6.30	28.7	0.132	<0.025	<0.100	0.541	8.9
GD 8	10/26/2017	6.1	8.17	8.25	16.3	<0.100	<0.025	<0.100	0.347	4.0
GD 8	3/27/2018	8.9	8.09	9.52	12.1	0.215	<0.025	<0.100	<0.25	6.5
GD 8	6/26/2018	5.8	8.50	5.74	29.7	0.150	<0.025	<0.100	0.670	5.8
GD 8	8/1/2018	45.8	6.89	7.39	22.9	0.556	0.072	0.114	0.641	53.2

TABLE B.4 - ANALYTICAL DATA - GD 8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 8	12/11/2018	16.0	7.87	11.71	9.2	0.326	<0.025	<0.100	0.406	24.4
GD 8	4/17/2019	6.7	8.05	9.30	17.6	0.115	<0.025	<0.100	0.437	<5.00
GD 8	6/11/2019	9.4	7.19	2.94	25.8	0.181	<0.025	<0.100	0.948	4.1
GD 8	8/28/2019	14.2	8.26	6.07	30.2	0.212	<0.025	<0.100	0.992	11.8
GD 8	10/28/2019	29.6	7.83	8.22	16.2	0.435	<0.025	0.109	0.255	12.9
GD 8	3/31/2020	19.3	7.97	9.30	16.6	0.133	<0.025	0.132	0.348	18.0
GD 8	6/10/2020	10.8	7.97	7.13	24.9	0.211	<0.030	<0.100	<0.25	8.0
GD 8	9/21/2020	NS	8.19	6.36	22.8	0.171	<0.030	<0.100	0.290	7.4
GD 8	12/17/2020	17.5	8.30	11.68	9.4	0.273	<0.030	<0.100	<0.25	11.5
GD 8	3/18/2021	117.0	8.15	11.53	16.5	0.178	<0.030	<0.100	0.312	102.0
GD 8	5/5/2021	3.7	8.01	9.62	18.5	7.03	<0.030	<0.100	0.796	35.7
GD 8	9/2/2021	*	*	8.04	24.5	0.241	<0.030	<0.100	0.611	18.3
GD 8	11/23/2021	<1.0	8.04	10.73	12.5	<0.100	<0.0300	<0.100	<0.250	2.7
GD 8	1/10/2022	18.9	7.60	12.25	9.2	0.222	<0.0300	0.122	0.277	20.8
GD 8	4/7/2022	8.2	7.87	9.94	16.8	0.120	<0.0300	<0.100	0.349	10.9
GD 8	8/3/2022	14.4	8.14	6.97	29.0	0.189	<0.0300	<0.100	0.406	12.1

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.5 - ANALYTICAL DATA - RC 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 2	3/12/2013	29.1	7.73	9.83	10.53	0.12	0.088	<0.100	0.75	14.0
RC 2	5/8/2013	18.9	6.16	3.06	16.36	0.19	<0.025	<0.100	0.55	12.0
RC 2	9/23/2013	11.4	6.24	3.00	23.61	<0.100	<0.025	<0.100	0.43	6.3
RC 2	12/10/2013	33.6	6.07	11.71	8.38	0.11	0.062	<0.100	0.54	10.0
RC 2	2/6/2014	30.4	3.89	17.28	5.62	0.26	<0.025	<0.100	0.43	9.6
RC 2	6/26/2014	17.6	7.90	6.81	24.81	0.15	<0.025	<0.100	0.44	7.2
RC 2	9/30/2014	3.4	7.27	5.55	22.25	<0.100	<0.025	<0.100	0.40	2.5
RC 2	11/19/2014	27.4	5.65	7.14	5.72	0.17	<0.025	<0.100	0.43	11.0
RC 2	3/23/2015	45.0	8.23	9.07	16.00	0.15	0.044	<0.100	0.81	18.0
RC 2	4/22/2015	14.1	7.64	11.42	18.40	0.26	<0.025	<0.100	<0.25	4.8
RC 2	9/30/2015	7.1	5.93	9.28	23.33	<0.100	<0.025	<0.100	<0.25	4.6
RC 2	11/19/2015	114.0	7.36	21.94	15.29	0.271	<0.025	0.133	0.75	14.4
RC 2	3/15/2016	14.5	7.62	16.67	14.61	0.181	<0.025	<0.100	0.43	6.0
RC 2	6/29/2016	12.1	7.78	4.31	28.30	<0.100	0.077	<0.100	0.35	10.9
RC 2	8/9/2016	24.5	8.12	5.05	26.50	0.140	<0.025	<0.100	0.45	9.9
RC 2	12/7/2016	17.2	7.86	7.47	12.0	0.200	<0.025	<0.100	0.53	11.9
RC 2	3/2/2017	25.3	7.71	7.74	13.10	0.166	<0.025	<0.100	0.45	8.0
RC 2	6/21/2017	14.2	7.91	5.61	23.7	<0.100	<0.025	<0.100	0.51	12.3
RC 2	8/17/2017	18.2	8.08	4.94	27.90	<0.100	<0.025	0.133	0.72	72.2
RC 2	10/26/2017	18.1	7.57	7.05	15.2	<0.100	<0.025	<0.100	0.27	17.5
RC 2	3/27/2018	18.2	7.91	8.43	12.4	0.146	<0.025	<0.100	<0.25	12.5
RC 2	6/26/2018	18.8	7.94	6.19	26.5	0.101	<0.025	<0.100	0.802	13.0
RC 2	8/1/2018	56.8	7.40	7.10	22.4	<0.100	<0.025	<0.100	0.506	84.4

TABLE B.5 - ANALYTICAL DATA - RC 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 2	12/11/2018	16.0	7.54	11.41	7.7	0.316	<0.025	<0.100	0.479	3.1
RC 2	4/17/2019	7.0	7.77	8.67	18.9	0.165	<0.025	<0.100	0.288	<5.00
RC 2	6/11/2019	14.3	6.83	3.78	23.0	<0.100	<0.025	<0.100	0.520	5.2
RC 2	8/28/2019	14.4	8.01	7.30	28.0	<0.100	<0.025	<0.100	0.748	4.8
RC 2	10/28/2019	11.4	7.55	9.42	14.9	0.132	<0.025	0.197	<0.250	3.4
RC 2	3/31/2020	84.5	7.90	9.10	15.7	0.190	0.0290	0.118	0.574	90.0
RC 2	6/10/2020	20.5	7.87	6.37	25.6	0.210	<0.030	<0.100	0.330	10.8
RC 2	9/21/2020	NS	7.24	7.03	19.6	<0.100	<0.030	<0.100	<0.250	5.2
RC 2	12/17/2020	28.1	7.91	11.23	8.9	0.218	<0.030	<0.100	0.396	5.4
RC 2	3/18/2021	67.5	7.90	8.68	16.7	0.145	<0.030	<0.100	0.611	26.8
RC 2	5/5/2021	2.8	7.31	8.95	19.1	7.91	<0.030	<0.100	0.892	15.6
RC 2	9/2/2021	*	*	6.52	25.0	0.122	<0.030	<0.100	0.802	3.4
RC 2	11/23/2021	3.5	7.66	8.33	12.2	0.124	<0.0300	<0.100	0.340	19.2
RC 2	1/10/2022	32.1	7.27	11.50	8.4	0.185	<0.0300	<0.100	0.501	9.0
RC 2	4/7/2022	10.96	7.41	9.02	17.5	0.186	<0.0300	0.144	0.386	5.0
RC 2	8/3/2022	15.1	8.26	7.41	27.1	0.175	<0.0300	<0.100	0.352	13.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.6 - ANALYTICAL DATA - SS 13

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 13	3/12/2013	8	7.04	9.85	11.45	0.34	0.032	<0.10	0.78	4.7
SS 13	5/8/2013	10	6.68	2.94	18.75	0.36	<0.050	<0.10	0.72	5.7
SS 13	9/23/2013	12	7.04	3.38	25.31	<0.10	0.028	<0.10	0.84	9.6
SS 13	12/10/2013	12.2	6.14	10.93	8.99	0.33	0.077	0.12	0.67	5.6
SS 13	2/6/2014	7.2	4.26	17.50	5.14	0.42	<0.025	<0.100	0.44	4.1
SS 13	6/26/2014	23.2	8.33	8.09	28.44	<0.100	<0.025	0.12	0.52	5.4
SS 13	9/30/2014	12.4	7.41	4.26	24.77	<0.100	<0.025	<0.100	0.44	12.0
SS 13	11/19/2014	13.4	6.31	6.08	6.44	0.22	0.044	<0.100	0.40	4.8
SS 13	3/23/2015	15.9	7.33	8.57	15.4	0.22	0.029	<0.100	0.71	7.6
SS 13	4/22/2015	15.3	6.60	8.93	20.8	0.32	<0.025	<0.100	0.67	10.0
SS 13	9/30/2015	9.5	7.33	11.54	25.95	<0.100	<0.025	<0.100	0.52	9.0
SS 13	11/19/2015	35.8	7.07	18.48	15.31	0.242	<0.025	0.181	0.97	4.8
SS 13	3/15/2016	9.1	6.61	12.42	17.37	0.323	<0.025	<0.100	<0.25	4.7
SS 13	6/29/2016	9.7	7.86	6.15	30.6	<0.100	<0.025	<0.100	0.53	9.8
SS 13	8/9/2016	20.3	7.77	5.92	29.1	<0.100	<0.025	<0.100	0.73	24.0
SS 13	12/7/2016	4.8	7.39	6.97	12.5	0.108	<0.025	<0.100	0.45	3.6
SS 13	3/2/2017	12.0	6.64	7.19	13.4	0.249	<0.025	<0.100	0.75	4.6
SS 13	6/21/2017	8.7	7.54	5.82	26.1	<0.100	<0.025	<0.100	0.82	12.8
SS 13	8/17/2017	9.3	7.93	6.54	30.9	<0.100	<0.025	<0.100	0.81	18.6
SS 13	10/26/2017	5.2	6.70	7.41	15.4	0.122	<0.025	<0.100	0.60	7.2
SS 13	3/27/2018	6.4	8.19	8.23	12.4	0.495	<0.025	<0.100	<0.25	16.2
SS 13	6/26/2018	6.8	7.36	5.67	29.5	<0.100	<0.025	0.140	0.998	10.2
SS 13	8/1/2018	24.2	6.75	6.86	21.9	0.226	0.206	0.308	1.180	20.2

TABLE B.6 - ANALYTICAL DATA - SS 13

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 13	12/11/2018	8.2	7.37	10.79	7.4	0.451	<0.025	<0.100	0.655	8.6
SS 13	4/17/2019	6.4	7.42	9.23	19.1	<0.100	<0.025	<0.100	0.624	6.8
SS 13	6/11/2019	8.9	6.59	3.12	23.4	<0.100	<0.025	<0.100	0.929	<6.25
SS 13	8/28/2019	6.7	7.93	7.33	29.7	<0.100	<0.025	<0.100	1.170	24.4
SS 13	10/28/2019	12.3	6.25	3.61	16.0	0.211	0.031	<0.100	0.739	3.7
SS 13	3/31/2020	60.4	6.95	8.64	14.9	0.233	0.0580	0.147	0.928	92.0
SS 13	6/10/2020	10.1	7.27	7.08	28.2	<0.100	<0.030	<0.100	0.492	21.2
SS 13	9/21/2020	NS	7.36	6.58	21.9	<0.100	<0.030	0.200	<0.250	7.8
SS 13	12/17/2020	12.3	8.04	10.83	8.3	0.405	<0.030	<0.100	0.432	5.3
SS 13	3/18/2021	26.8	7.61	9.23	16.9	0.163	<0.030	<0.100	0.926	16.5
SS 13	5/5/2021	0.5	7.77	8.13	18.2	7.64	0.0960	0.160	1.41	10.5
SS 13	9/2/2021	*	*	8.50	28.7	0.189	<0.030	0.108	1.33	13.4
SS 13	11/23/2021	<1.0	7.11	8.26	14.8	0.16	<0.0300	<0.100	0.331	5.30
SS 13	1/10/2022	9.1	7.71	11.23	8.8	0.295	<0.0300	<0.100	0.725	7.0
SS 13	4/7/2022	6.68	7.40	8.72	18.2	0.304	<0.0300	<0.100	0.886	5.3
SS 13	8/3/2022	14.2	7.92	7.03	31.4	<0.100	<0.0300	<0.100	1.65	44.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.7 - ANALYTICAL DATA - SS 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 14	3/12/2013	9.7	7.40	11.23	10.93	0.40	0.087	0.11	0.77	4.7
SS 14	5/8/2013	10.3	6.47	2.75	16.42	0.45	0.041	<0.100	0.53	5.0
SS 14	9/23/2013	3.1	6.76	6.49	21.77	0.38	0.036	<0.100	0.45	<2.5
SS 14	12/10/2013	17.6	5.63	11.33	8.56	0.28	0.160	0.19	0.66	9.2
SS 14	2/6/2014	12.4	4.19	17.56	5.16	0.62	0.074	<0.100	0.50	14.0
SS 14	6/26/2014	7.9	8.18	7.58	24.14	0.67	0.080	0.16	0.89	<2.5
SS 14	9/30/2014	7.9	7.42	3.67	22.35	<0.100	0.031	<0.100	0.52	6.1
SS 14	11/19/2014	16.0	6.27	7.50	5.48	0.75	0.075	0.22	0.46	9.2
SS 14	3/23/2015	21.3	7.75	9.53	16.5	0.27	0.110	0.14	1.10	11.0
SS 14	4/22/2015	12.3	7.43	12.29	17.5	0.620	<0.025	<0.100	0.58	6.3
SS 14	9/30/2015	7.3	7.16	12.79	24.02	<0.10	0.088	0.176	0.514	6.6
SS 14	11/19/2015	27.0	6.49	20.71	15.16	0.442	0.131	0.183	0.996	23.3
SS 14	3/15/2016	11.3	7.18	12.11	16.01	0.50	0.056	<0.100	0.834	8.1
SS 14	6/29/2016	6.0	7.62	3.61	27.2	<0.100	0.103	0.160	0.650	6.0
SS 14	8/9/2016	22.3	7.71	5.99	26.9	0.164	0.062	0.119	0.871	12.7
SS 14	12/7/2016	7.6	7.27	7.72	11.9	0.885	0.078	0.147	0.705	<2.5
SS 14	3/2/2017	12.6	7.60	8.76	12.2	0.475	0.092	0.153	0.842	9.2
SS 14	6/21/2017	21.5	7.74	6.24	23.7	0.249	0.030	0.109	0.725	63.7
SS 14	8/17/2017	6.0	8.12	7.11	31.4	0.118	0.070	<0.100	0.827	24.8
SS 14	10/26/2017	4.3	7.39	7.66	13.9	0.699	0.054	<0.100	0.582	3.6
SS 14	3/27/2018	8.8	7.34	8.96	11.9	0.673	0.044	0.148	<0.25	8.2
SS 14	6/26/2018	7.7	8.47	10.65	29.3	0.206	0.044	0.148	1.010	18.7
SS 14	8/1/2018	42.9	6.35	7.04	22.5	0.109	0.233	0.276	0.885	60.0

TABLE B.7 - ANALYTICAL DATA - SS 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 14	12/11/2018	8.4	6.95	11.53	7.4	0.812	0.057	0.117	0.635	4.3
SS 14	4/17/2019	6.6	7.60	8.28	22.1	0.598	0.042	<0.100	0.414	6.7
SS 14	6/11/2019	12.6	6.78	3.47	23.8	0.444	0.077	<0.100	0.928	5.9
SS 14	8/28/2019	8.1	7.96	8.18	27.9	<0.100	<0.025	0.174	1.050	8.5
SS 14	10/28/2019	10.9	6.97	7.83	15.1	0.458	0.048	0.167	0.381	2.7
SS 14	3/31/2020	62.4	6.67	9.31	15.2	0.190	0.235	0.348	0.934	145
SS 14	6/10/2020	17.0	7.32	7.20	29.1	0.246	0.078	0.128	0.897	40.4
SS 14	9/21/2020	NS	7.62	7.59	20.7	0.345	0.075	<0.100	0.281	8.4
SS 14	12/17/2020	11.4	7.94	11.72	8.6	0.546	0.050	<0.100	0.540	5.4
SS 14	3/18/2021	31.4	7.73	9.77	16.8	0.189	0.048	<0.100	0.670	19.8
SS 14	5/5/2021	1.2	6.98	8.62	19.4	7.85	0.073	<0.100	1.06	6.27
SS 14	9/2/2021	*	*	7.80	26.3	0.552	0.980	0.128	0.935	3.0
SS 14	11/23/2021	<1.0	7.46	10.28	12.7	0.315	0.108	0.178	0.370	2.6
SS 14	1/10/2022	9.8	7.12	11.84	8.8	0.385	0.068	0.136	0.674	4.4
SS 14	4/7/2022	4.4	6.82	9.83	17.8	0.402	0.033	<0.100	0.566	2.9
SS 14	8/3/2022	10.0	8.03	7.77	30.2	0.176	<0.0300	0.123	0.723	6.50

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.8 - ANALYTICAL DATA - GD 12

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 12	3/12/2013	8.5	7.41	10.93	13.43	0.25	0.030	<0.100	0.54	3.9
GD 12	5/8/2013	15.0	6.73	2.35	16.53	0.21	0.030	<0.100	0.40	7.5
GD 12	9/23/2013	9.8	6.76	3.94	26.07	<0.10	0.026	<0.100	0.48	9.0
GD 12	12/10/2013	18.8	6.15	10.09	10.18	0.22	0.079	0.11	0.45	5.9
GD 12	2/6/2014	12.3	4.17	16.99	5.76	0.31	<0.025	<0.100	0.28	3.9
GD 12	6/26/2014	28.5	8.38	9.40	26.72	0.11	0.035	0.12	0.62	32.0
GD 12	9/30/2014	10.6	7.68	5.77	24.68	<0.100	<0.025	<0.100	0.39	11.0
GD 12	11/19/2014	14.7	6.95	5.93	5.85	0.28	<0.025	0.13	0.39	6.6
GD 12	3/23/2015	17.6	7.80	9.56	16.80	0.24	<0.025	<0.100	0.59	8.1
GD 12	4/22/2015	17.3	7.45	11.04	19.80	0.25	<0.025	<0.100	0.43	14.0
GD 12	9/30/2015	7.4	7.30	11.07	24.67	<0.100	<0.025	<0.100	0.695	8.5
GD 12	11/19/2015	22.9	7.07	19.14	14.68	0.281	0.100	0.15	0.769	12.0
GD 12	3/15/2016	9.8	7.43	13.14	16.05	0.254	0.032	<0.100	0.434	4.6
GD 12	6/29/2016	12.9	8.22	7.68	31.20	<0.100	0.036	<0.100	0.380	12.0
GD 12	8/9/2016	22.1	7.57	4.39	27.60	<0.100	<0.025	<0.100	0.629	13.3
GD 12	12/7/2016	10.3	7.18	6.65	11.4	0.142	<0.025	<0.100	0.599	4.0
GD 12	3/2/2017	15.4	7.79	10.12	11.70	0.223	<0.025	0.12	0.583	6.1
GD 12	6/21/2017	16.1	7.43	5.12	24.3	<0.100	<0.025	<0.100	0.770	16.8
GD 12	8/17/2017	6.3	8.13	5.80	29.90	<0.100	<0.025	<0.100	0.583	13.3
GD 12	10/26/2017	9.8	6.74	7.53	13.2	0.19	<0.025	<0.100	0.312	7.8
GD 12	3/27/2018	6.3	7.71	9.24	11.5	0.356	<0.025	<0.100	<0.25	4.2
GD 12	6/26/2018	9.9	7.44	4.35	26.1	0.102	<0.025	<0.100	0.528	13.2
GD 12	8/1/2018	42.3	7.05	7.33	22.7	0.108	0.159	0.286	1.230	43.8

TABLE B.8 - ANALYTICAL DATA - GD 12

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 12	12/11/2018	9.5	6.68	11.46	7.8	0.313	<0.025	<0.100	0.574	4.3
GD 12	4/17/2019	9.1	7.45	9.20	17.5	0.257	<0.025	<0.100	0.272	4.0
GD 12	6/11/2019	19.0	7.20	3.25	22.0	0.223	0.066	0.121	0.820	8.2
GD 12	8/28/2019	11.0	7.83	7.61	28.2	<0.100	<0.025	0.103	0.764	9.4
GD 12	10/28/2019	18.9	5.34	6.65	14.7	0.197	0.044	<0.100	0.387	12.3
GD 12	3/31/2020	76.3	6.71	9.44	14.5	0.177	0.0650	0.167	1.00	143
GD 12	6/10/2020	12.3	6.46	6.44	25.8	<0.100	<0.030	<0.100	0.438	11.4
GD 12	9/21/2020	NS	7.18	7.15	19.9	0.103	<0.030	<0.100	<0.250	7.6
GD 12	12/17/2020	13.1	8.03	11.10	8.5	0.268	<0.030	<0.100	<0.250	3.7
GD 12	3/18/2021	36.2	7.92	10.04	17.1	0.163	<0.030	<0.100	0.621	17.6
GD 12	5/5/2021	4.1	7.49	8.97	18.9	7.26	<0.030	<0.100	0.610	16.4
GD 12	9/2/2021	*	*	7.34	24.4	0.245	<0.030	<0.100	0.779	3.5
GD 12	11/23/2021	<1.0	7.80	11.27	12.5	<0.100	<0.0300	<0.100	<0.250	2.8
GD 12	1/10/2022	10.7	7.29	12.18	8.5	0.230	<0.0300	<0.100	0.325	3.7
GD 12	4/7/2022	6.19	7.51	9.97	17.0	0.177	0.0740	<0.100	0.522	3.4
GD 12	8/3/2022	11.8	8.09	8.02	**31.5**	<0.100	<0.0300	0.142	0.999	6.40

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.9 - ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 14	3/12/2013	8.2	6.88	9.65	12.92	0.32	<0.025	<0.100	0.42	3.5
CO 14	5/8/2013	13.0	6.61	3.02	16.37	0.34	<0.12	<0.100	0.74	6.7
CO 14	9/23/2013	15.0	6.70	3.78	22.58	<0.100	0.036	<0.100	0.30	9.6
CO 14	12/10/2013	14.4	5.82	11.15	9.37	0.11	0.027	<0.100	0.55	9.7
CO 14	2/6/2014	13.7	4.02	16.69	5.08	0.58	<0.025	<0.100	0.41	9.1
CO 14	6/26/2014	19.7	8.25	8.19	22.33	0.34	<0.025	<0.100	0.86	9.0
CO 14	9/30/2014	***	***	***	***	***	***	***	***	***
CO 14	11/19/2014	9.84	6.70	3.86	7.90	<0.100	<0.025	<0.100	0.26	2.8
CO 14	3/23/2015	18.9	6.85	8.78	17.20	0.25	<0.025	<0.100	0.67	10.0
CO 14	4/22/2015	13.8	6.23	11.19	18.00	0.49	<0.025	<0.100	0.60	8.6
CO 14	9/30/2015	***	***	***	***	***	***	***	***	***
CO 14	11/19/2015	24.30	6.64	16.06	15.25	<0.100	<0.025	<0.100	1.27	5.9
CO 14	3/15/2016	15.80	6.33	13.05	16.42	0.468	<0.025	<0.100	0.713	9.7
CO 14	6/29/2016	***	***	***	***	***	***	***	***	***
CO 14	8/9/2016	***	***	***	***	***	***	***	***	***
CO 14	12/7/2016	***	***	***	***	***	***	***	***	***
CO 14	3/2/2017	19	6.34	8.58	13.60	0.106	<0.025	<0.100	0.601	5.2
CO 14	6/21/2017	9.0	6.57	6.49	22.9	<0.100	<0.025	<0.100	0.758	19.0
CO 14	8/17/2017	13.8	7.83	6.22	28.0	<0.100	<0.025	<0.100	0.851	50.6
CO 14	10/26/2017	8.1	6.43	8.40	14.2	<0.100	<0.025	<0.100	0.440	4.7
CO 14	3/27/2018	8.2	7.63	9.45	11.4	0.601	<0.025	<0.100	<0.25	9.5
CO 14	6/26/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS
CO 14	8/1/2018	40.2	6.99	7.42	22.1	<0.100	<0.025	<0.100	0.764	28.3

TABLE B.9 - ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 14	12/11/2018	7.6	7.38	10.74	7.7	0.184	<0.025	<0.100	0.567	4.9
CO 14	4/17/2019	9.3	7.91	8.99	19.0	0.460	<0.025	<0.100	2.96	9.4
CO 14	6/11/2019	17.5	7.07	3.56	22.4	<0.100	<0.025	0.14	0.773	5.6
CO 14	8/28/2019	***	***	***	***	***	***	***	***	***
CO 14	10/28/2019	***	***	***	***	***	***	***	***	***
CO 14	3/31/2020	77.6	7.84	9.07	15.0	0.402	<0.025	<0.100	0.532	106
CO 14	6/10/2020	13.8	7.64	7.20	24.4	0.244	<0.030	<0.100	0.482	5.6
CO 14	9/21/2020	***	***	***	***	***	***	***	***	***
CO 14	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

*** - outfall was dry

TABLE B.10 - ANALYTICAL DATA - SME 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 2	3/12/2013	6.0	7.12	9.28	14.17	0.28	0.032	<0.100	0.47	8.1
SME 2	5/8/2013	26.2	7.67	6.46	21.40	0.24	0.042	<0.100	0.92	21.0
SME 2	9/23/2013	7.3	6.92	5.51	26.24	<0.100	0.039	<0.100	0.34	7.1
SME 2	12/10/2013	11.8	5.71	11.05	11.01	0.31	0.100	0.15	0.42	7.0
SME 2	2/6/2014	19.9	4.21	14.38	6.13	0.39	0.053	<0.100	0.59	14.0
SME 2	6/26/2014	14.8	8.16	7.22	26.98	0.11	<0.025	<0.100	0.38	8.7
SME 2	9/30/2014	6.0	7.97	5.33	26.53	<0.100	<0.025	<0.100	0.52	7.4
SME 2	11/19/2014	9.5	7.06	3.53	10.20	0.14	0.039	0.16	<0.25	6.8
SME 2	3/23/2015	11.1	7.96	9.34	17.60	0.24	<0.025	<0.100	0.45	10.0
SME 2	4/22/2015	8.8	7.93	11.46	24.50	0.13	<0.025	<0.100	0.48	9.1
SME 2	9/30/2015	7.4	7.62	12.67	25.91	0.10	<0.025	0.101	0.497	8.7
SME 2	11/19/2015	22.0	6.55	14.30	19.12	0.22	0.062	0.219	1.21	82.3
SME 2	3/15/2016	8.2	7.86	13.43	20.73	<0.100	<0.025	<0.100	0.486	6.3
SME 2	6/29/2016	7.6	8.23	7.24	30.4	0.19	<0.025	<0.100	0.290	8.0
SME 2	8/9/2016	10.3	8.01	6.58	30.6	<0.100	<0.025	<0.100	0.585	8.2
SME 2	12/7/2016	6.0	7.52	6.86	12.7	<0.100	<0.025	0.101	0.469	5.8
SME 2	3/2/2017	11.8	8.03	8.55	15.2	0.267	<0.025	<0.100	0.720	11.4
SME 2	6/21/2017	5.2	7.18	4.64	26.6	<0.100	<0.025	<0.100	0.886	11.4
SME 2	8/17/2017	6.5	7.76	6.43	30.6	<0.100	<0.025	<0.100	0.729	15.3
SME 2	10/26/2017	5.2	7.03	6.87	17.6	<0.100	<0.025	<0.100	0.382	8.5
SME 2	3/27/2018	11.1	7.44	8.64	12.9	0.161	<0.025	<0.100	<0.25	17.5
SME 2	6/26/2018	10.8	7.97	6.43	29.6	0.111	<0.025	<0.100	0.731	9.9
SME 2	8/1/2018	29.6	7.39	6.46	23.4	0.371	0.099	0.128	0.423	24.8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 2	12/11/2018	9.7	7.82	9.99	7.9	0.212	<0.025	0.166	0.368	5.1
SME 2	4/17/2019	5.0	7.82	7.80	20.5	0.105	<0.025	<0.100	0.783	6.0
SME 2	6/11/2019	12.3	6.68	3.43	24.4	<0.100	<0.025	<0.100	0.676	9.2
SME 2	8/28/2019	6.6	7.83	6.26	29.2	<0.100	<0.025	<0.100	0.452	5.9
SME 2	10/28/2019	24.9	7.64	7.42	16.8	<0.100	<0.025	0.107	0.341	18.2
SME 2	3/31/2020	9.5	7.02	7.31	18.2	<0.100	<0.025	<0.100	0.521	10.2
SME 2	6/10/2020	10.4	7.81	6.40	27.0	0.117	<0.030	<0.100	0.367	8.0
SME 2	9/21/2020	NS	7.84	8.02	23.6	<0.100	<0.030	<0.100	<0.250	11.0
SME 2	12/17/2020	13.3	8.04	9.04	9.2	0.272	0.041	<0.100	0.342	6.7
SME 2	3/18/2021	27.3	8.20	12.80	18.4	0.193	0.033	<0.100	0.528	13.8
SME 2	5/5/2021	0.0	7.29	6.72	21.2	0.560	0.039	<0.100	0.768	6.80
SME 2	9/2/2021	*	*	6.31	27.5	0.134	<0.030	<0.100	0.562	11.8
SME 2	11/23/2021	<1.0	7.98	10.03	14.6	0.170	<0.0300	<0.100	<0.250	9.2
SME 2	1/10/2022	14.5	7.84	11.04	8.8	0.338	<0.0300	0.117	0.672	16.1
SME 2	Removed Monitoring Point from Stormwater Monitoring Program April 2022									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.11 - ANALYTICAL DATA - GD 6

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 6	3/12/2013	10.3	8.03	9.65	11.90	0.21	0.036	<0.100	0.29	5.8
GD 6	5/8/2013	18.5	6.81	2.35	19.02	0.23	0.033	<0.100	0.40	8.3
GD 6	9/23/2013	6.0	7.28	5.17	26.93	<0.100	<0.025	<0.100	0.36	5.8
GD 6	12/10/2013	26.4	5.98	11.41	10.64	0.37	0.041	<0.100	0.17	8.6
GD 6	2/6/2014	15.5	4.34	15.80	6.85	0.26	0.057	<0.100	0.16	5.5
GD 6	6/26/2014	14.4	8.31	8.95	27.29	<0.100	<0.025	<0.100	0.42	7.0
GD 6	9/30/2014	7.1	8.35	6.53	26.78	<0.100	<0.025	<0.100	0.55	7.0
GD 6	11/19/2014	13.4	7.17	3.36	9.67	0.22	<0.025	0.28	0.38	9.8
GD 6	3/23/2015	16.5	7.95	8.95	18.40	0.22	<0.025	<0.100	0.26	8.2
GD 6	4/22/2015	14.9	7.59	10.82	19.80	0.22	<0.025	<0.100	0.28	8.0
GD 6	9/30/2015	14.1	8.19	12.31	25.47	<0.100	<0.025	0.103	0.974	12.4
GD 6	11/19/2015	42.5	6.97	15.87	17.75	0.468	0.037	0.131	0.768	16.0
GD 6	3/15/2016	16.1	7.68	11.58	19.98	0.124	0.043	<0.100	0.500	7.9
GD 6	6/29/2016	10.4	8.86	9.64	31.50	<0.100	<0.025	<0.100	0.400	11.2
GD 6	8/9/2016	10.4	8.26	6.98	30.70	<0.100	<0.025	<0.100	0.621	10.3
GD 6	12/7/2016	11.5	7.43	8.13	14.3	0.365	<0.025	<0.100	0.485	7.5
GD 6	3/2/2017	14.3	8.05	8.02	14.70	0.250	<0.025	<0.100	0.509	9.0
GD 6	6/21/2017	7.7	7.67	4.99	26.8	<0.100	<0.025	0.11	0.926	21.0
GD 6	8/17/2017	7.0	8.02	7.72	31.2	<0.100	<0.025	<0.100	0.677	13.2
GD 6	10/26/2017	8.3	6.25	7.84	15.8	0.126	<0.025	<0.100	0.385	12.0
GD 6	3/27/2018	10.1	7.97	9.00	12.1	0.233	<0.025	1.76	<0.25	10.9
GD 6	6/26/2018	8.0	8.02	6.78	29.6	0.108	<0.025	<0.100	0.782	9.6
GD 6	8/1/2018	25.4	7.66	7.52	22.7	0.335	0.090	0.138	0.636	21.9

TABLE B.11 - ANALYTICAL DATA - GD 6

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 6	12/11/2018	13.8	7.97	10.92	8.2	0.397	<0.025	<0.100	0.362	5.8
GD 6	4/17/2019	9.0	7.10	8.00	20.5	0.198	<0.025	<0.100	0.624	9.6
GD 6	6/11/2019	17.9	7.07	3.68	23.8	<0.100	<0.025	<0.100	0.728	12.4
GD 6	8/28/2019	9.1	7.94	6.32	28.5	<0.100	<0.025	<0.100	0.607	6.5
GD 6	10/28/2019	18.4	7.48	6.63	16.4	0.198	<0.025	<0.100	0.467	9.9
GD 6	3/31/2020	16.0	6.06	8.86	16.1	0.212	<0.025	0.127	<0.250	8.40
GD 6	6/10/2020	7.4	7.04	6.36	26.5	0.127	<0.030	<0.100	0.832	10.4
GD 6	9/21/2020	NS	7.96	8.48	21.4	<0.100	<0.030	<0.100	<0.250	8.60
GD 6	12/17/2020	0.5	7.96	10.08	9.0	0.309	<0.030	<0.100	0.377	7.40
GD 6	3/18/2021	75.6	7.97	9.21	17.0	0.241	<0.030	0.183	0.364	31.6
GD 6	5/5/2021	5.7	7.55	8.62	19.2	7.95	<0.030	0.124	0.542	12.3
GD 6	9/2/2021	*	*	6.24	27.1	0.139	<0.030	0.305	3.44	25.4
GD 6	11/23/2021	<1.0	7.61	8.28	15.6	0.132	<0.0300	0.102	0.350	8.50
GD 6	1/10/2022	14.2	8.05	10.58	9.5	0.238	0.037	0.147	0.850	10.20
GD 6	4/7/2022	13.63	7.70	8.85	17.2	0.160	<0.0300	<0.100	0.433	9.90
GD 6	8/3/2022	10.1	7.71	7.21	29.7	<0.100	<0.0300	<0.100	0.588	5.30

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.12 - ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 15	3/12/2013	32	7.41	8.91	14.40	<0.10	0.097	<0.100	0.53	9.0
CO 15	5/8/2013	27	7.51	8.04	18.10	0.10	<0.12	<0.100	0.59	11.0
CO 15	9/23/2013	13	7.09	4.01	27.18	<0.10	0.027	<0.100	0.34	11.0
CO 15	12/10/2013	42	6.09	11.25	9.83	0.18	0.068	<0.100	0.56	13.0
CO 15	2/6/2014	32	4.22	16.10	6.28	0.21	<0.025	<0.100	0.46	12.0
CO 15	6/26/2014	105	8.16	7.00	25.55	<0.100	0.140	<0.100	0.59	46.0
CO 15	9/30/2014	8	7.88	6.67	23.28	<0.100	<0.025	<0.100	<0.25	8.6
CO 15	11/19/2014	44	7.38	3.68	9.43	0.20	0.030	<0.100	0.32	12.0
CO 15	3/23/2015	56	7.85	9.53	18.50	0.14	0.067	<0.100	0.61	19.0
CO 15	4/22/2015	26	7.62	10.14	21.90	0.14	<0.025	<0.100	0.40	11.0
CO 15	9/30/2015	15	7.68	12.73	22.88	<0.100	<0.025	<0.100	0.75	11.8
CO 15	11/19/2015	50	7.30	19.45	16.98	0.24	0.042	0.183	0.42	17.5
CO 15	3/15/2016	29	7.66	12.39	19.83	<0.100	<0.025	<0.100	0.78	12.4
CO 15	6/29/2016	***	***	***	***	***	***	***	***	***
CO 15	8/9/2016	38	8.03	6.78	29.6	<0.100	<0.025	<0.100	<0.25	22.0
CO 15	12/7/2016	13.6	7.50	9.78	12.1	<0.100	<0.025	<0.100	0.67	14.8
CO 15	3/2/2017	38.2	7.77	8.32	16.0	0.15	<0.025	<0.100	0.52	17.4
CO 15	6/21/2017	6.4	7.56	5.12	26.7	<0.100	<0.025	<0.100	0.97	18.3
CO 15	8/17/2017	21.7	8.29	6.47	30.1	<0.100	<0.025	<0.100	0.69	12.4
CO 15	10/26/2017	10.8	4.43	8.24	13.6	<0.100	<0.025	<0.100	0.39	6.4
CO 15	3/27/2018	14.5	7.87	9.33	12.1	<0.100	<0.025	<0.100	<0.25	8.0
CO 15	6/26/2018	13.8	7.87	7.33	26.5	<0.100	<0.025	0.270	0.573	12.4
CO 15	8/1/2018	58.8	7.25	7.12	23.0	<0.100	0.040	0.122	0.852	71.5

TABLE B.12 - ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 15	12/11/2018	111.3	8.73	11.94	7.0	0.168	<0.025	0.107	1.16	10.1
CO 15	4/17/2019	17.0	7.80	9.17	19.1	0.144	<0.025	<0.100	0.574	11.5
CO 15	6/11/2019	21.9	6.56	3.10	22.8	<0.100	<0.025	<0.100	1.00	9.8
CO 15	8/28/2019	70.8	8.07	7.52	25.7	0.166	0.026	0.130	1.54	20.4
CO 15	10/28/2019	30.7	7.31	9.63	15.0	0.120	<0.025	<0.100	0.61	10.2
CO 15	3/31/2020	61.8	6.46	9.25	15.7	0.102	0.0320	0.158	0.625	72.4
CO 15	6/10/2020	18.7	6.24	6.22	25.0	0.148	<0.030	<0.100	0.456	10.4
CO 15	9/21/2020	NS	7.31	8.18	17.9	<0.100	<0.030	<0.100	<0.250	5.6
CO 15	12/17/2020	2.8	8.98	10.87	10.0	0.161	<0.030	<0.100	0.685	15.6
CO 15	3/18/2021	63.1	8.46	15.75	19.8	0.193	<0.030	<0.100	0.554	26.0
CO 15	5/5/2021	3.8	7.47	9.06	19.3	7.78	<0.030	0.200	1.17	10.9
CO 15	9/2/2021	*	*	7.81	24.3	<0.100	<0.030	<0.100	0.926	13.8
CO 15	11/23/2021	2.0	7.87	10.67	15.2	<0.100	<0.030	<0.100	0.270	25.9
CO 15	1/10/2022	24.3	7.90	11.64	9.8	0.196	<0.0300	<0.100	<2.50	9.6
CO 15	4/7/2022	16.5	7.48	9.75	17.3	<0.100	0.0710	<0.100	0.853	11.7
CO 15	8/3/2022	12.8	8.15	7.92	27.0	0.131	<0.0300	<0.100	0.424	4.20

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

*** - outfall was dry

* - meter malfunctioned in field

TABLE B.13 - ANALYTICAL DATA - SME 7

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 7	12/17/2020	16.8	8.10	11.01	11.5	0.884	0.094	<0.100	0.541	19.4
SME 7	3/18/2021	111.0	8.93	10.25	18.3	0.429	0.093	0.270	0.407	78.2
SME 7	5/5/2021	8.2	6.06	8.01	18.4	1.090	0.112	0.244	1.240	36.4
SME 7	9/2/2021	*	*	7.91	22.6	0.491	0.179	0.275	2.490	77.6
SME 7	11/23/2021	<1.0	7.78	10.45	12.2	0.367	0.472	0.516	<0.250	<2.50
SME 7	1/10/2022	19.2	7.97	10.98	11.9	0.823	0.140	0.211	0.805	34.7
SME 7	4/7/2022	*	7.10	9.27	18.0	0.549	<0.0300	0.264	1.37	37.2
SME 7	8/3/2022	24.8	8.32	7.69	24.6	0.742	0.314	0.373	0.844	31.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.14 - ANALYTICAL DATA - SME 8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 8	12/17/2020	0.30	7.72	11.22	9.10	0.312	<0.030	<0.100	<0.25	25.9
SME 8	3/18/2021	48.8	8.17	9.47	18.0	0.183	<0.030	<0.100	0.460	17.7
SME 8	5/5/2021	3.3	7.11	9.39	18.5	0.597	<0.030	0.118	0.366	60.3
SME 8	9/2/2021	*	*	7.87	25.9	0.150	<0.030	<0.100	0.269	39.2
SME 8	1/10/2022	9.5	7.42	11.82	9.2	0.328	<0.0300	<0.100	0.832	33.5
SME 8	Removed from Stormwater Management Program April 2022									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.15 - ANALYTICAL DATA - SME 9

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 9	4/7/2022	5.17	7.78	9.32	17.0	<0.100	<0.0300	0.135	0.529	2.90
SME 9	8/3/2022	9.2	8.10	7.97	25.4	<0.100	<0.0300	<0.100	0.582	<2.5

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.16 - ANALYTICAL DATA - SME 10

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 10	4/7/2022	4.94	7.82	9.16	18.0	<0.100	<0.0300	<0.100	0.477	2.80
SME 10	8/3/2022	10.3	8.08	6.35	25.5	<0.100	<0.0300	<0.100	0.940	4.10

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.17 - ANALYTICAL DATA - HB 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
HB 3	3/12/2013	33.3	7.54	9.48	13.90	0.19	0.081	<0.100	0.83	49.0
HB 3	5/20/2013	14.5	8.21	6.82	27.80	0.17	<0.025	<0.100	0.60	17.0
HB 3	9/23/2013	21.3	8.02	4.89	25.70	<0.100	0.037	<0.100	0.60	19.0
HB 3	12/10/2013	48.4	7.90	8.65	10.10	<0.100	0.140	0.15	0.62	20.0
HB 3	2/6/2014	32.0	7.22	12.24	5.90	0.48	0.030	<0.100	0.37	13.0
HB 3	6/26/2014	12.0	8.20	7.12	NS	<0.100	<0.025	<0.100	0.37	12.0
HB 3	9/30/2014	29.5	8.05	6.01	24.78	<0.100	<0.025	<0.100	0.48	30.0
HB 3	11/19/2014	56.1	7.85	8.83	8.80	0.11	0.098	0.12	0.44	51.0
HB 3	3/23/2015	27.0	8.21	8.40	24.20	0.26	<0.025	<0.100	0.46	35.0
HB 3	4/22/2015	25.0	7.91	8.36	21.90	0.20	<0.025	<0.100	0.66	22.0
HB 3	9/30/2015	22.0	7.89	5.05	25.70	<0.100	<0.025	<0.100	0.91	23.0
HB 3	11/19/2015	32.0	7.83	7.37	17.40	0.377	0.045	<0.100	<0.25	30.2
HB 3	3/15/2016	28.8	8.52	7.97	19.10	0.295	0.087	<0.100	<0.25	23.8
HB 3	6/29/2016	17.3	8.02	2.77	30.61	<0.100	<0.025	<0.100	0.51	20.9
HB 3	8/9/2016	11.3	7.91	4.31	30.19	<0.100	<0.025	<0.100	0.703	14.3
HB 3	12/7/2016	16.0	7.93	8.44	12.81	0.111	<0.025	0.126	0.730	17.0
HB 3	3/2/2017	50.0	7.75	3.90	14.33	0.334	<0.025	0.115	0.969	57.1
HB 3	7/5/2017	23.1	7.29	5.36	27.00	<0.100	<0.025	<0.100	0.812	28.5
HB 3	8/16/2017	13.7	7.35	5.04	27.00	<0.100	<0.025	<0.100	0.763	12.7
HB 3	10/25/2017	11.7	6.64	9.93	18.5	<0.100	<0.025	<0.100	0.322	20.4
HB 3	3/28/2018	13.2	7.99	9.47	17.6	0.359	<0.025	<0.100	<0.25	20.2
HB 3	6/29/2018	14.6	7.67	5.55	26.0	<0.100	<0.025	<0.100	0.464	18.2
HB 3	8/2/2018	28.3	7.40	5.64	25.1	<0.100	<0.025	<0.100	0.952	35.3

TABLE B.17 - ANALYTICAL DATA - HB 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
HB 3	12/10/2018	24.8	7.55	10.98	7.9	0.363	<0.025	0.141	0.426	27.6
HB 3	4/15/2019	22.4	7.73	8.27	19.6	0.233	<0.025	<0.100	<0.250	35.5
HB 3	6/12/2019	12.4	8.13	6.77	26.6	0.129	<0.025	<0.100	<0.250	52.3
HB 3	8/27/2019	78.1	8.21	8.75	29.1	<0.100	<0.025	0.179	0.634	7.3
HB 3	10/29/2019	28.2	7.82	9.88	18.3	<0.100	<0.025	0.166	0.517	17.6
HB 3	3/30/2020	8.9	7.79	8.91	18.5	0.234	<0.025	<0.100	1.20	18.4
HB 3	6/16/2020	20.4	7.33	7.01	26.3	<0.100	<0.030	<0.100	0.30	14.6
HB 3	9/21/2020	12.1	7.80	7.69	23.5	<0.100	<0.030	<0.100	0.28	8.3
HB 3	12/17/2020	31.16	8.07	9.94	9.1	0.195	<0.030	<0.100	0.588	20.4
HB 3	3/18/2021	1.80	7.47	9.62	16.0	0.369	<0.030	<0.100	0.252	23.0
HB 3	5/5/2021	28.31	7.50	7.71	22.0	0.207	<0.030	<0.100	<0.250	35.1
HB 3	9/2/2021	19.2	7.61	5.30	27.4	<0.100	<0.030	<0.100	0.689	23.6
HB 3	11/23/2021	51.55	7.15	10.59	11.2	0.137	<0.0300	<0.100	<0.250	10.5
HB 3	1/11/2022	26.9	7.75	11.26	12.8	0.200	<0.0300	<0.10	0.550	23.6
HB 3	4/7/2022	27.8	7.61	9.40	18.1	0.268	<0.0300	<0.100	0.329	21.0
HB 3	8/2/2022	31.2	8.05	5.89	28.9	<0.100	<0.0300	<0.100	0.273	33.7

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.18 - ANALYTICAL DATA - SME 4

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 4	12/17/2020	17.70	7.69	10.82	9.80	0.387	<0.03	<0.10	0.263	17.8
SME 4	3/18/2021	2.20	7.25	9.20	17.60	0.319	<0.030	<0.100	0.331	21.6
SME 4	5/5/2021	20.02	7.86	7.81	21.0	0.213	<0.030	<0.100	<0.250	27.5
SME 4	11/23/2021	48.51	7.64	10.41	10.6	0.164	<0.0300	<0.100	<0.250	9.2
SME 4	1/11/2022	17.30	7.39	11.35	13.40	0.44	<0.0300	<0.10	0.97	15.6
SME 4	4/7/2022	21.6	7.55	9.30	16.7	0.273	0.060	<0.100	0.254	20.9
SME 4	8/2/2022	14.0	7.79	6.24	29.1	0.102	<0.0300	<0.100	0.274	6.00

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.19 - ANALYTICAL DATA - GD 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 5	3/13/2013	11.6	8.33	9.29	10.20	0.26	<0.025	<0.10	0.34	9.6
GD 5	5/20/2013	14.0	8.28	7.76	22.60	<0.100	<0.025	<0.10	0.62	9.0
GD 5	9/23/2013	11.5	7.67	6.78	27.10	<0.100	0.027	<0.10	0.45	8.0
GD 5	12/10/2013	57.9	7.97	9.10	9.10	0.10	0.088	0.10	0.47	18.0
GD 5	2/6/2014	45.9	7.14	9.88	7.20	0.17	0.038	<0.100	0.37	17.0
GD 5	6/26/2014	17.0	7.90	6.54	NS	<0.100	<0.025	<0.100	0.34	12.0
GD 5	9/30/2014	22.5	8.28	7.53	25.22	<0.100	<0.025	<0.100	<0.25	18.0
GD 5	11/19/2014	42.9	8.15	9.30	9.40	0.11	0.051	<0.100	0.43	26.0
GD 5	3/23/2015	24.0	8.14	8.58	15.90	0.12	<0.025	<0.100	0.34	15.0
GD 5	4/22/2015	25.0	7.81	7.78	21.70	0.14	<0.025	<0.100	0.65	13.0
GD 5	9/30/2015	18.0	8.03	6.27	26.30	<0.100	<0.025	0.115	0.557	17.3
GD 5	11/19/2015	90.0	7.63	7.34	16.60	0.168	0.042	<0.100	<0.250	42.8
GD 5	3/15/2016	23.7	8.80	7.47	19.40	<0.100	<0.025	<0.100	0.435	13.2
GD 5	6/29/2016	21.0	8.02	2.27	30.37	<0.100	0.074	<0.100	0.490	15.0
GD 5	8/9/2016	11.8	8.25	5.55	30.20	<0.100	<0.025	<0.100	0.412	11.0
GD 5	12/7/2016	10.0	7.73	10.61	11.96	<0.100	<0.025	<0.100	0.337	6.8
GD 5	3/2/2017	12.3	7.81	4.49	14.26	0.118	<0.025	<0.100	0.491	13.0
GD 5	7/5/2017	15.0	7.32	5.83	26.9	<0.100	<0.025	<0.100	0.730	22.7
GD 5	8/16/2017	8.0	7.89	6.22	28.0	<0.100	<0.025	<0.100	0.404	9.0
GD 5	10/25/2017	9.2	7.36	7.35	18.7	<0.100	<0.025	<0.100	0.347	14.6
GD 5	3/28/2018	6.1	8.18	9.47	18.5	0.127	<0.025	<0.100	<0.250	6.06
GD 5	6/29/2018	16.3	7.76	5.66	27.5	<0.100	<0.025	<0.100	0.689	19.60
GD 5	8/2/2018	18.4	7.59	6.02	25.7	<0.100	<0.025	<0.100	0.332	26.40

TABLE B.19 - ANALYTICAL DATA - GD 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 5	12/10/2018	37.7	7.87	11.30	7.3	<0.100	<0.025	0.190	0.523	22.3
GD 5	4/15/2019	29.7	7.69	8.02	19.3	0.128	<0.025	1.20	0.411	29.0
GD 5	6/12/2019	6.0	8.02	7.64	27.2	<0.100	<0.025	<0.100	<0.250	9.3
GD 5	8/27/2019	75.2	7.15	7.98	28.7	<0.100	<0.025	0.165	0.506	10.9
GD 5	10/29/2019	29.0	7.85	9.42	17.8	<0.100	<0.025	<0.100	0.477	21.0
GD 5	3/30/2020	14.5	7.65	8.86	19.1	0.130	<0.025	<0.100	0.320	12.1
GD 5	6/16/2020	16.4	7.69	7.75	27.2	<0.100	<0.030	<0.100	0.561	7.4
GD 5	9/21/2020	10.8	7.65	6.33	23.2	<0.100	<0.030	<0.100	<0.250	7.9
GD 5	12/17/2020	28.7	7.62	9.96	9.7	0.122	<0.030	0.113	0.422	19.8
GD 5	3/18/2021	3.4	7.15	8.98	16.9	0.127	<0.030	<0.100	0.600	30.6
GD 5	5/5/2021	36.10	7.84	7.74	19.8	0.204	<0.030	<0.100	<0.250	36.8
GD 5	9/2/2021	10.28	7.84	6.90	26.5	<0.100	<0.030	<0.100	0.510	16.1
GD 5	11/23/2021	27.7	7.70	10.54	11.3	<0.100	<0.0300	<0.100	<0.250	8.8
GD 5	1/11/2022	26.8	7.28	12.25	10.1	0.300	<0.0300	<0.10	0.510	12.1
GD 5	4/7/2022	16.4	7.72	9.32	17.2	0.157	<0.0300	<0.100	0.300	14.4
GD 5	8/2/2022	13.0	7.86	6.60	29.1	<0.100	<0.0300	<0.100	<0.250	6.40

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.20 - ANALYTICAL DATA - GD 7

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 7	3/12/2013	9.7	7.98	11.63	15.27	0.39	0.037	<0.100	0.31	8.8
GD 7	5/8/2013	26.1	7.72	7.46	18.40	0.24	0.063	<0.100	<0.56	20.0
GD 7	9/23/2013	10.9	7.05	6.31	26.50	<0.100	0.026	<0.100	0.54	9.6
GD 7	12/10/2013	41.9	8.02	9.68	7.50	0.34	0.084	0.11	0.32	40.0
GD 7	2/6/2014	28.0	7.27	13.32	4.40	0.52	0.034	<0.100	0.61	13.0
GD 7	6/26/2014	6.2	8.45	7.04	NS	<0.100	<0.025	<0.100	0.52	8.7
GD 7	9/30/2014	11.9	7.87	6.32	24.39	<0.100	<0.025	<0.100	0.41	13.0
GD 7	11/19/2014	19.6	8.53	10.10	9.60	0.14	<0.025	0.13	0.46	15.0
GD 7	3/23/2015	13.0	8.28	8.87	15.40	0.27	<0.025	<0.100	0.35	10.0
GD 7	4/22/2015	28.0	7.99	6.40	20.20	0.24	<0.025	<0.100	0.47	24.0
GD 7	9/30/2015	8.3	7.89	5.18	24.90	<0.100	<0.025	<0.100	0.59	9.1
GD 7	11/19/2015	45.0	7.78	8.23	15.60	0.344	0.051	<0.100	<0.250	34.3
GD 7	3/15/2016	17.2	8.46	8.51	17.80	0.261	<0.025	<0.100	0.397	13.9
GD 7	6/29/2016	10.7	7.90	2.22	30.32	<0.100	0.048	<0.100	0.490	8.6
GD 7	8/9/2016	6.5	7.97	4.08	29.31	<0.100	<0.025	<0.100	0.471	5.7
GD 7	12/7/2016	9.5	7.88	10.14	12.39	<0.100	<0.025	<0.100	0.355	7.8
GD 7	3/2/2017	10.8	7.80	4.57	13.35	0.36	<0.025	<0.100	0.514	14.4
GD 7	6/29/2017	9.4	8.18	6.59	26.4	<0.100	<0.025	<0.100	0.440	13.4
GD 7	8/16/2017	8.5	7.84	5.66	29.0	<0.100	<0.025	<0.100	0.358	15.3
GD 7	10/25/2017	9.9	7.73	6.93	19.8	<0.10	<0.025	<0.100	0.416	18.4
GD 7	3/28/2018	7.6	8.16	9.33	14.9	0.350	<0.025	<0.100	<0.250	9.19
GD 7	6/29/2018	14.2	7.79	5.56	27.5	<0.100	<0.025	<0.100	0.625	14.60
GD 7	8/2/2018	18.5	7.62	5.51	27.0	<0.100	0.027	<0.100	0.450	32.10

TABLE B.20 - ANALYTICAL DATA - GD 7

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 7	12/10/2018	40.8	7.06	11.05	8.0	0.378	<0.025	0.149	0.390	48.7
GD 7	4/15/2019	30.1	7.83	7.85	19.2	0.230	<0.025	<0.100	<0.250	12.0
GD 7	6/12/2019	7.4	7.24	6.68	27.2	0.132	<0.025	<0.100	<0.250	9.3
GD 7	8/27/2019	45.3	7.35	9.35	29.1	<0.100	<0.025	0.156	0.604	6.3
GD 7	10/29/2019	17.6	7.77	8.14	17.2	<0.100	<0.025	<0.100	0.414	17.0
GD 7	3/30/2020	7.8	7.77	10.38	21.1	<0.100	<0.025	<0.100	0.343	12.8
GD 7	6/16/2020	9.1	8.12	8.25	27.3	<0.100	<0.030	<0.100	0.322	8.3
GD 7	9/21/2020	13.6	7.42	12.45	23.7	<0.100	<0.030	<0.100	<0.250	9.60
GD 7	12/17/2020	14.4	7.75	10.21	9.5	0.373	<0.030	<0.100	<0.250	18.20
GD 7	3/18/2021	1.2	7.37	9.75	15.4	0.312	<0.030	<0.100	0.387	23.00
GD 7	5/5/2021	19.74	7.59	7.64	21.4	<0.100	<0.030	<0.100	0.661	40.3
GD 7	9/2/2021	13.57	7.75	6.38	27.6	0.107	<0.030	0.122	0.324	34.40
GD 7	11/23/2021	25.2	7.62	11.21	11.7	0.197	<0.0300	<0.100	<0.250	11.10
GD 7	1/11/2022	46.0	7.38	12.59	9.7	0.410	<0.0300	<0.10	<0.50	15.20
GD 7	4/7/2022	17.4	7.61	9.33	17.2	0.280	<0.0300	0.162	0.361	23.4
GD 7	8/2/2022	10.2	7.86	6.29	29.3	<0.100	<0.0300	<0.100	<0.250	4.30

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.21 - ANALYTICAL DATA - GD 9

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 9	2/6/2014	33.6	7.20	11.27	5.50	0.40	0.063	0.12	0.60	14.0
GD 9	6/26/2014	45.0	8.22	6.08	NS	<0.100	0.029	0.12	0.41	34.0
GD 9	9/30/2014	12.4	8.30	6.93	24.61	<0.100	<0.025	<0.100	0.30	15.0
GD 9	11/19/2014	22.8	8.13	9.38	9.30	0.16	0.082	0.25	0.74	15.0
GD 9	3/23/2015	25.0	8.16	7.58	15.80	0.15	<0.025	<0.100	0.64	18.0
GD 9	4/22/2015	18.0	7.58	5.58	20.70	0.15	<0.025	<0.100	0.65	14.0
GD 9	9/30/2015	9.6	7.93	5.37	25.70	<0.100	<0.025	<0.100	0.64	10.8
GD 9	11/19/2015	40.0	7.67	NS	16.50	0.254	0.096	0.116	<0.250	16.7
GD 9	3/15/2016	14.8	8.49	7.66	17.30	0.33	0.044	<0.100	<0.250	12.1
GD 9	6/29/2016	43.7	8.20	1.76	29.77	<0.100	<0.025	<0.100	0.65	67.2
GD 9	8/9/2016	11.0	8.07	4.14	29.00	<0.100	<0.025	<0.100	0.468	9.4
GD 9	12/7/2016	26.0	7.99	8.01	11.99	<0.100	<0.025	0.13	0.378	38.3
GD 9	3/2/2017	10.7	7.70	4.26	13.60	0.269	<0.025	<0.100	0.673	11.2
GD 9	6/29/2017	15.8	8.37	5.85	26.4	<0.100	<0.025	<0.100	0.722	15.7
GD 9	8/16/2017	11.3	7.82	5.52	29.60	<0.100	<0.025	<0.100	0.384	18.2
GD 9	10/25/2017	18.9	7.50	6.68	18.9	<0.100	0.025	<0.100	0.375	29.7
GD 9	3/28/2018	10.2	8.21	9.75	15.8	0.230	<0.025	<0.100	<0.250	12.4
GD 9	6/29/2018	11.0	7.73	5.45	27.6	<0.100	<0.025	<0.100	0.507	13.9
GD 9	8/2/2018	13.0	7.55	5.17	26.0	0.110	0.067	<0.100	0.600	20.8
GD 9	12/10/2018	26.4	7.90	11.05	7.9	0.292	0.047	0.244	0.442	22.8
GD 9	4/15/2019	221.5	7.51	8.09	20.0	0.194	0.034	<0.100	<0.250	178
GD 9	6/12/2019	7.3	7.21	8.61	27.0	0.116	<0.025	<0.100	<0.250	29.0
GD 9	8/27/2019	76.5	7.81	8.22	28.8	<0.100	<0.025	0.146	0.385	9.3

TABLE B.21 - ANALYTICAL DATA - GD 9

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 9	10/29/2019	22.3	7.35	8.91	17.9	<0.100	<0.025	<0.100	0.491	15.0
GD 9	3/30/2020	18.3	7.56	8.54	18.4	0.243	<0.025	0.121	<0.250	16.4
GD 9	6/16/2020	11.4	8.15	7.94	27.1	<0.100	<0.030	<0.100	0.352	11.5
GD 9	9/21/2020	11.6	7.38	6.41	23.3	<0.100	<0.030	<0.100	<0.250	9.0
GD 9	12/17/2020	12.33	7.71	10.62	9.7	0.336	<0.030	<0.100	0.261	13.1
GD 9	3/18/2021	1.70	7.24	8.83	15.5	0.189	<0.030	<0.100	0.576	18.6
GD 9	5/5/2021	23.76	7.68	7.08	21.0	0.176	0.036	<0.100	0.564	29.0
GD 9	9/2/2021	13.46	7.73	6.29	27.9	<0.100	<0.030	<0.100	0.311	25.8
GD 9	11/23/2021	39.41	7.84	10.71	13.9	0.113	<0.0300	0.124	<0.250	33.9
GD 9	1/11/2022	271.50	7.42	11.43	10.4	0.360	<0.030	<0.10	0.760	13.3
GD 9	4/7/2022	14.0	7.60	8.79	18.2	0.236	<0.0300	0.124	0.306	15.1
GD 9	8/2/2022	10.4	7.89	6.62	29.1	<0.100	<0.0300	<0.100	<0.250	7.40

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.22 - ANALYTICAL DATA - SME 1

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 1	3/12/2013	13.1	8.19	8.26	13.10	0.54	0.110	0.11	0.34	16.0
SME 1	5/8/2013	24.0	7.64	8.96	16.00	0.15	0.063	<0.100	0.42	14.0
SME 1	9/23/2013	14.2	8.26	7.87	27.70	<0.100	0.053	<0.100	0.80	15.0
SME 1	12/10/2013	46.3	8.05	9.15	7.60	0.55	0.210	0.26	0.47	21.0
SME 1	2/6/2014	61.0	7.22	11.34	5.90	0.55	0.110	0.13	0.50	23.0
SME 1	6/26/2014	14.0	8.49	7.05	NS	<0.100	<0.025	<0.100	0.31	13.0
SME 1	9/30/2014	27.6	8.25	7.46	24.67	<0.100	0.044	0.11	0.61	34.0
SME 1	11/19/2014	40.1	8.31	10.86	7.80	0.74	0.270	0.29	0.55	19.0
SME 1	3/23/2015	21.0	8.26	8.52	17.30	0.51	0.073	0.10	<0.250	14.0
SME 1	4/22/2015	29.0	7.14	7.97	18.50	0.40	0.039	<0.100	0.38	18.0
SME 1	9/30/2015	15.0	8.34	7.03	26.40	<0.100	0.052	0.135	0.807	15.3
SME 1	11/19/2015	50.0	7.92	7.04	15.90	0.401	0.084	0.134	<0.250	23.2
SME 1	3/15/2016	26.2	8.44	7.21	18.30	0.454	0.047	<0.100	<0.250	17.7
SME 1	6/29/2016	21.2	8.80	3.29	30.67	<0.100	0.180	0.245	0.620	20.3
SME 1	8/9/2016	15.3	8.55	4.98	28.87	<0.100	0.089	0.154	0.547	12.6
SME 1	12/7/2016	31.0	7.96	10.20	11.98	0.413	0.209	0.271	0.378	17.7
SME 1	3/2/2017	14.0	7.75	4.31	12.34	0.671	0.127	0.208	0.345	15.0
SME 1	6/29/2017	19.2	9.11	9.21	25.8	<0.100	0.028	0.000	0.530	18.3
SME 1	8/16/2017	10.6	8.12	6.58	29.7	<0.100	<0.025	0.111	0.520	12.7
SME 1	10/25/2017	5.4	8.02	8.32	17.3	0.368	0.121	0.151	0.288	16.9
SME 1	3/28/2018	19.3	8.10	9.18	17.6	0.633	0.106	0.000	<0.250	19.8
SME 1	6/29/2018	20.7	7.84	6.37	26.2	0.312	0.121	0.241	0.670	23.3
SME 1	8/2/2018	28.5	7.48	5.82	23.9	0.296	0.145	0.136	0.495	29.5

TABLE B.22 - ANALYTICAL DATA - SME 1

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 1	12/10/2018	32.0	7.45	11.48	8.0	0.259	<0.025	<0.100	0.336	31.0
SME 1	4/15/2019	42.2	7.89	7.89	19.7	0.390	0.063	<0.100	0.360	35.0
SME 1	6/12/2019	12.2	7.34	8.73	27.2	<0.100	<0.025	<0.100	<0.250	9.7
SME 1	8/27/2019	135.2	7.45	8.51	28.8	<0.100	<0.025	0.161	0.356	7.1
SME 1	10/29/2019	14.5	7.95	9.21	17.6	0.129	0.049	0.134	0.272	11.0
SME 1	3/30/2020	13.3	7.35	8.61	19.3	0.462	<0.025	<0.100	<0.250	13.3
SME 1	6/16/2020	11.6	8.58	10.36	27.0	<0.100	0.031	0.129	0.485	11.4
SME 1	9/21/2020	13.8	7.71	6.92	22.2	<0.100	<0.030	<0.100	<0.250	9.0
SME 1	12/17/2020	23.19	7.66	10.68	9.2	0.577	0.072	<0.100	0.300	20.9
SME 1	3/18/2021	14.10	7.24	9.54	15.7	0.263	0.112	<0.100	0.580	90.4
SME 1	5/5/2021	28.83	7.43	8.53	20.1	0.122	<0.030	<0.100	0.402	34.0
SME 1	9/2/2021	23.89	7.80	6.93	25.8	0.458	0.190	0.218	0.353	35.8
SME 1	11/23/2021	18.42	7.91	11.34	12.4	<0.100	0.076	0.165	<0.250	12.7
SME 1	1/11/2022	161.2	7.55	11.29	10.2	8.200	0.054	<0.10	1.800	17.0
SME 1	4/7/2022	112.9	7.65	9.26	17.2	0.431	0.192	0.255	0.544	140
SME 1	8/2/2022	12.0	8.10	7.98	29.2	<0.100	<0.0300	<0.100	0.281	6.30

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.23 - ANALYTICAL DATA - GD 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 3	3/13/2013	11.6	8.00	9.28	10.70	0.29	0.028	<0.100	0.44	11.0
GD 3	5/20/2013	11.7	8.09	7.01	23.40	0.15	0.026	<0.100	0.63	13.0
GD 3	9/23/2013	12.4	7.80	6.50	26.40	<0.100	0.025	<0.100	0.58	10.0
GD 3	12/10/2013	45.7	7.85	9.23	9.30	0.21	0.085	0.14	0.64	23.0
GD 3	2/6/2014	90.2	7.13	10.58	6.10	0.21	<0.025	0.12	0.68	27.0
GD 3	6/26/2014	15.0	8.13	8.00	NS	0.12	<0.025	<0.100	0.40	14.0
GD 3	9/30/2014	19.5	8.11	6.69	25.06	<0.100	<0.025	<0.100	0.32	19.0
GD 3	11/19/2014	18.1	8.36	10.88	9.3	<0.100	<0.025	<0.100	0.26	15.0
GD 3	3/23/2015	13.0	8.32	7.84	16.5	0.22	<0.025	<0.100	0.34	10.0
GD 3	4/22/2015	26.0	7.86	6.74	20.6	0.18	0.079	<0.100	0.36	21.0
GD 3	9/30/2015	10.0	7.94	4.91	24.9	0.103	<0.025	0.126	0.74	11.5
GD 3	11/19/2015	40.0	7.61	7.74	16.0	0.250	<0.025	0.101	<0.250	22.0
GD 3	3/15/2016	25.5	8.04	8.62	18.7	0.420	0.071	<0.100	<0.250	11.7
GD 3	6/29/2016	6.0	7.84	2.78	29.94	<0.100	0.088	<0.100	<0.250	10.7
GD 3	8/9/2016	8.3	7.98	5.09	30.01	<0.100	<0.025	<0.100	0.393	10.0
GD 3	12/7/2016	5.9	7.91	10.55	12.0	<0.100	<0.025	<0.100	0.356	8.1
GD 3	3/2/2017	14.0	8.21	5.01	14.35	0.237	<0.025	0.135	0.649	15.6
GD 3	7/5/2017	11.2	7.48	6.23	27.3	<0.100	<0.025	<0.100	0.560	14.4
GD 3	8/16/2017	7.4	8.01	6.24	28.8	<0.100	<0.025	<0.100	0.387	8.5
GD 3	10/25/2017	8.9	7.54	7.25	19.1	<0.100	<0.025	<0.100	0.390	13.6
GD 3	3/28/2018	9.1	8.06	9.34	16.6	0.241	<0.025	<0.100	<0.250	10.8
GD 3	6/29/2018	12.9	7.68	5.63	27.3	<0.100	<0.025	<0.100	0.511	12.7
GD 3	8/2/2018	13.4	7.69	5.72	26.6	<0.100	<0.025	<0.100	0.569	20.8

TABLE B.23 - ANALYTICAL DATA - GD 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 3	12/10/2018	41.4	7.40	11.09	6.8	<0.100	<0.025	0.128	0.519	31.3
GD 3	4/15/2019	15.3	7.71	8.02	19.9	0.233	<0.025	<0.100	<0.250	14.7
GD 3	6/12/2019	9.6	7.24	8.31	27.3	<0.100	<0.025	<0.100	<0.250	13.0
GD 3	8/27/2019	202.8	7.18	8.33	28.8	<0.100	<0.025	0.159	0.434	6.5
GD 3	10/29/2019	26.2	7.84	9.63	17.2	<0.100	<0.025	<0.100	0.453	13.0
GD 3	3/30/2020	17.4	7.58	8.83	18.8	0.216	<0.025	<0.100	0.281	18.0
GD 3	6/16/2020	11.6	8.03	8.20	27.5	<0.100	<0.030	<0.100	0.363	9.5
GD 3	9/21/2020	13.5	7.51	6.73	23.4	<0.100	<0.030	0.106	<0.250	9.8
GD3	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.24 - ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 3	3/13/2013	17.1	7.84	7.44	11.30	0.20	0.038	<0.100	0.69	15.0
SME 3	5/20/2013	18.5	8.11	6.09	23.60	0.17	0.028	<0.100	0.69	19.0
SME 3	9/23/2013	15.3	*	5.32	26.50	<0.100	0.029	<0.100	0.53	13.0
SME 3	12/10/2013	48.3	7.69	8.85	9.60	<0.100	0.086	<0.100	0.62	20.0
SME 3	2/6/2014	82.7	7.09	10.62	6.30	0.25	<0.025	<0.100	0.69	33.0
SME 3	6/26/2014	50.0	8.04	7.03	NS	<0.100	0.047	<0.100	0.53	30.0
SME 3	9/30/2014	17.3	8.08	5.98	25.33	<0.100	<0.025	<0.100	0.66	18.0
SME 3	11/19/2014	22.4	8.30	10.40	9.30	0.12	0.035	<0.100	<0.250	19.0
SME 3	3/23/2015	25.0	8.13	7.72	21.20	0.24	0.026	<0.100	0.46	16.0
SME 3	4/22/2015	12.0	7.76	6.70	21.80	0.15	<0.025	<0.100	0.45	14.0
SME 3	9/30/2015	18.0	7.96	6.19	25.60	0.125	<0.025	0.129	0.42	24.4
SME 3	11/19/2015	65.0	7.56	7.44	15.80	0.253	0.032	<0.100	<0.250	37.8
SME 3	3/15/2016	68.4	8.35	7.51	19.20	0.295	<0.025	<0.100	<0.250	78.8
SME 3	6/29/2016	17.7	7.80	2.56	30.16	<0.100	0.062	<0.100	0.37	15.3
SME 3	8/9/2016	14.8	7.52	3.43	29.53	<0.100	<0.025	<0.100	0.564	10.8
SME 3	12/7/2016	8.5	7.90	10.91	11.85	<0.100	<0.025	0.147	1.780	9.4
SME 3	3/2/2017	14.6	7.95	4.60	13.64	0.272	<0.025	<0.100	0.733	17.0
SME 3	7/5/2017	12.5	7.54	5.88	27.3	<0.100	0.039	<0.100	0.628	16.3
SME 3	8/16/2017	11.5	7.86	5.00	28.1	<0.100	0.07	<0.100	0.446	18.5
SME 3	10/25/2017	15.3	7.42	8.23	19.4	<0.100	0.053	0.106	0.376	49.7
SME 3	3/28/2018	8.9	7.98	9.44	17.4	0.220	<0.025	<0.100	<0.250	11.2
SME 3	6/29/2018	15.8	7.53	5.39	26.9	<0.100	<0.025	<0.100	0.800	115.0
SME 3	8/2/2018	30.0	7.59	5.66	26.4	<0.100	<0.025	0.108	0.981	56.0

TABLE B.24 - ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 3	12/10/2018	33.1	7.21	10.68	7.0	<0.100	<0.025	0.127	0.433	27.1
SME 3	4/15/2019	552.6	7.78	7.65	19.7	0.234	<0.025	0.285	0.271	371
SME 3	6/12/2019	7.8	7.48	6.87	27.1	<0.100	<0.025	<0.100	<0.250	10.7
SME 3	8/27/2019	55.3	7.91	8.41	29.2	<0.100	<0.025	0.149	0.389	7.0
SME 3	10/29/2019	22.4	7.77	8.44	17.2	<0.100	<0.025	<0.100	0.390	15.4
SME 3	3/30/2020	14.4	7.51	8.91	18.8	0.239	<0.025	<0.100	0.657	18.2
SME 3	6/16/2020	9.2	8.06	7.95	27.1	<0.100	<0.030	0.102	0.466	10.1
SME 3	9/21/2020	15.3	7.67	6.50	23.0	<0.100	<0.030	<0.100	0.660	10.7
SME 3	9/2/2021	102.33	7.75	5.64	26.3	<0.100	0.057	0.234	1.24	267
SME 3	1/11/2022	109.4	7.58	11.17	9.9	0.390	<0.0300	<0.10	0.520	15.4
SME 3	4/7/2022	32.3	7.69	8.99	16.6	0.181	<0.0300	<0.100	0.406	27.0
SME 3	8/2/2022	11.0	7.81	6.35	29.2	<0.100	<0.0300	<0.100	<0.250	5.60

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.25 - ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 5	3/12/2013	5.98	8.38	9.87	10.80	0.30	0.031	<0.100	0.39	7.2
SS 5	5/8/2013	24.4	7.38	7.19	16.80	0.16	<0.12	<0.100	0.62	21.0
SS 5	9/23/2013	13.8	8.00	5.44	25.80	<0.100	0.029	<0.100	1.30	15.0
SS 5	12/10/2013	22.8	8.25	9.10	7.70	0.24	0.043	0.11	0.67	13.0
SS 5	2/6/2014	27.5	7.20	12.09	5.40	0.39	<0.025	<0.100	0.86	12.0
SS 5	6/26/2014	11.0	8.53	7.01	NS	<0.100	<0.025	<0.100	0.40	11.0
SS 5	9/30/2014	11.2	7.64	6.82	24.44	<0.100	<0.025	<0.100	0.45	11.0
SS 5	11/19/2014	14.1	8.96	13.13	8.50	<0.100	<0.025	<0.100	0.35	9.6
SS 5	3/23/2015	18.0	8.50	8.99	17.70	0.26	<0.025	<0.100	0.46	11.0
SS 5	4/22/2015	19.0	7.76	6.71	20.20	0.15	<0.025	<0.100	0.47	13.0
SS 5	9/30/2015	11.0	8.26	6.61	25.30	<0.100	<0.025	<0.100	0.606	9.9
SS 5	11/19/2015	19.0	7.86	8.47	15.90	0.239	<0.025	<0.100	<0.250	11.0
SS 5	3/15/2016	20.0	8.37	8.47	17.20	0.264	<0.025	0.225	0.279	9.5
SS 5	6/29/2016	14.7	8.01	3.81	29.77	<0.100	0.066	<0.100	0.480	13.2
SS 5	8/9/2016	11.6	7.86	3.16	29.40	<0.100	<0.025	<0.100	0.464	12.6
SS 5	12/7/2016	6.6	7.94	6.70	12.30	<0.100	<0.025	0.12	0.420	8.0
SS 5	3/2/2017	14.0	7.78	3.92	12.77	0.334	<0.025	<0.100	0.766	16.0
SS 5	7/5/2017	8.4	7.77	7.19	28.90	<0.100	<0.025	<0.100	0.474	12.0
SS 5	8/16/2017	10.2	8.10	4.83	29.90	<0.100	<0.025	<0.100	0.493	15.1
SS 5	10/25/2017	7.5	8.24	8.36	19.2	<0.100	<0.025	<0.100	0.531	11.8
SS 5	3/28/2018	7.0	8.53	10.23	18.5	0.248	<0.025	<0.100	<0.250	8.33
SS 5	6/29/2018	10.4	7.93	5.50	27.5	<0.100	<0.025	<0.100	0.605	13.3
SS 5	8/2/2018	13.5	7.58	6.04	25.8	<0.100	<0.025	<0.100	0.554	12.8

TABLE B.25 - ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 5	12/10/2018	21.9	7.01	11.15	7.3	0.146	<0.025	<0.100	0.522	16.7
SS 5	4/15/2019	15.5	7.35	7.77	19.4	0.168	<0.025	<0.100	0.374	11.7
SS 5	6/12/2019	10.0	8.44	8.78	26.6	<0.100	<0.025	<0.100	<0.250	11.0
SS 5	8/27/2019	24.5	8.66	9.02	28.9	<0.100	<0.025	0.168	0.508	7.1
SS 5	10/29/2019	18.7	8.20	9.33	18.1	0.105	<0.025	0.198	0.631	10.4
SS 5	3/30/2020	9.2	8.35	11.07	20.8	0.127	<0.025	<0.100	0.399	10.6
SS 5	6/16/2020	10.5	8.41	7.99	27.9	<0.100	<0.030	<0.100	0.534	9.7
SS 5	9/21/2020	16.5	7.36	11.45	22.6	<0.100	<0.030	<0.100	0.512	11.0
SS 5	12/17/2020	8.64	8.02	11.24	9.6	0.200	<0.030	<0.100	0.428	10.1
SS 5	3/18/2021	0.60	7.36	9.03	15.7	0.191	<0.030	<0.100	0.570	14.6
SS 5	5/5/2021	38.40	7.55	7.72	20.5	0.108	<0.030	<0.100	0.576	32.2
SS 5	9/2/2021	9.62	8.00	8.54	28.6	<0.100	<0.030	<0.100	0.431	14.4
SS 5	11/23/2021	10.84	7.40	10.89	13.7	0.126	<0.0300	<0.100	<0.250	7.7
SS 5	1/11/2022	46.0	7.64	11.13	11.1	0.320	<0.0300	<0.10	1.300	10.4
SS 5	4/7/2022	20.7	7.80	8.85	17.9	0.122	<0.0300	<0.100	0.516	15.6
SS 5	8/2/2022	11.9	8.38	7.32	30.6	<0.100	<0.0300	<0.100	0.812	7.80

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.26 - ANALYTICAL DATA - SME 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 5	12/17/2020	15.24	7.80	10.94	10.00	0.371	<0.030	<0.100	0.258	17.7
SME 5	3/18/2021	1.70	7.83	9.59	15.90	0.316	<0.030	<0.100	0.317	23.0
SME 5	5/5/2021	50.11	7.80	7.96	21.2	<0.100	<0.030	<0.100	0.410	60.6
SME 5	9/2/2021	15.15	8.02	6.42	28.2	0.128	<0.030	<0.100	0.325	31.8
SME 5	11/23/2021	68.29	7.78	10.42	14.9	0.231	<0.0300	<0.100	<0.250	14.0
SME 5	1/11/2022	24.90	7.66	10.46	14.7	0.450	0.035	<0.10	1.50	16.6
SME 5	4/7/2022	55.4	7.99	9.43	17.4	0.290	<0.0300	<0.100	0.385	25.4
SME 5	8/2/2022	12.0	8.26	7.16	30.4	0.102	<0.0300	<0.100	0.277	7.30

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.27 - ANALYTICAL DATA - SME 6

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 6	12/17/2020	13.6	7.96	10.89	10.10	0.368	<0.03	<0.10	<0.25	16.7
SME 6	3/18/2021	3.3	7.65	9.84	15.50	0.358	<0.030	<0.100	0.618	47.2
SME 6	5/5/2021	62.32	7.75	7.80	19.9	0.183	<0.030	<0.100	0.403	82.8
SME 6	9/2/2021	13.32	8.19	6.72	27.7	0.131	<0.030	0.430	0.353	19.0
SME 6	11/23/2021	9.79	7.68	10.35	15.1	0.231	<0.0300	<0.100	<0.250	11.2
SME 6	1/11/2022	24.4	7.72	11.24	10.2	0.450	<0.0300	<0.10	2.40	16.9
SME 6	4/7/2022	31.4	7.95	9.63	18.0	0.270	<0.0300	<0.100	0.373	28.8
SME 6	8/2/2022	11.1	8.25	8.26	30.9	<0.100	<0.0300	<0.100	<0.250	8.40

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.28 - ANALYTICAL DATA - RC 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 14	3/12/2013	28.3	8.23	7.53	10.3	<0.100	0.088	<0.100	0.61	21.0
RC 14	5/8/2013	29.5	6.72	1.78	21.4	0.14	<0.12	<0.100	0.63	16.0
RC 14	9/23/2013	18.4	7.86	6.68	24.7	<0.100	<0.025	<0.100	0.58	13.0
RC 14	12/10/2013	40.0	8.45	9.50	8.2	<0.100	0.100	0.11	0.69	16.0
RC 14	2/6/2014	66.6	7.15	10.94	4.9	0.16	0.036	0.11	0.70	18.0
RC 14	6/26/2014	6.2	8.21	6.30	NS	<0.100	<0.025	<0.100	0.39	5.9
RC 14	9/30/2014	12.4	7.20	6.20	23.5	<0.100	<0.025	<0.100	0.40	12.0
RC 14	9/19/2014	50.3	8.20	10.10	7.5	<0.100	0.085	0.13	0.52	28.0
RC 14	3/23/2015	70.0	8.03	7.80	18.2	0.26	0.070	<0.100	1.10	34.0
RC 14	4/22/2015	30.0	7.77	7.25	18.1	0.20	<0.025	<0.100	0.40	15.0
RC 14	9/30/2015	17.0	8.28	5.63	24.4	<0.100	<0.025	<0.100	0.454	12.6
RC 14	11/19/2015	95.0	7.32	6.07	17.71	0.137	<0.025	0.135	0.633	36.0
RC 14	3/15/2016	85.0	8.13	7.73	18.5	0.106	<0.025	0.304	0.434	69.6
RC 14	6/29/2016	17.2	7.58	2.17	28.53	<0.100	0.037	<0.100	0.460	17.5
RC 14	8/9/2016	10.4	7.05	2.35	28.53	<0.100	<0.025	<0.100	0.547	8.5
RC 14	12/7/2016	7.9	7.21	6.47	11.62	<0.100	<0.025	<0.100	0.252	8.6
RC 14	3/2/2017	18.0	7.32	3.55	12.69	0.12	<0.025	<0.100	0.608	14.6
RC 14	7/5/2017	17.7	7.55	6.56	25.7	0.279	0.041	<0.100	0.357	35.0
RC 14	8/16/2017	9.8	7.72	5.54	26.7	0.21	0.042	<0.100	0.400	12.4
RC 14	10/25/2017	18.7	7.64	7.26	17.1	0.24	0.088	0.149	0.465	27.2
RC 14	3/28/2018	9.9	8.03	9.00	18.3	0.148	<0.025	<0.100	<0.25	10.9
RC 14	6/29/2018	12.9	7.64	5.89	27.1	<0.100	<0.025	<0.100	0.722	13.8
RC 14	8/2/2018	21.7	7.30	5.56	23.7	<0.100	0.055	<0.100	0.848	17.3

TABLE B.28 - ANALYTICAL DATA - RC 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 14	12/10/2018	35.1	7.13	10.63	7.3	<0.100	0.038	0.169	1.400	16.9
RC 14	4/15/2019	45.8	7.68	7.67	19.5	0.108	<0.025	<0.100	0.403	36.0
RC 14	6/12/2019	11.0	8.03	7.39	25.3	0.120	<0.025	<0.100	0.250	12.3
RC 14	8/27/2019	76.4	8.36	8.78	28.4	<0.100	<0.025	0.141	0.391	8.8
RC 14	10/29/2019	17.4	7.90	9.83	17.7	<0.100	<0.025	<0.100	0.478	10.6
RC 14	3/30/2020	12.9	8.10	10.01	21.9	<0.100	<0.025	<0.100	0.451	15.7
RC 14	6/16/2020	11.5	6.79	8.01	26.9	0.141	<0.030	<0.100	0.560	11.4
RC 14	9/21/2020	13.7	7.49	9.65	21.9	<0.100	<0.030	0.202	0.307	8.2
RC 14	12/17/2020	25.8	7.72	10.40	9.3	0.261	<0.030	<0.100	0.497	14.4
RC 14	3/18/2021	25.8	7.72	10.40	9.3	0.261	<0.030	<0.100	0.497	14.4
RC 14	5/5/2021	33.45	7.68	7.99	20.9	<0.100	<0.030	<0.100	0.566	30.4
RC 14	9/2/2021	16.75	7.87	7.11	25.7	0.210	0.040	<0.100	0.350	23.2
RC 14	11/23/2021	24.6	7.96	10.57	13.3	<0.100	<0.0300	0.103	<0.250	40.2
RC 14	1/11/2022	66.4	7.40	11.82	10.4	0.170	<0.0300	<0.10	1.500	20.6
RC 14	4/7/2022	99.0	7.76	8.27	17.6	<0.100	<0.0300	0.101	0.548	178
RC 14	8/2/2022	12.9	8.29	7.67	30.2	<0.100	<0.0300	<0.100	0.332	11.1

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

Appendix III

Laboratory Report No. L1521087, dated August 24, 2022

Laboratory Report No. L1521589, dated August 25, 2022

ANALYTICAL REPORT

August 24, 2022

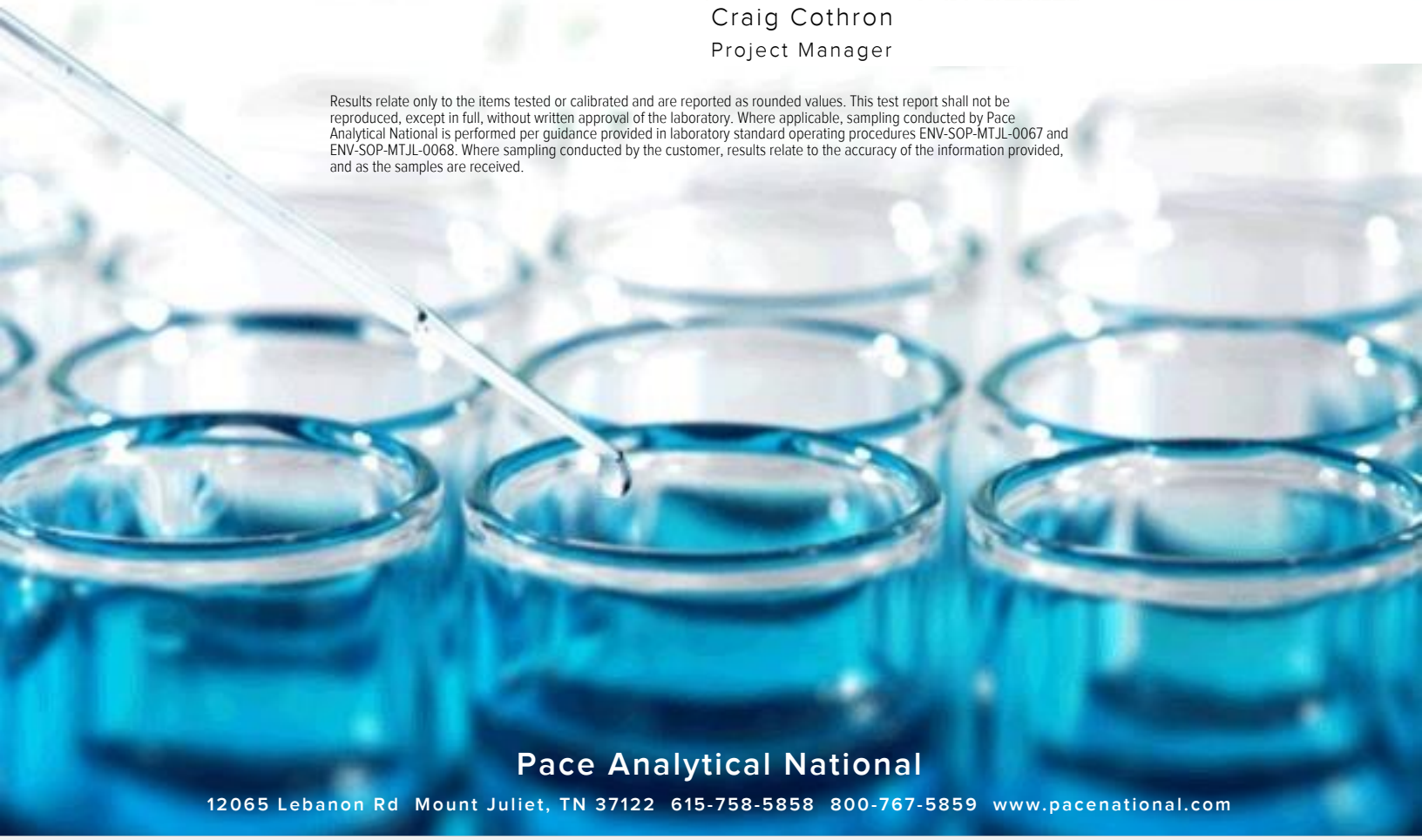
S&ME - Huntsville

Sample Delivery Group:	L1521087
Samples Received:	08/03/2022
Project Number:	44872-20-0044
Description:	
Site:	BOAT
Report To:	Ms. Sara Yeldell 360 D Quality Circle NW Suite 450 Huntsville, AL 35806

Entire Report Reviewed By:

Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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HB-3 L1521087-01 WW

Collected by: Nathanael Wade | Collected date/time: 08/02/22 10:00 | Received date/time: 08/03/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1906907	1	08/07/22 03:47	08/07/22 05:30	AEC	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906884	1	08/11/22 11:10	08/20/22 01:16	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1913148	1	08/19/22 14:49	08/19/22 14:49	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1912018	1	08/11/22 11:10	08/17/22 00:51	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1904830	1	08/03/22 14:53	08/03/22 14:53	JAR	Mt. Juliet, TN

SME-4 L1521087-02 WW

Collected by: Nathanael Wade | Collected date/time: 08/02/22 10:10 | Received date/time: 08/03/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1906907	1	08/07/22 03:47	08/07/22 05:30	AEC	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906884	1	08/11/22 11:10	08/20/22 01:20	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1913148	1	08/19/22 14:57	08/19/22 14:57	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1912018	1	08/11/22 11:10	08/17/22 00:55	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1904830	1	08/03/22 14:53	08/03/22 14:53	JAR	Mt. Juliet, TN

GD-5 L1521087-03 WW

Collected by: Nathanael Wade | Collected date/time: 08/02/22 10:30 | Received date/time: 08/03/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1906907	1	08/07/22 03:47	08/07/22 05:30	AEC	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906884	1	08/11/22 11:10	08/20/22 01:21	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1913148	1	08/19/22 14:58	08/19/22 14:58	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1912018	1	08/11/22 11:10	08/17/22 00:56	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1904830	1	08/03/22 14:53	08/03/22 14:53	JAR	Mt. Juliet, TN

GD-7 L1521087-04 WW

Collected by: Nathanael Wade | Collected date/time: 08/02/22 11:00 | Received date/time: 08/03/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1906907	1	08/07/22 03:47	08/07/22 05:30	AEC	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906884	1	08/11/22 11:10	08/20/22 01:22	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1913148	1	08/19/22 14:59	08/19/22 14:59	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1912018	1	08/11/22 11:10	08/17/22 00:57	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1904830	1	08/03/22 14:54	08/03/22 14:54	JAR	Mt. Juliet, TN

GD-9 L1521087-05 WW

Collected by: Nathanael Wade | Collected date/time: 08/02/22 11:15 | Received date/time: 08/03/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1906907	1	08/07/22 03:47	08/07/22 05:30	AEC	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906884	1	08/11/22 11:10	08/20/22 01:24	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1913335	1	08/19/22 16:18	08/19/22 16:18	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1912018	1	08/11/22 11:10	08/17/22 00:59	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1904830	1	08/03/22 14:54	08/03/22 14:54	JAR	Mt. Juliet, TN

SME-1 L1521087-06 WW

Collected by: Nathanael Wade | Collected date/time: 08/02/22 11:25 | Received date/time: 08/03/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1906907	1	08/07/22 03:47	08/07/22 05:30	AEC	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906884	1	08/11/22 11:10	08/20/22 01:25	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1913335	1	08/19/22 16:22	08/19/22 16:22	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1912018	1	08/11/22 11:10	08/17/22 01:00	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1904830	1	08/03/22 14:54	08/03/22 14:54	JAR	Mt. Juliet, TN

SS-5 L1521087-07 WW

Collected by: Nathanael Wade | Collected date/time: 08/02/22 12:15 | Received date/time: 08/03/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1906907	1	08/07/22 03:47	08/07/22 05:30	AEC	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906884	1	08/11/22 11:10	08/20/22 01:26	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1913335	1	08/19/22 16:23	08/19/22 16:23	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1912018	1	08/11/22 11:10	08/17/22 01:01	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1904830	1	08/03/22 14:55	08/03/22 14:55	JAR	Mt. Juliet, TN

SME-5 L1521087-08 WW

Collected by: Nathanael Wade | Collected date/time: 08/02/22 12:25 | Received date/time: 08/03/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1906907	1	08/07/22 03:47	08/07/22 05:30	AEC	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906884	1	08/11/22 11:10	08/20/22 01:28	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1913335	1	08/19/22 16:25	08/19/22 16:25	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1912018	1	08/11/22 11:10	08/17/22 01:03	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1904830	1	08/03/22 14:55	08/03/22 14:55	JAR	Mt. Juliet, TN

SME-6 L1521087-09 WW

Collected by: Nathanael Wade | Collected date/time: 08/02/22 12:40 | Received date/time: 08/03/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1906907	1	08/07/22 03:47	08/07/22 05:30	AEC	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906884	1	08/11/22 11:10	08/20/22 01:29	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1913335	1	08/19/22 16:26	08/19/22 16:26	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1912018	1	08/11/22 11:10	08/17/22 01:04	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1904830	1	08/03/22 14:55	08/03/22 14:55	JAR	Mt. Juliet, TN

RC-14 L1521087-10 WW

Collected by: Nathanael Wade | Collected date/time: 08/02/22 13:00 | Received date/time: 08/03/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1906907	1	08/07/22 03:47	08/07/22 05:30	AEC	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906884	1	08/11/22 11:10	08/20/22 01:30	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1913335	1	08/19/22 16:31	08/19/22 16:31	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1912018	1	08/11/22 11:10	08/17/22 01:05	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1904830	1	08/03/22 14:55	08/03/22 14:55	JAR	Mt. Juliet, TN

SME 3 L1521087-11 WW

Collected by: Nathanael Wade
Collected date/time: 08/02/22 10:50
Received date/time: 08/03/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1906907	1	08/07/22 03:47	08/07/22 05:30	AEC	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906884	1	08/11/22 11:10	08/20/22 01:32	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1913335	1	08/19/22 16:32	08/19/22 16:32	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1912018	1	08/11/22 11:10	08/17/22 01:06	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1904830	1	08/03/22 14:56	08/03/22 14:56	JAR	Mt. Juliet, TN

SME 11 L1521087-12 WW

Collected by: Nathanael Wade
Collected date/time: 08/02/22 10:15
Received date/time: 08/03/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1906907	1	08/07/22 03:47	08/07/22 05:30	AEC	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906884	1	08/11/22 11:10	08/20/22 15:13	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1913335	1	08/19/22 16:34	08/19/22 16:34	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1912018	1	08/11/22 11:10	08/17/22 01:10	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1904830	1	08/03/22 14:56	08/03/22 14:56	JAR	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Craig Cothron
Project Manager

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	33.7		2.50	1	08/07/2022 05:30	WG1906907

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.273		0.250	1	08/20/2022 01:16	WG1906884

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/19/2022 14:49	WG1913148

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/17/2022 00:51	WG1912018

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/03/2022 14:53	WG1904830

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	6.00		2.50	1	08/07/2022 05:30	WG1906907

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.274		0.250	1	08/20/2022 01:20	WG1906884

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.102		0.100	1	08/19/2022 14:57	WG1913148

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/17/2022 00:55	WG1912018

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/03/2022 14:53	WG1904830

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	6.40		2.50	1	08/07/2022 05:30	WG1906907

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	ND		0.250	1	08/20/2022 01:21	WG1906884

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/19/2022 14:58	WG1913148

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/17/2022 00:56	WG1912018

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/03/2022 14:53	WG1904830

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	4.30		2.50	1	08/07/2022 05:30	WG1906907

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	ND		0.250	1	08/20/2022 01:22	WG1906884

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/19/2022 14:59	WG1913148

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/17/2022 00:57	WG1912018

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/03/2022 14:54	WG1904830

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	7.40		2.50	1	08/07/2022 05:30	WG1906907

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	ND		0.250	1	08/20/2022 01:24	WG1906884

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/19/2022 16:18	WG1913335

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/17/2022 00:59	WG1912018

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/03/2022 14:54	WG1904830

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	6.30		2.50	1	08/07/2022 05:30	WG1906907

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.281		0.250	1	08/20/2022 01:25	WG1906884

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/19/2022 16:22	WG1913335

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/17/2022 01:00	WG1912018

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/03/2022 14:54	WG1904830

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	7.80		2.50	1	08/07/2022 05:30	WG1906907

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.812		0.250	1	08/20/2022 01:26	WG1906884

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/19/2022 16:23	WG1913335

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/17/2022 01:01	WG1912018

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/03/2022 14:55	WG1904830

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	7.30		2.50	1	08/07/2022 05:30	WG1906907

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.277		0.250	1	08/20/2022 01:28	WG1906884

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.102		0.100	1	08/19/2022 16:25	WG1913335

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/17/2022 01:03	WG1912018

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/03/2022 14:55	WG1904830

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	8.40		2.50	1	08/07/2022 05:30	WG1906907

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	ND		0.250	1	08/20/2022 01:29	WG1906884

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/19/2022 16:26	WG1913335

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/17/2022 01:04	WG1912018

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/03/2022 14:55	WG1904830

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	11.1		2.50	1	08/07/2022 05:30	WG1906907

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.332		0.250	1	08/20/2022 01:30	WG1906884

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/19/2022 16:31	WG1913335

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/17/2022 01:05	WG1912018

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/03/2022 14:55	WG1904830

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	5.60		2.50	1	08/07/2022 05:30	WG1906907

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	ND		0.250	1	08/20/2022 01:32	WG1906884

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/19/2022 16:32	WG1913335

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/17/2022 01:06	WG1912018

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/03/2022 14:56	WG1904830

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	4.60		2.50	1	08/07/2022 05:30	WG1906907

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.411		0.250	1	08/20/2022 15:13	WG1906884

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/19/2022 16:34	WG1913335

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/17/2022 01:10	WG1912018

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/03/2022 14:56	WG1904830

Method Blank (MB)

(MB) R3823952-1 08/07/22 05:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1521071-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521071-01 08/07/22 05:30 • (DUP) R3823952-3 08/07/22 05:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	16.4	16.0	1	2.47		5

L1521077-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521077-01 08/07/22 05:30 • (DUP) R3823952-4 08/07/22 05:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	69.2	75.2	1	8.31	J3	5

Laboratory Control Sample (LCS)

(LCS) R3823952-2 08/07/22 05:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	800	103	85.7-114	

QUALITY CONTROL SUMMARY

L1521087-01,02,03,04,05,06,07,08,09,10,11,12

Method Blank (MB)

(MB) R3828503-1 08/20/22 01:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1521007-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521007-01 08/20/22 01:10 • (DUP) R3828503-3 08/20/22 01:11

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	16.5	16.7	1	1.20		20

L1521128-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521128-01 08/20/22 15:15 • (DUP) R3828503-6 08/20/22 15:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	163	180	10	9.91		20

Laboratory Control Sample (LCS)

(LCS) R3828503-2 08/20/22 01:05

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	12.7	10.7	84.3	75.2-120	

L1521007-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1521007-01 08/20/22 01:10 • (MS) R3828503-4 08/20/22 01:13 • (MSD) R3828503-5 08/20/22 01:14

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	16.5	19.4	18.9	58.0	48.0	1	90.0-110	J6	J6	2.61	20

L1521128-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1521128-01 08/20/22 15:15 • (MS) R3828503-7 08/20/22 15:23

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	163	157	0.000	10	90.0-110	V

Method Blank (MB)

(MB) R3828253-1 08/19/22 14:25

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1520091-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1520091-01 08/19/22 14:40 • (DUP) R3828253-3 08/19/22 14:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	ND	ND	1	19.1		20

L1521087-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521087-01 08/19/22 14:49 • (DUP) R3828253-6 08/19/22 14:50

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3828253-2 08/19/22 14:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.55	102	90.0-110	

L1520091-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1520091-01 08/19/22 14:40 • (MS) R3828253-4 08/19/22 14:43 • (MSD) R3828253-5 08/19/22 14:44

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50	ND	2.51	2.52	97.8	98.2	1	90.0-110			0.398	20

L1521087-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1521087-01 08/19/22 14:49 • (MS) R3828253-7 08/19/22 14:52

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	ND	2.55	98.3	1	90.0-110	

QUALITY CONTROL SUMMARY

L1521087-05,06,07,08,09,10,11,12

Method Blank (MB)

(MB) R3828350-1 08/19/22 16:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1521087-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1521087-05 08/19/22 16:18 • (DUP) R3828350-3 08/19/22 16:20

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	ND	ND	1	0.000		20

L1522059-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1522059-03 08/19/22 17:03 • (DUP) R3828350-8 08/19/22 17:04

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	177	176	100	0.567		20

Laboratory Control Sample (LCS)

(LCS) R3828350-2 08/19/22 16:17

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.53	101	90.0-110	

L1521087-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1521087-05 08/19/22 16:18 • (MS) R3828350-4 08/19/22 16:21

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	ND	2.30	92.0	1	90.0-110	

L1522059-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1522059-03 08/19/22 17:03 • (MS) R3828350-9 08/19/22 17:05 • (MSD) R3828350-10 08/19/22 17:07

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	250	177	402	405	90.0	91.2	100	90.0-110			0.743	20

QUALITY CONTROL SUMMARY

L1521087-01,02,03,04,05,06,07,08,09,10,11,12

Method Blank (MB)

(MB) R3827003-1 08/17/22 00:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	0.0601	J	0.0350	0.100

L1521007-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521007-01 08/17/22 00:46 • (DUP) R3827003-3 08/17/22 00:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	3.46	3.46	1	0.000		20

L1521128-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521128-01 08/17/22 01:19 • (DUP) R3827003-6 08/17/22 01:20

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	25.4	23.8	10	6.50		20

Laboratory Control Sample (LCS)

(LCS) R3827003-2 08/17/22 00:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	3.45	91.3	83.2-116	

L1521007-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1521007-01 08/17/22 00:46 • (MS) R3827003-4 08/17/22 00:49 • (MSD) R3827003-5 08/17/22 00:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	3.46	5.47	5.75	80.4	91.6	1	90.0-110	E J6	E	4.99	20

Method Blank (MB)

(MB) R3822262-1 08/03/22 14:48

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1520851-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1520851-03 08/03/22 14:50 • (DUP) R3822262-5 08/03/22 14:51

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	0.513	0.517	1	0.777		20

L1521087-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1521087-10 08/03/22 14:55 • (DUP) R3822262-6 08/03/22 14:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3822262-2 08/03/22 14:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.212	86.7	85.0-115	

L1520851-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1520851-01 08/03/22 14:48 • (MS) R3822262-3 08/03/22 14:49 • (MSD) R3822262-4 08/03/22 14:49

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	0.348	0.507	0.514	31.8	33.2	1	80.0-120	J6	J6	1.37	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Pres Chk

Report to:
Ms. Sara Yeldell

Email To: syeldell@smeinc.com

Project Description:

City/State Collected: Gadsden, AL

Please Circle: PT MT (CT) ET

Phone: 256-837-8882

Client Project #
44872-20-0044

Lab Project #
QOREHAL-448220044B

Collected by (print):
Nathanael Wade

Site/Facility ID #
BOAT

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Quote #

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres						Remarks	Sample # (lab only)
								12	12								
HB-3	G	WW	5'	8-2	1000	4	X	X	X	X							01
SME-4	G	WW	5'	8-2	1010	4	X	X	X	X							02
GD-5	G	WW	5'	8-2	1030	4	X	X	X	X							03
GD-7	G	WW	5'	8-2	1100	4	X	X	X	X							04
GD-9	G	WW	5'	8-2	1115	4	X	X	X	X							05
SME-1	G	WW	5'	8-2	1125	4	X	X	X	X							06
SS-5	G	WW	5'	8-2	1215	4	X	X	X	X							07
SME-5	G	WW	5'	8-2	1225	4	X	X	X	X							08
SME-6	G	WW	5'	8-2	1240	4	X	X	X	X							09
RC-14	G	WW	5'	8-2	1300	4	X	X	X	X							10

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Relinquished by : (Signature) — Date: 8-2 — Time: 1400 — Received by: (Signature)

Trip Blank Received: Yes / (No)
HCL / MeoH
TBR

Relinquished by : (Signature) — Date: — Time: — Received by: (Signature)

Temp: 2.6 °C — Bottles Received: 98

If preservation required by Login: Date/Time

Relinquished by : (Signature) — Date: — Time: — Received for lab by: (Signature)

Date: 8/3/22 — Time: 0915

Hold: — Condition: NCF / OK

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: ✓Y __N
RAD Screen <0.5 mR/hr: __Y __N

Chain of Custody Page 1 of 2

Pace
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MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1521087
D188

Acctnum: QOREHAL
Template: T203454
Prelogin: P935019
PM: 034 - Craig Cothron
PB: CC 8/2/22

Shipped Via: FedEX Ground

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville. AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Report to:
Ms. Sara Yeldell

Email To: **syeldell@smeinc.com**

Project Description:

City/State Collected:

Please Circle: PT MT CT ET

Phone: **256-837-8882**

Client Project #
44872-20-0044

Lab Project #
QOREHAL-448220044B

Collected by (print):

Site/Facility ID #
BOAT

P.O. #

Collected by (signature):

Immediately Packed on Ice N___ Y___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres								
SME3	G	WW	5'	8-2	1050	4	X	X	X	X								11
SME11	G	WW	5'	8-2	1015	4	X	X	X	X								12
		WW				4	X	X	X	X								

Chain of Custody Page 3 of 2

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SDG # L521087

Table #

Acctnum: **QOREHAL**
Template: **T203454**
Prelogin: **P935019**
PM: **034 - Craig Cothron**
PB: 8/16/22

Shipped Via: **FedEX Ground**

Remarks | Sample # (lab only)

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: 3.6 °C Bottles Received: 48

Date: 8/13/22 Time: 0915

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

August 25, 2022

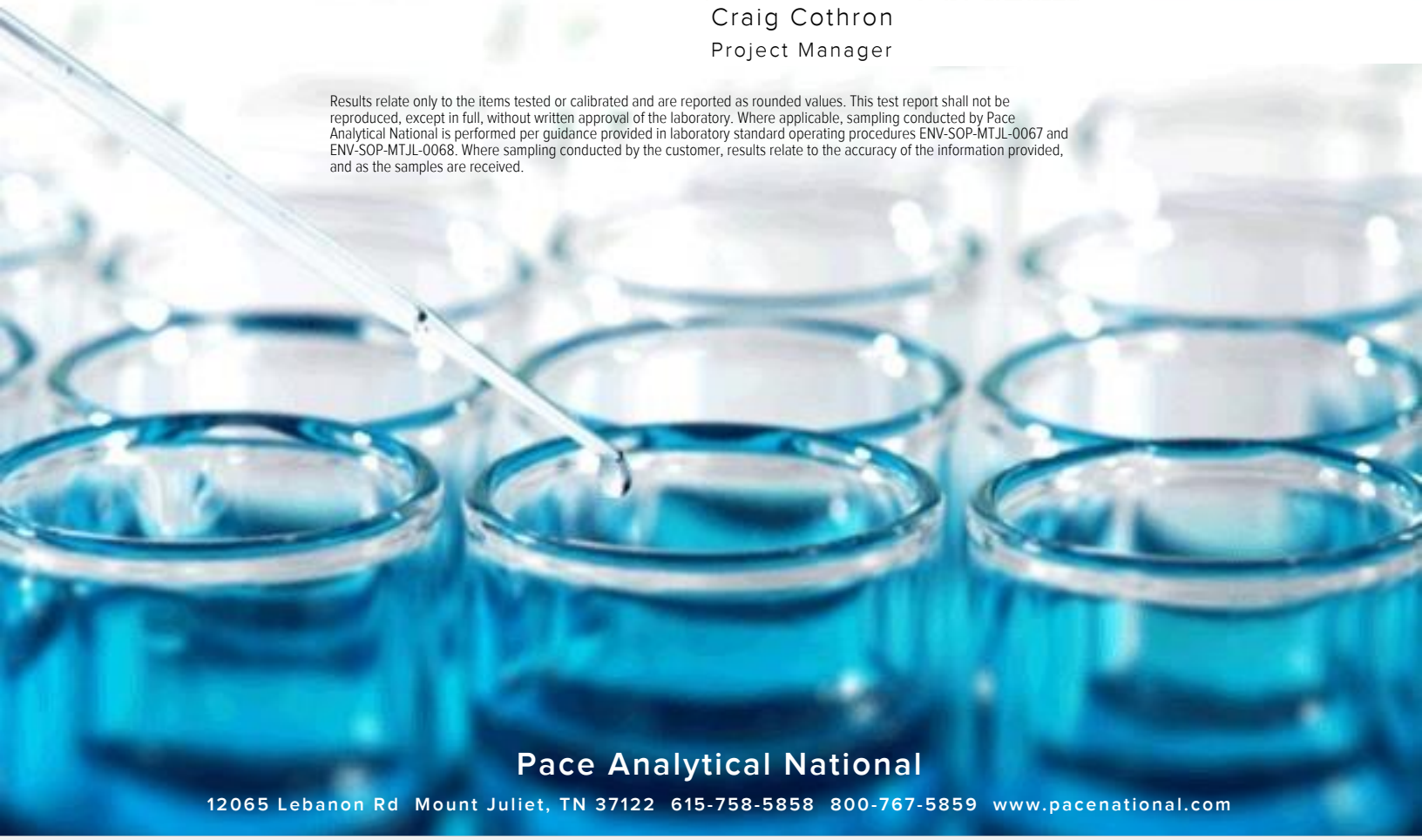
S&ME - Huntsville

Sample Delivery Group:	L1521589
Samples Received:	08/04/2022
Project Number:	4482-20-044
Description:	
Site:	LAND
Report To:	Ms. Sarah Yeldell 360 D Quality Circle NW Suite 450 Huntsville, AL 35806

Entire Report Reviewed By:

Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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AT 5 L1521589-01 WW

Collected by: Nathanael Wade | Collected date/time: 08/03/22 12:40 | Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906890	1	08/15/22 08:43	08/20/22 23:57	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912097	1	08/17/22 19:19	08/17/22 19:19	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914061	1	08/15/22 08:43	08/21/22 00:06	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:28	08/05/22 09:28	ARS	Mt. Juliet, TN

GD 8 L1521589-02 WW

Collected by: Nathanael Wade | Collected date/time: 08/03/22 12:30 | Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906890	1	08/15/22 08:43	08/20/22 23:59	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912097	1	08/17/22 19:21	08/17/22 19:21	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914061	1	08/15/22 08:43	08/21/22 00:07	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:28	08/05/22 09:28	ARS	Mt. Juliet, TN

RC 2 L1521589-03 WW

Collected by: Nathanael Wade | Collected date/time: 08/03/22 12:20 | Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906890	1	08/15/22 08:43	08/21/22 00:00	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912097	1	08/17/22 19:22	08/17/22 19:22	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914061	1	08/15/22 08:43	08/24/22 17:43	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:28	08/05/22 09:28	ARS	Mt. Juliet, TN

SS 13 L1521589-04 WW

Collected by: Nathanael Wade | Collected date/time: 08/03/22 11:30 | Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906892	1	08/15/22 15:35	08/21/22 00:49	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912097	1	08/17/22 19:23	08/17/22 19:23	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914064	1	08/15/22 15:35	08/21/22 00:58	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:29	08/05/22 09:29	ARS	Mt. Juliet, TN

SS 14 L1521589-05 WW

Collected by: Nathanael Wade | Collected date/time: 08/03/22 11:45 | Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906892	1	08/15/22 15:35	08/21/22 00:50	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912098	1	08/18/22 16:19	08/18/22 16:19	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914064	1	08/15/22 15:35	08/21/22 00:59	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:29	08/05/22 09:29	ARS	Mt. Juliet, TN

GD 12 L1521589-06 WW

Collected by: Nathanael Wade | Collected date/time: 08/03/22 12:05 | Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906892	1	08/15/22 15:35	08/21/22 00:56	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912098	1	08/18/22 16:24	08/18/22 16:24	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914064	1	08/15/22 15:35	08/21/22 01:04	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:29	08/05/22 09:29	ARS	Mt. Juliet, TN

GD 6 L1521589-07 WW

Collected by: Nathanael Wade | Collected date/time: 08/03/22 11:05 | Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906892	1	08/15/22 15:35	08/21/22 01:02	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912098	1	08/18/22 16:25	08/18/22 16:25	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914064	1	08/15/22 15:35	08/21/22 01:06	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:29	08/05/22 09:29	ARS	Mt. Juliet, TN

CO 15 L1521589-08 WW

Collected by: Nathanael Wade | Collected date/time: 08/03/22 10:20 | Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906892	1	08/15/22 15:35	08/21/22 01:04	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912098	1	08/18/22 16:26	08/18/22 16:26	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914064	1	08/15/22 15:35	08/21/22 01:10	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:30	08/05/22 09:30	ARS	Mt. Juliet, TN

SME 7 L1521589-09 WW

Collected by: Nathanael Wade | Collected date/time: 08/03/22 09:45 | Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906892	1	08/15/22 15:35	08/21/22 01:05	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912098	1	08/18/22 16:31	08/18/22 16:31	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914064	1	08/15/22 15:35	08/21/22 01:12	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:30	08/05/22 09:30	ARS	Mt. Juliet, TN

SME 9 L1521589-10 WW

Collected by: Nathanael Wade | Collected date/time: 08/03/22 10:40 | Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906892	1	08/15/22 15:35	08/21/22 01:06	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912098	1	08/18/22 16:33	08/18/22 16:33	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914064	1	08/15/22 15:35	08/21/22 01:13	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:30	08/05/22 09:30	ARS	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

SME 10 L1521589-11 WW

Collected by: Nathanael Wade
Collected date/time: 08/03/22 10:45
Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906892	1	08/15/22 15:35	08/21/22 01:08	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912098	1	08/18/22 16:36	08/18/22 16:36	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914064	1	08/15/22 15:35	08/21/22 01:14	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:31	08/05/22 09:31	ARS	Mt. Juliet, TN

SME 12 L1521589-12 WW

Collected by: Nathanael Wade
Collected date/time: 08/03/22 12:45
Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906892	1	08/15/22 15:35	08/21/22 01:09	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912098	1	08/18/22 16:38	08/18/22 16:38	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914064	1	08/15/22 15:35	08/21/22 01:15	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:32	08/05/22 09:32	ARS	Mt. Juliet, TN

SME 13 L1521589-13 WW

Collected by: Nathanael Wade
Collected date/time: 08/03/22 09:50
Received date/time: 08/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1908292	1	08/09/22 22:09	08/10/22 01:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1906892	1	08/15/22 15:35	08/21/22 01:11	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1912098	1	08/18/22 16:39	08/18/22 16:39	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1914064	1	08/15/22 15:35	08/21/22 01:17	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1906091	1	08/05/22 09:33	08/05/22 09:33	ARS	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Craig Cothron
Project Manager

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	30.8		5.00	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.702		0.250	1	08/20/2022 23:57	WG1906890

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.715		0.100	1	08/17/2022 19:19	WG1912097

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.323		0.100	1	08/21/2022 00:06	WG1914061

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.271		0.0300	1	08/05/2022 09:28	WG1906091

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	12.1		2.50	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.406		0.250	1	08/20/2022 23:59	WG1906890

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.189		0.100	1	08/17/2022 19:21	WG1912097

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/21/2022 00:07	WG1914061

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/05/2022 09:28	WG1906091

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	13.8		2.50	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.352		0.250	1	08/21/2022 00:00	WG1906890

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.175		0.100	1	08/17/2022 19:22	WG1912097

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/24/2022 17:43	WG1914061

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/05/2022 09:28	WG1906091

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	44.4		5.00	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	1.65		0.250	1	08/21/2022 00:49	WG1906892

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/17/2022 19:23	WG1912097

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/21/2022 00:58	WG1914064

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/05/2022 09:29	WG1906091

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	6.50		2.50	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.723		0.250	1	08/21/2022 00:50	WG1906892

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.176		0.100	1	08/18/2022 16:19	WG1912098

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.123	J6	0.100	1	08/21/2022 00:59	WG1914064

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/05/2022 09:29	WG1906091

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	6.40		2.50	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.999		0.250	1	08/21/2022 00:56	WG1906892

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/18/2022 16:24	WG1912098

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.142	P1	0.100	1	08/21/2022 01:04	WG1914064

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/05/2022 09:29	WG1906091

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	5.30		2.50	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.588		0.250	1	08/21/2022 01:02	WG1906892

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/18/2022 16:25	WG1912098

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/21/2022 01:06	WG1914064

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/05/2022 09:29	WG1906091

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	4.20		2.50	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.424		0.250	1	08/21/2022 01:04	WG1906892

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.131		0.100	1	08/18/2022 16:26	WG1912098

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/21/2022 01:10	WG1914064

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/05/2022 09:30	WG1906091

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	31.0		4.30	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.844		0.250	1	08/21/2022 01:05	WG1906892

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.742		0.100	1	08/18/2022 16:31	WG1912098

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.373		0.100	1	08/21/2022 01:12	WG1914064

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.314		0.0300	1	08/05/2022 09:30	WG1906091

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	ND		2.50	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.582		0.250	1	08/21/2022 01:06	WG1906892

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/18/2022 16:33	WG1912098

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/21/2022 01:13	WG1914064

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND	J6	0.0300	1	08/05/2022 09:30	WG1906091

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	4.10		2.50	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.940		0.250	1	08/21/2022 01:08	WG1906892

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	08/18/2022 16:36	WG1912098

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	08/21/2022 01:14	WG1914064

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	08/05/2022 09:31	WG1906091

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	27.6		2.50	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.461		0.250	1	08/21/2022 01:09	WG1906892

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.711		0.100	1	08/18/2022 16:38	WG1912098

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.310		0.100	1	08/21/2022 01:15	WG1914064

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.285		0.0300	1	08/05/2022 09:32	WG1906091

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	33.3		5.55	1	08/10/2022 01:33	WG1908292

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.951		0.250	1	08/21/2022 01:11	WG1906892

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.739		0.100	1	08/18/2022 16:39	WG1912098

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.389		0.100	1	08/21/2022 01:17	WG1914064

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.344		0.0300	1	08/05/2022 09:33	WG1906091

Method Blank (MB)

(MB) R3824861-1 08/10/22 01:33

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1521588-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1521588-02 08/10/22 01:33 • (DUP) R3824861-3 08/10/22 01:33

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	16.4	19.2	1	15.7	P1	5

L1521589-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1521589-13 08/10/22 01:33 • (DUP) R3824861-4 08/10/22 01:33

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	33.3	34.0	1	1.99		5

Laboratory Control Sample (LCS)

(LCS) R3824861-2 08/10/22 01:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	820	106	85.7-114	

Method Blank (MB)

(MB) R3828572-1 08/20/22 23:41

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1521561-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521561-01 08/20/22 23:44 • (DUP) R3828572-3 08/20/22 23:45

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	3.44	3.52	1	2.30		20

L1521584-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521584-01 08/20/22 23:49 • (DUP) R3828572-5 08/20/22 23:51

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.615	0.679	1	9.89		20

Laboratory Control Sample (LCS)

(LCS) R3828572-2 08/20/22 23:42

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	12.7	11.8	92.9	75.2-120	

L1521561-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1521561-01 08/20/22 23:44 • (MS) R3828572-4 08/20/22 23:46

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	3.44	8.20	95.2	1	90.0-110	

L1521584-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1521584-01 08/20/22 23:49 • (MS) R3828572-6 08/20/22 23:52 • (MSD) R3828572-7 08/20/22 23:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	0.615	5.48	5.08	97.3	89.3	1	90.0-110		J6	7.58	20

QUALITY CONTROL SUMMARY

L1521589-04,05,06,07,08,09,10,11,12,13

Method Blank (MB)

(MB) R3828577-1 08/21/22 00:46

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1521589-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1521589-05 08/21/22 00:50 • (DUP) R3828577-3 08/21/22 00:52

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.723	0.829	1	13.7		20

L1521589-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1521589-06 08/21/22 00:56 • (DUP) R3828577-6 08/21/22 00:57

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.999	0.972	1	2.74		20

Laboratory Control Sample (LCS)

(LCS) R3828577-2 08/21/22 00:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	12.7	12.1	95.3	75.2-120	

L1521589-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1521589-05 08/21/22 00:50 • (MS) R3828577-4 08/21/22 00:53 • (MSD) R3828577-5 08/21/22 00:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	0.723	5.89	6.10	103	108	1	90.0-110			3.50	20

L1521589-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1521589-06 08/21/22 00:56 • (MS) R3828577-7 08/21/22 00:58

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	0.999	5.97	99.4	1	90.0-110	

Method Blank (MB)

(MB) R3827468-1 08/17/22 18:42

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1521354-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521354-01 08/17/22 18:45 • (DUP) R3827468-3 08/17/22 18:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	ND	ND	1	0.000		20

L1521391-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521391-01 08/17/22 18:51 • (DUP) R3827468-6 08/17/22 18:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	1.03	1.02	1	0.976		20

Laboratory Control Sample (LCS)

(LCS) R3827468-2 08/17/22 18:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.54	102	90.0-110	

L1521354-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1521354-01 08/17/22 18:45 • (MS) R3827468-4 08/17/22 18:47 • (MSD) R3827468-5 08/17/22 18:49

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50	ND	2.45	2.36	98.0	94.4	1	90.0-110			3.74	20

L1521391-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1521391-01 08/17/22 18:51 • (MS) R3827468-7 08/17/22 18:58

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	1.03	3.37	93.6	1	90.0-110	

Method Blank (MB)

(MB) R3827923-1 08/18/22 16:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1521589-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1521589-05 08/18/22 16:19 • (DUP) R3827923-3 08/18/22 16:20

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.176	0.175	1	0.570		20

L1521589-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1521589-10 08/18/22 16:33 • (DUP) R3827923-6 08/18/22 16:34

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3827923-2 08/18/22 16:17

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.55	102	90.0-110	

L1521589-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1521589-05 08/18/22 16:19 • (MS) R3827923-4 08/18/22 16:21 • (MSD) R3827923-5 08/18/22 16:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50	0.176	2.73	2.67	102	99.8	1	90.0-110			2.22	20

L1521589-10 Original Sample (OS) • Matrix Spike (MS)

(OS) L1521589-10 08/18/22 16:33 • (MS) R3827923-7 08/18/22 16:35

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	ND	2.54	97.7	1	90.0-110	

Method Blank (MB)

(MB) R3830069-1 08/20/22 23:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1521584-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521584-01 08/21/22 00:01 • (DUP) R3830069-3 08/21/22 00:02

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	2.14	2.13	1	0.468		20

Laboratory Control Sample (LCS)

(LCS) R3830069-2 08/20/22 23:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	3.65	96.6	83.2-116	

L1521584-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1521584-01 08/21/22 00:01 • (MS) R3830069-4 08/21/22 00:03 • (MSD) R3830069-5 08/21/22 00:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	2.14	6.54	4.37	176	89.2	1	90.0-110	E J5	J3 J6	39.8	20

Method Blank (MB)

(MB) R3828575-1 08/21/22 00:55

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1521589-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1521589-05 08/21/22 00:59 • (DUP) R3828575-3 08/21/22 01:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.123	0.129	1	4.76		20

L1521589-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1521589-06 08/21/22 01:04 • (DUP) R3828575-6 08/21/22 01:05

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.142	ND	1	94.3	P1	20

Laboratory Control Sample (LCS)

(LCS) R3828575-2 08/21/22 00:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	3.69	97.6	83.2-116	

L1521589-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1521589-05 08/21/22 00:59 • (MS) R3828575-4 08/21/22 01:01 • (MSD) R3828575-5 08/21/22 01:03

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	0.123	2.37	2.34	89.9	88.7	1	90.0-110	J6	J6	1.27	20

Method Blank (MB)

(MB) R3822982-1 08/05/22 09:27

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1521589-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1521589-01 08/05/22 09:28 • (DUP) R3822982-3 08/05/22 09:28

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	0.271	0.321	1	16.9		20

L1521589-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1521589-11 08/05/22 09:31 • (DUP) R3822982-6 08/05/22 09:31

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3822982-2 08/05/22 09:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.222	90.8	85.0-115	

L1521589-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1521589-10 08/05/22 09:30 • (MS) R3822982-4 08/05/22 09:31 • (MSD) R3822982-5 08/05/22 09:31

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	ND	0.141	0.135	28.2	27.0	1	80.0-120	J6	J6	4.35	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville. AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Pres Chk

Report to: **Ms. Sarah Yeldell**

Email To: **syeldell@smeinc.com**

Project Description:

City/State Collected: Goldsten, AL

Please Circle: PT MT CT ET

Phone: **256-837-8882**

Client Project # **4482-20-044**

Lab Project # **QOREHAL-448220044**

Collected by (print): Nathaniel Wilde

Site/Facility ID # **LAND**

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Quote #

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres	Remarks	Sample # (lab only)
AT 5	G	WW		8-3	1240	4	X	X	X	X		01
GD 8		WW			1230	4	X	X	X	X		02
RC 2		WW			1220	4	X	X	X	X		03
SS 13		WW			1130	4	X	X	X	X		04
SS 14		WW			1145	4	X	X	X	X		05
GD 12		WW			1205	4	X	X	X	X		06
~~SME2~~		WW				4	X	X	X	X		
GD 6		WW			1105	4	X	X	X	X		07
CO 15		WW			1020	4	X	X	X	X		08
SME 7		WW			945	4	X	X	X	X		09

Chain of Custody Page 1 of 2

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MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L152589
G225

Acctnum: **QOREHAL**
Template: **T181690**
Prelogin: **P935006**
PM: **034 - Craig Cothron**
PB: 8 6/27/22

Shipped Via: **FedEX Ground**

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: Remove SME2 and SME8 from template

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP ~~Y~~ N
COC Signed/Accurate: Y __N
Bottles arrive intact: Y __N
Correct bottles used: Y __N
Sufficient volume sent: Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: ~~Y~~ __N
RAD Screen <0.5 mR/hr: ~~Y~~ __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / (No) HCL / MeoH TBR
Nathaniel Wilde	8-3	1330		0
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: 52
				If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 8/4/22 Time: 0900
			M. Smith	Hold: Condition: NCF / OK

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville. AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Report to:
Ms. Sarah Yeldell

Email To: **syeldell@smeinc.com**

Project Description:

City/State Collected:

Please Circle: PT MT CT ET

Phone: **256-837-8882**

Client Project #
4482-20-044

Lab Project #
QOREHAL-448220044

Collected by (print):

Site/Facility ID #
LAND

P.O. #

Collected by (signature):

Immediately Packed on Ice N ____ Y ____

Rush? (Lab MUST be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres
~~SME 8~~		~~WW~~				4	X	X	X	X
SME 9	G	WW	SURF	8-3	1040	4	X	X	X	X
SME 10	|	WW	SUR	|	1045	4	X	X	X	X
SME 12	|	WW	-2	|	1245	4	X	X	X	X
SME 13	|	WW	-2	|	950	4	X	X	X	X

Chain of Custody Page 2 of 3

Pace
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MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1521895

Table #

Acctnum: **QOREHAL**
Template: **T181690**
Prelogin: **P935006**
PM: 034 - Craig Cothron
PB: CC 6/27/22

Shipped Via: **FedEX Ground**

Remarks	Sample # (lab only)
	10
	11
	12
	13

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N
RAD Screen <0.5 mR/hr: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 8/4/22 Time: 0940	Hold: / Condition: NCF / OK

Tracking Numbers	Temperature
5829 6700 7058	1.8
5829 6700 7069	2.2

Monitoring Report Fourth Quarter 2022
Gadsden, Alabama Urbanized Area
Phase II Small MS4
NPDES General Permit ALR040000
S&ME Project No. 22820261

PREPARED FOR:

Gadsden-Etowah MS4 Steering Committee

PREPARED BY:

S&ME, Inc.
360D Quality Circle NW, Ste 450
Huntsville, AL 35806

December 22, 2022

December 22, 2022

Attention: Gadsden-Etowah MS4 Steering Committee

Reference: **FY 2023 Wet-Weather Monitoring**
October 1, 2022 to December 31, 2022
Gadsden-Etowah MS4 Entities
Gadsden, Etowah County, Alabama
S&ME Project No. 22820261

Dear Gadsden-Etowah MS4 Steering Committee:

S&ME has prepared the attached report for the wet-weather monitoring conducted for the Gadsden-Etowah Phase II Small Municipal Separate Storm Sewer Systems. The report details the monitoring conducted during the October 1, 2022 to December 31, 2022 reporting period. Our work was performed in general accordance with S&ME Proposal No. 22820261, dated October 25, 2022.

S&ME appreciates the opportunity to provide our services to the City of Attalla, City of Gadsden, City of Glencoe, City of Hokes Buff, Rainbow City, City of Southside, and Etowah County. If you should have questions concerning this report, or if additional information is required, please contact us.

Sincerely,

S&ME, Inc.

Sarah Yeldell, P.E.
Project Manager

Deborah J. Jones, P.E.
Senior Engineer

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1.0 Introduction

S&ME, Inc. has prepared this Monitoring Report for the seven entities comprising the Gadsden-Etowah MS4 in general accordance with S&ME Proposal No. 22820261, dated October 25, 2022.

1.1 NPDES Permit

The Storm Water Phase II Final Rule issued by the United States Environmental Protection Agency (USEPA) in 1999 requires nationwide coverage of all operators of small MS4s located within the boundaries of an "urbanized area" as defined by the latest decennial Census. Based on the results of the 2010 census, the Bureau of the Census designated the City of Attalla, City of Gadsden, City of Glencoe, City of Hokes Bluff, City of Rainbow City, City of Southside, and portions of unincorporated Etowah County as the *Gadsden, Alabama Urbanized Area*. A map outlining the approximate boundary of the *Gadsden, Alabama Urbanized Area* is included as **Figure 1** in **Appendix I**. The regulated small municipal separate storm sewer systems (MS4s) within the urbanized area are collectively referred to as the Gadsden-Etowah MS4.

The Alabama Department of Environmental Management (ADEM) reissued National Pollutant Discharge Elimination System (NPDES) General Permit ALR040000 for discharges from regulated small municipal separate storm sewer systems with an effective date of October 1, 2021. Permit numbers for each entity in the Gadsden-Etowah MS4 are provided in Table 1-1.

Table 1-1 Permit Numbers and Responsible Officials

Entity	Permit Number	Name
City of Attalla	ALR040052	Larry Means, Mayor
City of Gadsden	ALR040053	Craig Ford, Mayor
City of Glencoe	ALR040054	Chris Hare, Mayor
City of Hokes Bluff	ALR040055	Scott Reeves, Mayor
City of Rainbow City	ALR040056	Joe Taylor, Mayor
City of Southside	ALR040057	Dana Snyder, Mayor
Etowah County	ALR040009	Robert Nail, Engineer

1.2 Water Quality Concerns

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987, and EPA's Water Quality Planning and Management Regulations (40 CFR 130) require states to identify waterbodies not in compliance with the water quality standards applicable to their designated use classifications. Section 303(d) then requires that total maximum daily loads (TMDLs) be determined for all pollutants causing violation of applicable water quality standards in each identified segment.

Neely Henry Lake is the primary receiving water for the Gadsden-Etowah MS4. In 1996, the ADEM identified five of the six reservoirs on the Coosa River within the State of Alabama's borders as being impaired, including Neely Henry Lake. In 2008, the EPA approved TMDLs for Neely Henry Lake related to Nutrients (Total Phosphorous), pH, and Dissolved Oxygen. **The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus loading.**

1.3 Monitoring Program

Part III.B of the NPDES General Permit requires that the Permittee develop and implement a Storm Water Management Program Plan (SWMPP). Part IV.D of the NPDES General Permit requires that the SWMPP include monitoring provisions to document that the waste load allocations prescribed in the TMDL are being achieved. The seven entities comprising the Gadsden-Etowah MS4 have chosen to develop and implement a joint monitoring program.

Each entity's SWMPP requires implementation of the wet-weather monitoring program as detailed in the *Gadsden-Etowah MS4 Wet-Weather Monitoring Program*, dated April 2022 (hereafter referred to as the 2022 Monitoring Program). The intent of the proposed monitoring program is to evaluate the effectiveness of the City's BMPs in achieving the required phosphorous reduction as established in the TMDL and to generally evaluate overall water quality. The Gadsden-Etowah Steering Committee is responsible for implementation of the Gadsden-Etowah Wet Weather Monitoring Program.

2.0 Rainfall Data

The largest loading of phosphorous to the Coosa River from the Gadsden-Etowah MS4 is expected to occur during runoff events; therefore, the 2022 Monitoring Program requires that monitoring be conducted within 72 hours of a qualifying rain event of 0.75 inch, as measured at three rain gauges within the MS4 located a minimum of three miles apart.

On November 15, 2022, a rain event was observed at four weather stations located in the vicinity of the urbanized area. The locations of the weather stations are identified on **Figure 2** in **Appendix I**.

Table 2-1 Quarterly Rainfall Data

Gauge Name	Location	Lattitude	Longitude	Precip 11/14/22	Precip 11/15/22
KALATTAL13	Attalla, AL	33.989°	-86.109°	0.00 in	0.88 in
KALHOKES2	Hokes Bluff, AL	33.993°	-85.806°	0.00 in	0.82 in
KALSOUTH7	Southside, AL	33.890°	-86.010°	0.00 in	0.92 in

Gauge Name	Location	Lattitude	Longitude	Precip 11/14/22	Precip 11/15/22
KALGLENC2	Glencoe, AL	33.920°	-85.98°	0.00 in	0.80 in

3.0 Monitoring Event

On November 16, 2022, S&ME personnel mobilized to conduct storm water monitoring for the fourth quarter of 2022 in general accordance with Section 3 of the *Gadsden-Etowah MS4 Wet-Weather Monitoring Program*, dated April 2022.

3.1 Monitoring Locations

The primary monitoring locations selected for determining compliance of the Gadsden-Etowah MS4 with the 2008 phosphorous TMDL are identified on **Figure 3** in **Appendix I**. Coordinates for each point are listed in Table 3-1.

Table 3-1 Monitoring Point Coordinates

Outfall ID	Latitude	Longitude	Access	Waterbody Evaluated
AT 5	34.006446°	-86.069061°	LAND	Big Wills Creek / Little Wills Creek
GD 8	33.999535°	-86.024463°	LAND	Black Creek
RC 2	33.967683°	-86.039476°	LAND	Horton Creek
SS 13	33.891352°	-86.049229°	LAND	Neely Henry Lake
SS 14	33.885921°	-86.030683°	LAND	U.T. to Neely Henry Lake
GD 12	33.952567°	-86.003495°	LAND	U.T. to Neely Henry Lake
GD 6	34.015350°	-85.995617°	LAND	Town Creek
CO 15	33.972280°	-85.965354°	LAND	U.T. to Neely Henry Lake
SME 7	34.006225°	-86.111277°	LAND	Big Wills Creek
SME 9	34.002807°	-85.871879°	LAND	U.T. to Neely Henry Lake
SME 10	33.985669°	-85.878605°	LAND	U.T. to Big Cove Creek (exiting Hokes Bluff)
HB 3	34.002129°	-85.882808°	BOAT	U.T. to Neely Henry Lake
SME 4	34.001667°	-85.883342°	BOAT	Coosa River channel at north end of MS4
GD 5	34.014324°	-85.924013°	BOAT	Big Cove Creek / Little Cove Creek
SME 3	34.009698°	-85.956230°	BOAT	Coal Creek
GD 7	34.008361°	-85.999777°	BOAT	Storm sewer outfall to Coosa River
GD 9	33.989718°	-85.998472°	BOAT	U.T. to Coosa River (East Gadsden)
SME 1	33.990184°	-86.004048°	BOAT	Big Wills Creek / Black Creek
SS 5	33.941329°	-86.021569°	BOAT	U.T. to Coosa River

Outfall ID	Latitude	Longitude	Access	Waterbody Evaluated
SME 5	33.940514°	-86.029885°	BOAT	Coosa River channel at center of MS4
SME 6	33.852125°	-86.049695°	BOAT	Confluence of Greens Creek and Coosa River
RC 14	33.905786°	-86.111656°	BOAT	Rook Creek / Dry Creek

Following evaluation of the monitoring program for the Annual Reports in May of 2020, monitoring points CO 14, SME 3, and GD 3 were removed from the monitoring program and monitoring points SME 4, SME 5, SME 6, SME 7, and SME 8 were added. The changes to the monitoring program were implemented beginning with the 2020 fourth quarter sampling event. Monitoring point SME 3 was reinstated as part of the monitoring program beginning with the 2021 third quarter sampling event.

Following evaluation of the monitoring program for the 2022 SWMPPs and Wet-Weather Monitoring Program, monitoring points SME 2 and SME 8 were removed from the monitoring program and monitoring points SME 9 and SME 10 were added. The changes to the monitoring program were implemented beginning with the 2022 second quarter sampling event.

3.2 Sampling Procedures

Samples accessible by land were obtained using a stainless-steel bucket. Samples accessible by boat were obtained using a horizontal Van Dorn sampler. The bucket and Van Dorn sampler were decontaminated prior to use and in between samples.

3.3 Field Documentation

The following observations were documented in the field at each monitoring location:

- Monitoring point ID
- Date and time
- Person conducting the sampling
- Equipment used
- Depth of sample collection
- Weather conditions
- Waterbody conditions

The following parameters were measured in the field at the time of sample collection:

- Turbidity
- pH
- Dissolved Oxygen (DO)
- Temperature

Field parameters were measured using a YSI Pro DSS Multi-Probe Meter.

The recorded field observations are included on **Table B.1** in **Appendix II**. The recorded field parameters are included on **Table B.2** in **Appendix II**.

3.4 Quality Assurance / Quality Control

The following handling procedures were employed in general accordance with EPA and ADEM guidance to safeguard the quality of the collected samples.

3.4.1 Sample Containers and Preservation

The samples were collected in new laboratory-provided containers containing analyte-appropriate preservatives as listed in Table 3-2.

Table 3-2 Sample Containers and Preservation

Parameter	Container	Preservative	Hold Time
Total Suspended Solids (TSS)	HDPE - 1 L	NONE	7 days
Total Phosphorous	HDPE - 250 mL	H_2SO_4	48 hours
Orthophosphate	AMB - 100 mL	NONE	48 hours
Nitrate-Nitrite	HDPE - 250 mL	H_2SO_4	28 days
Total Kjeldahl Nitrogen (TKN)	HDPE - 250 mL	H_2SO_4	28 days

Prior to filling, sample containers were labeled with the following information in waterproof ink:

- Project number
- Sample location
- Collection date and time
- Preservative
- Analysis to be performed

3.4.2 Quality Assurance

Three duplicate samples were submitted to the laboratory. One duplicate sample of monitoring point AT 5 was collected by the land team during the sampling event and labeled as SME 12. One duplicate sample of monitoring point SME 9 was collected by the land team during the sampling event and labeled as SME 13. One duplicate sample of monitoring point SME 4 was collected by the boat team during the sampling event and labeled as SME 11.

3.4.3 Sample Shipment

After filling, the sample containers were sealed and immediately placed on ice in a protective container for shipment to the analytical laboratory. A Chain of Custody form was completed and accompanied the samples from the field to the laboratory. A copy of the Chain of Custody is included in **Appendix III**.

4.0 Analytical Results

The laboratory analytical results for the November 16, 2022, quarterly monitoring event are included on **Table B.2** in **Appendix II**. Historical monitoring data is included in Appendix II as **Tables B.3 to B.21**. The laboratory reports and Chain of Custody are included in **Appendix III**.

5.0 Recordkeeping

Each quarterly monitoring report will be incorporated into the Annual Report submitted by each entity. Monitoring reports will be retained by each entity for a minimum of 3 years.

The Storm Water Steering Committee is responsible for the coordination and implementation of the Storm Water Management Plan. Current membership of the Storm Water Steering Committee is as follows:

Table 5-1 Storm Water Steering Committee

Entity	Contact	Phone No.	Email
City of Gadsden	Heath Williamson	256-549-4520	hwilliamson@cityofgadsden.com
City of Gadsden	Keener Morrow	256-549-4524	kmorrow@cityofgadsden.com
City of Attalla	Jason Nicholson	256-441-9200	jnicholson@attallacity.org
City of Rainbow City	Joel Garmon	256-413-1230	jgarmon@rbcalabama.com
City of Southside	Judd Rich	256-442-9775 Ext. 103	jrich@cityofsouthside.com
City of Glencoe	Todd Means	256-492-1424	toddmeans@cityofglencoe.org
City of Hokes Bluff	Lisa Lowman	256-492-2414	hbcity@cityofhokesbluff.net
Etowah County	Robert Nail	256-549-5358	rnail@etowahcounty.org

One copy of this Monitoring Report has been provided to each member of the Storm Water Steering Committee.

6.0 Certification of the Monitoring Report

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature of Responsible Official	Date
Print Name and Title	MS4 Entity

7.0 Acknowledgement

S&ME certifies that the information provided in this monitoring report reflects the conditions reported, encountered, and discovered at the time of report preparation. When performing this scope of services, S&ME observed the degree of care and skill generally exercised by other consultants undertaking similar studies at the same time, under similar circumstances and conditions, and in the same geographic area.

8.0 Closing

S&ME sincerely appreciates the opportunity to provide watershed monitoring services for the Gadsden-Etowah MS4. Should questions remain or if additional information is required, please do not hesitate to contact the undersigned.

S&ME, Inc.

Abigail Harris
Staff Professional

Deborah J. Jones, P.E.
Senior Engineer

Appendices

Appendix I – Figures

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – Rain Gauge Locations

Figure 3 – MS4 Monitoring Locations

GADSDEN-ETOWAH MS4 BOUNDARIES

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

N

0 1.5 3 Miles

Legend

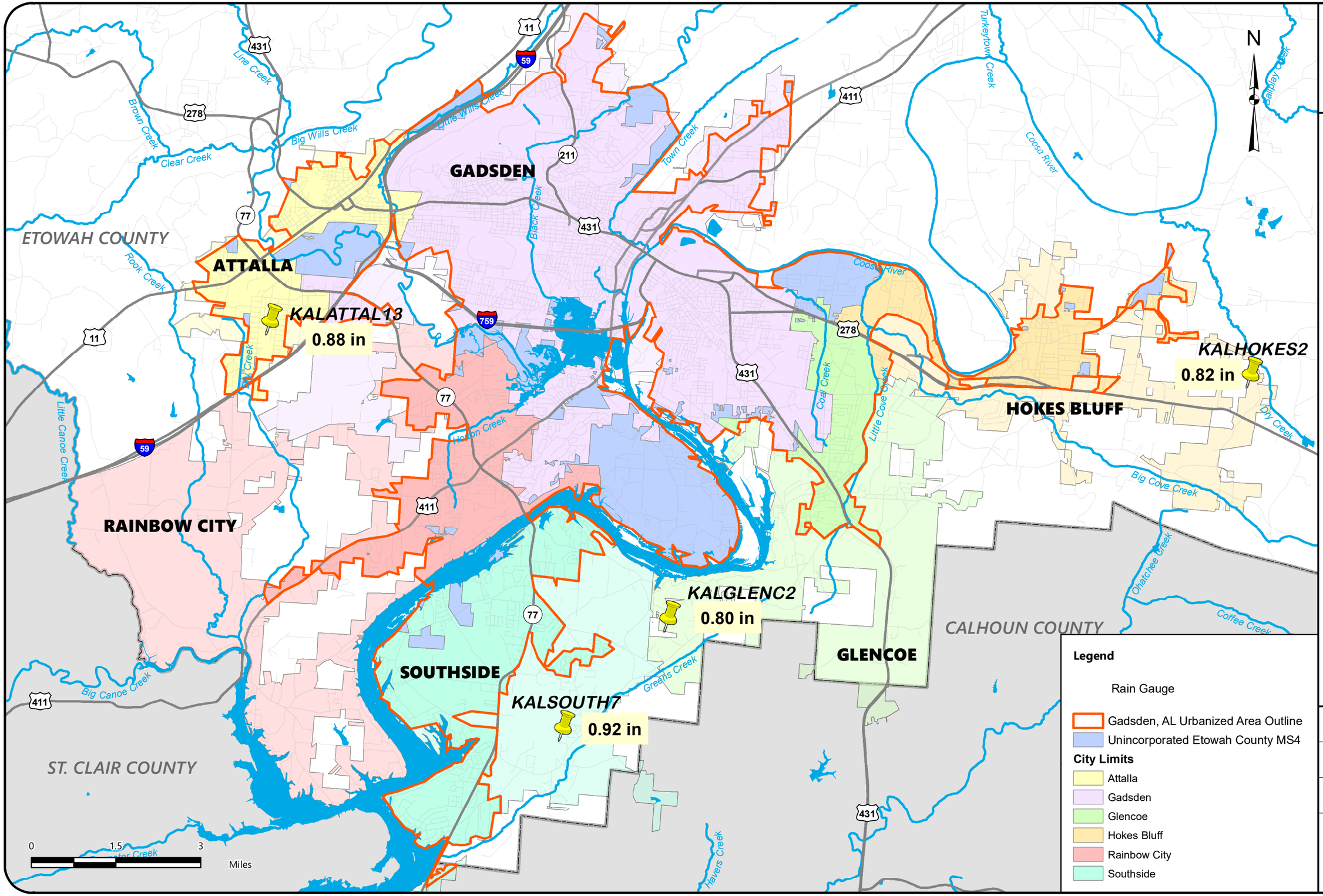
- Gadsden, AL Urbanized Area Outline
- Unincorporated Etowah County MS4

City Limits

- Attalla
- Gadsden
- Glencoe
- Hokes Bluff
- Rainbow City
- Southside

SCALE:	1:100,000
DATE:	12/05/2022
PROJECT NUMBER	22820261
FIGURE NO.	1

REFERENCE:
GIS base layers were obtained from Esri. This map is for informational purposes only. All feature locations displayed are approximated and are not based on civil survey information, unless stated otherwise.



RAIN GAUGE LOCATIONS (11/15/2022)

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

SCALE: 1:100,000

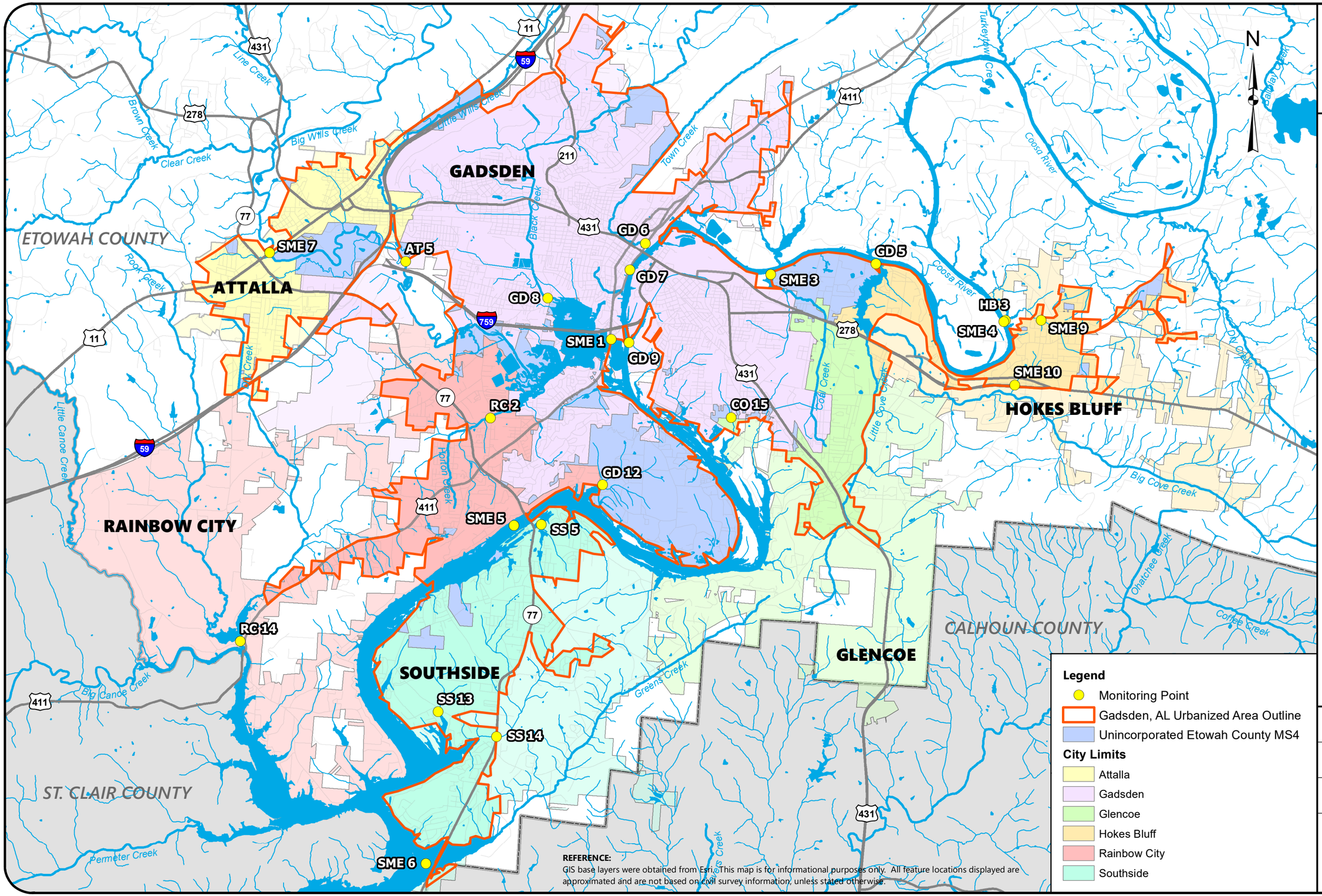
DATE: 12/16/2022

PROJECT NUMBER 22820261

FIGURE NO. 2

WET-WEATHER MONITORING LOCATIONS

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009



REFERENCE:
GIS base layers were obtained from Esri. This map is for informational purposes only. All feature locations displayed are approximated and are not based on civil survey information, unless stated otherwise.

SCALE:	1:100,000
DATE:	03/23/2022
PROJECT NUMBER	22820261
FIGURE NO.	3

Appendix II – Tables

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.26 – Historical Analytical Data

TABLE B.1 - FIELD OBSERVATIONS

GADSDEN-ETOWAH MS4 MONITORING

MONITORING POINT ID	DATE	TIME	DEPTH (FT)	PERSONNEL	WEATHER CONDITIONS	WATERBODY CONDITIONS
AT 5	11/16/2022	13:45	-2'	AH/PC	Sunny	Smooth
GD 8	11/16/2022	13:30	-2'	AH/PC	Sunny	Smooth
RC 2	11/16/2022	13:15	-2'	AH/PC	Sunny	Smooth
SS 13	11/16/2022	12:38	-2'	AH/PC	Sunny	Smooth
SS 14	11/16/2022	12:45	-2'	AH/PC	Sunny	Smooth
GD 12	11/16/2022	13:00	-2'	AH/PC	Sunny	Smooth
GD 6	11/16/2022	12:12	-2'	AH/PC	Sunny	Smooth
CO 15	11/16/2022	11:10	-2'	AH/PC	Sunny	Smooth
SME 7	11/16/2022	10:37	-2'	AH/PC	Sunny	Smooth
SME 9	11/16/2022	11:40	-2'	AH/PC	Sunny	Smooth
SME 10	11/16/2022	11:50	-2'	AH/PC	Sunny	Smooth
HB 3	11/16/2022	10:35	-5'	NW	Partly Cloudy	Smooth
SME 4	11/16/2022	10:45	-5'	NW	Partly Cloudy	Smooth
GD 5	11/16/2022	11:05	-5'	NW	Partly Cloudy	Smooth
SME 3	11/16/2022	11:15	-5'	NW	Partly Cloudy	Smooth
GD 7	11/16/2022	11:30	-5'	NW	Partly Cloudy	Smooth
GD 9	11/16/2022	11:40	-5'	NW	Partly Cloudy	Smooth
SME 1	11/16/2022	11:55	-5'	NW	Partly Cloudy	Smooth
SS 5	11/16/2022	12:40	-5'	NW	Partly Cloudy	Smooth
SME 5	11/16/2022	12:50	-5'	NW	Partly Cloudy	Smooth
SME 6	11/16/2022	13:05	-5'	NW	Partly Cloudy	Rough
RC 14	11/16/2022	13:25	-5'	NW	Partly Cloudy	Rough

TABLE B.2 - ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	11/16/2022	6.4	7.80	10.62	11.1	0.366	0.448	0.420	<0.250	7.30
GD 8	11/16/2022	5.2	8.21	9.74	12.2	0.107	0.0330	<0.100	0.472	4.20
RC 2	11/16/2022	19.4	7.35	8.84	11.2	0.126	<0.0300	<0.100	0.434	13.4
SS 13	11/16/2022	4.4	7.06	9.81	13.1	<0.100	<0.0300	<0.100	0.263	5.50
SS 14	11/16/2022	4.3	7.37	9.76	10.8	<0.100	0.0390	<0.100	0.406	2.50
GD 12	11/16/2022	3.9	7.25	9.67	11.2	<0.100	<0.0300	<0.100	0.407	4.50
GD 6	11/16/2022	23.9	7.47	9.78	12.2	0.166	<0.0300	<0.100	0.476	7.50
CO 15	11/16/2022	9.5	7.38	10.5	11.2	<0.100	<0.0300	<0.100	0.424	10.70
SME 7	11/16/2022	4.9	7.87	10.3	11.1	0.424	0.490	0.528	<0.250	3.80
SME 9	11/16/2022	2.9	7.50	9.86	12.2	<0.100	<0.0300	<0.100	<0.250	<2.50
SME 10	11/16/2022	9.8	7.18	8.03	12.2	<0.100	<0.0300	<0.100	0.516	4.60
SME 12	11/16/2022	DUPLICATE OF AT 5				0.362	0.427	0.415	<0.250	6.70
SME 13	11/16/2022	DUPLICATE OF SME 7				0.425	0.488	0.430	0.310	2.80
HB 3	11/16/2022	10.73	7.71	9.53	12.9	<0.100	<0.0300	<0.100	0.604	7.40
SME 4	11/16/2022	9.91	7.69	9.45	12.5	<0.100	<0.0300	<0.100	0.382	10.5
GD 5	11/16/2022	6.95	7.75	9.56	13.4	<0.100	<0.0300	<0.100	0.312	8.67
SME 3	11/16/2022	7.34	7.76	9.28	13.6	<0.100	<0.0300	<0.100	0.294	10.3
GD 7	11/16/2022	5.25	7.75	9.00	14.4	<0.100	0.0430	<0.100	0.509	8.53
GD 9	11/16/2022	4.52	7.81	9.41	14.1	<0.100	<0.0300	<0.100	0.399	5.70
SME 1	11/16/2022	5.78	7.86	9.45	14.3	<0.100	<0.0300	<0.100	0.306	7.90
SS 5	11/16/2022	5.32	8.07	10.21	14.0	<0.100	<0.0300	<0.100	0.314	8.30
SME 5	11/16/2022	7.26	7.91	9.00	14.7	0.113	<0.0300	<0.100	0.347	11.1
SME 6	11/16/2022	8.01	7.87	9.34	14.0	<0.100	<0.0300	<0.100	0.308	11.3
RC 14	11/16/2022	6.84	7.79	9.06	12.4	<0.100	<0.0300	<0.100	<0.250	9.20
SME 11	11/16/2022	DUPLICATE OF SME 4				<0.100	<0.0300	<0.100	0.289	12.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled (Dry)

Bold - maximum reading for constituent

NA - not availabe at this time

* - value unknown due to equipment malfuction

TABLE B.3 - HISTORICAL ANALYTICAL DATA - AT 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	3/12/2013	15	7.80	11.04	12.55	0.61	0.150	0.14	0.37	20.0
AT 5	5/8/2013	25	5.08	2.59	14.69	0.31	0.099	0.11	0.56	19.0
AT 5	9/23/2013	21	5.96	3.95	22.88	1.30	0.400	0.35	0.37	22.0
AT 5	12/10/2013	68	5.32	11.43	8.21	0.79	0.290	0.34	0.97	64.0
AT 5	2/6/2014	40	4.06	15.29	7.28	0.80	0.130	0.13	0.35	32.0
AT 5	6/26/2014	70	7.85	7.61	23.89	0.77	0.340	0.28	0.38	19.0
AT 5	9/30/2014	15	5.78	6.63	21.03	0.94	0.490	0.54	<0.25	14.0
AT 5	11/19/2014	47	5.08	10.23	6.91	1.30	0.410	0.39	0.50	27.0
AT 5	3/23/2015	17	8.69	9.39	14.5	0.71	0.130	0.14	0.27	15.0
AT5	4/22/2015	53	6.93	11.13	18.4	0.69	0.110	0.13	<0.25	76.0
AT5	9/30/2015	15	6.37	9.45	21.63	1.82	0.664	0.86	<0.25	16.4
AT5	11/19/2015	934	7.38	19.33	14.98	0.67	0.261	0.31	1.47	74.6
AT 5	3/15/2016	30.2	7.93	20.43	16.86	0.578	0.068	<0.100	0.772	26.7
AT 5	6/29/2016	18.1	7.99	6.57	25.4	0.800	0.598	0.71	<0.250	14.5
AT 5	8/9/2016	17.1	7.89	6.47	25.8	0.975	0.482	0.502	0.268	18.3
AT5	12/7/2016	26.5	7.08	10.19	11.3	0.663	0.450	0.474	<0.250	16.9
AT5	3/2/2017	50.8	8.14	8.86	13.4	1.08	0.267	0.373	0.529	44.6
AT 5	6/21/2017	11.7	7.98	6.74	23.3	0.616	0.226	0.366	0.544	70.0
AT 5	8/17/2017	9.5	8.09	6.77	26.0	0.890	0.258	0.283	0.690	12.0
AT 5	10/26/2017	9.8	7.95	8.25	15.7	0.936	0.226	0.250	<0.250	9.4
AT 5	3/27/2018	14.5	7.79	9.03	12.9	0.849	0.162	0.148	<0.250	15.9
AT 5	6/26/2018	16.4	8.06	6.89	25.5	0.849	0.230	0.246	0.411	25.2
AT 5	8/1/2018	77.9	7.33	7.16	22.3	0.510	0.285	0.401	0.680	107.0
AT 5	12/11/2018	29.2	7.59	10.73	9.4	1.09	0.066	0.204	0.579	46.2

TABLE B.3 - HISTORICAL ANALYTICAL DATA - AT 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	4/17/2019	12.2	7.63	8.99	17.9	0.638	0.061	<0.100	<0.250	14.4
AT 5	6/11/2019	24.6	7.18	3.48	22.2	0.822	0.206	0.290	0.486	15.9
AT 5	8/28/2019	20.7	7.84	7.42	27.1	0.534	0.404	0.485	1.070	23.5
AT 5	10/28/2019	22.5	7.84	8.45	15.1	0.665	0.523	0.499	<0.250	17.0
AT 5	3/31/2020	23.1	8.09	9.07	16.6	0.657	0.0320	0.102	<0.250	27.1
AT 5	6/10/2020	19.4	7.56	7.35	23.2	0.825	0.248	0.243	<0.250	22.8
AT 5	9/21/2020	NS	8.08	8.21	20.6	0.603	0.491	0.399	<0.250	11.3
AT 5	12/17/2020	28.7	7.91	11.21	9.6	0.831	0.087	<0.100	<0.250	18.6
AT 5	3/18/2021	119.0	7.82	10.68	17.2	0.310	0.050	<0.100	<0.250	55.6
AT 5	5/5/2021	6.5	7.24	8.45	18.1	6.86	0.121	0.157	1.37	43.7
AT 5	9/2/2021	*	*	7.75	23.4	0.482	0.131	0.262	0.969	67.4
AT 5	11/23/2021	<1.0	8.13	11.09	12.9	0.343	<0.0300	0.253	<0.250	2.6
AT 5	1/10/2022	20.8	7.39	11.46	10.0	0.769	0.126	0.184	0.279	29.7
AT 5	4/7/2022	21.9	7.53	9.30	16.6	0.509	0.101	0.121	0.380	33.8
AT 5	8/3/2022	21.7	8.17	7.50	26.0	0.715	0.271	0.323	0.702	30.8
AT 5	11/16/2022	6.4	7.80	10.62	11.1	0.366	0.448	0.420	<0.250	7.3

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.4 - HISTORICAL ANALYTICAL DATA - GD 8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 8	3/12/2013	6.6	7.65	11.73	9.85	0.13	<0.025	<0.100	0.25	4.5
GD 8	5/8/2013	18.7	6.71	1.72	14.47	0.11	<0.025	<0.100	0.38	19.0
GD 8	9/23/2013	17.8	6.22	3.98	22.74	<0.100	<0.025	<0.100	0.41	9.6
GD 8	12/10/2013	30.7	6.04	13.33	8.10	0.28	0.040	<0.100	0.35	32.0
GD 8	2/6/2014	15.5	3.87	16.32	6.48	0.25	<0.025	<0.100	0.13	13.0
GD 8	6/26/2014	30.8	8.19	6.64	26.15	0.25	<0.025	<0.100	0.48	7.3
GD 8	9/30/2014	11.9	7.32	5.06	23.19	0.14	<0.025	<0.100	0.42	6.0
GD 8	11/19/2014	25.3	5.16	9.01	5.87	0.23	<0.025	<0.100	0.32	13.0
GD 8	3/23/2015	10.6	8.67	9.76	14.8	0.22	<0.025	<0.100	<0.25	4.8
GD 8	4/22/2015	20.2	7.40	11.71	17.70	0.16	<0.025	<0.100	<0.25	15.0
GD 8	9/30/2015	9.0	7.79	9.48	24.33	0.184	<0.025	<0.100	0.483	6.8
GD 8	11/19/2015	212	6.94	23.30	15.13	0.233	<0.025	0.101	0.852	79.6
GD 8	3/15/2016	11.4	7.88	16.81	16.98	0.131	<0.025	<0.100	0.470	8.3
GD 8	6/29/2016	32.5	8.50	6.60	29.3	<0.100	<0.025	<0.100	0.450	39.8
GD 8	8/9/2016	12.7	8.90	5.87	28.9	0.217	<0.025	<0.100	0.668	6.3
GD 8	12/7/2016	10.1	7.75	8.84	12.1	0.308	<0.025	<0.100	0.409	7.0
GD 8	3/2/2017	19.7	8.14	9.76	12.2	0.284	<0.025	<0.100	0.342	3.6
GD 8	6/21/2017	7.9	8.73	6.50	25.0	<0.100	<0.025	<0.100	0.642	7.0
GD 8	8/17/2017	6.8	8.55	6.30	28.7	0.132	<0.025	<0.100	0.541	8.9
GD 8	10/26/2017	6.1	8.17	8.25	16.3	<0.100	<0.025	<0.100	0.347	4.0
GD 8	3/27/2018	8.9	8.09	9.52	12.1	0.215	<0.025	<0.100	<0.25	6.5
GD 8	6/26/2018	5.8	8.50	5.74	29.7	0.150	<0.025	<0.100	0.670	5.8
GD 8	8/1/2018	45.8	6.89	7.39	22.9	0.556	0.072	0.114	0.641	53.2
GD 8	12/11/2018	16.0	7.87	11.71	9.2	0.326	<0.025	<0.100	0.406	24.4

TABLE B.4 - HISTORICAL ANALYTICAL DATA - GD 8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 8	4/17/2019	6.7	8.05	9.30	17.6	0.115	<0.025	<0.100	0.437	<5.00
GD 8	6/11/2019	9.4	7.19	2.94	25.8	0.181	<0.025	<0.100	0.948	4.1
GD 8	8/28/2019	14.2	8.26	6.07	30.2	0.212	<0.025	<0.100	0.992	11.8
GD 8	10/28/2019	29.6	7.83	8.22	16.2	0.435	<0.025	0.109	0.255	12.9
GD 8	3/31/2020	19.3	7.97	9.30	16.6	0.133	<0.025	0.132	0.348	18.0
GD 8	6/10/2020	10.8	7.97	7.13	24.9	0.211	<0.030	<0.100	<0.25	8.0
GD 8	9/21/2020	NS	8.19	6.36	22.8	0.171	<0.030	<0.100	0.290	7.4
GD 8	12/17/2020	17.5	8.30	11.68	9.4	0.273	<0.030	<0.100	<0.25	11.5
GD 8	3/18/2021	117.0	8.15	11.53	16.5	0.178	<0.030	<0.100	0.312	102.0
GD 8	5/5/2021	3.7	8.01	9.62	18.5	7.03	<0.030	<0.100	0.796	35.7
GD 8	9/2/2021	*	*	8.04	24.5	0.241	<0.030	<0.100	0.611	18.3
GD 8	11/23/2021	<1.0	8.04	10.73	12.5	<0.100	<0.0300	<0.100	<0.250	2.7
GD 8	1/10/2022	18.9	7.60	12.25	9.2	0.222	<0.0300	0.122	0.277	20.8
GD 8	4/7/2022	8.2	7.87	9.94	16.8	0.120	<0.0300	<0.100	0.349	10.9
GD 8	8/3/2022	14.4	8.14	6.97	29.0	0.189	<0.0300	<0.100	0.406	12.1
GD 8	11/16/2022	5.2	8.21	9.74	12.2	0.107	0.0330	<0.100	0.472	4.2

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.5 - HISTORICAL ANALYTICAL DATA - RC 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 2	3/12/2013	29.1	7.73	9.83	10.53	0.12	0.088	<0.100	0.75	14.0
RC 2	5/8/2013	18.9	6.16	3.06	16.36	0.19	<0.025	<0.100	0.55	12.0
RC 2	9/23/2013	11.4	6.24	3.00	23.61	<0.100	<0.025	<0.100	0.43	6.3
RC 2	12/10/2013	33.6	6.07	11.71	8.38	0.11	0.062	<0.100	0.54	10.0
RC 2	2/6/2014	30.4	3.89	17.28	5.62	0.26	<0.025	<0.100	0.43	9.6
RC 2	6/26/2014	17.6	7.90	6.81	24.81	0.15	<0.025	<0.100	0.44	7.2
RC 2	9/30/2014	3.4	7.27	5.55	22.25	<0.100	<0.025	<0.100	0.40	2.5
RC 2	11/19/2014	27.4	5.65	7.14	5.72	0.17	<0.025	<0.100	0.43	11.0
RC 2	3/23/2015	45.0	8.23	9.07	16.00	0.15	0.044	<0.100	0.81	18.0
RC 2	4/22/2015	14.1	7.64	11.42	18.40	0.26	<0.025	<0.100	<0.25	4.8
RC 2	9/30/2015	7.1	5.93	9.28	23.33	<0.100	<0.025	<0.100	<0.25	4.6
RC 2	11/19/2015	114.0	7.36	21.94	15.29	0.271	<0.025	0.133	0.75	14.4
RC 2	3/15/2016	14.5	7.62	16.67	14.61	0.181	<0.025	<0.100	0.43	6.0
RC 2	6/29/2016	12.1	7.78	4.31	28.30	<0.100	0.077	<0.100	0.35	10.9
RC 2	8/9/2016	24.5	8.12	5.05	26.50	0.140	<0.025	<0.100	0.45	9.9
RC 2	12/7/2016	17.2	7.86	7.47	12.0	0.200	<0.025	<0.100	0.53	11.9
RC 2	3/2/2017	25.3	7.71	7.74	13.10	0.166	<0.025	<0.100	0.45	8.0
RC 2	6/21/2017	14.2	7.91	5.61	23.7	<0.100	<0.025	<0.100	0.51	12.3
RC 2	8/17/2017	18.2	8.08	4.94	27.90	<0.100	<0.025	0.133	0.72	72.2
RC 2	10/26/2017	18.1	7.57	7.05	15.2	<0.100	<0.025	<0.100	0.27	17.5
RC 2	3/27/2018	18.2	7.91	8.43	12.4	0.146	<0.025	<0.100	<0.25	12.5
RC 2	6/26/2018	18.8	7.94	6.19	26.5	0.101	<0.025	<0.100	0.802	13.0
RC 2	8/1/2018	56.8	7.40	7.10	22.4	<0.100	<0.025	<0.100	0.506	84.4
RC 2	12/11/2018	16.0	7.54	11.41	7.7	0.316	<0.025	<0.100	0.479	3.1

TABLE B.5 - HISTORICAL ANALYTICAL DATA - RC 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 2	4/17/2019	7.0	7.77	8.67	18.9	0.165	<0.025	<0.100	0.288	<5.00
RC 2	6/11/2019	14.3	6.83	3.78	23.0	<0.100	<0.025	<0.100	0.520	5.2
RC 2	8/28/2019	14.4	8.01	7.30	28.0	<0.100	<0.025	<0.100	0.748	4.8
RC 2	10/28/2019	11.4	7.55	9.42	14.9	0.132	<0.025	0.197	<0.250	3.4
RC 2	3/31/2020	84.5	7.90	9.10	15.7	0.190	0.0290	0.118	0.574	90.0
RC 2	6/10/2020	20.5	7.87	6.37	25.6	0.210	<0.030	<0.100	0.330	10.8
RC 2	9/21/2020	NS	7.24	7.03	19.6	<0.100	<0.030	<0.100	<0.250	5.2
RC 2	12/17/2020	28.1	7.91	11.23	8.9	0.218	<0.030	<0.100	0.396	5.4
RC 2	3/18/2021	67.5	7.90	8.68	16.7	0.145	<0.030	<0.100	0.611	26.8
RC 2	5/5/2021	2.8	7.31	8.95	19.1	7.91	<0.030	<0.100	0.892	15.6
RC 2	9/2/2021	*	*	6.52	25.0	0.122	<0.030	<0.100	0.802	3.4
RC 2	11/23/2021	3.5	7.66	8.33	12.2	0.124	<0.0300	<0.100	0.340	19.2
RC 2	1/10/2022	32.1	7.27	11.50	8.4	0.185	<0.0300	<0.100	0.501	9.0
RC 2	4/7/2022	10.96	7.41	9.02	17.5	0.186	<0.0300	0.144	0.386	5.0
RC 2	8/3/2022	15.1	8.26	7.41	27.1	0.175	<0.0300	<0.100	0.352	13.8
RC 2	11/16/2022	19.4	7.35	8.84	11.2	0.126	<0.0300	<0.100	0.434	13.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.6 - HISTORICAL ANALYTICAL DATA - SS 13

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 13	3/12/2013	8	7.04	9.85	11.45	0.34	0.032	<0.10	0.78	4.7
SS 13	5/8/2013	10	6.68	2.94	18.75	0.36	<0.050	<0.10	0.72	5.7
SS 13	9/23/2013	12	7.04	3.38	25.31	<0.10	0.028	<0.10	0.84	9.6
SS 13	12/10/2013	12.2	6.14	10.93	8.99	0.33	0.077	0.12	0.67	5.6
SS 13	2/6/2014	7.2	4.26	17.50	5.14	0.42	<0.025	<0.100	0.44	4.1
SS 13	6/26/2014	23.2	8.33	8.09	28.44	<0.100	<0.025	0.12	0.52	5.4
SS 13	9/30/2014	12.4	7.41	4.26	24.77	<0.100	<0.025	<0.100	0.44	12.0
SS 13	11/19/2014	13.4	6.31	6.08	6.44	0.22	0.044	<0.100	0.40	4.8
SS 13	3/23/2015	15.9	7.33	8.57	15.4	0.22	0.029	<0.100	0.71	7.6
SS 13	4/22/2015	15.3	6.60	8.93	20.8	0.32	<0.025	<0.100	0.67	10.0
SS 13	9/30/2015	9.5	7.33	11.54	25.95	<0.100	<0.025	<0.100	0.52	9.0
SS 13	11/19/2015	35.8	7.07	18.48	15.31	0.242	<0.025	0.181	0.97	4.8
SS 13	3/15/2016	9.1	6.61	12.42	17.37	0.323	<0.025	<0.100	<0.25	4.7
SS 13	6/29/2016	9.7	7.86	6.15	30.6	<0.100	<0.025	<0.100	0.53	9.8
SS 13	8/9/2016	20.3	7.77	5.92	29.1	<0.100	<0.025	<0.100	0.73	24.0
SS 13	12/7/2016	4.8	7.39	6.97	12.5	0.108	<0.025	<0.100	0.45	3.6
SS 13	3/2/2017	12.0	6.64	7.19	13.4	0.249	<0.025	<0.100	0.75	4.6
SS 13	6/21/2017	8.7	7.54	5.82	26.1	<0.100	<0.025	<0.100	0.82	12.8
SS 13	8/17/2017	9.3	7.93	6.54	30.9	<0.100	<0.025	<0.100	0.81	18.6
SS 13	10/26/2017	5.2	6.70	7.41	15.4	0.122	<0.025	<0.100	0.60	7.2
SS 13	3/27/2018	6.4	8.19	8.23	12.4	0.495	<0.025	<0.100	<0.25	16.2
SS 13	6/26/2018	6.8	7.36	5.67	29.5	<0.100	<0.025	0.140	0.998	10.2
SS 13	8/1/2018	24.2	6.75	6.86	21.9	0.226	0.206	0.308	1.180	20.2
SS 13	12/11/2018	8.2	7.37	10.79	7.4	0.451	<0.025	<0.100	0.655	8.6

TABLE B.6 - HISTORICAL ANALYTICAL DATA - SS 13

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 13	4/17/2019	6.4	7.42	9.23	19.1	<0.100	<0.025	<0.100	0.624	6.8
SS 13	6/11/2019	8.9	6.59	3.12	23.4	<0.100	<0.025	<0.100	0.929	<6.25
SS 13	8/28/2019	6.7	7.93	7.33	29.7	<0.100	<0.025	<0.100	1.170	24.4
SS 13	10/28/2019	12.3	6.25	3.61	16.0	0.211	0.031	<0.100	0.739	3.7
SS 13	3/31/2020	60.4	6.95	8.64	14.9	0.233	0.0580	0.147	0.928	92.0
SS 13	6/10/2020	10.1	7.27	7.08	28.2	<0.100	<0.030	<0.100	0.492	21.2
SS 13	9/21/2020	NS	7.36	6.58	21.9	<0.100	<0.030	0.200	<0.250	7.8
SS 13	12/17/2020	12.3	8.04	10.83	8.3	0.405	<0.030	<0.100	0.432	5.3
SS 13	3/18/2021	26.8	7.61	9.23	16.9	0.163	<0.030	<0.100	0.926	16.5
SS 13	5/5/2021	0.5	7.77	8.13	18.2	7.64	0.0960	0.160	1.41	10.5
SS 13	9/2/2021	*	*	8.50	28.7	0.189	<0.030	0.108	1.33	13.4
SS 13	11/23/2021	<1.0	7.11	8.26	14.8	0.16	<0.0300	<0.100	0.331	5.30
SS 13	1/10/2022	9.1	7.71	11.23	8.8	0.295	<0.0300	<0.100	0.725	7.0
SS 13	4/7/2022	6.68	7.40	8.72	18.2	0.304	<0.0300	<0.100	0.886	5.3
SS 13	8/3/2022	14.2	7.92	7.03	31.4	<0.100	<0.0300	<0.100	1.65	44.4
SS 13	11/16/2022	4.4	7.06	9.81	13.1	<0.100	<0.0300	<0.100	0.26	5.5

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.7 - HISTORICAL ANALYTICAL DATA - SS 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 14	3/12/2013	9.7	7.40	11.23	10.93	0.40	0.087	0.11	0.77	4.7
SS 14	5/8/2013	10.3	6.47	2.75	16.42	0.45	0.041	<0.100	0.53	5.0
SS 14	9/23/2013	3.1	6.76	6.49	21.77	0.38	0.036	<0.100	0.45	<2.5
SS 14	12/10/2013	17.6	5.63	11.33	8.56	0.28	0.160	0.19	0.66	9.2
SS 14	2/6/2014	12.4	4.19	17.56	5.16	0.62	0.074	<0.100	0.50	14.0
SS 14	6/26/2014	7.9	8.18	7.58	24.14	0.67	0.080	0.16	0.89	<2.5
SS 14	9/30/2014	7.9	7.42	3.67	22.35	<0.100	0.031	<0.100	0.52	6.1
SS 14	11/19/2014	16.0	6.27	7.50	5.48	0.75	0.075	0.22	0.46	9.2
SS 14	3/23/2015	21.3	7.75	9.53	16.5	0.27	0.110	0.14	1.10	11.0
SS 14	4/22/2015	12.3	7.43	12.29	17.5	0.620	<0.025	<0.100	0.58	6.3
SS 14	9/30/2015	7.3	7.16	12.79	24.02	<0.10	0.088	0.176	0.514	6.6
SS 14	11/19/2015	27.0	6.49	20.71	15.16	0.442	0.131	0.183	0.996	23.3
SS 14	3/15/2016	11.3	7.18	12.11	16.01	0.50	0.056	<0.100	0.834	8.1
SS 14	6/29/2016	6.0	7.62	3.61	27.2	<0.100	0.103	0.160	0.650	6.0
SS 14	8/9/2016	22.3	7.71	5.99	26.9	0.164	0.062	0.119	0.871	12.7
SS 14	12/7/2016	7.6	7.27	7.72	11.9	0.885	0.078	0.147	0.705	<2.5
SS 14	3/2/2017	12.6	7.60	8.76	12.2	0.475	0.092	0.153	0.842	9.2
SS 14	6/21/2017	21.5	7.74	6.24	23.7	0.249	0.030	0.109	0.725	63.7
SS 14	8/17/2017	6.0	8.12	7.11	31.4	0.118	0.070	<0.100	0.827	24.8
SS 14	10/26/2017	4.3	7.39	7.66	13.9	0.699	0.054	<0.100	0.582	3.6
SS 14	3/27/2018	8.8	7.34	8.96	11.9	0.673	0.044	0.148	<0.25	8.2
SS 14	6/26/2018	7.7	8.47	10.65	29.3	0.206	0.044	0.148	1.010	18.7
SS 14	8/1/2018	42.9	6.35	7.04	22.5	0.109	0.233	0.276	0.885	60.0
SS 14	12/11/2018	8.4	6.95	11.53	7.4	0.812	0.057	0.117	0.635	4.3

TABLE B.7 - HISTORICAL ANALYTICAL DATA - SS 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 14	4/17/2019	6.6	7.60	8.28	22.1	0.598	0.042	<0.100	0.414	6.7
SS 14	6/11/2019	12.6	6.78	3.47	23.8	0.444	0.077	<0.100	0.928	5.9
SS 14	8/28/2019	8.1	7.96	8.18	27.9	<0.100	<0.025	0.174	1.050	8.5
SS 14	10/28/2019	10.9	6.97	7.83	15.1	0.458	0.048	0.167	0.381	2.7
SS 14	3/31/2020	62.4	6.67	9.31	15.2	0.190	0.235	0.348	0.934	145
SS 14	6/10/2020	17.0	7.32	7.20	29.1	0.246	0.078	0.128	0.897	40.4
SS 14	9/21/2020	NS	7.62	7.59	20.7	0.345	0.075	<0.100	0.281	8.4
SS 14	12/17/2020	11.4	7.94	11.72	8.6	0.546	0.050	<0.100	0.540	5.4
SS 14	3/18/2021	31.4	7.73	9.77	16.8	0.189	0.048	<0.100	0.670	19.8
SS 14	5/5/2021	1.2	6.98	8.62	19.4	7.85	0.073	<0.100	1.06	6.27
SS 14	9/2/2021	*	*	7.80	26.3	0.552	0.980	0.128	0.935	3.0
SS 14	11/23/2021	<1.0	7.46	10.28	12.7	0.315	0.108	0.178	0.370	2.6
SS 14	1/10/2022	9.8	7.12	11.84	8.8	0.385	0.068	0.136	0.674	4.4
SS 14	4/7/2022	4.4	6.82	9.83	17.8	0.402	0.033	<0.100	0.566	2.9
SS 14	8/3/2022	10.0	8.03	7.77	30.2	0.176	<0.0300	0.123	0.723	6.50
SS 14	11/16/2022	4.3	7.37	9.76	10.8	<0.100	0.0390	<0.100	0.406	2.50

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.8 - HISTORICAL ANALYTICAL DATA - GD 12

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 12	3/12/2013	8.5	7.41	10.93	13.43	0.25	0.030	<0.100	0.54	3.9
GD 12	5/8/2013	15.0	6.73	2.35	16.53	0.21	0.030	<0.100	0.40	7.5
GD 12	9/23/2013	9.8	6.76	3.94	26.07	<0.10	0.026	<0.100	0.48	9.0
GD 12	12/10/2013	18.8	6.15	10.09	10.18	0.22	0.079	0.11	0.45	5.9
GD 12	2/6/2014	12.3	4.17	16.99	5.76	0.31	<0.025	<0.100	0.28	3.9
GD 12	6/26/2014	28.5	8.38	9.40	26.72	0.11	0.035	0.12	0.62	32.0
GD 12	9/30/2014	10.6	7.68	5.77	24.68	<0.100	<0.025	<0.100	0.39	11.0
GD 12	11/19/2014	14.7	6.95	5.93	5.85	0.28	<0.025	0.13	0.39	6.6
GD 12	3/23/2015	17.6	7.80	9.56	16.80	0.24	<0.025	<0.100	0.59	8.1
GD 12	4/22/2015	17.3	7.45	11.04	19.80	0.25	<0.025	<0.100	0.43	14.0
GD 12	9/30/2015	7.4	7.30	11.07	24.67	<0.100	<0.025	<0.100	0.695	8.5
GD 12	11/19/2015	22.9	7.07	19.14	14.68	0.281	0.100	0.15	0.769	12.0
GD 12	3/15/2016	9.8	7.43	13.14	16.05	0.254	0.032	<0.100	0.434	4.6
GD 12	6/29/2016	12.9	8.22	7.68	31.20	<0.100	0.036	<0.100	0.380	12.0
GD 12	8/9/2016	22.1	7.57	4.39	27.60	<0.100	<0.025	<0.100	0.629	13.3
GD 12	12/7/2016	10.3	7.18	6.65	11.4	0.142	<0.025	<0.100	0.599	4.0
GD 12	3/2/2017	15.4	7.79	10.12	11.70	0.223	<0.025	0.12	0.583	6.1
GD 12	6/21/2017	16.1	7.43	5.12	24.3	<0.100	<0.025	<0.100	0.770	16.8
GD 12	8/17/2017	6.3	8.13	5.80	29.90	<0.100	<0.025	<0.100	0.583	13.3
GD 12	10/26/2017	9.8	6.74	7.53	13.2	0.19	<0.025	<0.100	0.312	7.8
GD 12	3/27/2018	6.3	7.71	9.24	11.5	0.356	<0.025	<0.100	<0.25	4.2
GD 12	6/26/2018	9.9	7.44	4.35	26.1	0.102	<0.025	<0.100	0.528	13.2
GD 12	8/1/2018	42.3	7.05	7.33	22.7	0.108	0.159	0.286	1.230	43.8
GD 12	12/11/2018	9.5	6.68	11.46	7.8	0.313	<0.025	<0.100	0.574	4.3

TABLE B.8 - HISTORICAL ANALYTICAL DATA - GD 12

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 12	4/17/2019	9.1	7.45	9.20	17.5	0.257	<0.025	<0.100	0.272	4.0
GD 12	6/11/2019	19.0	7.20	3.25	22.0	0.223	0.066	0.121	0.820	8.2
GD 12	8/28/2019	11.0	7.83	7.61	28.2	<0.100	<0.025	0.103	0.764	9.4
GD 12	10/28/2019	18.9	5.34	6.65	14.7	0.197	0.044	<0.100	0.387	12.3
GD 12	3/31/2020	76.3	6.71	9.44	14.5	0.177	0.0650	0.167	1.00	143
GD 12	6/10/2020	12.3	6.46	6.44	25.8	<0.100	<0.030	<0.100	0.438	11.4
GD 12	9/21/2020	NS	7.18	7.15	19.9	0.103	<0.030	<0.100	<0.250	7.6
GD 12	12/17/2020	13.1	8.03	11.10	8.5	0.268	<0.030	<0.100	<0.250	3.7
GD 12	3/18/2021	36.2	7.92	10.04	17.1	0.163	<0.030	<0.100	0.621	17.6
GD 12	5/5/2021	4.1	7.49	8.97	18.9	7.26	<0.030	<0.100	0.610	16.4
GD 12	9/2/2021	*	*	7.34	24.4	0.245	<0.030	<0.100	0.779	3.5
GD 12	11/23/2021	<1.0	7.80	11.27	12.5	<0.100	<0.0300	<0.100	<0.250	2.8
GD 12	1/10/2022	10.7	7.29	12.18	8.5	0.230	<0.0300	<0.100	0.325	3.7
GD 12	4/7/2022	6.19	7.51	9.97	17.0	0.177	0.0740	<0.100	0.522	3.4
GD 12	8/3/2022	11.8	8.09	8.02	31.5	<0.100	<0.0300	0.142	0.999	6.40
GD 12	11/16/2022	3.9	7.25	9.67	11.2	<0.100	<0.0300	<0.100	0.407	4.50

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.9 - HISTORICAL ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 14	3/12/2013	8.2	6.88	9.65	12.92	0.32	<0.025	<0.100	0.42	3.5
CO 14	5/8/2013	13.0	6.61	3.02	16.37	0.34	<0.12	<0.100	0.74	6.7
CO 14	9/23/2013	15.0	6.70	3.78	22.58	<0.100	0.036	<0.100	0.30	9.6
CO 14	12/10/2013	14.4	5.82	11.15	9.37	0.11	0.027	<0.100	0.55	9.7
CO 14	2/6/2014	13.7	4.02	16.69	5.08	0.58	<0.025	<0.100	0.41	9.1
CO 14	6/26/2014	19.7	8.25	8.19	22.33	0.34	<0.025	<0.100	0.86	9.0
CO 14	9/30/2014	***	***	***	***	***	***	***	***	***
CO 14	11/19/2014	9.84	6.70	3.86	7.90	<0.100	<0.025	<0.100	0.26	2.8
CO 14	3/23/2015	18.9	6.85	8.78	17.20	0.25	<0.025	<0.100	0.67	10.0
CO 14	4/22/2015	13.8	6.23	11.19	18.00	0.49	<0.025	<0.100	0.60	8.6
CO 14	9/30/2015	***	***	***	***	***	***	***	***	***
CO 14	11/19/2015	24.30	6.64	16.06	15.25	<0.100	<0.025	<0.100	1.27	5.9
CO 14	3/15/2016	15.80	6.33	13.05	16.42	0.468	<0.025	<0.100	0.713	9.7
CO 14	6/29/2016	***	***	***	***	***	***	***	***	***
CO 14	8/9/2016	***	***	***	***	***	***	***	***	***
CO 14	12/7/2016	***	***	***	***	***	***	***	***	***
CO 14	3/2/2017	19	6.34	8.58	13.60	0.106	<0.025	<0.100	0.601	5.2
CO 14	6/21/2017	9.0	6.57	6.49	22.9	<0.100	<0.025	<0.100	0.758	19.0
CO 14	8/17/2017	13.8	7.83	6.22	28.0	<0.100	<0.025	<0.100	0.851	50.6
CO 14	10/26/2017	8.1	6.43	8.40	14.2	<0.100	<0.025	<0.100	0.440	4.7
CO 14	3/27/2018	8.2	7.63	9.45	11.4	0.601	<0.025	<0.100	<0.25	9.5
CO 14	6/26/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS
CO 14	8/1/2018	40.2	6.99	7.42	22.1	<0.100	<0.025	<0.100	0.764	28.3
CO 14	12/11/2018	7.6	7.38	10.74	7.7	0.184	<0.025	<0.100	0.567	4.9

TABLE B.9 - HISTORICAL ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 14	4/17/2019	9.3	7.91	8.99	19.0	0.460	<0.025	<0.100	2.96	9.4
CO 14	6/11/2019	17.5	7.07	3.56	22.4	<0.100	<0.025	0.14	0.773	5.6
CO 14	8/28/2019	***	***	***	***	***	***	***	***	***
CO 14	10/28/2019	***	***	***	***	***	***	***	***	***
CO 14	3/31/2020	77.6	7.84	9.07	15.0	0.402	<0.025	<0.100	0.532	106
CO 14	6/10/2020	13.8	7.64	7.20	24.4	0.244	<0.030	<0.100	0.482	5.6
CO 14	9/21/2020	***	***	***	***	***	***	***	***	***
CO 14	Removed from Monitoring Program September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

*** - outfall was dry

TABLE B.10 - HISTORICAL ANALYTICAL DATA - SME 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 2	3/12/2013	6.0	7.12	9.28	14.17	0.28	0.032	<0.100	0.47	8.1
SME 2	5/8/2013	26.2	7.67	6.46	21.40	0.24	0.042	<0.100	0.92	21.0
SME 2	9/23/2013	7.3	6.92	5.51	26.24	<0.100	0.039	<0.100	0.34	7.1
SME 2	12/10/2013	11.8	5.71	11.05	11.01	0.31	0.100	0.15	0.42	7.0
SME 2	2/6/2014	19.9	4.21	14.38	6.13	0.39	0.053	<0.100	0.59	14.0
SME 2	6/26/2014	14.8	8.16	7.22	26.98	0.11	<0.025	<0.100	0.38	8.7
SME 2	9/30/2014	6.0	7.97	5.33	26.53	<0.100	<0.025	<0.100	0.52	7.4
SME 2	11/19/2014	9.5	7.06	3.53	10.20	0.14	0.039	0.16	<0.25	6.8
SME 2	3/23/2015	11.1	7.96	9.34	17.60	0.24	<0.025	<0.100	0.45	10.0
SME 2	4/22/2015	8.8	7.93	11.46	24.50	0.13	<0.025	<0.100	0.48	9.1
SME 2	9/30/2015	7.4	7.62	12.67	25.91	0.10	<0.025	0.101	0.497	8.7
SME 2	11/19/2015	22.0	6.55	14.30	19.12	0.22	0.062	0.219	1.21	82.3
SME 2	3/15/2016	8.2	7.86	13.43	20.73	<0.100	<0.025	<0.100	0.486	6.3
SME 2	6/29/2016	7.6	8.23	7.24	30.4	0.19	<0.025	<0.100	0.290	8.0
SME 2	8/9/2016	10.3	8.01	6.58	30.6	<0.100	<0.025	<0.100	0.585	8.2
SME 2	12/7/2016	6.0	7.52	6.86	12.7	<0.100	<0.025	0.101	0.469	5.8
SME 2	3/2/2017	11.8	8.03	8.55	15.2	0.267	<0.025	<0.100	0.720	11.4
SME 2	6/21/2017	5.2	7.18	4.64	26.6	<0.100	<0.025	<0.100	0.886	11.4
SME 2	8/17/2017	6.5	7.76	6.43	30.6	<0.100	<0.025	<0.100	0.729	15.3
SME 2	10/26/2017	5.2	7.03	6.87	17.6	<0.100	<0.025	<0.100	0.382	8.5
SME 2	3/27/2018	11.1	7.44	8.64	12.9	0.161	<0.025	<0.100	<0.25	17.5
SME 2	6/26/2018	10.8	7.97	6.43	29.6	0.111	<0.025	<0.100	0.731	9.9
SME 2	8/1/2018	29.6	7.39	6.46	23.4	0.371	0.099	0.128	0.423	24.8
SME 2	12/11/2018	9.7	7.82	9.99	7.9	0.212	<0.025	0.166	0.368	5.1

TABLE B.10 - HISTORICAL ANALYTICAL DATA - SME 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 2	4/17/2019	5.0	7.82	7.80	20.5	0.105	<0.025	<0.100	0.783	6.0
SME 2	6/11/2019	12.3	6.68	3.43	24.4	<0.100	<0.025	<0.100	0.676	9.2
SME 2	8/28/2019	6.6	7.83	6.26	29.2	<0.100	<0.025	<0.100	0.452	5.9
SME 2	10/28/2019	24.9	7.64	7.42	16.8	<0.100	<0.025	0.107	0.341	18.2
SME 2	3/31/2020	9.5	7.02	7.31	18.2	<0.100	<0.025	<0.100	0.521	10.2
SME 2	6/10/2020	10.4	7.81	6.40	27.0	0.117	<0.030	<0.100	0.367	8.0
SME 2	9/21/2020	NS	7.84	8.02	23.6	<0.100	<0.030	<0.100	<0.250	11.0
SME 2	12/17/2020	13.3	8.04	9.04	9.2	0.272	0.041	<0.100	0.342	6.7
SME 2	3/18/2021	27.3	8.20	12.80	18.4	0.193	0.033	<0.100	0.528	13.8
SME 2	5/5/2021	0.0	7.29	6.72	21.2	0.560	0.039	<0.100	0.768	6.80
SME 2	9/2/2021	*	*	6.31	27.5	0.134	<0.030	<0.100	0.562	11.8
SME 2	11/23/2021	<1.0	7.98	10.03	14.6	0.170	<0.0300	<0.100	<0.250	9.2
SME 2	1/10/2022	14.5	7.84	11.04	8.8	0.338	<0.0300	0.117	0.672	16.1
SME 2	Removed form Monitoring Program April 2022									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.11 - HISTORICAL ANALYTICAL DATA - GD 6

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 6	3/12/2013	10.3	8.03	9.65	11.90	0.21	0.036	<0.100	0.29	5.8
GD 6	5/8/2013	18.5	6.81	2.35	19.02	0.23	0.033	<0.100	0.40	8.3
GD 6	9/23/2013	6.0	7.28	5.17	26.93	<0.100	<0.025	<0.100	0.36	5.8
GD 6	12/10/2013	26.4	5.98	11.41	10.64	0.37	0.041	<0.100	0.17	8.6
GD 6	2/6/2014	15.5	4.34	15.80	6.85	0.26	0.057	<0.100	0.16	5.5
GD 6	6/26/2014	14.4	8.31	8.95	27.29	<0.100	<0.025	<0.100	0.42	7.0
GD 6	9/30/2014	7.1	8.35	6.53	26.78	<0.100	<0.025	<0.100	0.55	7.0
GD 6	11/19/2014	13.4	7.17	3.36	9.67	0.22	<0.025	0.28	0.38	9.8
GD 6	3/23/2015	16.5	7.95	8.95	18.40	0.22	<0.025	<0.100	0.26	8.2
GD 6	4/22/2015	14.9	7.59	10.82	19.80	0.22	<0.025	<0.100	0.28	8.0
GD 6	9/30/2015	14.1	8.19	12.31	25.47	<0.100	<0.025	0.103	0.974	12.4
GD 6	11/19/2015	42.5	6.97	15.87	17.75	0.468	0.037	0.131	0.768	16.0
GD 6	3/15/2016	16.1	7.68	11.58	19.98	0.124	0.043	<0.100	0.500	7.9
GD 6	6/29/2016	10.4	8.86	9.64	31.50	<0.100	<0.025	<0.100	0.400	11.2
GD 6	8/9/2016	10.4	8.26	6.98	30.70	<0.100	<0.025	<0.100	0.621	10.3
GD 6	12/7/2016	11.5	7.43	8.13	14.3	0.365	<0.025	<0.100	0.485	7.5
GD 6	3/2/2017	14.3	8.05	8.02	14.70	0.250	<0.025	<0.100	0.509	9.0
GD 6	6/21/2017	7.7	7.67	4.99	26.8	<0.100	<0.025	0.11	0.926	21.0
GD 6	8/17/2017	7.0	8.02	7.72	31.2	<0.100	<0.025	<0.100	0.677	13.2
GD 6	10/26/2017	8.3	6.25	7.84	15.8	0.126	<0.025	<0.100	0.385	12.0
GD 6	3/27/2018	10.1	7.97	9.00	12.1	0.233	<0.025	1.76	<0.25	10.9
GD 6	6/26/2018	8.0	8.02	6.78	29.6	0.108	<0.025	<0.100	0.782	9.6
GD 6	8/1/2018	25.4	7.66	7.52	22.7	0.335	0.090	0.138	0.636	21.9
GD 6	12/11/2018	13.8	7.97	10.92	8.2	0.397	<0.025	<0.100	0.362	5.8

TABLE B.11 - HISTORICAL ANALYTICAL DATA - GD 6

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 6	4/17/2019	9.0	7.10	8.00	20.5	0.198	<0.025	<0.100	0.624	9.6
GD 6	6/11/2019	17.9	7.07	3.68	23.8	<0.100	<0.025	<0.100	0.728	12.4
GD 6	8/28/2019	9.1	7.94	6.32	28.5	<0.100	<0.025	<0.100	0.607	6.5
GD 6	10/28/2019	18.4	7.48	6.63	16.4	0.198	<0.025	<0.100	0.467	9.9
GD 6	3/31/2020	16.0	6.06	8.86	16.1	0.212	<0.025	0.127	<0.250	8.40
GD 6	6/10/2020	7.4	7.04	6.36	26.5	0.127	<0.030	<0.100	0.832	10.4
GD 6	9/21/2020	NS	7.96	8.48	21.4	<0.100	<0.030	<0.100	<0.250	8.60
GD 6	12/17/2020	0.5	7.96	10.08	9.0	0.309	<0.030	<0.100	0.377	7.40
GD 6	3/18/2021	75.6	7.97	9.21	17.0	0.241	<0.030	0.183	0.364	31.6
GD 6	5/5/2021	5.7	7.55	8.62	19.2	7.95	<0.030	0.124	0.542	12.3
GD 6	9/2/2021	*	*	6.24	27.1	0.139	<0.030	0.305	3.44	25.4
GD 6	11/23/2021	<1.0	7.61	8.28	15.6	0.132	<0.0300	0.102	0.350	8.50
GD 6	1/10/2022	14.2	8.05	10.58	9.5	0.238	0.037	0.147	0.850	10.20
GD 6	4/7/2022	13.63	7.70	8.85	17.2	0.160	<0.0300	<0.100	0.433	9.90
GD 6	8/3/2022	10.1	7.71	7.21	29.7	<0.100	<0.0300	<0.100	0.588	5.30
GD 6	11/16/2022	23.9	7.47	9.78	12.2	0.166	<0.0300	<0.100	0.476	7.50

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.12 - HISTORICAL ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 15	3/12/2013	32	7.41	8.91	14.40	<0.10	0.097	<0.100	0.53	9.0
CO 15	5/8/2013	27	7.51	8.04	18.10	0.10	<0.12	<0.100	0.59	11.0
CO 15	9/23/2013	13	7.09	4.01	27.18	<0.10	0.027	<0.100	0.34	11.0
CO 15	12/10/2013	42	6.09	11.25	9.83	0.18	0.068	<0.100	0.56	13.0
CO 15	2/6/2014	32	4.22	16.10	6.28	0.21	<0.025	<0.100	0.46	12.0
CO 15	6/26/2014	105	8.16	7.00	25.55	<0.100	0.140	<0.100	0.59	46.0
CO 15	9/30/2014	8	7.88	6.67	23.28	<0.100	<0.025	<0.100	<0.25	8.6
CO 15	11/19/2014	44	7.38	3.68	9.43	0.20	0.030	<0.100	0.32	12.0
CO 15	3/23/2015	56	7.85	9.53	18.50	0.14	0.067	<0.100	0.61	19.0
CO 15	4/22/2015	26	7.62	10.14	21.90	0.14	<0.025	<0.100	0.40	11.0
CO 15	9/30/2015	15	7.68	12.73	22.88	<0.100	<0.025	<0.100	0.75	11.8
CO 15	11/19/2015	50	7.30	19.45	16.98	0.24	0.042	0.183	0.42	17.5
CO 15	3/15/2016	29	7.66	12.39	19.83	<0.100	<0.025	<0.100	0.78	12.4
CO 15	6/29/2016	***	***	***	***	***	***	***	***	***
CO 15	8/9/2016	38	8.03	6.78	29.6	<0.100	<0.025	<0.100	<0.25	22.0
CO 15	12/7/2016	13.6	7.50	9.78	12.1	<0.100	<0.025	<0.100	0.67	14.8
CO 15	3/2/2017	38.2	7.77	8.32	16.0	0.15	<0.025	<0.100	0.52	17.4
CO 15	6/21/2017	6.4	7.56	5.12	26.7	<0.100	<0.025	<0.100	0.97	18.3
CO 15	8/17/2017	21.7	8.29	6.47	30.1	<0.100	<0.025	<0.100	0.69	12.4
CO 15	10/26/2017	10.8	4.43	8.24	13.6	<0.100	<0.025	<0.100	0.39	6.4
CO 15	3/27/2018	14.5	7.87	9.33	12.1	<0.100	<0.025	<0.100	<0.25	8.0
CO 15	6/26/2018	13.8	7.87	7.33	26.5	<0.100	<0.025	0.270	0.573	12.4
CO 15	8/1/2018	58.8	7.25	7.12	23.0	<0.100	0.040	0.122	0.852	71.5
CO 15	12/11/2018	111.3	8.73	11.94	7.0	0.168	<0.025	0.107	1.16	10.1

TABLE B.12 - HISTORICAL ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 15	4/17/2019	17.0	7.80	9.17	19.1	0.144	<0.025	<0.100	0.574	11.5
CO 15	6/11/2019	21.9	6.56	3.10	22.8	<0.100	<0.025	<0.100	1.00	9.8
CO 15	8/28/2019	70.8	8.07	7.52	25.7	0.166	0.026	0.130	1.54	20.4
CO 15	10/28/2019	30.7	7.31	9.63	15.0	0.120	<0.025	<0.100	0.61	10.2
CO 15	3/31/2020	61.8	6.46	9.25	15.7	0.102	0.0320	0.158	0.625	72.4
CO 15	6/10/2020	18.7	6.24	6.22	25.0	0.148	<0.030	<0.100	0.456	10.4
CO 15	9/21/2020	NS	7.31	8.18	17.9	<0.100	<0.030	<0.100	<0.250	5.6
CO 15	12/17/2020	2.8	8.98	10.87	10.0	0.161	<0.030	<0.100	0.685	15.6
CO 15	3/18/2021	63.1	8.46	15.75	19.8	0.193	<0.030	<0.100	0.554	26.0
CO 15	5/5/2021	3.8	7.47	9.06	19.3	7.78	<0.030	0.200	1.17	10.9
CO 15	9/2/2021	*	*	7.81	24.3	<0.100	<0.030	<0.100	0.926	13.8
CO 15	11/23/2021	2.0	7.87	10.67	15.2	<0.100	<0.030	<0.100	0.270	25.9
CO 15	1/10/2022	24.3	7.90	11.64	9.8	0.196	<0.0300	<0.100	<2.50	9.6
CO 15	4/7/2022	16.5	7.48	9.75	17.3	<0.100	0.0710	<0.100	0.853	11.7
CO 15	8/3/2022	12.8	8.15	7.92	27.0	0.131	<0.0300	<0.100	0.424	4.20
CO 15	11/16/2022	9.5	7.38	10.50	11.2	<0.100	<0.0300	<0.100	0.424	10.7

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

*** - outfall was dry

* - meter malfunctioned in field

TABLE B.13 - HISTORICAL ANALYTICAL DATA - SME 7

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 7	12/17/2020	16.8	8.10	11.01	11.5	0.884	0.094	<0.100	0.541	19.4
SME 7	3/18/2021	111.0	8.93	10.25	18.3	0.429	0.093	0.270	0.407	78.2
SME 7	5/5/2021	8.2	6.06	8.01	18.4	1.090	0.112	0.244	1.240	36.4
SME 7	9/2/2021	*	*	7.91	22.6	0.491	0.179	0.275	2.490	77.6
SME 7	11/23/2021	<1.0	7.78	10.45	12.2	0.367	0.472	0.516	<0.250	<2.50
SME 7	1/10/2022	19.2	7.97	10.98	11.9	0.823	0.140	0.211	0.805	34.7
SME 7	4/7/2022	*	7.10	9.27	18.0	0.549	<0.0300	0.264	1.37	37.2
SME 7	8/3/2022	24.8	8.32	7.69	24.6	0.742	0.314	0.373	0.844	31.0
SME 7	11/16/2022	4.9	7.87	10.30	11.1	0.424	0.490	0.528	<0.250	3.80

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.14 - HISTORICAL ANALYTICAL DATA - SME 8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 8	12/17/2020	0.30	7.72	11.22	9.10	0.312	<0.030	<0.100	<0.25	25.9
SME 8	3/18/2021	48.8	8.17	9.47	18.0	0.183	<0.030	<0.100	0.460	17.7
SME 8	5/5/2021	3.3	7.11	9.39	18.5	0.597	<0.030	0.118	0.366	60.3
SME 8	9/2/2021	*	*	7.87	25.9	0.150	<0.030	<0.100	0.269	39.2
SME 8	1/10/2022	9.5	7.42	11.82	9.2	0.328	<0.0300	<0.100	0.832	33.5
SME 8	Removed from Monitoring Program April 2022									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.15 - HISTORICAL ANALYTICAL DATA - SME 9

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 9	4/7/2022	5.17	7.78	9.32	17.0	<0.100	<0.0300	0.135	0.529	2.90
SME 9	8/3/2022	9.20	8.10	7.97	25.4	<0.100	<0.0300	<0.100	0.582	<2.50
SME 9	11/16/2022	2.90	7.50	9.86	12.2	<0.100	<0.0300	<0.100	<0.250	<2.50

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.16 - HISTORICAL ANALYTICAL DATA - SME 10

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 10	4/7/2022	4.94	7.82	9.16	18.0	<0.100	<0.0300	<0.100	0.477	2.80
SME 10	8/3/2022	10.3	8.08	6.35	25.5	<0.100	<0.0300	<0.100	0.940	4.10
SME 10	11/16/2022	9.80	7.18	8.03	12.2	<0.100	<0.0300	<0.100	0.516	4.60

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.17 - HISTORICAL ANALYTICAL DATA - HB 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
HB 3	3/12/2013	33.3	7.54	9.48	13.90	0.19	0.081	<0.100	0.83	49.0
HB 3	5/20/2013	14.5	8.21	6.82	27.80	0.17	<0.025	<0.100	0.60	17.0
HB 3	9/23/2013	21.3	8.02	4.89	25.70	<0.100	0.037	<0.100	0.60	19.0
HB 3	12/10/2013	48.4	7.90	8.65	10.10	<0.100	0.140	0.15	0.62	20.0
HB 3	2/6/2014	32.0	7.22	12.24	5.90	0.48	0.030	<0.100	0.37	13.0
HB 3	6/26/2014	12.0	8.20	7.12	NS	<0.100	<0.025	<0.100	0.37	12.0
HB 3	9/30/2014	29.5	8.05	6.01	24.78	<0.100	<0.025	<0.100	0.48	30.0
HB 3	11/19/2014	56.1	7.85	8.83	8.80	0.11	0.098	0.12	0.44	51.0
HB 3	3/23/2015	27.0	8.21	8.40	24.20	0.26	<0.025	<0.100	0.46	35.0
HB 3	4/22/2015	25.0	7.91	8.36	21.90	0.20	<0.025	<0.100	0.66	22.0
HB 3	9/30/2015	22.0	7.89	5.05	25.70	<0.100	<0.025	<0.100	0.91	23.0
HB 3	11/19/2015	32.0	7.83	7.37	17.40	0.377	0.045	<0.100	<0.25	30.2
HB 3	3/15/2016	28.8	8.52	7.97	19.10	0.295	0.087	<0.100	<0.25	23.8
HB 3	6/29/2016	17.3	8.02	2.77	30.61	<0.100	<0.025	<0.100	0.51	20.9
HB 3	8/9/2016	11.3	7.91	4.31	30.19	<0.100	<0.025	<0.100	0.703	14.3
HB 3	12/7/2016	16.0	7.93	8.44	12.81	0.111	<0.025	0.126	0.730	17.0
HB 3	3/2/2017	50.0	7.75	3.90	14.33	0.334	<0.025	0.115	0.969	57.1
HB 3	7/5/2017	23.1	7.29	5.36	27.00	<0.100	<0.025	<0.100	0.812	28.5
HB 3	8/16/2017	13.7	7.35	5.04	27.00	<0.100	<0.025	<0.100	0.763	12.7
HB 3	10/25/2017	11.7	6.64	9.93	18.5	<0.100	<0.025	<0.100	0.322	20.4
HB 3	3/28/2018	13.2	7.99	9.47	17.6	0.359	<0.025	<0.100	<0.25	20.2
HB 3	6/29/2018	14.6	7.67	5.55	26.0	<0.100	<0.025	<0.100	0.464	18.2
HB 3	8/2/2018	28.3	7.40	5.64	25.1	<0.100	<0.025	<0.100	0.952	35.3
HB 3	12/10/2018	24.8	7.55	10.98	7.9	0.363	<0.025	0.141	0.426	27.6

TABLE B.17 - HISTORICAL ANALYTICAL DATA - HB 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
HB 3	4/15/2019	22.4	7.73	8.27	19.6	0.233	<0.025	<0.100	<0.250	35.5
HB 3	6/12/2019	12.4	8.13	6.77	26.6	0.129	<0.025	<0.100	<0.250	52.3
HB 3	8/27/2019	78.1	8.21	8.75	29.1	<0.100	<0.025	0.179	0.634	7.30
HB 3	10/29/2019	28.2	7.82	9.88	18.3	<0.100	<0.025	0.166	0.517	17.6
HB 3	3/30/2020	8.9	7.79	8.91	18.5	0.234	<0.025	<0.100	1.20	18.4
HB 3	6/16/2020	20.4	7.33	7.01	26.3	<0.100	<0.030	<0.100	0.30	14.6
HB 3	9/21/2020	12.1	7.80	7.69	23.5	<0.100	<0.030	<0.100	0.28	8.30
HB 3	12/17/2020	31.16	8.07	9.94	9.1	0.195	<0.030	<0.100	0.588	20.4
HB 3	3/18/2021	1.80	7.47	9.62	16.0	0.369	<0.030	<0.100	0.252	23.0
HB 3	5/5/2021	28.31	7.50	7.71	22.0	0.207	<0.030	<0.100	<0.250	35.1
HB 3	9/2/2021	19.2	7.61	5.30	27.4	<0.100	<0.030	<0.100	0.689	23.6
HB 3	11/23/2021	51.55	7.15	10.59	11.2	0.137	<0.0300	<0.100	<0.250	10.5
HB 3	1/11/2022	26.9	7.75	11.26	12.8	0.200	<0.0300	<0.10	0.550	23.6
HB 3	4/7/2022	27.8	7.61	9.40	18.1	0.268	<0.0300	<0.100	0.329	21.0
HB 3	8/2/2022	31.2	8.05	5.89	28.9	<0.100	<0.0300	<0.100	0.273	33.7
HB 3	11/16/2022	10.73	7.71	9.53	12.9	<0.100	<0.0300	<0.100	0.604	7.40

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.18 - HISTORICAL ANALYTICAL DATA - SME 4

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 4	12/17/2020	17.70	7.69	10.82	9.80	0.387	<0.03	<0.10	0.263	17.8
SME 4	3/18/2021	2.20	7.25	9.20	17.60	0.319	<0.030	<0.100	0.331	21.6
SME 4	5/5/2021	20.02	7.86	7.81	21.0	0.213	<0.030	<0.100	<0.250	27.5
SME 4	11/23/2021	48.51	7.64	10.41	10.6	0.164	<0.0300	<0.100	<0.250	9.2
SME 4	1/11/2022	17.30	7.39	11.35	13.40	0.44	<0.0300	<0.10	0.97	15.6
SME 4	4/7/2022	21.6	7.55	9.30	16.7	0.273	0.060	<0.100	0.254	20.9
SME 4	8/2/2022	14.0	7.79	6.24	29.1	0.102	<0.0300	<0.100	0.274	6.00
SME 4	11/16/2022	9.91	7.69	9.45	12.5	<0.100	<0.0300	<0.100	0.382	10.5

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.19 - HISTORICAL ANALYTICAL DATA - GD 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 5	3/13/2013	11.6	8.33	9.29	10.20	0.26	<0.025	<0.10	0.34	9.6
GD 5	5/20/2013	14.0	8.28	7.76	22.60	<0.100	<0.025	<0.10	0.62	9.0
GD 5	9/23/2013	11.5	7.67	6.78	27.10	<0.100	0.027	<0.10	0.45	8.0
GD 5	12/10/2013	57.9	7.97	9.10	9.10	0.10	0.088	0.10	0.47	18.0
GD 5	2/6/2014	45.9	7.14	9.88	7.20	0.17	0.038	<0.100	0.37	17.0
GD 5	6/26/2014	17.0	7.90	6.54	NS	<0.100	<0.025	<0.100	0.34	12.0
GD 5	9/30/2014	22.5	8.28	7.53	25.22	<0.100	<0.025	<0.100	<0.25	18.0
GD 5	11/19/2014	42.9	8.15	9.30	9.40	0.11	0.051	<0.100	0.43	26.0
GD 5	3/23/2015	24.0	8.14	8.58	15.90	0.12	<0.025	<0.100	0.34	15.0
GD 5	4/22/2015	25.0	7.81	7.78	21.70	0.14	<0.025	<0.100	0.65	13.0
GD 5	9/30/2015	18.0	8.03	6.27	26.30	<0.100	<0.025	0.115	0.557	17.3
GD 5	11/19/2015	90.0	7.63	7.34	16.60	0.168	0.042	<0.100	<0.250	42.8
GD 5	3/15/2016	23.7	8.80	7.47	19.40	<0.100	<0.025	<0.100	0.435	13.2
GD 5	6/29/2016	21.0	8.02	2.27	30.37	<0.100	0.074	<0.100	0.490	15.0
GD 5	8/9/2016	11.8	8.25	5.55	30.20	<0.100	<0.025	<0.100	0.412	11.0
GD 5	12/7/2016	10.0	7.73	10.61	11.96	<0.100	<0.025	<0.100	0.337	6.8
GD 5	3/2/2017	12.3	7.81	4.49	14.26	0.118	<0.025	<0.100	0.491	13.0
GD 5	7/5/2017	15.0	7.32	5.83	26.9	<0.100	<0.025	<0.100	0.730	22.7
GD 5	8/16/2017	8.0	7.89	6.22	28.0	<0.100	<0.025	<0.100	0.404	9.0
GD 5	10/25/2017	9.2	7.36	7.35	18.7	<0.100	<0.025	<0.100	0.347	14.6
GD 5	3/28/2018	6.1	8.18	9.47	18.5	0.127	<0.025	<0.100	<0.250	6.06
GD 5	6/29/2018	16.3	7.76	5.66	27.5	<0.100	<0.025	<0.100	0.689	19.60
GD 5	8/2/2018	18.4	7.59	6.02	25.7	<0.100	<0.025	<0.100	0.332	26.40
GD 5	12/10/2018	37.7	7.87	11.30	7.3	<0.100	<0.025	0.190	0.523	22.3

TABLE B.19 - HISTORICAL ANALYTICAL DATA - GD 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 5	4/15/2019	29.7	7.69	8.02	19.3	0.128	<0.025	1.20	0.411	29.0
GD 5	6/12/2019	6.0	8.02	7.64	27.2	<0.100	<0.025	<0.100	<0.250	9.3
GD 5	8/27/2019	75.2	7.15	7.98	28.7	<0.100	<0.025	0.165	0.506	10.9
GD 5	10/29/2019	29.0	7.85	9.42	17.8	<0.100	<0.025	<0.100	0.477	21.0
GD 5	3/30/2020	14.5	7.65	8.86	19.1	0.130	<0.025	<0.100	0.320	12.1
GD 5	6/16/2020	16.4	7.69	7.75	27.2	<0.100	<0.030	<0.100	0.561	7.4
GD 5	9/21/2020	10.8	7.65	6.33	23.2	<0.100	<0.030	<0.100	<0.250	7.9
GD 5	12/17/2020	28.7	7.62	9.96	9.7	0.122	<0.030	0.113	0.422	19.8
GD 5	3/18/2021	3.4	7.15	8.98	16.9	0.127	<0.030	<0.100	0.600	30.6
GD 5	5/5/2021	36.10	7.84	7.74	19.8	0.204	<0.030	<0.100	<0.250	36.8
GD 5	9/2/2021	10.28	7.84	6.90	26.5	<0.100	<0.030	<0.100	0.510	16.1
GD 5	11/23/2021	27.7	7.70	10.54	11.3	<0.100	<0.0300	<0.100	<0.250	8.8
GD 5	1/11/2022	26.8	7.28	12.25	10.1	0.300	<0.0300	<0.10	0.510	12.1
GD 5	4/7/2022	16.4	7.72	9.32	17.2	0.157	<0.0300	<0.100	0.300	14.4
GD 5	8/2/2022	13.0	7.86	6.60	29.1	<0.100	<0.0300	<0.100	<0.250	6.40
GD 5	11/16/2022	6.95	7.75	9.56	13.4	<0.100	<0.0300	<0.100	0.312	8.67

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.20 - HISTORICAL ANALYTICAL DATA - GD 7

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 7	3/12/2013	9.7	7.98	11.63	15.27	0.39	0.037	<0.100	0.31	8.8
GD 7	5/8/2013	26.1	7.72	7.46	18.40	0.24	0.063	<0.100	<0.56	20.0
GD 7	9/23/2013	10.9	7.05	6.31	26.50	<0.100	0.026	<0.100	0.54	9.6
GD 7	12/10/2013	41.9	8.02	9.68	7.50	0.34	0.084	0.11	0.32	40.0
GD 7	2/6/2014	28.0	7.27	13.32	4.40	0.52	0.034	<0.100	0.61	13.0
GD 7	6/26/2014	6.2	8.45	7.04	NS	<0.100	<0.025	<0.100	0.52	8.7
GD 7	9/30/2014	11.9	7.87	6.32	24.39	<0.100	<0.025	<0.100	0.41	13.0
GD 7	11/19/2014	19.6	8.53	10.10	9.60	0.14	<0.025	0.13	0.46	15.0
GD 7	3/23/2015	13.0	8.28	8.87	15.40	0.27	<0.025	<0.100	0.35	10.0
GD 7	4/22/2015	28.0	7.99	6.40	20.20	0.24	<0.025	<0.100	0.47	24.0
GD 7	9/30/2015	8.3	7.89	5.18	24.90	<0.100	<0.025	<0.100	0.59	9.1
GD 7	11/19/2015	45.0	7.78	8.23	15.60	0.344	0.051	<0.100	<0.250	34.3
GD 7	3/15/2016	17.2	8.46	8.51	17.80	0.261	<0.025	<0.100	0.397	13.9
GD 7	6/29/2016	10.7	7.90	2.22	30.32	<0.100	0.048	<0.100	0.490	8.6
GD 7	8/9/2016	6.5	7.97	4.08	29.31	<0.100	<0.025	<0.100	0.471	5.7
GD 7	12/7/2016	9.5	7.88	10.14	12.39	<0.100	<0.025	<0.100	0.355	7.8
GD 7	3/2/2017	10.8	7.80	4.57	13.35	0.36	<0.025	<0.100	0.514	14.4
GD 7	6/29/2017	9.4	8.18	6.59	26.4	<0.100	<0.025	<0.100	0.440	13.4
GD 7	8/16/2017	8.5	7.84	5.66	29.0	<0.100	<0.025	<0.100	0.358	15.3
GD 7	10/25/2017	9.9	7.73	6.93	19.8	<0.10	<0.025	<0.100	0.416	18.4
GD 7	3/28/2018	7.6	8.16	9.33	14.9	0.350	<0.025	<0.100	<0.250	9.19
GD 7	6/29/2018	14.2	7.79	5.56	27.5	<0.100	<0.025	<0.100	0.625	14.60
GD 7	8/2/2018	18.5	7.62	5.51	27.0	<0.100	0.027	<0.100	0.450	32.10
GD 7	12/10/2018	40.8	7.06	11.05	8.0	0.378	<0.025	0.149	0.390	48.7

TABLE B.20 - HISTORICAL ANALYTICAL DATA - GD 7

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 7	4/15/2019	30.1	7.83	7.85	19.2	0.230	<0.025	<0.100	<0.250	12.0
GD 7	6/12/2019	7.4	7.24	6.68	27.2	0.132	<0.025	<0.100	<0.250	9.3
GD 7	8/27/2019	45.3	7.35	9.35	29.1	<0.100	<0.025	0.156	0.604	6.3
GD 7	10/29/2019	17.6	7.77	8.14	17.2	<0.100	<0.025	<0.100	0.414	17.0
GD 7	3/30/2020	7.8	7.77	10.38	21.1	<0.100	<0.025	<0.100	0.343	12.8
GD 7	6/16/2020	9.1	8.12	8.25	27.3	<0.100	<0.030	<0.100	0.322	8.3
GD 7	9/21/2020	13.6	7.42	12.45	23.7	<0.100	<0.030	<0.100	<0.250	9.60
GD 7	12/17/2020	14.4	7.75	10.21	9.5	0.373	<0.030	<0.100	<0.250	18.20
GD 7	3/18/2021	1.2	7.37	9.75	15.4	0.312	<0.030	<0.100	0.387	23.00
GD 7	5/5/2021	19.74	7.59	7.64	21.4	<0.100	<0.030	<0.100	0.661	40.3
GD 7	9/2/2021	13.57	7.75	6.38	27.6	0.107	<0.030	0.122	0.324	34.40
GD 7	11/23/2021	25.2	7.62	11.21	11.7	0.197	<0.0300	<0.100	<0.250	11.10
GD 7	1/11/2022	46.0	7.38	12.59	9.7	0.410	<0.0300	<0.10	<0.50	15.20
GD 7	4/7/2022	17.4	7.61	9.33	17.2	0.280	<0.0300	0.162	0.361	23.4
GD 7	8/2/2022	10.2	7.86	6.29	29.3	<0.100	<0.0300	<0.100	<0.250	4.30
GD 7	11/16/2022	5.25	7.75	9.00	14.4	<0.100	0.0430	<0.100	0.509	8.53

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.21 - HISTORICAL ANALYTICAL DATA - GD 9

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 9	2/6/2014	33.6	7.20	11.27	5.50	0.40	0.063	0.12	0.60	14.0
GD 9	6/26/2014	45.0	8.22	6.08	NS	<0.100	0.029	0.12	0.41	34.0
GD 9	9/30/2014	12.4	8.30	6.93	24.61	<0.100	<0.025	<0.100	0.30	15.0
GD 9	11/19/2014	22.8	8.13	9.38	9.30	0.16	0.082	0.25	0.74	15.0
GD 9	3/23/2015	25.0	8.16	7.58	15.80	0.15	<0.025	<0.100	0.64	18.0
GD 9	4/22/2015	18.0	7.58	5.58	20.70	0.15	<0.025	<0.100	0.65	14.0
GD 9	9/30/2015	9.6	7.93	5.37	25.70	<0.100	<0.025	<0.100	0.64	10.8
GD 9	11/19/2015	40.0	7.67	NS	16.50	0.254	0.096	0.116	<0.250	16.7
GD 9	3/15/2016	14.8	8.49	7.66	17.30	0.33	0.044	<0.100	<0.250	12.1
GD 9	6/29/2016	43.7	8.20	1.76	29.77	<0.100	<0.025	<0.100	0.65	67.2
GD 9	8/9/2016	11.0	8.07	4.14	29.00	<0.100	<0.025	<0.100	0.468	9.4
GD 9	12/7/2016	26.0	7.99	8.01	11.99	<0.100	<0.025	0.13	0.378	38.3
GD 9	3/2/2017	10.7	7.70	4.26	13.60	0.269	<0.025	<0.100	0.673	11.2
GD 9	6/29/2017	15.8	8.37	5.85	26.4	<0.100	<0.025	<0.100	0.722	15.7
GD 9	8/16/2017	11.3	7.82	5.52	29.60	<0.100	<0.025	<0.100	0.384	18.2
GD 9	10/25/2017	18.9	7.50	6.68	18.9	<0.100	0.025	<0.100	0.375	29.7
GD 9	3/28/2018	10.2	8.21	9.75	15.8	0.230	<0.025	<0.100	<0.250	12.4
GD 9	6/29/2018	11.0	7.73	5.45	27.6	<0.100	<0.025	<0.100	0.507	13.9
GD 9	8/2/2018	13.0	7.55	5.17	26.0	0.110	0.067	<0.100	0.600	20.8
GD 9	12/10/2018	26.4	7.90	11.05	7.9	0.292	0.047	0.244	0.442	22.8
GD 9	4/15/2019	221.5	7.51	8.09	20.0	0.194	0.034	<0.100	<0.250	178
GD 9	6/12/2019	7.3	7.21	8.61	27.0	0.116	<0.025	<0.100	<0.250	29.0
GD 9	8/27/2019	76.5	7.81	8.22	28.8	<0.100	<0.025	0.146	0.385	9.3
GD 9	10/29/2019	22.3	7.35	8.91	17.9	<0.100	<0.025	<0.100	0.491	15.0

TABLE B.21 - HISTORICAL ANALYTICAL DATA - GD 9

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 9	3/30/2020	18.3	7.56	8.54	18.4	0.243	<0.025	0.121	<0.250	16.4
GD 9	6/16/2020	11.4	8.15	7.94	27.1	<0.100	<0.030	<0.100	0.352	11.5
GD 9	9/21/2020	11.6	7.38	6.41	23.3	<0.100	<0.030	<0.100	<0.250	9.0
GD 9	12/17/2020	12.33	7.71	10.62	9.7	0.336	<0.030	<0.100	0.261	13.1
GD 9	3/18/2021	1.70	7.24	8.83	15.5	0.189	<0.030	<0.100	0.576	18.6
GD 9	5/5/2021	23.76	7.68	7.08	21.0	0.176	0.036	<0.100	0.564	29.0
GD 9	9/2/2021	13.46	7.73	6.29	27.9	<0.100	<0.030	<0.100	0.311	25.8
GD 9	11/23/2021	39.41	7.84	10.71	13.9	0.113	<0.0300	0.124	<0.250	33.9
GD 9	1/11/2022	271.50	7.42	11.43	10.4	0.360	<0.030	<0.10	0.760	13.3
GD 9	4/7/2022	14.0	7.60	8.79	18.2	0.236	<0.0300	0.124	0.306	15.1
GD 9	8/2/2022	10.4	7.89	6.62	29.1	<0.100	<0.0300	<0.100	<0.250	7.40
GD 9	11/16/2022	4.52	7.81	9.41	14.1	<0.100	<0.0300	<0.100	0.399	5.70

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.22 - HISTORICAL ANALYTICAL DATA - SME 1

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 1	3/12/2013	13.1	8.19	8.26	13.10	0.54	0.110	0.11	0.34	16.0
SME 1	5/8/2013	24.0	7.64	8.96	16.00	0.15	0.063	<0.100	0.42	14.0
SME 1	9/23/2013	14.2	8.26	7.87	27.70	<0.100	0.053	<0.100	0.80	15.0
SME 1	12/10/2013	46.3	8.05	9.15	7.60	0.55	0.210	0.26	0.47	21.0
SME 1	2/6/2014	61.0	7.22	11.34	5.90	0.55	0.110	0.13	0.50	23.0
SME 1	6/26/2014	14.0	8.49	7.05	NS	<0.100	<0.025	<0.100	0.31	13.0
SME 1	9/30/2014	27.6	8.25	7.46	24.67	<0.100	0.044	0.11	0.61	34.0
SME 1	11/19/2014	40.1	8.31	10.86	7.80	0.74	0.270	0.29	0.55	19.0
SME 1	3/23/2015	21.0	8.26	8.52	17.30	0.51	0.073	0.10	<0.250	14.0
SME 1	4/22/2015	29.0	7.14	7.97	18.50	0.40	0.039	<0.100	0.38	18.0
SME 1	9/30/2015	15.0	8.34	7.03	26.40	<0.100	0.052	0.135	0.807	15.3
SME 1	11/19/2015	50.0	7.92	7.04	15.90	0.401	0.084	0.134	<0.250	23.2
SME 1	3/15/2016	26.2	8.44	7.21	18.30	0.454	0.047	<0.100	<0.250	17.7
SME 1	6/29/2016	21.2	8.80	3.29	30.67	<0.100	0.180	0.245	0.620	20.3
SME 1	8/9/2016	15.3	8.55	4.98	28.87	<0.100	0.089	0.154	0.547	12.6
SME 1	12/7/2016	31.0	7.96	10.20	11.98	0.413	0.209	0.271	0.378	17.7
SME 1	3/2/2017	14.0	7.75	4.31	12.34	0.671	0.127	0.208	0.345	15.0
SME 1	6/29/2017	19.2	9.11	9.21	25.8	<0.100	0.028	0.000	0.530	18.3
SME 1	8/16/2017	10.6	8.12	6.58	29.7	<0.100	<0.025	0.111	0.520	12.7
SME 1	10/25/2017	5.4	8.02	8.32	17.3	0.368	0.121	0.151	0.288	16.9
SME 1	3/28/2018	19.3	8.10	9.18	17.6	0.633	0.106	0.000	<0.250	19.8
SME 1	6/29/2018	20.7	7.84	6.37	26.2	0.312	0.121	0.241	0.670	23.3
SME 1	8/2/2018	28.5	7.48	5.82	23.9	0.296	0.145	0.136	0.495	29.5
SME 1	12/10/2018	32.0	7.45	11.48	8.0	0.259	<0.025	<0.100	0.336	31.0

TABLE B.22 - HISTORICAL ANALYTICAL DATA - SME 1

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 1	4/15/2019	42.2	7.89	7.89	19.7	0.390	0.063	<0.100	0.360	35.0
SME 1	6/12/2019	12.2	7.34	8.73	27.2	<0.100	<0.025	<0.100	<0.250	9.7
SME 1	8/27/2019	135.2	7.45	8.51	28.8	<0.100	<0.025	0.161	0.356	7.1
SME 1	10/29/2019	14.5	7.95	9.21	17.6	0.129	0.049	0.134	0.272	11.0
SME 1	3/30/2020	13.3	7.35	8.61	19.3	0.462	<0.025	<0.100	<0.250	13.3
SME 1	6/16/2020	11.6	8.58	10.36	27.0	<0.100	0.031	0.129	0.485	11.4
SME 1	9/21/2020	13.8	7.71	6.92	22.2	<0.100	<0.030	<0.100	<0.250	9.0
SME 1	12/17/2020	23.19	7.66	10.68	9.2	0.577	0.072	<0.100	0.300	20.9
SME 1	3/18/2021	14.10	7.24	9.54	15.7	0.263	0.112	<0.100	0.580	90.4
SME 1	5/5/2021	28.83	7.43	8.53	20.1	0.122	<0.030	<0.100	0.402	34.0
SME 1	9/2/2021	23.89	7.80	6.93	25.8	0.458	0.190	0.218	0.353	35.8
SME 1	11/23/2021	18.42	7.91	11.34	12.4	<0.100	0.076	0.165	<0.250	12.7
SME 1	1/11/2022	161.2	7.55	11.29	10.2	8.200	0.054	<0.10	1.800	17.0
SME 1	4/7/2022	112.9	7.65	9.26	17.2	0.431	0.192	0.255	0.544	140
SME 1	8/2/2022	12.0	8.10	7.98	29.2	<0.100	<0.0300	<0.100	0.281	6.30
SME 1	11/16/2022	5.78	7.86	9.45	14.3	<0.100	<0.0300	<0.100	0.306	7.90

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.23 - HISTORICAL ANALYTICAL DATA - GD 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 3	3/13/2013	11.6	8.00	9.28	10.70	0.29	0.028	<0.100	0.44	11.0
GD 3	5/20/2013	11.7	8.09	7.01	23.40	0.15	0.026	<0.100	0.63	13.0
GD 3	9/23/2013	12.4	7.80	6.50	26.40	<0.100	0.025	<0.100	0.58	10.0
GD 3	12/10/2013	45.7	7.85	9.23	9.30	0.21	0.085	0.14	0.64	23.0
GD 3	2/6/2014	90.2	7.13	10.58	6.10	0.21	<0.025	0.12	0.68	27.0
GD 3	6/26/2014	15.0	8.13	8.00	NS	0.12	<0.025	<0.100	0.40	14.0
GD 3	9/30/2014	19.5	8.11	6.69	25.06	<0.100	<0.025	<0.100	0.32	19.0
GD 3	11/19/2014	18.1	8.36	10.88	9.3	<0.100	<0.025	<0.100	0.26	15.0
GD 3	3/23/2015	13.0	8.32	7.84	16.5	0.22	<0.025	<0.100	0.34	10.0
GD 3	4/22/2015	26.0	7.86	6.74	20.6	0.18	0.079	<0.100	0.36	21.0
GD 3	9/30/2015	10.0	7.94	4.91	24.9	0.103	<0.025	0.126	0.74	11.5
GD 3	11/19/2015	40.0	7.61	7.74	16.0	0.250	<0.025	0.101	<0.250	22.0
GD 3	3/15/2016	25.5	8.04	8.62	18.7	0.420	0.071	<0.100	<0.250	11.7
GD 3	6/29/2016	6.0	7.84	2.78	29.94	<0.100	0.088	<0.100	<0.250	10.7
GD 3	8/9/2016	8.3	7.98	5.09	30.01	<0.100	<0.025	<0.100	0.393	10.0
GD 3	12/7/2016	5.9	7.91	10.55	12.0	<0.100	<0.025	<0.100	0.356	8.1
GD 3	3/2/2017	14.0	8.21	5.01	14.35	0.237	<0.025	0.135	0.649	15.6
GD 3	7/5/2017	11.2	7.48	6.23	27.3	<0.100	<0.025	<0.100	0.560	14.4
GD 3	8/16/2017	7.4	8.01	6.24	28.8	<0.100	<0.025	<0.100	0.387	8.5
GD 3	10/25/2017	8.9	7.54	7.25	19.1	<0.100	<0.025	<0.100	0.390	13.6
GD 3	3/28/2018	9.1	8.06	9.34	16.6	0.241	<0.025	<0.100	<0.250	10.8
GD 3	6/29/2018	12.9	7.68	5.63	27.3	<0.100	<0.025	<0.100	0.511	12.7
GD 3	8/2/2018	13.4	7.69	5.72	26.6	<0.100	<0.025	<0.100	0.569	20.8
GD 3	12/10/2018	41.4	7.40	11.09	6.8	<0.100	<0.025	0.128	0.519	31.3

TABLE B.23 - HISTORICAL ANALYTICAL DATA - GD 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 3	4/15/2019	15.3	7.71	8.02	19.9	0.233	<0.025	<0.100	<0.250	14.7
GD 3	6/12/2019	9.6	7.24	8.31	27.3	<0.100	<0.025	<0.100	<0.250	13.0
GD 3	8/27/2019	202.8	7.18	8.33	28.8	<0.100	<0.025	0.159	0.434	6.5
GD 3	10/29/2019	26.2	7.84	9.63	17.2	<0.100	<0.025	<0.100	0.453	13.0
GD 3	3/30/2020	17.4	7.58	8.83	18.8	0.216	<0.025	<0.100	0.281	18.0
GD 3	6/16/2020	11.6	8.03	8.20	27.5	<0.100	<0.030	<0.100	0.363	9.5
GD 3	9/21/2020	13.5	7.51	6.73	23.4	<0.100	<0.030	0.106	<0.250	9.8
	Removed from Monitoring Program September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.24 - HISTORICAL ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 3	3/13/2013	17.1	7.84	7.44	11.30	0.20	0.038	<0.100	0.69	15.0
SME 3	5/20/2013	18.5	8.11	6.09	23.60	0.17	0.028	<0.100	0.69	19.0
SME 3	9/23/2013	15.3	*	5.32	26.50	<0.100	0.029	<0.100	0.53	13.0
SME 3	12/10/2013	48.3	7.69	8.85	9.60	<0.100	0.086	<0.100	0.62	20.0
SME 3	2/6/2014	82.7	7.09	10.62	6.30	0.25	<0.025	<0.100	0.69	33.0
SME 3	6/26/2014	50.0	8.04	7.03	NS	<0.100	0.047	<0.100	0.53	30.0
SME 3	9/30/2014	17.3	8.08	5.98	25.33	<0.100	<0.025	<0.100	0.66	18.0
SME 3	11/19/2014	22.4	8.30	10.40	9.30	0.12	0.035	<0.100	<0.250	19.0
SME 3	3/23/2015	25.0	8.13	7.72	21.20	0.24	0.026	<0.100	0.46	16.0
SME 3	4/22/2015	12.0	7.76	6.70	21.80	0.15	<0.025	<0.100	0.45	14.0
SME 3	9/30/2015	18.0	7.96	6.19	25.60	0.125	<0.025	0.129	0.42	24.4
SME 3	11/19/2015	65.0	7.56	7.44	15.80	0.253	0.032	<0.100	<0.250	37.8
SME 3	3/15/2016	68.4	8.35	7.51	19.20	0.295	<0.025	<0.100	<0.250	78.8
SME 3	6/29/2016	17.7	7.80	2.56	30.16	<0.100	0.062	<0.100	0.37	15.3
SME 3	8/9/2016	14.8	7.52	3.43	29.53	<0.100	<0.025	<0.100	0.564	10.8
SME 3	12/7/2016	8.5	7.90	10.91	11.85	<0.100	<0.025	0.147	1.780	9.4
SME 3	3/2/2017	14.6	7.95	4.60	13.64	0.272	<0.025	<0.100	0.733	17.0
SME 3	7/5/2017	12.5	7.54	5.88	27.3	<0.100	0.039	<0.100	0.628	16.3
SME 3	8/16/2017	11.5	7.86	5.00	28.1	<0.100	0.07	<0.100	0.446	18.5
SME 3	10/25/2017	15.3	7.42	8.23	19.4	<0.100	0.053	0.106	0.376	49.7
SME 3	3/28/2018	8.9	7.98	9.44	17.4	0.220	<0.025	<0.100	<0.250	11.2
SME 3	6/29/2018	15.8	7.53	5.39	26.9	<0.100	<0.025	<0.100	0.800	115.0
SME 3	8/2/2018	30.0	7.59	5.66	26.4	<0.100	<0.025	0.108	0.981	56.0
SME 3	12/10/2018	33.1	7.21	10.68	7.0	<0.100	<0.025	0.127	0.433	27.1

TABLE B.24 - HISTORICAL ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 3	4/15/2019	552.6	7.78	7.65	19.7	0.234	<0.025	0.285	0.271	371
SME 3	6/12/2019	7.8	7.48	6.87	27.1	<0.100	<0.025	<0.100	<0.250	10.7
SME 3	8/27/2019	55.3	7.91	8.41	29.2	<0.100	<0.025	0.149	0.389	7.0
SME 3	10/29/2019	22.4	7.77	8.44	17.2	<0.100	<0.025	<0.100	0.390	15.4
SME 3	3/30/2020	14.4	7.51	8.91	18.8	0.239	<0.025	<0.100	0.657	18.2
SME 3	6/16/2020	9.2	8.06	7.95	27.1	<0.100	<0.030	0.102	0.466	10.1
SME 3	9/21/2020	15.3	7.67	6.50	23.0	<0.100	<0.030	<0.100	0.660	10.7
SME 3	9/2/2021	102.33	7.75	5.64	26.3	<0.100	0.057	0.234	1.24	267
SME 3	1/11/2022	109.4	7.58	11.17	9.9	0.390	<0.0300	<0.10	0.520	15.4
SME 3	4/7/2022	32.3	7.69	8.99	16.6	0.181	<0.0300	<0.100	0.406	27.0
SME 3	8/2/2022	11.0	7.81	6.35	29.2	<0.100	<0.0300	<0.100	<0.250	5.60
SME 3	11/16/2022	7.3	7.76	9.28	13.6	<0.100	<0.0300	<0.100	0.294	10.30

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.25 - HISTORICAL ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 5	3/12/2013	5.98	8.38	9.87	10.80	0.30	0.031	<0.100	0.39	7.2
SS 5	5/8/2013	24.4	7.38	7.19	16.80	0.16	<0.12	<0.100	0.62	21.0
SS 5	9/23/2013	13.8	8.00	5.44	25.80	<0.100	0.029	<0.100	1.30	15.0
SS 5	12/10/2013	22.8	8.25	9.10	7.70	0.24	0.043	0.11	0.67	13.0
SS 5	2/6/2014	27.5	7.20	12.09	5.40	0.39	<0.025	<0.100	0.86	12.0
SS 5	6/26/2014	11.0	8.53	7.01	NS	<0.100	<0.025	<0.100	0.40	11.0
SS 5	9/30/2014	11.2	7.64	6.82	24.44	<0.100	<0.025	<0.100	0.45	11.0
SS 5	11/19/2014	14.1	8.96	13.13	8.50	<0.100	<0.025	<0.100	0.35	9.6
SS 5	3/23/2015	18.0	8.50	8.99	17.70	0.26	<0.025	<0.100	0.46	11.0
SS 5	4/22/2015	19.0	7.76	6.71	20.20	0.15	<0.025	<0.100	0.47	13.0
SS 5	9/30/2015	11.0	8.26	6.61	25.30	<0.100	<0.025	<0.100	0.606	9.9
SS 5	11/19/2015	19.0	7.86	8.47	15.90	0.239	<0.025	<0.100	<0.250	11.0
SS 5	3/15/2016	20.0	8.37	8.47	17.20	0.264	<0.025	0.225	0.279	9.5
SS 5	6/29/2016	14.7	8.01	3.81	29.77	<0.100	0.066	<0.100	0.480	13.2
SS 5	8/9/2016	11.6	7.86	3.16	29.40	<0.100	<0.025	<0.100	0.464	12.6
SS 5	12/7/2016	6.6	7.94	6.70	12.30	<0.100	<0.025	0.12	0.420	8.0
SS 5	3/2/2017	14.0	7.78	3.92	12.77	0.334	<0.025	<0.100	0.766	16.0
SS 5	7/5/2017	8.4	7.77	7.19	28.90	<0.100	<0.025	<0.100	0.474	12.0
SS 5	8/16/2017	10.2	8.10	4.83	29.90	<0.100	<0.025	<0.100	0.493	15.1
SS 5	10/25/2017	7.5	8.24	8.36	19.2	<0.100	<0.025	<0.100	0.531	11.8
SS 5	3/28/2018	7.0	8.53	10.23	18.5	0.248	<0.025	<0.100	<0.250	8.33
SS 5	6/29/2018	10.4	7.93	5.50	27.5	<0.100	<0.025	<0.100	0.605	13.3
SS 5	8/2/2018	13.5	7.58	6.04	25.8	<0.100	<0.025	<0.100	0.554	12.8
SS 5	12/10/2018	21.9	7.01	11.15	7.3	0.146	<0.025	<0.100	0.522	16.7

TABLE B.25 - HISTORICAL ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 5	4/15/2019	15.5	7.35	7.77	19.4	0.168	<0.025	<0.100	0.374	11.7
SS 5	6/12/2019	10.0	8.44	8.78	26.6	<0.100	<0.025	<0.100	<0.250	11.0
SS 5	8/27/2019	24.5	8.66	9.02	28.9	<0.100	<0.025	0.168	0.508	7.1
SS 5	10/29/2019	18.7	8.20	9.33	18.1	0.105	<0.025	0.198	0.631	10.4
SS 5	3/30/2020	9.2	8.35	11.07	20.8	0.127	<0.025	<0.100	0.399	10.6
SS 5	6/16/2020	10.5	8.41	7.99	27.9	<0.100	<0.030	<0.100	0.534	9.7
SS 5	9/21/2020	16.5	7.36	11.45	22.6	<0.100	<0.030	<0.100	0.512	11.0
SS 5	12/17/2020	8.64	8.02	11.24	9.6	0.200	<0.030	<0.100	0.428	10.1
SS 5	3/18/2021	0.60	7.36	9.03	15.7	0.191	<0.030	<0.100	0.570	14.6
SS 5	5/5/2021	38.40	7.55	7.72	20.5	0.108	<0.030	<0.100	0.576	32.2
SS 5	9/2/2021	9.62	8.00	8.54	28.6	<0.100	<0.030	<0.100	0.431	14.4
SS 5	11/23/2021	10.84	7.40	10.89	13.7	0.126	<0.0300	<0.100	<0.250	7.7
SS 5	1/11/2022	46.0	7.64	11.13	11.1	0.320	<0.0300	<0.10	1.300	10.4
SS 5	4/7/2022	20.7	7.80	8.85	17.9	0.122	<0.0300	<0.100	0.516	15.6
SS 5	8/2/2022	11.9	8.38	7.32	30.6	<0.100	<0.0300	<0.100	0.812	7.80
SS 5	11/16/2022	5.32	8.07	10.21	14.0	<0.100	<0.0300	<0.100	0.314	8.30

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.26 - HISTORICAL ANALYTICAL DATA - SME 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 5	12/17/2020	15.24	7.80	10.94	10.00	0.371	<0.030	<0.100	0.258	17.7
SME 5	3/18/2021	1.70	7.83	9.59	15.90	0.316	<0.030	<0.100	0.317	23.0
SME 5	5/5/2021	50.11	7.80	7.96	21.2	<0.100	<0.030	<0.100	0.410	60.6
SME 5	9/2/2021	15.15	8.02	6.42	28.2	0.128	<0.030	<0.100	0.325	31.8
SME 5	11/23/2021	68.29	7.78	10.42	14.9	0.231	<0.0300	<0.100	<0.250	14.0
SME 5	1/11/2022	24.90	7.66	10.46	14.7	0.450	0.035	<0.10	1.50	16.6
SME 5	4/7/2022	55.4	7.99	9.43	17.4	0.290	<0.0300	<0.100	0.385	25.4
SME 5	8/2/2022	12.0	8.26	7.16	30.4	0.102	<0.0300	<0.100	0.277	7.30
SME 5	11/16/2022	7.26	7.91	9.00	14.7	0.113	<0.0300	<0.100	0.347	11.1

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.27 - HISTORICAL ANALYTICAL DATA - SME 6

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 6	12/17/2020	13.6	7.96	10.89	10.10	0.368	<0.03	<0.10	<0.25	16.7
SME 6	3/18/2021	3.3	7.65	9.84	15.50	0.358	<0.030	<0.100	0.618	47.2
SME 6	5/5/2021	62.32	7.75	7.80	19.9	0.183	<0.030	<0.100	0.403	82.8
SME 6	9/2/2021	13.32	8.19	6.72	27.7	0.131	<0.030	0.430	0.353	19.0
SME 6	11/23/2021	9.79	7.68	10.35	15.1	0.231	<0.0300	<0.100	<0.250	11.2
SME 6	1/11/2022	24.4	7.72	11.24	10.2	0.450	<0.0300	<0.10	2.40	16.9
SME 6	4/7/2022	31.4	7.95	9.63	18.0	0.270	<0.0300	<0.100	0.373	28.8
SME 6	8/2/2022	11.1	8.25	8.26	30.9	<0.100	<0.0300	<0.100	<0.250	8.40
SME 6	11/16/2022	8.01	7.87	9.34	14.0	<0.100	<0.0300	<0.100	0.308	11.3

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.28 - HISTORICAL ANALYTICAL DATA - RC 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 14	3/12/2013	28.3	8.23	7.53	10.3	<0.100	0.088	<0.100	0.61	21.0
RC 14	5/8/2013	29.5	6.72	1.78	21.4	0.14	<0.12	<0.100	0.63	16.0
RC 14	9/23/2013	18.4	7.86	6.68	24.7	<0.100	<0.025	<0.100	0.58	13.0
RC 14	12/10/2013	40.0	8.45	9.50	8.2	<0.100	0.100	0.11	0.69	16.0
RC 14	2/6/2014	66.6	7.15	10.94	4.9	0.16	0.036	0.11	0.70	18.0
RC 14	6/26/2014	6.2	8.21	6.30	NS	<0.100	<0.025	<0.100	0.39	5.9
RC 14	9/30/2014	12.4	7.20	6.20	23.5	<0.100	<0.025	<0.100	0.40	12.0
RC 14	9/19/2014	50.3	8.20	10.10	7.5	<0.100	0.085	0.13	0.52	28.0
RC 14	3/23/2015	70.0	8.03	7.80	18.2	0.26	0.070	<0.100	1.10	34.0
RC 14	4/22/2015	30.0	7.77	7.25	18.1	0.20	<0.025	<0.100	0.40	15.0
RC 14	9/30/2015	17.0	8.28	5.63	24.4	<0.100	<0.025	<0.100	0.454	12.6
RC 14	11/19/2015	95.0	7.32	6.07	17.71	0.137	<0.025	0.135	0.633	36.0
RC 14	3/15/2016	85.0	8.13	7.73	18.5	0.106	<0.025	0.304	0.434	69.6
RC 14	6/29/2016	17.2	7.58	2.17	28.53	<0.100	0.037	<0.100	0.460	17.5
RC 14	8/9/2016	10.4	7.05	2.35	28.53	<0.100	<0.025	<0.100	0.547	8.5
RC 14	12/7/2016	7.9	7.21	6.47	11.62	<0.100	<0.025	<0.100	0.252	8.6
RC 14	3/2/2017	18.0	7.32	3.55	12.69	0.12	<0.025	<0.100	0.608	14.6
RC 14	7/5/2017	17.7	7.55	6.56	25.7	0.279	0.041	<0.100	0.357	35.0
RC 14	8/16/2017	9.8	7.72	5.54	26.7	0.21	0.042	<0.100	0.400	12.4
RC 14	10/25/2017	18.7	7.64	7.26	17.1	0.24	0.088	0.149	0.465	27.2
RC 14	3/28/2018	9.9	8.03	9.00	18.3	0.148	<0.025	<0.100	<0.25	10.9
RC 14	6/29/2018	12.9	7.64	5.89	27.1	<0.100	<0.025	<0.100	0.722	13.8
RC 14	8/2/2018	21.7	7.30	5.56	23.7	<0.100	0.055	<0.100	0.848	17.3
RC 14	12/10/2018	35.1	7.13	10.63	7.3	<0.100	0.038	0.169	1.400	16.9

TABLE B.28 - HISTORICAL ANALYTICAL DATA - RC 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 14	4/15/2019	45.8	7.68	7.67	19.5	0.108	<0.025	<0.100	0.403	36.0
RC 14	6/12/2019	11.0	8.03	7.39	25.3	0.120	<0.025	<0.100	0.250	12.3
RC 14	8/27/2019	76.4	8.36	8.78	28.4	<0.100	<0.025	0.141	0.391	8.8
RC 14	10/29/2019	17.4	7.90	9.83	17.7	<0.100	<0.025	<0.100	0.478	10.6
RC 14	3/30/2020	12.9	8.10	10.01	21.9	<0.100	<0.025	<0.100	0.451	15.7
RC 14	6/16/2020	11.5	6.79	8.01	26.9	0.141	<0.030	<0.100	0.560	11.4
RC 14	9/21/2020	13.7	7.49	9.65	21.9	<0.100	<0.030	0.202	0.307	8.2
RC 14	12/17/2020	25.8	7.72	10.40	9.3	0.261	<0.030	<0.100	0.497	14.4
RC 14	3/18/2021	25.8	7.72	10.40	9.3	0.261	<0.030	<0.100	0.497	14.4
RC 14	5/5/2021	33.45	7.68	7.99	20.9	<0.100	<0.030	<0.100	0.566	30.4
RC 14	9/2/2021	16.75	7.87	7.11	25.7	0.210	0.040	<0.100	0.350	23.2
RC 14	11/23/2021	24.6	7.96	10.57	13.3	<0.100	<0.0300	0.103	<0.250	40.2
RC 14	1/11/2022	66.4	7.40	11.82	10.4	0.170	<0.0300	<0.10	1.500	20.6
RC 14	4/7/2022	99.0	7.76	8.27	17.6	<0.100	<0.0300	0.101	0.548	178
RC 14	8/2/2022	12.9	8.29	7.67	30.2	<0.100	<0.0300	<0.100	0.332	11.1
RC 14	11/16/2022	6.84	7.79	9.06	12.4	<0.100	<0.0300	<0.100	<0.250	9.20

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

Appendix III – Laboratory Reports

Laboratory Report No. L1559040, dated November 17, 2022

Laboratory Report No. L1559012, dated November 17, 2022

ANALYTICAL REPORT

November 29, 2022

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

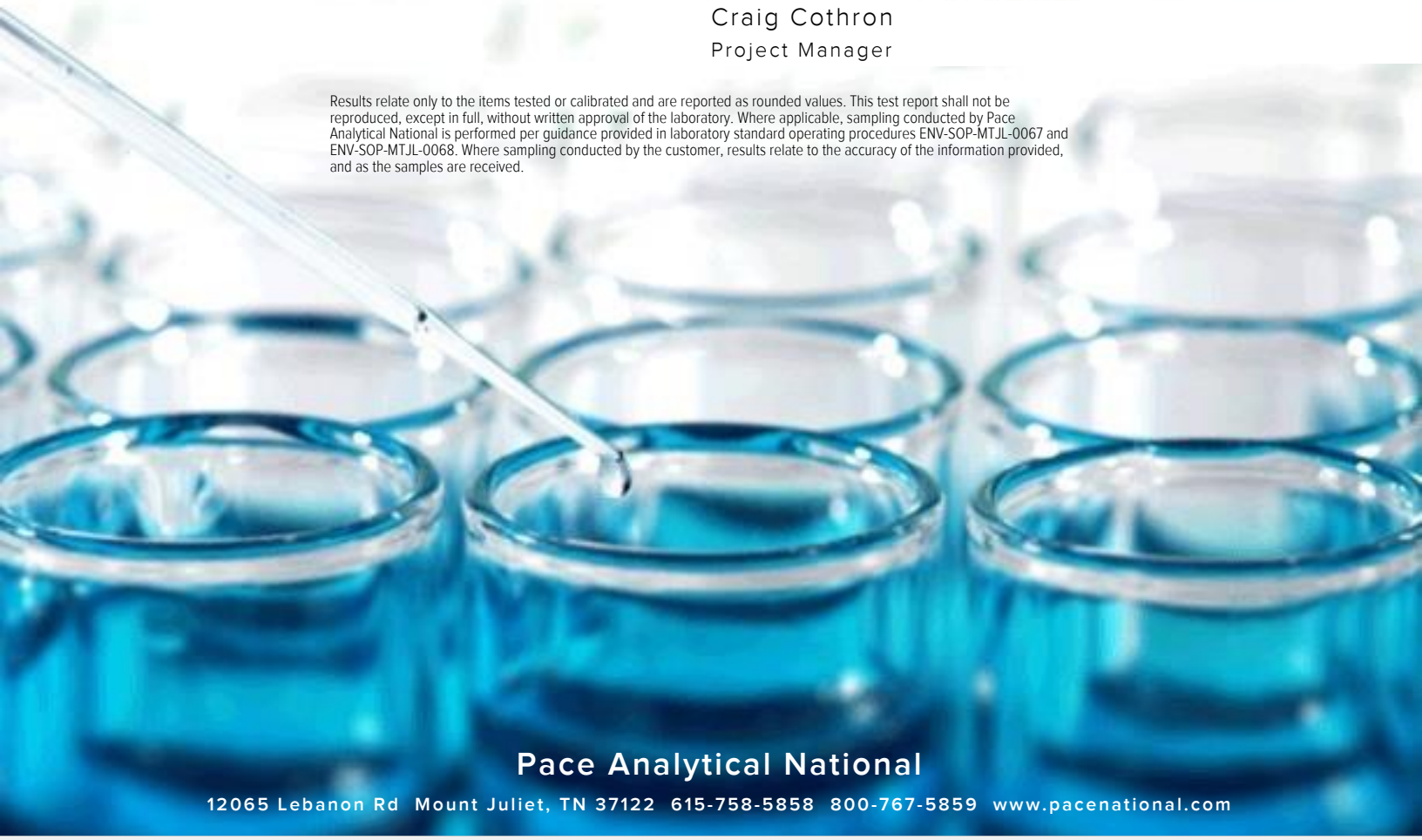
S&ME - Huntsville

Sample Delivery Group:	L1559040
Samples Received:	11/17/2022
Project Number:	22820261
Description:	
Site:	LAND
Report To:	Ms. Sarah Yeldell 360 D Quality Circle NW Suite 450 Huntsville, AL 35806

Entire Report Reviewed By:

Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
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AT 5 L1559040-01 WW

Collected by: Patrick C. | Collected date/time: 11/16/22 13:45 | Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963188	1	11/23/22 04:27	11/28/22 19:27	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 14:59	11/23/22 14:59	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966057	1	11/23/22 04:27	11/28/22 19:39	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 03:00	11/18/22 03:00	CRB	Mt. Juliet, TN

GD 8 L1559040-02 WW

Collected by: Patrick C. | Collected date/time: 11/16/22 13:30 | Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963190	1	11/23/22 11:50	11/23/22 14:47	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 15:00	11/23/22 15:00	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1964555	1	11/23/22 11:50	11/23/22 15:17	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 03:01	11/18/22 03:01	CRB	Mt. Juliet, TN

RC 2 L1559040-03 WW

Collected by: Patrick C. | Collected date/time: 11/16/22 13:15 | Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963190	1	11/23/22 11:50	11/23/22 14:52	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 15:04	11/23/22 15:04	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1964555	1	11/23/22 11:50	11/23/22 15:22	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 03:01	11/18/22 03:01	CRB	Mt. Juliet, TN

SS 13 L1559040-04 WW

Collected by: Patrick C. | Collected date/time: 11/16/22 12:38 | Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963190	1	11/23/22 11:50	11/23/22 14:56	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 15:05	11/23/22 15:05	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1964555	1	11/23/22 11:50	11/23/22 15:25	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 03:02	11/18/22 03:02	CRB	Mt. Juliet, TN

SS 14 L1559040-05 WW

Collected by: Patrick C. | Collected date/time: 11/16/22 12:45 | Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963190	1	11/23/22 11:50	11/23/22 15:00	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 15:10	11/23/22 15:10	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1964555	1	11/23/22 11:50	11/23/22 15:26	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961697	1	11/18/22 03:21	11/18/22 03:21	CRB	Mt. Juliet, TN

GD 12 L1559040-06 WW

Collected by: Patrick C. | Collected date/time: 11/16/22 13:00 | Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963190	1	11/23/22 11:50	11/23/22 15:02	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 15:11	11/23/22 15:11	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1964555	1	11/23/22 11:50	11/23/22 15:30	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961697	1	11/18/22 03:21	11/18/22 03:21	CRB	Mt. Juliet, TN

GD 6 L1559040-07 WW

Collected by: Patrick C. | Collected date/time: 11/16/22 12:12 | Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963190	1	11/23/22 11:50	11/23/22 15:03	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 15:13	11/23/22 15:13	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1964555	1	11/23/22 11:50	11/23/22 15:31	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961697	1	11/18/22 03:22	11/18/22 03:22	CRB	Mt. Juliet, TN

CO 15 L1559040-08 WW

Collected by: Patrick C. | Collected date/time: 11/16/22 11:10 | Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964669	1	11/23/22 19:16	11/23/22 22:08	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963190	1	11/23/22 11:50	11/23/22 15:04	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 15:14	11/23/22 15:14	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1964555	1	11/23/22 11:50	11/23/22 15:33	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961697	1	11/18/22 03:22	11/18/22 03:22	CRB	Mt. Juliet, TN

SME 7 L1559040-09 WW

Collected by: Patrick C. | Collected date/time: 11/16/22 10:37 | Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964669	1	11/23/22 19:16	11/23/22 22:08	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963190	1	11/23/22 11:50	11/23/22 15:06	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 15:15	11/23/22 15:15	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1964555	1	11/23/22 11:50	11/23/22 15:34	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961697	1	11/18/22 03:22	11/18/22 03:22	CRB	Mt. Juliet, TN

SME 9 L1559040-10 WW

Collected by: Patrick C. | Collected date/time: 11/16/22 11:40 | Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964669	1	11/23/22 19:16	11/23/22 22:08	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963193	1	11/24/22 13:40	11/28/22 17:43	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 15:17	11/23/22 15:17	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966045	1	11/24/22 13:40	11/28/22 18:01	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961697	1	11/18/22 03:23	11/18/22 03:23	CRB	Mt. Juliet, TN

SME 10 L1559040-11 WW

Collected by: Patrick C.
Collected date/time: 11/16/22 11:50
Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964669	1	11/23/22 19:16	11/23/22 22:08	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963193	1	11/24/22 13:40	11/28/22 17:48	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 15:18	11/23/22 15:18	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966045	1	11/24/22 13:40	11/28/22 18:06	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961697	1	11/18/22 03:24	11/18/22 03:24	CRB	Mt. Juliet, TN

SME 12 L1559040-12 WW

Collected by: Patrick C.
Collected date/time: 11/16/22 13:45
Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964669	1	11/23/22 19:16	11/23/22 22:08	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963193	1	11/24/22 13:40	11/28/22 17:49	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 15:19	11/23/22 15:19	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966045	1	11/24/22 13:40	11/28/22 18:07	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961697	1	11/18/22 03:25	11/18/22 03:25	CRB	Mt. Juliet, TN

SME 13 L1559040-13 WW

Collected by: Patrick C.
Collected date/time: 11/16/22 10:37
Received date/time: 11/17/22 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964669	1	11/23/22 19:16	11/23/22 22:08	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963193	1	11/24/22 13:40	11/28/22 17:56	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962988	1	11/23/22 15:20	11/23/22 15:20	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966045	1	11/24/22 13:40	11/28/22 18:12	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961697	1	11/18/22 03:25	11/18/22 03:25	CRB	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Craig Cothron
Project Manager

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	7.30		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	ND		0.250	1	11/28/2022 19:27	WG1963188

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.366		0.100	1	11/23/2022 14:59	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.420		0.100	1	11/28/2022 19:39	WG1966057

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.448		0.0300	1	11/18/2022 03:00	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	4.20		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.472	J5	0.250	1	11/23/2022 14:47	WG1963190

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.107		0.100	1	11/23/2022 15:00	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/23/2022 15:17	WG1964555

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0330		0.0300	1	11/18/2022 03:01	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	13.4		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.434		0.250	1	11/23/2022 14:52	WG1963190

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.126		0.100	1	11/23/2022 15:04	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/23/2022 15:22	WG1964555

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 03:01	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	5.50		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.263		0.250	1	11/23/2022 14:56	WG1963190

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/23/2022 15:05	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/23/2022 15:25	WG1964555

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 03:02	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	2.50		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.406		0.250	1	11/23/2022 15:00	WG1963190

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/23/2022 15:10	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/23/2022 15:26	WG1964555

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0390		0.0300	1	11/18/2022 03:21	WG1961697

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	4.50		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.407		0.250	1	11/23/2022 15:02	WG1963190

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/23/2022 15:11	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/23/2022 15:30	WG1964555

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 03:21	WG1961697

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	7.50		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.476		0.250	1	11/23/2022 15:03	WG1963190

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.166		0.100	1	11/23/2022 15:13	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/23/2022 15:31	WG1964555

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 03:22	WG1961697

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	10.7		2.50	1	11/23/2022 22:08	WG1964669

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.424		0.250	1	11/23/2022 15:04	WG1963190

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/23/2022 15:14	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/23/2022 15:33	WG1964555

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 03:22	WG1961697

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	3.80		2.50	1	11/23/2022 22:08	WG1964669

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	ND		0.250	1	11/23/2022 15:06	WG1963190

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.424		0.100	1	11/23/2022 15:15	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.528		0.100	1	11/23/2022 15:34	WG1964555

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.490		0.0300	1	11/18/2022 03:22	WG1961697

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	ND		2.50	1	11/23/2022 22:08	WG1964669

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	11/28/2022 17:43	WG1963193

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	11/23/2022 15:17	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus,Total	ND		0.100	1	11/28/2022 18:01	WG1966045

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND		0.0300	1	11/18/2022 03:23	WG1961697

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	4.60		2.50	1	11/23/2022 22:08	WG1964669

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.516		0.250	1	11/28/2022 17:48	WG1963193

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/23/2022 15:18	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/28/2022 18:06	WG1966045

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 03:24	WG1961697

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	6.70		2.50	1	11/23/2022 22:08	WG1964669

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	ND		0.250	1	11/28/2022 17:49	WG1963193

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.362		0.100	1	11/23/2022 15:19	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.415		0.100	1	11/28/2022 18:07	WG1966045

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.427		0.0300	1	11/18/2022 03:25	WG1961697

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	4.80		2.50	1	11/23/2022 22:08	WG1964669

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.310		0.250	1	11/28/2022 17:56	WG1963193

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.425		0.100	1	11/23/2022 15:20	WG1962988

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.430		0.100	1	11/28/2022 18:12	WG1966045

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.488		0.0300	1	11/18/2022 03:25	WG1961697

Method Blank (MB)

(MB) R3865043-1 11/23/22 19:12

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1558990-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1558990-01 11/23/22 19:12 • (DUP) R3865043-3 11/23/22 19:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	83.3	72.7	1	13.7	P1	5

L1559808-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1559808-01 11/23/22 19:12 • (DUP) R3865043-4 11/23/22 19:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	15.6	17.2	1	9.76	P1	5

Laboratory Control Sample (LCS)

(LCS) R3865043-2 11/23/22 19:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	816	106	85.7-114	

Method Blank (MB)

(MB) R3865152-1 11/23/22 22:08

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1559472-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1559472-01 11/23/22 22:08 • (DUP) R3865152-3 11/23/22 22:08

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	19.2	20.0	1	4.08		5

L1561033-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1561033-01 11/23/22 22:08 • (DUP) R3865152-4 11/23/22 22:08

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	296	320	1	7.79	P1	5

Laboratory Control Sample (LCS)

(LCS) R3865152-2 11/23/22 22:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	796	103	85.7-114	

Method Blank (MB)

(MB) R3865802-1 11/28/22 19:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1559012-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-04 11/28/22 20:00 • (DUP) R3865802-3 11/28/22 19:08

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.509	0.548	1	7.38		20

L1559012-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-05 11/28/22 19:12 • (DUP) R3865802-6 11/28/22 19:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.399	0.415	1	3.93		20

Laboratory Control Sample (LCS)

(LCS) R3865802-2 11/28/22 19:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	12.7	12.0	94.5	75.2-120	

L1559012-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559012-04 11/28/22 20:00 • (MS) R3865802-4 11/28/22 19:10 • (MSD) R3865802-5 11/28/22 19:11

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	0.509	5.48	5.50	99.4	99.8	1	90.0-110			0.364	20

L1559368-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559368-01 11/28/22 19:35 • (MS) R3865802-7 11/28/22 19:37 • (MSD) R3865802-8 11/28/22 19:38

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	ND	4.55	4.60	91.0	92.0	1	90.0-110			1.09	20

Method Blank (MB)

(MB) R3864738-1 11/23/22 14:44

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1559040-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1559040-02 11/23/22 14:47 • (DUP) R3864738-3 11/23/22 14:48

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.472	0.425	1	10.5		20

L1559040-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1559040-03 11/23/22 14:52 • (DUP) R3864738-6 11/23/22 14:54

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.434	0.383	1	12.5		20

Laboratory Control Sample (LCS)

(LCS) R3864738-2 11/23/22 14:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	12.7	13.3	105	75.2-120	

L1559040-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559040-02 11/23/22 14:47 • (MS) R3864738-4 11/23/22 14:50 • (MSD) R3864738-5 11/23/22 14:51

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	0.472	6.16	6.07	114	112	1	90.0-110	J5	J5	1.47	20

Sample Narrative:

MS: Matrix spike failure due to matrix interference.

MSD: Matrix spike failure due to matrix interference.

L1559040-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1559040-03 11/23/22 14:52 • (MS) R3864738-7 11/23/22 14:55

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	0.434	5.94	110	1	90.0-110	

Method Blank (MB)

(MB) R3865786-1 11/28/22 17:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1559040-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1559040-10 11/28/22 17:43 • (DUP) R3865786-3 11/28/22 17:44

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	ND	ND	1	0.000		20

L1559040-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1559040-12 11/28/22 17:49 • (DUP) R3865786-6 11/28/22 17:51

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3865786-2 11/28/22 17:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	12.7	12.4	97.6	75.2-120	

L1559040-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559040-10 11/28/22 17:43 • (MS) R3865786-4 11/28/22 17:45 • (MSD) R3865786-5 11/28/22 17:47

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	ND	5.21	5.23	104	105	1	90.0-110			0.383	20

L1559040-12 Original Sample (OS) • Matrix Spike (MS)

(OS) L1559040-12 11/28/22 17:49 • (MS) R3865786-7 11/28/22 17:52

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	ND	5.35	103	1	90.0-110	

Method Blank (MB)

(MB) R3864674-1 11/23/22 14:55

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1559040-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1559040-02 11/23/22 15:00 • (DUP) R3864674-3 11/23/22 15:01

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.107	0.111	1	3.67		20

L1559150-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1559150-01 11/23/22 15:56 • (DUP) R3864674-8 11/23/22 15:58

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.835	0.845	1	1.19		20

Laboratory Control Sample (LCS)

(LCS) R3864674-2 11/23/22 14:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.56	102	90.0-110	

L1559040-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1559040-02 11/23/22 15:00 • (MS) R3864674-4 11/23/22 15:03

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	0.107	2.70	104	1	90.0-110	

L1559150-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559150-01 11/23/22 15:56 • (MS) R3864674-9 11/23/22 15:59 • (MSD) R3864674-10 11/23/22 16:00

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50	0.835	3.38	3.46	102	105	1	90.0-110			2.34	20

Method Blank (MB)

(MB) R3864700-1 11/23/22 15:15

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1559040-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1559040-02 11/23/22 15:17 • (DUP) R3864700-3 11/23/22 15:18

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

L1559040-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1559040-03 11/23/22 15:22 • (DUP) R3864700-6 11/23/22 15:24

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3864700-2 11/23/22 15:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	3.91	103	83.2-116	

L1559040-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559040-02 11/23/22 15:17 • (MS) R3864700-4 11/23/22 15:20 • (MSD) R3864700-5 11/23/22 15:21

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	ND	2.67	2.72	107	109	1	90.0-110			1.86	20

Method Blank (MB)

(MB) R3865794-1 11/28/22 17:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1559040-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1559040-10 11/28/22 18:01 • (DUP) R3865794-3 11/28/22 18:02

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

L1559040-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1559040-12 11/28/22 18:07 • (DUP) R3865794-6 11/28/22 18:09

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.415	0.397	1	4.43		20

Laboratory Control Sample (LCS)

(LCS) R3865794-2 11/28/22 17:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	3.51	92.9	83.2-116	

L1559040-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559040-10 11/28/22 18:01 • (MS) R3865794-4 11/28/22 18:03 • (MSD) R3865794-5 11/28/22 18:05

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	ND	2.30	2.28	92.0	91.2	1	90.0-110			0.873	20

Method Blank (MB)

(MB) R3865803-1 11/28/22 19:19

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1559012-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-04 11/28/22 19:21 • (DUP) R3865803-3 11/28/22 19:22

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3865803-2 11/28/22 19:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	3.71	98.1	83.2-116	

L1559012-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559012-04 11/28/22 19:21 • (MS) R3865803-4 11/28/22 19:24 • (MSD) R3865803-5 11/28/22 19:25

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	ND	2.53	2.51	101	100	1	90.0-110			0.794	20

Method Blank (MB)

(MB) R3862502-1 11/18/22 02:52

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1559012-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-01 11/18/22 02:53 • (DUP) R3862502-3 11/18/22 02:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

L1559012-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-11 11/18/22 02:59 • (DUP) R3862502-6 11/18/22 03:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3862502-2 11/18/22 02:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.221	90.4	85.0-115	

L1559012-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559012-10 11/18/22 02:57 • (MS) R3862502-4 11/18/22 02:58 • (MSD) R3862502-5 11/18/22 02:59

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	ND	0.519	0.500	104	100	1	80.0-120			3.73	20

Method Blank (MB)

(MB) R3862503-1 11/18/22 03:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1559040-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1559040-07 11/18/22 03:22 • (DUP) R3862503-3 11/18/22 03:22

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3862503-2 11/18/22 03:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.252	103	85.0-115	

L1559040-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559040-10 11/18/22 03:23 • (MS) R3862503-4 11/18/22 03:24 • (MSD) R3862503-5 11/18/22 03:24

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	ND	0.468	0.528	93.6	106	1	80.0-120			12.0	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
S&ME - Huntsville
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace PEOPLE ADVANCING SCIENCE

MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

Report to: Ms. Sarah Yeldell

Email To: syeldell@smeinc.com

Project Description:

City/State Collected:

Please Circle: PT MT CT ET

Phone: 256-837-8882

Client Project # ~~4482-20-044~~ 22820261

Lab Project # QOREHAL-448220044

SDG # L1559040

Tab D051

Collected by (print): Patrick Cromer

Site/Facility ID # LAND

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Immediately Packed on Ice N ___ Y ✓

Acctnum: QOREHAL
Template: T181690
Prelogin: P953844
PM: 034 - Craig Cothron
PB: BW 9/26
Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4 <2	TKN / NO2NO3 250mlHDPE-H2SO4 <2	TSS 1L-HDPE NoPres							Remarks	Sample # (lab only)
AT 5	Grab	WW	1'	11-16	13:45	4	X	X	X	X								-01
GD 8	Grab	WW	1'	11-16	13:30	4	X	X	X	X								-02
RC 2	Grab	WW	1'	11-16	13:15	4	X	X	X	X								-03
SS 13	Grab	WW	1'	11-16	12:38	4	X	X	X	X								-04
SS 14	Grab	WW	1'	11-16	12:45	4	X	X	X	X								-05
GD 12	Grab	WW	1'	11-16	13:00	4	X	X	X	X								-06
GD 6	Grab	WW	1'	11-16	12:12	4	X	X	X	X								-07
CO 15	Grab	WW	1'	11-16	11:10	4	X	X	X	X								-08
SME 7	Grab	WW	1'	11-16	10:37	4	X	X	X	X								-09
SME 9	Grab	WW	1'	11-16	11:40	4	X	X	X	X								-10

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # ~~5882~~ ~~7562~~ ~~4683~~ KF

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: ✓Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
[signature]	11-16	14:15			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	~~MSA7~~ °C ~~2.2+0=2.2~~ KF Bottles Received: 52	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Kayla [signature]	Date: 11/17/22 Time: 1100	Hold: Condition: NCF / OK

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Report to:
Ms. Sarah Yeldell

Email To: **syeldell@smeinc.com**

Project Description:

City/State Collected:

Please Circle: PT MT CT ET

Phone: **256-837-8882**

Client Project # ~~4482-20-044~~ 22820261

Lab Project # **QOREHAL-448220044**

Collected by (print): Patrick Curnow

Site/Facility ID # **LAND**

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres							Remarks	Sample # (lab only)
SME 10	Grab	WW	1'	11-16	11:50	4	X	X	X	X								11
		WW				4	X	X	X	X								
		WW				4	X	X	X	X								

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1559040

Table #

Acctnum: **QOREHAL**

Template: **T181690**

Prelogin: **P953844**

PM: **034 - Craig Cothron**

PB: BW 9/26

Shipped Via: **FedEX Ground**

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # ~~5882 7562 4685~~ KF

Sample Receipt Checklist

COC Seal Present/Intact:	__NP	X __N
COC Signed/Accurate:		X __N
Bottles arrive intact:		X __N
Correct bottles used:		X __N
Sufficient volume sent:		__Y __N
If Applicable		
VOA Zero Headspace:		Y __N
Preservation Correct/Checked:		X __N
RAD Screen <0.5 mR/hr:		X __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes (No) HCL / MeoH TBR
	11-16	14:15		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: MSAT °C ~~2.2+0-2.2~~ KF 52 Bottles Received:
				If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11/17/22 Time: 1100
				Hold:

Condition: NCF / (OK)

4155904

P051

Tracking Numbers	Temperature
5882 7562 4683	MSA7 2.2+0=2.2
5882 7562 4672	MSA7 5.1+0=5.1

11/17-NCF-L1559040 QOREHAL TD

R5

Time estimate: oh **Time spent:** oh

Members

Troy Dunlap (responsible) CC Craig Cothron

- [ ] Login Clarification needed
- [ ] Chain of custody is incomplete
- [ ] Please specify Metals requested
- [ ] Please specify TCLP requested
- [x] Received additional samples not listed on COC
- [ ] Sample IDs on containers do not match IDs on COC
- [ ] Client did not "X" analysis
- [ ] Chain of Custody is missing
- [ ] If no COC: Received by:_____
- [ ] If no COC: Date/Time:_____
- [ ] If no COC: Temp./Cont.Rec./pH:_____
- [ ] If no COC: Carrier:_____
- [ ] If no COC: Tracking #:_____
- [ ] Client informed by call
- [x] Client informed by Email
- [ ] Client informed by Voicemail
- [x] Date/Time:_11/17/22 1720_____
- [x] PM initials:_____cc_____
- [x] Client Contact:__Sarah Yeldell_____

Comments

Troy Dunlap *17 November 2022 3:33 PM*

Received SME 12 and SME 13 not listed on the COC. Added.

Craig Cothron *17 November 2022 5:27 PM*

Run these samples for all analysis listed on COC

Troy Dunlap *17 November 2022 5:42 PM*

Done.

ANALYTICAL REPORT

November 29, 2022

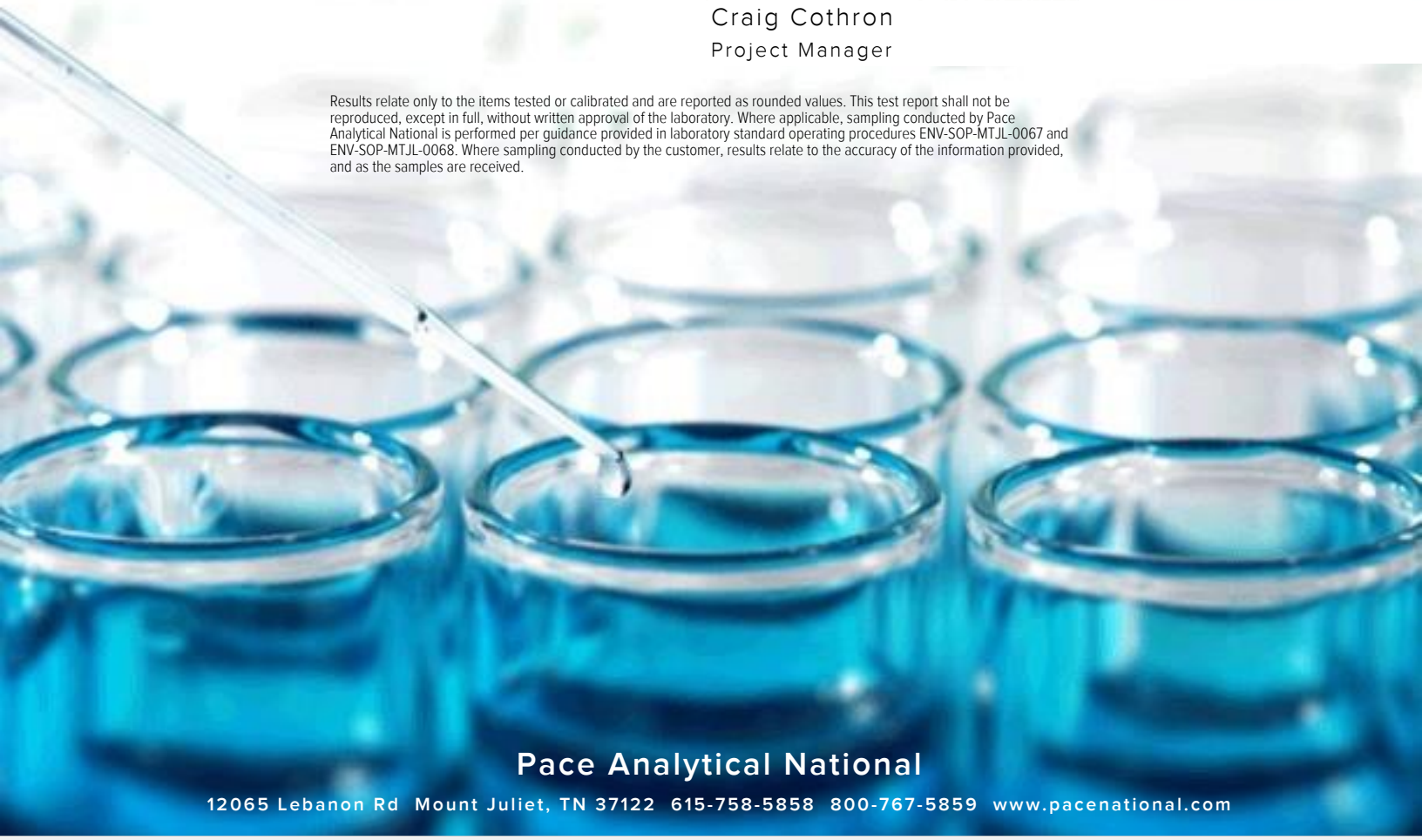
S&ME - Huntsville

Sample Delivery Group:	L1559012
Samples Received:	11/17/2022
Project Number:	22820261
Description:	
Site:	BOAT
Report To:	Sarah Yeldell 360 D Quality Circle NW Suite 450 Huntsville, AL 35806

Entire Report Reviewed By:

Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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HB-3 L1559012-01 WW

Collected by: Nathanael Wade | Collected date/time: 11/16/22 10:35 | Received date/time: 11/17/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964622	1	11/23/22 16:56	11/23/22 17:05	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963186	1	11/22/22 04:12	11/23/22 09:44	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962987	1	11/22/22 18:28	11/22/22 18:28	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1964148	1	11/22/22 04:12	11/23/22 08:29	CAG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 02:53	11/18/22 02:53	CRB	Mt. Juliet, TN

SME-4 L1559012-02 WW

Collected by: Nathanael Wade | Collected date/time: 11/16/22 10:45 | Received date/time: 11/17/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964622	1	11/23/22 16:56	11/23/22 17:05	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963186	1	11/22/22 04:12	11/23/22 09:48	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962987	1	11/22/22 18:33	11/22/22 18:33	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1964148	1	11/22/22 04:12	11/23/22 08:31	CAG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 02:54	11/18/22 02:54	CRB	Mt. Juliet, TN

GD-5 L1559012-03 WW

Collected by: Nathanael Wade | Collected date/time: 11/16/22 11:05 | Received date/time: 11/17/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964622	1	11/23/22 16:56	11/23/22 17:05	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963186	1	11/22/22 04:12	11/23/22 09:52	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962987	1	11/22/22 18:34	11/22/22 18:34	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1964148	1	11/22/22 04:12	11/23/22 08:33	CAG	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 02:55	11/18/22 02:55	CRB	Mt. Juliet, TN

GD-7 L1559012-04 WW

Collected by: Nathanael Wade | Collected date/time: 11/16/22 11:30 | Received date/time: 11/17/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964622	1	11/23/22 16:56	11/23/22 17:05	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963188	1	11/23/22 04:27	11/28/22 20:00	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962987	1	11/22/22 18:35	11/22/22 18:35	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966057	1	11/23/22 04:27	11/28/22 19:21	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 02:55	11/18/22 02:55	CRB	Mt. Juliet, TN

GD-9 L1559012-05 WW

Collected by: Nathanael Wade | Collected date/time: 11/16/22 11:40 | Received date/time: 11/17/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964622	1	11/23/22 16:56	11/23/22 17:05	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963188	1	11/23/22 04:27	11/28/22 19:12	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962987	1	11/22/22 18:37	11/22/22 18:37	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966057	1	11/23/22 04:27	11/28/22 19:26	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 02:56	11/18/22 02:56	CRB	Mt. Juliet, TN

SME-1 L1559012-06 WW

Collected by: Nathanael Wade | Collected date/time: 11/16/22 11:55 | Received date/time: 11/17/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963188	1	11/23/22 04:27	11/28/22 19:18	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962987	1	11/22/22 18:44	11/22/22 18:44	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966057	1	11/23/22 04:27	11/28/22 19:28	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 02:56	11/18/22 02:56	CRB	Mt. Juliet, TN

SS-5 L1559012-07 WW

Collected by: Nathanael Wade | Collected date/time: 11/16/22 12:40 | Received date/time: 11/17/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963188	1	11/23/22 04:27	11/28/22 19:19	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962987	1	11/22/22 18:46	11/22/22 18:46	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966057	1	11/23/22 04:27	11/28/22 19:29	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 02:56	11/18/22 02:56	CRB	Mt. Juliet, TN

SME-5 L1559012-08 WW

Collected by: Nathanael Wade | Collected date/time: 11/16/22 12:50 | Received date/time: 11/17/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963188	1	11/23/22 04:27	11/28/22 19:20	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962987	1	11/22/22 18:47	11/22/22 18:47	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966057	1	11/23/22 04:27	11/28/22 19:30	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 02:57	11/18/22 02:57	CRB	Mt. Juliet, TN

SME-6 L1559012-09 WW

Collected by: Nathanael Wade | Collected date/time: 11/16/22 13:05 | Received date/time: 11/17/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963188	1	11/23/22 04:27	11/28/22 19:22	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962987	1	11/22/22 18:48	11/22/22 18:48	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966057	1	11/23/22 04:27	11/28/22 19:34	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 02:57	11/18/22 02:57	CRB	Mt. Juliet, TN

RC-14 L1559012-10 WW

Collected by: Nathanael Wade | Collected date/time: 11/16/22 13:25 | Received date/time: 11/17/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963188	1	11/23/22 04:27	11/28/22 19:23	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962987	1	11/22/22 18:50	11/22/22 18:50	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966057	1	11/23/22 04:27	11/28/22 19:35	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 02:57	11/18/22 02:57	CRB	Mt. Juliet, TN

SME3 L1559012-11 WW

Collected by: Nathanael Wade
Collected date/time: 11/16/22 11:15
Received date/time: 11/17/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963188	1	11/23/22 04:27	11/28/22 19:24	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962987	1	11/22/22 18:51	11/22/22 18:51	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966057	1	11/23/22 04:27	11/28/22 19:36	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 02:59	11/18/22 02:59	CRB	Mt. Juliet, TN

SME11 L1559012-12 WW

Collected by: Nathanael Wade
Collected date/time: 11/16/22 10:50
Received date/time: 11/17/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1964661	1	11/23/22 17:34	11/23/22 19:12	SGB	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1963188	1	11/23/22 04:27	11/28/22 19:26	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1962987	1	11/22/22 18:52	11/22/22 18:52	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1966057	1	11/23/22 04:27	11/28/22 19:38	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1961695	1	11/18/22 03:00	11/18/22 03:00	CRB	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Craig Cothron
Project Manager

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	7.40		2.50	1	11/23/2022 17:05	WG1964622

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.604		0.250	1	11/23/2022 09:44	WG1963186

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/22/2022 18:28	WG1962987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/23/2022 08:29	WG1964148

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 02:53	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	10.5		3.33	1	11/23/2022 17:05	WG1964622

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.382		0.250	1	11/23/2022 09:48	WG1963186

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/22/2022 18:33	WG1962987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/23/2022 08:31	WG1964148

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 02:54	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	8.67		3.33	1	11/23/2022 17:05	WG1964622

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.312		0.250	1	11/23/2022 09:52	WG1963186

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/22/2022 18:34	WG1962987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/23/2022 08:33	WG1964148

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 02:55	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	8.53		3.33	1	11/23/2022 17:05	WG1964622

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.509		0.250	1	11/28/2022 20:00	WG1963188

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/22/2022 18:35	WG1962987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/28/2022 19:21	WG1966057

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0430		0.0300	1	11/18/2022 02:55	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	5.70		2.50	1	11/23/2022 17:05	WG1964622

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.399		0.250	1	11/28/2022 19:12	WG1963188

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/22/2022 18:37	WG1962987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/28/2022 19:26	WG1966057

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 02:56	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	7.90		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.306		0.250	1	11/28/2022 19:18	WG1963188

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/22/2022 18:44	WG1962987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/28/2022 19:28	WG1966057

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 02:56	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	8.30		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.314		0.250	1	11/28/2022 19:19	WG1963188

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/22/2022 18:46	WG1962987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/28/2022 19:29	WG1966057

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 02:56	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	11.1		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.347		0.250	1	11/28/2022 19:20	WG1963188

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.113		0.100	1	11/22/2022 18:47	WG1962987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/28/2022 19:30	WG1966057

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 02:57	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	11.3		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.308		0.250	1	11/28/2022 19:22	WG1963188

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/22/2022 18:48	WG1962987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/28/2022 19:34	WG1966057

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 02:57	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	9.20		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	ND		0.250	1	11/28/2022 19:23	WG1963188

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/22/2022 18:50	WG1962987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/28/2022 19:35	WG1966057

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 02:57	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	10.3		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.294		0.250	1	11/28/2022 19:24	WG1963188

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	11/22/2022 18:51	WG1962987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	11/28/2022 19:36	WG1966057

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	11/18/2022 02:59	WG1961695

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	12.0		2.50	1	11/23/2022 19:12	WG1964661

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.289		0.250	1	11/28/2022 19:26	WG1963188

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	11/22/2022 18:52	WG1962987

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus,Total	ND		0.100	1	11/28/2022 19:38	WG1966057

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND		0.0300	1	11/18/2022 03:00	WG1961695

Method Blank (MB)

(MB) R3865012-1 11/23/22 17:05

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1558907-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1558907-01 11/23/22 17:05 • (DUP) R3865012-3 11/23/22 17:05

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	ND	ND	1	20.0	P1	5

L1558927-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1558927-01 11/23/22 17:05 • (DUP) R3865012-4 11/23/22 17:05

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	53.0	46.0	1	14.1	P1	5

Laboratory Control Sample (LCS)

(LCS) R3865012-2 11/23/22 17:05

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	784	101	85.7-114	

Method Blank (MB)

(MB) R3865043-1 11/23/22 19:12

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1558990-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1558990-01 11/23/22 19:12 • (DUP) R3865043-3 11/23/22 19:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	83.3	72.7	1	13.7	P1	5

L1559808-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1559808-01 11/23/22 19:12 • (DUP) R3865043-4 11/23/22 19:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	15.6	17.2	1	9.76	P1	5

Laboratory Control Sample (LCS)

(LCS) R3865043-2 11/23/22 19:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	816	106	85.7-114	

Method Blank (MB)

(MB) R3864385-1 11/23/22 09:19

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1558997-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1558997-01 11/23/22 09:38 • (DUP) R3864385-3 11/23/22 09:40

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	3.11	3.26	1	4.71		20

L1559012-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-01 11/23/22 09:44 • (DUP) R3864385-6 11/23/22 09:45

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.604	0.613	1	1.48		20

Laboratory Control Sample (LCS)

(LCS) R3864385-2 11/23/22 09:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	12.7	13.9	109	75.2-120	

L1558997-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1558997-01 11/23/22 09:38 • (MS) R3864385-4 11/23/22 09:41 • (MSD) R3864385-5 11/23/22 09:42

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	3.11	8.81	8.77	114	113	1	90.0-110	J5	J5	0.455	20

Sample Narrative:

MS: Matrix spike failure due to matrix interference.

MSD: Matrix spike failure due to matrix interference.

L1559012-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1559012-01 11/23/22 09:44 • (MS) R3864385-7 11/23/22 09:47

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	0.604	5.68	102	1	90.0-110	

QUALITY CONTROL SUMMARY

L1559012-04,05,06,07,08,09,10,11,12

Method Blank (MB)

(MB) R3865802-1 11/28/22 19:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1559012-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-04 11/28/22 20:00 • (DUP) R3865802-3 11/28/22 19:08

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.509	0.548	1	7.38		20

L1559012-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-05 11/28/22 19:12 • (DUP) R3865802-6 11/28/22 19:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.399	0.415	1	3.93		20

Laboratory Control Sample (LCS)

(LCS) R3865802-2 11/28/22 19:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	12.7	12.0	94.5	75.2-120	

L1559012-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559012-04 11/28/22 20:00 • (MS) R3865802-4 11/28/22 19:10 • (MSD) R3865802-5 11/28/22 19:11

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	0.509	5.48	5.50	99.4	99.8	1	90.0-110			0.364	20

L1559368-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559368-01 11/28/22 19:35 • (MS) R3865802-7 11/28/22 19:37 • (MSD) R3865802-8 11/28/22 19:38

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	ND	4.55	4.60	91.0	92.0	1	90.0-110			1.09	20

QUALITY CONTROL SUMMARY

L1559012-01,02,03,04,05,06,07,08,09,10,11,12

Method Blank (MB)

(MB) R3864194-1 11/22/22 18:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1559012-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-01 11/22/22 18:28 • (DUP) R3864194-3 11/22/22 18:29

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	ND	ND	1	0.000		20

L1559012-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-05 11/22/22 18:37 • (DUP) R3864194-6 11/22/22 18:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3864194-2 11/22/22 18:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.53	101	90.0-110	

L1559012-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559012-01 11/22/22 18:28 • (MS) R3864194-4 11/22/22 18:30 • (MSD) R3864194-5 11/22/22 18:32

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50	ND	2.63	2.57	105	103	1	90.0-110			2.31	20

L1559012-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1559012-05 11/22/22 18:37 • (MS) R3864194-7 11/22/22 18:43

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	ND	2.56	102	1	90.0-110	

Method Blank (MB)

(MB) R3864298-1 11/23/22 08:10

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1558997-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1558997-01 11/23/22 08:21 • (DUP) R3864298-3 11/23/22 08:25

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	1.02	1.03	1	0.976		20

L1559012-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-01 11/23/22 08:29 • (DUP) R3864298-6 11/23/22 08:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3864298-2 11/23/22 08:11

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	3.97	105	83.2-116	

L1558997-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1558997-01 11/23/22 08:21 • (MS) R3864298-4 11/23/22 08:26 • (MSD) R3864298-5 11/23/22 08:28

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	1.02	3.48	3.49	98.4	98.8	1	90.0-110			0.287	20

Method Blank (MB)

(MB) R3865803-1 11/28/22 19:19

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1559012-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-04 11/28/22 19:21 • (DUP) R3865803-3 11/28/22 19:22

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3865803-2 11/28/22 19:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	3.78	3.71	98.1	83.2-116	

L1559012-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559012-04 11/28/22 19:21 • (MS) R3865803-4 11/28/22 19:24 • (MSD) R3865803-5 11/28/22 19:25

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	ND	2.53	2.51	101	100	1	90.0-110			0.794	20

Method Blank (MB)

(MB) R3862502-1 11/18/22 02:52

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1559012-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-01 11/18/22 02:53 • (DUP) R3862502-3 11/18/22 02:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

L1559012-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1559012-11 11/18/22 02:59 • (DUP) R3862502-6 11/18/22 03:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3862502-2 11/18/22 02:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.221	90.4	85.0-115	

L1559012-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559012-10 11/18/22 02:57 • (MS) R3862502-4 11/18/22 02:58 • (MSD) R3862502-5 11/18/22 02:59

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	ND	0.519	0.500	104	100	1	80.0-120			3.73	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

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Pres Chk

Email To: syeldell@smeinc.com

Report to:
Ms. Sara Yeldell

Project Description:

City/State Collected:

Please Circle: PT MT CT ET

Phone: 256-837-8882

Client Project # ~~44872-20-0044~~ 22820261

Lab Project # QOREHAL-448220044B

Collected by (print): Nathaniel Hale

Site/Facility ID # BOAT

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Quote #

Analysis / Container / Preservative

Chain of Custody Page 1 of 2

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1559012

Tab J227

Acctnum:

Template: T203454

Prelogin: P953858

PM: 034 - Craig Cothron

PB: BW 9/26

Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres							Remarks	Sample # (lab only)
HB-3	G	WW	-5'	11-16	1035	4	X	X	X	X								-01
SME-4		WW			1045	4	X	X	X	X								-02
GD-5		WW			1105	4	X	X	X	X								-03
GD-7		WW			1130	4	X	X	X	X								-04
GD-9		WW			1140	4	X	X	X	X								-05
SME-1		WW			1155	4	X	X	X	X								-06
SS-5		WW			1240	4	X	X	X	X								-07
SME-5		WW			1250	4	X	X	X	X								-08
SME-6		WW			1305	4	X	X	X	X								-09
RC-14		WW			1325	4	X	X	X	X								-10

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N
RAD Screen <0.5 mR/hr: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
Nathaniel Hale	11-16	1430			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: 48	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11/17/22 Time: 9:10	Hold: Condition: NCF / OK

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville. AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Report to:
Ms. Sara Yeldell

Email To: **syeldell@smeinc.com**

Project Description:

City/State Collected:

Please Circle: PT MT CT ET

Phone: **256-837-8882**

Client Project #
~~44872-20-0044~~
22820261

Lab Project #
QOREHAL-448220044B

Collected by (print):

Site/Facility ID #
BOAT

P.O. #

Collected by (signature):

Immediately Packed on Ice N____ Y____

Rush? (Lab MUST Be Notified)
____ Same Day ____ Five Day
____ Next Day ____ 5 Day (Rad Only)
____ Two Day ____ 10 Day (Rad Only)
____ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Pres Chk

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres						Remarks	Sample # (lab only)
SME3	G	WW	~5'	11-16	1115	4	X	X	X	X							-11
SME11	"	WW	"	"	1050	4	X	X	X	X							-12
		WW				4	X	X	X	X							

Chain of Custody Page 2 of 2

Pace
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MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1559012

Table #

Acctnum: **QOREHAL**
Template: **T203454**
Prelogin: **P953858**
PM: **034 - Craig Cothron**
PB: BW 9/24

Shipped Via: **FedEX Ground**

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N
RAD Screen <0.5 mR/hr: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No (HCL / MeoH TBR)	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: 48	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11/17/22 Time: 9:40	Hold: / Condition: NCF / OK

L 1559012

Tracking Numbers	Temperature
5882 7562 4709	3.2+0=3.2
5882 7562 4684	4.5+0=4.5

Monitoring Report First Quarter 2023
Gadsden, Alabama Urbanized Area
Phase II Small MS4
NPDES General Permit ALR040000
S&ME Project No. 22820261

PREPARED FOR:

Gadsden-Etowah MS4 Steering Committee

PREPARED BY:

S&ME, Inc.
360D Quality Circle NW, Ste 450
Huntsville, AL 35806

February 27, 2023

February 27, 2023

Attention: Gadsden-Etowah MS4 Steering Committee

Reference: **FY 2023 Wet-Weather Monitoring**
January 1, 2023 to March 31, 2023
Gadsden-Etowah MS4 Entities
Gadsden, Etowah County, Alabama
S&ME Project No. 22820261

Dear Gadsden-Etowah MS4 Steering Committee:

S&ME has prepared the attached report for the wet-weather monitoring conducted for the Gadsden-Etowah Phase II Small Municipal Separate Storm Sewer Systems. The report details the monitoring conducted during the January 1, 2023 to March 31, 2023 reporting period. Our work was performed in general accordance with S&ME Proposal No. 22820261, dated October 25, 2022.

S&ME appreciates the opportunity to provide our services to the City of Attalla, City of Gadsden, City of Glencoe, City of Hokes Buff, Rainbow City, City of Southside, and Etowah County. If you should have questions concerning this report, or if additional information is required, please contact us.

Sincerely,

S&ME, Inc.

Sarah Yeldell, P.E.
Project Manager

Deborah J. Jones, P.E.
Senior Engineer

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Appendices

Appendix I – Figures

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1.0 Introduction

S&ME, Inc. has prepared this Monitoring Report for the seven entities comprising the Gadsden-Etowah MS4 in general accordance with S&ME Proposal No. 22820261, dated October 25, 2022.

1.1 NPDES Permit

The Storm Water Phase II Final Rule issued by the United States Environmental Protection Agency (USEPA) in 1999 requires nationwide coverage of all operators of small MS4s located within the boundaries of an "urbanized area" as defined by the latest decennial Census. Based on the results of the 2010 census, the Bureau of the Census designated the City of Attalla, City of Gadsden, City of Glencoe, City of Hokes Bluff, City of Rainbow City, City of Southside, and portions of unincorporated Etowah County as the *Gadsden, Alabama Urbanized Area*. A map outlining the approximate boundary of the *Gadsden, Alabama Urbanized Area* is included as **Figure 1** in **Appendix I**. The regulated small municipal separate storm sewer systems (MS4s) within the urbanized area are collectively referred to as the Gadsden-Etowah MS4.

The Alabama Department of Environmental Management (ADEM) reissued National Pollutant Discharge Elimination System (NPDES) General Permit ALR040000 for discharges from regulated small municipal separate storm sewer systems with an effective date of October 1, 2021. Permit numbers for each entity in the Gadsden-Etowah MS4 are provided in Table 1-1.

Table 1-1 Permit Numbers and Responsible Officials

Entity	Permit Number	Name
City of Attalla	ALR040052	Larry Means, Mayor
City of Gadsden	ALR040053	Craig Ford, Mayor
City of Glencoe	ALR040054	Chris Hare, Mayor
City of Hokes Bluff	ALR040055	Scott Reeves, Mayor
City of Rainbow City	ALR040056	Joe Taylor, Mayor
City of Southside	ALR040057	Dana Snyder, Mayor
Etowah County	ALR040009	Robert Nail, Engineer

1.2 Water Quality Concerns

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987, and EPA's Water Quality Planning and Management Regulations (40 CFR 130) require states to identify waterbodies not in compliance with the water quality standards applicable to their designated use classifications. Section 303(d) then requires that total maximum daily loads (TMDLs) be determined for all pollutants causing violation of applicable water quality standards in each identified segment.

Neely Henry Lake is the primary receiving water for the Gadsden-Etowah MS4. In 1996, the ADEM identified five of the six reservoirs on the Coosa River within the State of Alabama's borders as being impaired, including Neely

Henry Lake. In 2008, the EPA approved TMDLs for Neely Henry Lake related to Nutrients (Total Phosphorous), pH, and Dissolved Oxygen. **The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus loading.**

1.3 Monitoring Program

Part III.B of the NPDES General Permit requires that the Permittee develop and implement a Storm Water Management Program Plan (SWMPP). Part IV.D of the NPDES General Permit requires that the SWMPP include monitoring provisions to document that the waste load allocations prescribed in the TMDL are being achieved. The seven entities comprising the Gadsden-Etowah MS4 have chosen to develop and implement a joint monitoring program.

Each entity's SWMPP requires implementation of the wet-weather monitoring program as detailed in the *Gadsden-Etowah MS4 Wet-Weather Monitoring Program*, dated April 2022 (hereafter referred to as the 2022 Monitoring Program). The intent of the proposed monitoring program is to evaluate the effectiveness of the City's BMPs in achieving the required phosphorous reduction as established in the TMDL and to generally evaluate overall water quality. The Gadsden-Etowah Steering Committee is responsible for implementation of the Gadsden-Etowah Wet Weather Monitoring Program.

2.0 Rainfall Data

The largest loading of phosphorous to the Coosa River from the Gadsden-Etowah MS4 is expected to occur during runoff events; therefore, the 2022 Monitoring Program requires that monitoring be conducted within 72 hours of a qualifying rain event of 0.75 inch, as measured at three rain gauges within the MS4 located a minimum of three miles apart.

On February 11-12, 2023, a rain event was observed at four weather stations located in the vicinity of the urbanized area. The locations of the weather stations are identified on **Figure 2** in **Appendix I**.

Table 2-1 Quarterly Rainfall Data

Gauge Name	Location	Lattitude	Longitude	Precip 2/11/23	Precip 2/12/23
KALATTAL14	Attalla, AL	33.989°	-86.109°	1.06 in	0.46 in
KALHOKES2	Hokes Bluff, AL	33.993°	-85.806°	0.71 in	0.34 in
KALSOUTH7	Southside, AL	33.890°	-86.010°	1.12 in	0.33 in
KALGLENC2	Glencoe, AL	33.920°	-85.98°	1.20 in	0.31 in

3.0 Monitoring Event

On February 13-14, 2023, S&ME personnel mobilized to conduct storm water monitoring for the first quarter of 2023 in general accordance with Section 3 of the *Gadsden-Etowah MS4 Wet-Weather Monitoring Program*, dated April 2022.

3.1 Monitoring Locations

The primary monitoring locations selected for determining compliance of the Gadsden-Etowah MS4 with the 2008 phosphorous TMDL are identified on **Figure 3** in **Appendix I**. Coordinates for each point are listed in Table 3-1.

Table 3-1 Monitoring Point Coordinates

Outfall ID	Latitude	Longitude	Access	Waterbody Evaluated
AT 5	34.006446°	-86.069061°	LAND	Big Wills Creek / Little Wills Creek
GD 8	33.999535°	-86.024463°	LAND	Black Creek
RC 2	33.967683°	-86.039476°	LAND	Horton Creek
SS 13	33.891352°	-86.049229°	LAND	Neely Henry Lake
SS 14	33.885921°	-86.030683°	LAND	U.T. to Neely Henry Lake
GD 12	33.952567°	-86.003495°	LAND	U.T. to Neely Henry Lake
GD 6	34.015350°	-85.995617°	LAND	Town Creek
CO 15	33.972280°	-85.965354°	LAND	U.T. to Neely Henry Lake
SME 7	34.006225°	-86.111277°	LAND	Big Wills Creek
SME 9	34.002807°	-85.871879°	LAND	U.T. to Neely Henry Lake
SME 10	33.985669°	-85.878605°	LAND	U.T. to Big Cove Creek (exiting Hokes Bluff)
HB 3	34.002129°	-85.882808°	BOAT	U.T. to Neely Henry Lake
SME 4	34.001667°	-85.883342°	BOAT	Coosa River channel at north end of MS4
GD 5	34.014324°	-85.924013°	BOAT	Big Cove Creek / Little Cove Creek
SME 3	34.009698°	-85.956230°	BOAT	Coal Creek
GD 7	34.008361°	-85.999777°	BOAT	Storm sewer outfall to Coosa River
GD 9	33.989718°	-85.998472°	BOAT	U.T. to Coosa River (East Gadsden)
SME 1	33.990184°	-86.004048°	BOAT	Big Wills Creek / Black Creek
SS 5	33.941329°	-86.021569°	BOAT	U.T. to Coosa River
SME 5	33.940514°	-86.029885°	BOAT	Coosa River channel at center of MS4
SME 6	33.852125°	-86.049695°	BOAT	Confluence of Greens Creek and Coosa River
RC 14	33.905786°	-86.111656°	BOAT	Rook Creek / Dry Creek

Following evaluation of the monitoring program for the Annual Reports in May of 2020, monitoring points CO 14, SME 3, and GD 3 were removed from the monitoring program and monitoring points SME 4, SME 5, SME 6, SME

7, and SME 8 were added. The changes to the monitoring program were implemented beginning with the 2020 fourth quarter sampling event. Monitoring point SME 3 was reinstated as part of the monitoring program beginning with the 2021 third quarter sampling event.

Following evaluation of the monitoring program for the 2022 SWMPPs and Wet-Weather Monitoring Program, monitoring points SME 2 and SME 8 were removed from the monitoring program and monitoring points SME 9 and SME 10 were added. The changes to the monitoring program were implemented beginning with the 2022 second quarter sampling event.

3.2 Sampling Procedures

Samples accessible by land were obtained using a stainless-steel bucket. Samples accessible by boat were obtained using a horizontal Van Dorn sampler. The bucket and Van Dorn sampler were decontaminated prior to use and in between samples.

3.3 Field Documentation

The following observations were documented in the field at each monitoring location:

- Monitoring point ID
- Date and time
- Person conducting the sampling
- Equipment used
- Depth of sample collection
- Weather conditions
- Waterbody conditions

The following parameters were measured in the field at the time of sample collection:

- Turbidity
- pH
- Dissolved Oxygen (DO)
- Temperature

Field parameters were measured using a YSI Pro DSS Multi-Probe Meter.

The recorded field observations are included on **Table B.1** in **Appendix II**. The recorded field parameters are included on **Table B.2** in **Appendix II**.

3.4 Quality Assurance / Quality Control

The following handling procedures were employed in general accordance with EPA and ADEM guidance to safeguard the quality of the collected samples.

3.4.1 *Sample Containers and Preservation*

The samples were collected in new laboratory-provided containers containing analyte-appropriate preservatives as listed in Table 3-2.

Table 3-2 Sample Containers and Preservation

Parameter	Container	Preservative	Hold Time
Total Suspended Solids (TSS)	HDPE - 1 L	NONE	7 days
Total Phosphorous	HDPE - 250 mL	H_2SO_4	48 hours
Orthophosphate	AMB - 100 mL	NONE	48 hours
Nitrate-Nitrite	HDPE - 250 mL	H_2SO_4	28 days
Total Kjeldahl Nitrogen (TKN)	HDPE - 250 mL	H_2SO_4	28 days

Prior to filling, sample containers were labeled with the following information in waterproof ink:

- Project number
- Sample location
- Collection date and time
- Preservative
- Analysis to be performed

3.4.2 *Quality Assurance*

Three duplicate samples were submitted to the laboratory. One duplicate sample of monitoring point AT 5 was collected by the land team during the sampling event and labeled as SME 12. One duplicate sample of monitoring point SME 9 was collected by the land team during the sampling event and labeled as SME 13. One duplicate sample of monitoring point SME 4 was collected by the boat team during the sampling event and labeled as SME 11.

3.4.3 *Sample Shipment*

After filling, the sample containers were sealed and immediately placed on ice in a protective container for shipment to the analytical laboratory. A Chain of Custody form was completed and accompanied the samples from the field to the laboratory. A copy of the Chain of Custody is included in **Appendix III**.

4.0 Analytical Results

The laboratory analytical results for the February 13-14, 2023, quarterly monitoring event are included on **Table B.2** in **Appendix II**. Historical monitoring data is included in Appendix II as **Tables B.3 to B.28**. The laboratory reports and Chain of Custody are included in **Appendix III**.

5.0 Recordkeeping

Each quarterly monitoring report will be incorporated into the Annual Report submitted by each entity. Monitoring reports will be retained by each entity for a minimum of 3 years.

The Storm Water Steering Committee is responsible for the coordination and implementation of the Storm Water Management Plan. Current membership of the Storm Water Steering Committee is as follows:

Table 5-1 Storm Water Steering Committee

Entity	Contact	Phone No.	Email
City of Gadsden	Heath Williamson	256-549-4520	hwilliamson@cityofgadsden.com
City of Gadsden	Keener Morrow	256-549-4524	kmorrow@cityofgadsden.com
City of Attalla	Jason Nicholson	256-441-9200	jnicholson@attallacity.org
City of Rainbow City	Joel Garmon	256-413-1230	jgarmon@rbcalabama.com
City of Southside	Judd Rich	256-442-9775 Ext. 103	juddrich@cityofsouthside.com
City of Glencoe	Todd Means	256-492-1424	toddmeans@cityofglencoe.org
City of Hokes Bluff	Lisa Lowman	256-492-2414	hbcity@cityofhokesbluff.net
Etowah County	Robert Nail	256-549-5358	rnail@etowahcounty.org

One copy of this Monitoring Report has been provided to each member of the Storm Water Steering Committee.

6.0 Certification of the Monitoring Report

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature of Responsible Official	Date
Print Name and Title	MS4 Entity

7.0 Acknowledgement

S&ME certifies that the information provided in this monitoring report reflects the conditions reported, encountered, and discovered at the time of report preparation. When performing this scope of services, S&ME observed the degree of care and skill generally exercised by other consultants undertaking similar studies at the same time, under similar circumstances and conditions, and in the same geographic area.

8.0 Closing

S&ME sincerely appreciates the opportunity to provide watershed monitoring services for the Gadsden-Etowah MS4. Should questions remain or if additional information is required, please do not hesitate to contact the undersigned.

S&ME, Inc.

Nathanael A. Wade

Nathanael A. Wade, E.I.
Staff Professional

Deborah J. Jones

Deborah J. Jones, P.E.
Senior Engineer

Appendices

Appendix I – Figures

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – Rain Gauge Locations

Figure 3 – MS4 Monitoring Locations

GADSDEN-ETOWAH MS4 BOUNDARIES

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

N

0 1.5 3 Miles

Legend

- Gadsden, AL Urbanized Area Outline
- Unincorporated Etowah County MS4

City Limits

- Attalla
- Gadsden
- Glencoe
- Hokes Bluff
- Rainbow City
- Southside

SCALE: 1:100,000

DATE: 02/18/2022

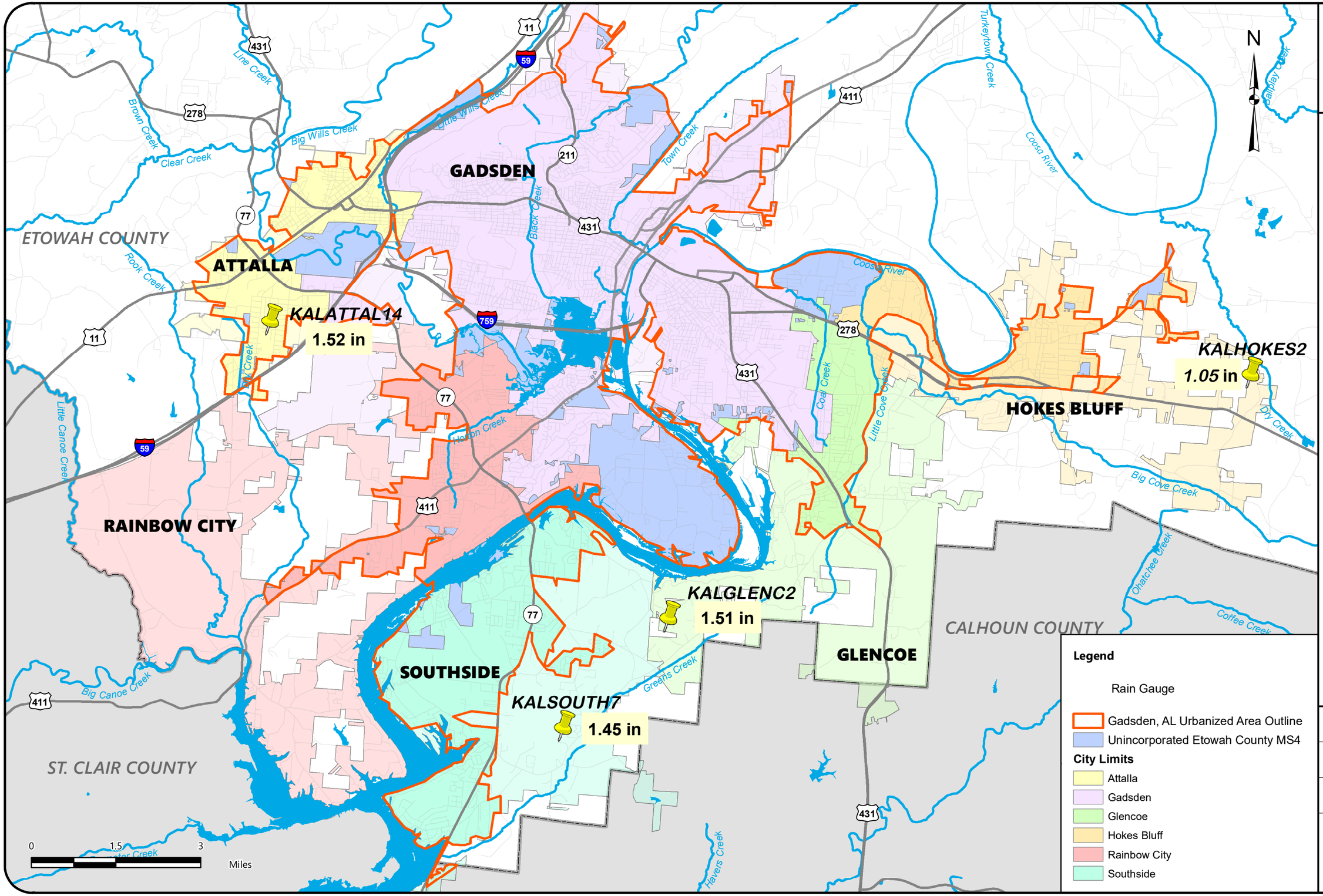
PROJECT NUMBER 215660

FIGURE NO. 1

REFERENCE:
GIS base layers were obtained from Esri. This map is for informational purposes only. All feature locations displayed are approximated and are not based on civil survey information, unless stated otherwise.

RAIN GAUGE LOCATIONS (2/11/2023-2/12/2023)

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009



Legend

Rain Gauge

Gadsden, AL Urbanized Area Outline

Unincorporated Etowah County MS4

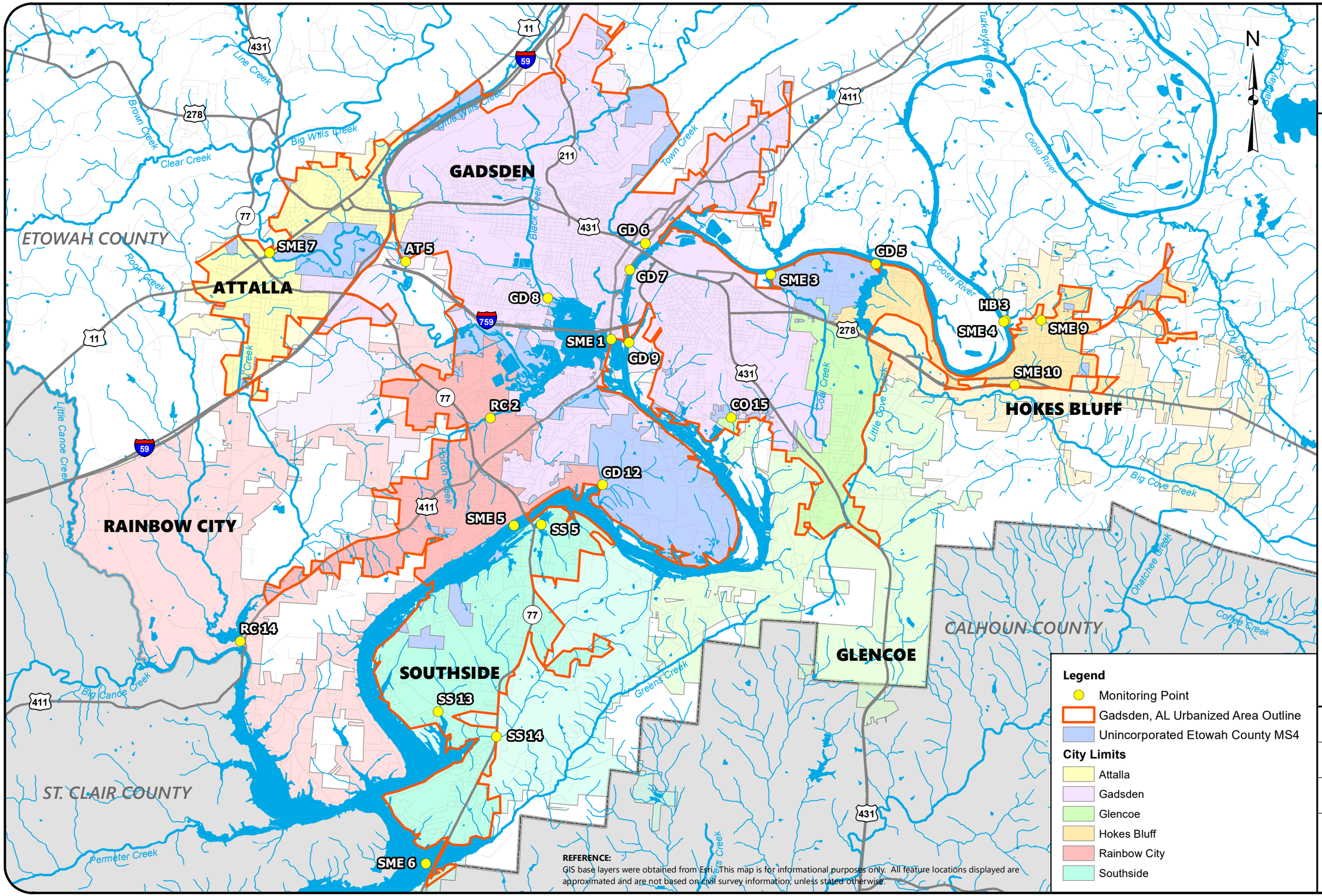
City Limits

- Attalla
- Gadsden
- Glencoe
- Hokes Bluff
- Rainbow City
- Southside

SCALE:	1:100,000
DATE:	02/20/2023
PROJECT NUMBER	22820261
FIGURE NO.	2

WET-WEATHER MONITORING LOCATIONS

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009



REFERENCE:
GIS base layers were obtained from Esri. This map is for informational purposes only. All feature locations displayed are approximated and are not based on civil survey information, unless stated otherwise.

SCALE:	1:100,000
DATE:	03/23/2022
PROJECT NUMBER	22820261
FIGURE NO.	3

Appendix II – Tables

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.28 – Historical Analytical Data

TABLE B.1 - FIELD OBSERVATIONS

GADSDEN-ETOWAH MS4 MONITORING

MONITORING POINT ID	DATE	TIME	DEPTH (FT)	PERSONNEL	WEATHER CONDITIONS	WATERBODY CONDITIONS
AT 5	2/13/2023	13:00	-2'	AH/NW	Sunny	Fast Flowing
GD 8	2/13/2023	12:50	-2'	AH/NW	Sunny	Fast Flowing
RC 2	2/13/2023	12:40	-2'	AH/NW	Sunny	Smooth
SS 13	2/13/2023	12:00	-2'	AH/NW	Sunny	Smooth
SS 14	2/13/2023	12:12	-2'	AH/NW	Sunny	Smooth
GD 12	2/13/2023	12:30	-2'	AH/NW	Sunny	Smooth
GD 6	2/13/2023	11:20	-2'	AH/NW	Sunny	Smooth
CO 15	2/13/2023	10:40	-2'	AH/NW	Sunny	Smooth
SME 7	2/13/2023	10:10	-2'	AH/NW	Sunny	Fast Flowing
SME 9	2/13/2023	10:54	-2'	AH/NW	Sunny	Smooth
SME 10	2/13/2023	11:00	-2'	AH/NW	Sunny	Smooth
HB 3	2/14/2023	10:40	-5'	NW	Sunny	Smooth
SME 4	2/14/2023	10:50	-5'	NW	Sunny	Smooth
GD 5	2/14/2023	11:05	-5'	NW	Sunny	Smooth
SME 3	2/14/2023	11:15	-5'	NW	Sunny	Smooth
GD 7	2/14/2023	11:30	-5'	NW	Sunny	Smooth
GD 9	2/14/2023	11:40	-5'	NW	Sunny	Smooth
SME 1	2/14/2023	11:45	-5'	NW	Sunny	Smooth
SS 5	2/14/2023	12:30	-5'	NW	Sunny	Smooth
SME 5	2/14/2023	12:40	-5'	NW	Sunny	Smooth
SME 6	2/14/2023	12:55	-5'	NW	Sunny	Rough
RC 14	2/14/2023	13:10	-5'	NW	Sunny	Rough

TABLE B.2 - ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	**DATE**	**TURBIDITY (NTU)**	**pH**	**DO (mg/L)**	**TEMP (°C)**	**NITRATE-NITRITE (mg/L)**	**ORTHO-PHOSPHATE (mg/L)**	**TOTAL P (mg/L)**	**TKN (mg/L)**	**TSS (mg/L)**
SME 7	2/13/2023	34.3	7.12	11.11	11.4	**0.737**	<0.0300	0.115	**1.01**	36.2
CO 15	2/13/2023	21.8	7.15	11.46	10.2	0.242	<0.0300	<0.100	0.717	7.50
SME 9	2/13/2023	10.3	**7.43**	**11.93**	10.2	<0.100	0.0900	<0.100	0.783	2.60
SME 10	2/13/2023	19.1	7.32	11.34	9.7	0.185	<0.0300	<0.100	0.773	4.00
GD 6	2/13/2023	18.3	7.26	11.69	12.4	0.265	<0.0300	<0.100	0.559	7.10
SS 13	2/13/2023	10.6	6.45	11.05	10.9	0.459	<0.0300	<0.100	1.00	5.60
SS 14	2/13/2023	12.0	6.82	11.64	10.8	0.501	0.0520	<0.100	0.749	4.30
GD 12	2/13/2023	10.0	5.69	11.45	12.2	0.277	<0.0300	<0.100	0.750	2.90
RC 2	2/13/2023	20.0	7.12	11.58	10.9	0.273	<0.0300	<0.100	0.636	5.30
GD 8	2/13/2023	15.0	7.39	11.81	11.1	0.237	<0.0300	<0.100	0.316	16.5
AT 5	2/13/2023	32.6	7.29	11.01	11.5	0.699	0.0810	<0.100	0.301	38.0
SME 12	2/13/2023	DUPLICATE OF AT 5				0.702	0.0750	0.106	0.606	35.4
SME 13	2/13/2023	DUPLICATE OF SME 7				0.730	0.0910	**0.141**	0.957	35.8
HB 3	2/14/2023	15.0	7.25	11.10	11.7	0.414	<0.0300	<0.100	0.471	11.6
SME 4	2/14/2023	15.8	7.27	10.99	11.3	0.416	<0.0300	<0.100	0.484	22.5
GD 5	2/14/2023	18.8	7.18	10.85	11.4	0.255	<0.0300	<0.100	0.606	11.5
SME 3	2/14/2023	33.2	7.18	10.81	10.8	0.325	<0.0300	<0.100	0.351	**66.4**
GD 7	2/14/2023	23.4	7.17	10.96	11.5	0.399	<0.0300	0.106	0.610	20.3
GD 9	2/14/2023	16.1	7.17	11.09	11.6	0.362	<0.0300	<0.100	0.484	12.6
SME 1	2/14/2023	15.5	7.26	11.23	11.0	0.372	<0.0300	<0.100	0.281	11.3
SS 5	2/14/2023	11.2	7.35	11.62	12.7	0.284	**0.0930**	<0.100	0.344	10.4
SME 5	2/14/2023	15.1	7.17	10.93	12.2	0.425	<0.0300	<0.100	0.302	12.3
SME 6	2/14/2023	17.7	7.31	10.83	**12.8**	0.374	<0.0300	<0.100	0.319	14.9
RC 14	2/14/2023	**36.9**	6.92	10.48	12.2	0.107	<0.0300	<0.100	0.423	17.9
SME 11	2/14/2023	DUPLICATE OF SME 4				0.415	<0.0300	<0.100	0.280	12.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled (Dry)

Bold - maximum reading for constituent

NA - not availabe at this time

* - value unknown due to equipment malfuction

TABLE B.3 - HISTORICAL ANALYTICAL DATA - AT 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	3/12/2013	15	7.80	11.04	12.55	0.61	0.150	0.14	0.37	20.0
AT 5	5/8/2013	25	5.08	2.59	14.69	0.31	0.099	0.11	0.56	19.0
AT 5	9/23/2013	21	5.96	3.95	22.88	1.30	0.400	0.35	0.37	22.0
AT 5	12/10/2013	68	5.32	11.43	8.21	0.79	0.290	0.34	0.97	64.0
AT 5	2/6/2014	40	4.06	15.29	7.28	0.80	0.130	0.13	0.35	32.0
AT 5	6/26/2014	70	7.85	7.61	23.89	0.77	0.340	0.28	0.38	19.0
AT 5	9/30/2014	15	5.78	6.63	21.03	0.94	0.490	0.54	<0.25	14.0
AT 5	11/19/2014	47	5.08	10.23	6.91	1.30	0.410	0.39	0.50	27.0
AT 5	3/23/2015	17	8.69	9.39	14.5	0.71	0.130	0.14	0.27	15.0
AT 5	4/22/2015	53	6.93	11.13	18.4	0.69	0.110	0.13	<0.25	76.0
AT 5	9/30/2015	15	6.37	9.45	21.63	1.82	0.664	0.86	<0.25	16.4
AT 5	11/19/2015	934	7.38	19.33	14.98	0.67	0.261	0.31	1.47	74.6
AT 5	3/15/2016	30.2	7.93	20.43	16.86	0.578	0.068	<0.100	0.772	26.7
AT 5	6/29/2016	18.1	7.99	6.57	25.4	0.800	0.598	0.71	<0.250	14.5
AT 5	8/9/2016	17.1	7.89	6.47	25.8	0.975	0.482	0.502	0.268	18.3
AT 5	12/7/2016	26.5	7.08	10.19	11.3	0.663	0.450	0.474	<0.250	16.9
AT 5	3/2/2017	50.8	8.14	8.86	13.4	1.08	0.267	0.373	0.529	44.6
AT 5	6/21/2017	11.7	7.98	6.74	23.3	0.616	0.226	0.366	0.544	70.0
AT 5	8/17/2017	9.5	8.09	6.77	26.0	0.890	0.258	0.283	0.690	12.0
AT 5	10/26/2017	9.8	7.95	8.25	15.7	0.936	0.226	0.250	<0.250	9.4
AT 5	3/27/2018	14.5	7.79	9.03	12.9	0.849	0.162	0.148	<0.250	15.9
AT 5	6/26/2018	16.4	8.06	6.89	25.5	0.849	0.230	0.246	0.411	25.2
AT 5	8/1/2018	77.9	7.33	7.16	22.3	0.510	0.285	0.401	0.680	107.0
AT 5	12/11/2018	29.2	7.59	10.73	9.4	1.09	0.066	0.204	0.579	46.2

TABLE B.3 - HISTORICAL ANALYTICAL DATA - AT 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	4/17/2019	12.2	7.63	8.99	17.9	0.638	0.061	<0.100	<0.250	14.4
AT 5	6/11/2019	24.6	7.18	3.48	22.2	0.822	0.206	0.290	0.486	15.9
AT 5	8/28/2019	20.7	7.84	7.42	27.1	0.534	0.404	0.485	1.070	23.5
AT 5	10/28/2019	22.5	7.84	8.45	15.1	0.665	0.523	0.499	<0.250	17.0
AT 5	3/31/2020	23.1	8.09	9.07	16.6	0.657	0.0320	0.102	<0.250	27.1
AT 5	6/10/2020	19.4	7.56	7.35	23.2	0.825	0.248	0.243	<0.250	22.8
AT 5	9/21/2020	NS	8.08	8.21	20.6	0.603	0.491	0.399	<0.250	11.3
AT 5	12/17/2020	28.7	7.91	11.21	9.6	0.831	0.087	<0.100	<0.250	18.6
AT 5	3/18/2021	119.0	7.82	10.68	17.2	0.310	0.050	<0.100	<0.250	55.6
AT 5	5/5/2021	6.5	7.24	8.45	18.1	6.86	0.121	0.157	1.37	43.7
AT 5	9/2/2021	*	*	7.75	23.4	0.482	0.131	0.262	0.969	67.4
AT 5	11/23/2021	<1.0	8.13	11.09	12.9	0.343	<0.0300	0.253	<0.250	2.6
AT 5	1/10/2022	20.8	7.39	11.46	10.0	0.769	0.126	0.184	0.279	29.7
AT 5	4/7/2022	21.9	7.53	9.30	16.6	0.509	0.101	0.121	0.380	33.8
AT 5	8/3/2022	21.7	8.17	7.50	26.0	0.715	0.271	0.323	0.702	30.8
AT 5	11/16/2022	6.4	7.80	10.62	11.1	0.366	0.448	0.420	<0.250	7.3
AT 5	2/13/2023	32.6	7.29	11.01	11.5	0.699	0.0810	<0.100	0.301	38.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.4 - HISTORICAL ANALYTICAL DATA - GD 8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 8	3/12/2013	6.6	7.65	11.73	9.85	0.13	<0.025	<0.100	0.25	4.5
GD 8	5/8/2013	18.7	6.71	1.72	14.47	0.11	<0.025	<0.100	0.38	19.0
GD 8	9/23/2013	17.8	6.22	3.98	22.74	<0.100	<0.025	<0.100	0.41	9.6
GD 8	12/10/2013	30.7	6.04	13.33	8.10	0.28	0.040	<0.100	0.35	32.0
GD 8	2/6/2014	15.5	3.87	16.32	6.48	0.25	<0.025	<0.100	0.13	13.0
GD 8	6/26/2014	30.8	8.19	6.64	26.15	0.25	<0.025	<0.100	0.48	7.3
GD 8	9/30/2014	11.9	7.32	5.06	23.19	0.14	<0.025	<0.100	0.42	6.0
GD 8	11/19/2014	25.3	5.16	9.01	5.87	0.23	<0.025	<0.100	0.32	13.0
GD 8	3/23/2015	10.6	8.67	9.76	14.8	0.22	<0.025	<0.100	<0.25	4.8
GD 8	4/22/2015	20.2	7.40	11.71	17.70	0.16	<0.025	<0.100	<0.25	15.0
GD 8	9/30/2015	9.0	7.79	9.48	24.33	0.184	<0.025	<0.100	0.483	6.8
GD 8	11/19/2015	212	6.94	23.30	15.13	0.233	<0.025	0.101	0.852	79.6
GD 8	3/15/2016	11.4	7.88	16.81	16.98	0.131	<0.025	<0.100	0.470	8.3
GD 8	6/29/2016	32.5	8.50	6.60	29.3	<0.100	<0.025	<0.100	0.450	39.8
GD 8	8/9/2016	12.7	8.90	5.87	28.9	0.217	<0.025	<0.100	0.668	6.3
GD 8	12/7/2016	10.1	7.75	8.84	12.1	0.308	<0.025	<0.100	0.409	7.0
GD 8	3/2/2017	19.7	8.14	9.76	12.2	0.284	<0.025	<0.100	0.342	3.6
GD 8	6/21/2017	7.9	8.73	6.50	25.0	<0.100	<0.025	<0.100	0.642	7.0
GD 8	8/17/2017	6.8	8.55	6.30	28.7	0.132	<0.025	<0.100	0.541	8.9
GD 8	10/26/2017	6.1	8.17	8.25	16.3	<0.100	<0.025	<0.100	0.347	4.0
GD 8	3/27/2018	8.9	8.09	9.52	12.1	0.215	<0.025	<0.100	<0.25	6.5
GD 8	6/26/2018	5.8	8.50	5.74	29.7	0.150	<0.025	<0.100	0.670	5.8
GD 8	8/1/2018	45.8	6.89	7.39	22.9	0.556	0.072	0.114	0.641	53.2
GD 8	12/11/2018	16.0	7.87	11.71	9.2	0.326	<0.025	<0.100	0.406	24.4

TABLE B.4 - HISTORICAL ANALYTICAL DATA - GD 8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 8	4/17/2019	6.7	8.05	9.30	17.6	0.115	<0.025	<0.100	0.437	<5.00
GD 8	6/11/2019	9.4	7.19	2.94	25.8	0.181	<0.025	<0.100	0.948	4.1
GD 8	8/28/2019	14.2	8.26	6.07	30.2	0.212	<0.025	<0.100	0.992	11.8
GD 8	10/28/2019	29.6	7.83	8.22	16.2	0.435	<0.025	0.109	0.255	12.9
GD 8	3/31/2020	19.3	7.97	9.30	16.6	0.133	<0.025	0.132	0.348	18.0
GD 8	6/10/2020	10.8	7.97	7.13	24.9	0.211	<0.030	<0.100	<0.25	8.0
GD 8	9/21/2020	NS	8.19	6.36	22.8	0.171	<0.030	<0.100	0.290	7.4
GD 8	12/17/2020	17.5	8.30	11.68	9.4	0.273	<0.030	<0.100	<0.25	11.5
GD 8	3/18/2021	117.0	8.15	11.53	16.5	0.178	<0.030	<0.100	0.312	102.0
GD 8	5/5/2021	3.7	8.01	9.62	18.5	7.03	<0.030	<0.100	0.796	35.7
GD 8	9/2/2021	*	*	8.04	24.5	0.241	<0.030	<0.100	0.611	18.3
GD 8	11/23/2021	<1.0	8.04	10.73	12.5	<0.100	<0.0300	<0.100	<0.250	2.7
GD 8	1/10/2022	18.9	7.60	12.25	9.2	0.222	<0.0300	0.122	0.277	20.8
GD 8	4/7/2022	8.2	7.87	9.94	16.8	0.120	<0.0300	<0.100	0.349	10.9
GD 8	8/3/2022	14.4	8.14	6.97	29.0	0.189	<0.0300	<0.100	0.406	12.1
GD 8	11/16/2022	5.2	8.21	9.74	12.2	0.107	0.0330	<0.100	0.472	4.2
GD 8	2/13/2023	15.0	7.39	11.81	11.1	0.237	<0.0300	<0.100	0.316	16.5

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.5 - HISTORICAL ANALYTICAL DATA - RC 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 2	3/12/2013	29.1	7.73	9.83	10.53	0.12	0.088	<0.100	0.75	14.0
RC 2	5/8/2013	18.9	6.16	3.06	16.36	0.19	<0.025	<0.100	0.55	12.0
RC 2	9/23/2013	11.4	6.24	3.00	23.61	<0.100	<0.025	<0.100	0.43	6.3
RC 2	12/10/2013	33.6	6.07	11.71	8.38	0.11	0.062	<0.100	0.54	10.0
RC 2	2/6/2014	30.4	3.89	17.28	5.62	0.26	<0.025	<0.100	0.43	9.6
RC 2	6/26/2014	17.6	7.90	6.81	24.81	0.15	<0.025	<0.100	0.44	7.2
RC 2	9/30/2014	3.4	7.27	5.55	22.25	<0.100	<0.025	<0.100	0.40	2.5
RC 2	11/19/2014	27.4	5.65	7.14	5.72	0.17	<0.025	<0.100	0.43	11.0
RC 2	3/23/2015	45.0	8.23	9.07	16.00	0.15	0.044	<0.100	0.81	18.0
RC 2	4/22/2015	14.1	7.64	11.42	18.40	0.26	<0.025	<0.100	<0.25	4.8
RC 2	9/30/2015	7.1	5.93	9.28	23.33	<0.100	<0.025	<0.100	<0.25	4.6
RC 2	11/19/2015	114.0	7.36	21.94	15.29	0.271	<0.025	0.133	0.75	14.4
RC 2	3/15/2016	14.5	7.62	16.67	14.61	0.181	<0.025	<0.100	0.43	6.0
RC 2	6/29/2016	12.1	7.78	4.31	28.30	<0.100	0.077	<0.100	0.35	10.9
RC 2	8/9/2016	24.5	8.12	5.05	26.50	0.140	<0.025	<0.100	0.45	9.9
RC 2	12/7/2016	17.2	7.86	7.47	12.0	0.200	<0.025	<0.100	0.53	11.9
RC 2	3/2/2017	25.3	7.71	7.74	13.10	0.166	<0.025	<0.100	0.45	8.0
RC 2	6/21/2017	14.2	7.91	5.61	23.7	<0.100	<0.025	<0.100	0.51	12.3
RC 2	8/17/2017	18.2	8.08	4.94	27.90	<0.100	<0.025	0.133	0.72	72.2
RC 2	10/26/2017	18.1	7.57	7.05	15.2	<0.100	<0.025	<0.100	0.27	17.5
RC 2	3/27/2018	18.2	7.91	8.43	12.4	0.146	<0.025	<0.100	<0.25	12.5
RC 2	6/26/2018	18.8	7.94	6.19	26.5	0.101	<0.025	<0.100	0.802	13.0
RC 2	8/1/2018	56.8	7.40	7.10	22.4	<0.100	<0.025	<0.100	0.506	84.4
RC 2	12/11/2018	16.0	7.54	11.41	7.7	0.316	<0.025	<0.100	0.479	3.1

TABLE B.5 - HISTORICAL ANALYTICAL DATA - RC 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 2	4/17/2019	7.0	7.77	8.67	18.9	0.165	<0.025	<0.100	0.288	<5.00
RC 2	6/11/2019	14.3	6.83	3.78	23.0	<0.100	<0.025	<0.100	0.520	5.2
RC 2	8/28/2019	14.4	8.01	7.30	28.0	<0.100	<0.025	<0.100	0.748	4.8
RC 2	10/28/2019	11.4	7.55	9.42	14.9	0.132	<0.025	0.197	<0.250	3.4
RC 2	3/31/2020	84.5	7.90	9.10	15.7	0.190	0.0290	0.118	0.574	90.0
RC 2	6/10/2020	20.5	7.87	6.37	25.6	0.210	<0.030	<0.100	0.330	10.8
RC 2	9/21/2020	NS	7.24	7.03	19.6	<0.100	<0.030	<0.100	<0.250	5.2
RC 2	12/17/2020	28.1	7.91	11.23	8.9	0.218	<0.030	<0.100	0.396	5.4
RC 2	3/18/2021	67.5	7.90	8.68	16.7	0.145	<0.030	<0.100	0.611	26.8
RC 2	5/5/2021	2.8	7.31	8.95	19.1	7.91	<0.030	<0.100	0.892	15.6
RC 2	9/2/2021	*	*	6.52	25.0	0.122	<0.030	<0.100	0.802	3.4
RC 2	11/23/2021	3.5	7.66	8.33	12.2	0.124	<0.0300	<0.100	0.340	19.2
RC 2	1/10/2022	32.1	7.27	11.50	8.4	0.185	<0.0300	<0.100	0.501	9.0
RC 2	4/7/2022	10.96	7.41	9.02	17.5	0.186	<0.0300	0.144	0.386	5.0
RC 2	8/3/2022	15.1	8.26	7.41	27.1	0.175	<0.0300	<0.100	0.352	13.8
RC 2	11/16/2022	19.4	7.35	8.84	11.2	0.126	<0.0300	<0.100	0.434	13.4
RC 2	2/13/2023	20.0	7.12	11.58	10.9	0.273	<0.0300	<0.100	0.636	5.30

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.6 - HISTORICAL ANALYTICAL DATA - SS 13

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 13	3/12/2013	8	7.04	9.85	11.45	0.34	0.032	<0.10	0.78	4.7
SS 13	5/8/2013	10	6.68	2.94	18.75	0.36	<0.050	<0.10	0.72	5.7
SS 13	9/23/2013	12	7.04	3.38	25.31	<0.10	0.028	<0.10	0.84	9.6
SS 13	12/10/2013	12.2	6.14	10.93	8.99	0.33	0.077	0.12	0.67	5.6
SS 13	2/6/2014	7.2	4.26	17.50	5.14	0.42	<0.025	<0.100	0.44	4.1
SS 13	6/26/2014	23.2	8.33	8.09	28.44	<0.100	<0.025	0.12	0.52	5.4
SS 13	9/30/2014	12.4	7.41	4.26	24.77	<0.100	<0.025	<0.100	0.44	12.0
SS 13	11/19/2014	13.4	6.31	6.08	6.44	0.22	0.044	<0.100	0.40	4.8
SS 13	3/23/2015	15.9	7.33	8.57	15.4	0.22	0.029	<0.100	0.71	7.6
SS 13	4/22/2015	15.3	6.60	8.93	20.8	0.32	<0.025	<0.100	0.67	10.0
SS 13	9/30/2015	9.5	7.33	11.54	25.95	<0.100	<0.025	<0.100	0.52	9.0
SS 13	11/19/2015	35.8	7.07	18.48	15.31	0.242	<0.025	0.181	0.97	4.8
SS 13	3/15/2016	9.1	6.61	12.42	17.37	0.323	<0.025	<0.100	<0.25	4.7
SS 13	6/29/2016	9.7	7.86	6.15	30.6	<0.100	<0.025	<0.100	0.53	9.8
SS 13	8/9/2016	20.3	7.77	5.92	29.1	<0.100	<0.025	<0.100	0.73	24.0
SS 13	12/7/2016	4.8	7.39	6.97	12.5	0.108	<0.025	<0.100	0.45	3.6
SS 13	3/2/2017	12.0	6.64	7.19	13.4	0.249	<0.025	<0.100	0.75	4.6
SS 13	6/21/2017	8.7	7.54	5.82	26.1	<0.100	<0.025	<0.100	0.82	12.8
SS 13	8/17/2017	9.3	7.93	6.54	30.9	<0.100	<0.025	<0.100	0.81	18.6
SS 13	10/26/2017	5.2	6.70	7.41	15.4	0.122	<0.025	<0.100	0.60	7.2
SS 13	3/27/2018	6.4	8.19	8.23	12.4	0.495	<0.025	<0.100	<0.25	16.2
SS 13	6/26/2018	6.8	7.36	5.67	29.5	<0.100	<0.025	0.140	0.998	10.2
SS 13	8/1/2018	24.2	6.75	6.86	21.9	0.226	0.206	0.308	1.180	20.2
SS 13	12/11/2018	8.2	7.37	10.79	7.4	0.451	<0.025	<0.100	0.655	8.6

TABLE B.6 - HISTORICAL ANALYTICAL DATA - SS 13

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 13	4/17/2019	6.4	7.42	9.23	19.1	<0.100	<0.025	<0.100	0.624	6.8
SS 13	6/11/2019	8.9	6.59	3.12	23.4	<0.100	<0.025	<0.100	0.929	<6.25
SS 13	8/28/2019	6.7	7.93	7.33	29.7	<0.100	<0.025	<0.100	1.170	24.4
SS 13	10/28/2019	12.3	6.25	3.61	16.0	0.211	0.031	<0.100	0.739	3.7
SS 13	3/31/2020	60.4	6.95	8.64	14.9	0.233	0.0580	0.147	0.928	92.0
SS 13	6/10/2020	10.1	7.27	7.08	28.2	<0.100	<0.030	<0.100	0.492	21.2
SS 13	9/21/2020	NS	7.36	6.58	21.9	<0.100	<0.030	0.200	<0.250	7.8
SS 13	12/17/2020	12.3	8.04	10.83	8.3	0.405	<0.030	<0.100	0.432	5.3
SS 13	3/18/2021	26.8	7.61	9.23	16.9	0.163	<0.030	<0.100	0.926	16.5
SS 13	5/5/2021	0.5	7.77	8.13	18.2	7.64	0.0960	0.160	1.41	10.5
SS 13	9/2/2021	*	*	8.50	28.7	0.189	<0.030	0.108	1.33	13.4
SS 13	11/23/2021	<1.0	7.11	8.26	14.8	0.16	<0.0300	<0.100	0.331	5.30
SS 13	1/10/2022	9.1	7.71	11.23	8.8	0.295	<0.0300	<0.100	0.725	7.0
SS 13	4/7/2022	6.68	7.40	8.72	18.2	0.304	<0.0300	<0.100	0.886	5.3
SS 13	8/3/2022	14.2	7.92	7.03	31.4	<0.100	<0.0300	<0.100	1.65	44.4
SS 13	11/16/2022	4.4	7.06	9.81	13.1	<0.100	<0.0300	<0.100	0.26	5.5
SS 13	2/13/2023	10.6	6.45	11.05	10.9	0.459	<0.0300	<0.100	1.00	2.50

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.7 - HISTORICAL ANALYTICAL DATA - SS 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 14	3/12/2013	9.7	7.40	11.23	10.93	0.40	0.087	0.11	0.77	4.7
SS 14	5/8/2013	10.3	6.47	2.75	16.42	0.45	0.041	<0.100	0.53	5.0
SS 14	9/23/2013	3.1	6.76	6.49	21.77	0.38	0.036	<0.100	0.45	<2.5
SS 14	12/10/2013	17.6	5.63	11.33	8.56	0.28	0.160	0.19	0.66	9.2
SS 14	2/6/2014	12.4	4.19	17.56	5.16	0.62	0.074	<0.100	0.50	14.0
SS 14	6/26/2014	7.9	8.18	7.58	24.14	0.67	0.080	0.16	0.89	<2.5
SS 14	9/30/2014	7.9	7.42	3.67	22.35	<0.100	0.031	<0.100	0.52	6.1
SS 14	11/19/2014	16.0	6.27	7.50	5.48	0.75	0.075	0.22	0.46	9.2
SS 14	3/23/2015	21.3	7.75	9.53	16.5	0.27	0.110	0.14	1.10	11.0
SS 14	4/22/2015	12.3	7.43	12.29	17.5	0.620	<0.025	<0.100	0.58	6.3
SS 14	9/30/2015	7.3	7.16	12.79	24.02	<0.10	0.088	0.176	0.514	6.6
SS 14	11/19/2015	27.0	6.49	20.71	15.16	0.442	0.131	0.183	0.996	23.3
SS 14	3/15/2016	11.3	7.18	12.11	16.01	0.50	0.056	<0.100	0.834	8.1
SS 14	6/29/2016	6.0	7.62	3.61	27.2	<0.100	0.103	0.160	0.650	6.0
SS 14	8/9/2016	22.3	7.71	5.99	26.9	0.164	0.062	0.119	0.871	12.7
SS 14	12/7/2016	7.6	7.27	7.72	11.9	0.885	0.078	0.147	0.705	<2.5
SS 14	3/2/2017	12.6	7.60	8.76	12.2	0.475	0.092	0.153	0.842	9.2
SS 14	6/21/2017	21.5	7.74	6.24	23.7	0.249	0.030	0.109	0.725	63.7
SS 14	8/17/2017	6.0	8.12	7.11	31.4	0.118	0.070	<0.100	0.827	24.8
SS 14	10/26/2017	4.3	7.39	7.66	13.9	0.699	0.054	<0.100	0.582	3.6
SS 14	3/27/2018	8.8	7.34	8.96	11.9	0.673	0.044	0.148	<0.25	8.2
SS 14	6/26/2018	7.7	8.47	10.65	29.3	0.206	0.044	0.148	1.010	18.7
SS 14	8/1/2018	42.9	6.35	7.04	22.5	0.109	0.233	0.276	0.885	60.0
SS 14	12/11/2018	8.4	6.95	11.53	7.4	0.812	0.057	0.117	0.635	4.3

TABLE B.7 - HISTORICAL ANALYTICAL DATA - SS 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 14	4/17/2019	6.6	7.60	8.28	22.1	0.598	0.042	<0.100	0.414	6.7
SS 14	6/11/2019	12.6	6.78	3.47	23.8	0.444	0.077	<0.100	0.928	5.9
SS 14	8/28/2019	8.1	7.96	8.18	27.9	<0.100	<0.025	0.174	1.050	8.5
SS 14	10/28/2019	10.9	6.97	7.83	15.1	0.458	0.048	0.167	0.381	2.7
SS 14	3/31/2020	62.4	6.67	9.31	15.2	0.190	0.235	0.348	0.934	145
SS 14	6/10/2020	17.0	7.32	7.20	29.1	0.246	0.078	0.128	0.897	40.4
SS 14	9/21/2020	NS	7.62	7.59	20.7	0.345	0.075	<0.100	0.281	8.4
SS 14	12/17/2020	11.4	7.94	11.72	8.6	0.546	0.050	<0.100	0.540	5.4
SS 14	3/18/2021	31.4	7.73	9.77	16.8	0.189	0.048	<0.100	0.670	19.8
SS 14	5/5/2021	1.2	6.98	8.62	19.4	7.85	0.073	<0.100	1.06	6.27
SS 14	9/2/2021	*	*	7.80	26.3	0.552	0.980	0.128	0.935	3.0
SS 14	11/23/2021	<1.0	7.46	10.28	12.7	0.315	0.108	0.178	0.370	2.6
SS 14	1/10/2022	9.8	7.12	11.84	8.8	0.385	0.068	0.136	0.674	4.4
SS 14	4/7/2022	4.4	6.82	9.83	17.8	0.402	0.033	<0.100	0.566	2.9
SS 14	8/3/2022	10.0	8.03	7.77	30.2	0.176	<0.0300	0.123	0.723	6.50
SS 14	11/16/2022	4.3	7.37	9.76	10.8	<0.100	0.0390	<0.100	0.406	2.50
SS 14	2/13/2023	12.0	6.82	11.64	10.8	0.501	0.0520	<0.100	0.749	4.30

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.8 - HISTORICAL ANALYTICAL DATA - GD 12

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 12	3/12/2013	8.5	7.41	10.93	13.43	0.25	0.030	<0.100	0.54	3.9
GD 12	5/8/2013	15.0	6.73	2.35	16.53	0.21	0.030	<0.100	0.40	7.5
GD 12	9/23/2013	9.8	6.76	3.94	26.07	<0.10	0.026	<0.100	0.48	9.0
GD 12	12/10/2013	18.8	6.15	10.09	10.18	0.22	0.079	0.11	0.45	5.9
GD 12	2/6/2014	12.3	4.17	16.99	5.76	0.31	<0.025	<0.100	0.28	3.9
GD 12	6/26/2014	28.5	8.38	9.40	26.72	0.11	0.035	0.12	0.62	32.0
GD 12	9/30/2014	10.6	7.68	5.77	24.68	<0.100	<0.025	<0.100	0.39	11.0
GD 12	11/19/2014	14.7	6.95	5.93	5.85	0.28	<0.025	0.13	0.39	6.6
GD 12	3/23/2015	17.6	7.80	9.56	16.80	0.24	<0.025	<0.100	0.59	8.1
GD 12	4/22/2015	17.3	7.45	11.04	19.80	0.25	<0.025	<0.100	0.43	14.0
GD 12	9/30/2015	7.4	7.30	11.07	24.67	<0.100	<0.025	<0.100	0.695	8.5
GD 12	11/19/2015	22.9	7.07	19.14	14.68	0.281	0.100	0.15	0.769	12.0
GD 12	3/15/2016	9.8	7.43	13.14	16.05	0.254	0.032	<0.100	0.434	4.6
GD 12	6/29/2016	12.9	8.22	7.68	31.20	<0.100	0.036	<0.100	0.380	12.0
GD 12	8/9/2016	22.1	7.57	4.39	27.60	<0.100	<0.025	<0.100	0.629	13.3
GD 12	12/7/2016	10.3	7.18	6.65	11.4	0.142	<0.025	<0.100	0.599	4.0
GD 12	3/2/2017	15.4	7.79	10.12	11.70	0.223	<0.025	0.12	0.583	6.1
GD 12	6/21/2017	16.1	7.43	5.12	24.3	<0.100	<0.025	<0.100	0.770	16.8
GD 12	8/17/2017	6.3	8.13	5.80	29.90	<0.100	<0.025	<0.100	0.583	13.3
GD 12	10/26/2017	9.8	6.74	7.53	13.2	0.19	<0.025	<0.100	0.312	7.8
GD 12	3/27/2018	6.3	7.71	9.24	11.5	0.356	<0.025	<0.100	<0.25	4.2
GD 12	6/26/2018	9.9	7.44	4.35	26.1	0.102	<0.025	<0.100	0.528	13.2
GD 12	8/1/2018	42.3	7.05	7.33	22.7	0.108	0.159	0.286	1.230	43.8
GD 12	12/11/2018	9.5	6.68	11.46	7.8	0.313	<0.025	<0.100	0.574	4.3

TABLE B.8 - HISTORICAL ANALYTICAL DATA - GD 12

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 12	4/17/2019	9.1	7.45	9.20	17.5	0.257	<0.025	<0.100	0.272	4.0
GD 12	6/11/2019	19.0	7.20	3.25	22.0	0.223	0.066	0.121	0.820	8.2
GD 12	8/28/2019	11.0	7.83	7.61	28.2	<0.100	<0.025	0.103	0.764	9.4
GD 12	10/28/2019	18.9	5.34	6.65	14.7	0.197	0.044	<0.100	0.387	12.3
GD 12	3/31/2020	76.3	6.71	9.44	14.5	0.177	0.0650	0.167	1.00	143
GD 12	6/10/2020	12.3	6.46	6.44	25.8	<0.100	<0.030	<0.100	0.438	11.4
GD 12	9/21/2020	NS	7.18	7.15	19.9	0.103	<0.030	<0.100	<0.250	7.6
GD 12	12/17/2020	13.1	8.03	11.10	8.5	0.268	<0.030	<0.100	<0.250	3.7
GD 12	3/18/2021	36.2	7.92	10.04	17.1	0.163	<0.030	<0.100	0.621	17.6
GD 12	5/5/2021	4.1	7.49	8.97	18.9	7.26	<0.030	<0.100	0.610	16.4
GD 12	9/2/2021	*	*	7.34	24.4	0.245	<0.030	<0.100	0.779	3.5
GD 12	11/23/2021	<1.0	7.80	11.27	12.5	<0.100	<0.0300	<0.100	<0.250	2.8
GD 12	1/10/2022	10.7	7.29	12.18	8.5	0.230	<0.0300	<0.100	0.325	3.7
GD 12	4/7/2022	6.19	7.51	9.97	17.0	0.177	0.0740	<0.100	0.522	3.4
GD 12	8/3/2022	11.8	8.09	8.02	31.5	<0.100	<0.0300	0.142	0.999	6.40
GD 12	11/16/2022	3.9	7.25	9.67	11.2	<0.100	<0.0300	<0.100	0.407	4.50
GD 12	2/16/2023	10.0	5.69	11.45	12.2	0.277	<0.0300	<0.100	0.750	2.90

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.9 - HISTORICAL ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 14	3/12/2013	8.2	6.88	9.65	12.92	0.32	<0.025	<0.100	0.42	3.5
CO 14	5/8/2013	13.0	6.61	3.02	16.37	0.34	<0.12	<0.100	0.74	6.7
CO 14	9/23/2013	15.0	6.70	3.78	22.58	<0.100	0.036	<0.100	0.30	9.6
CO 14	12/10/2013	14.4	5.82	11.15	9.37	0.11	0.027	<0.100	0.55	9.7
CO 14	2/6/2014	13.7	4.02	16.69	5.08	0.58	<0.025	<0.100	0.41	9.1
CO 14	6/26/2014	19.7	8.25	8.19	22.33	0.34	<0.025	<0.100	0.86	9.0
CO 14	9/30/2014	***	***	***	***	***	***	***	***	***
CO 14	11/19/2014	9.84	6.70	3.86	7.90	<0.100	<0.025	<0.100	0.26	2.8
CO 14	3/23/2015	18.9	6.85	8.78	17.20	0.25	<0.025	<0.100	0.67	10.0
CO 14	4/22/2015	13.8	6.23	11.19	18.00	0.49	<0.025	<0.100	0.60	8.6
CO 14	9/30/2015	***	***	***	***	***	***	***	***	***
CO 14	11/19/2015	24.30	6.64	16.06	15.25	<0.100	<0.025	<0.100	1.27	5.9
CO 14	3/15/2016	15.80	6.33	13.05	16.42	0.468	<0.025	<0.100	0.713	9.7
CO 14	6/29/2016	***	***	***	***	***	***	***	***	***
CO 14	8/9/2016	***	***	***	***	***	***	***	***	***
CO 14	12/7/2016	***	***	***	***	***	***	***	***	***
CO 14	3/2/2017	19	6.34	8.58	13.60	0.106	<0.025	<0.100	0.601	5.2
CO 14	6/21/2017	9.0	6.57	6.49	22.9	<0.100	<0.025	<0.100	0.758	19.0
CO 14	8/17/2017	13.8	7.83	6.22	28.0	<0.100	<0.025	<0.100	0.851	50.6
CO 14	10/26/2017	8.1	6.43	8.40	14.2	<0.100	<0.025	<0.100	0.440	4.7
CO 14	3/27/2018	8.2	7.63	9.45	11.4	0.601	<0.025	<0.100	<0.25	9.5
CO 14	6/26/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS
CO 14	8/1/2018	40.2	6.99	7.42	22.1	<0.100	<0.025	<0.100	0.764	28.3
CO 14	12/11/2018	7.6	7.38	10.74	7.7	0.184	<0.025	<0.100	0.567	4.9

TABLE B.9 - HISTORICAL ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 14	4/17/2019	9.3	7.91	8.99	19.0	0.460	<0.025	<0.100	2.96	9.4
CO 14	6/11/2019	17.5	7.07	3.56	22.4	<0.100	<0.025	0.14	0.773	5.6
CO 14	8/28/2019	***	***	***	***	***	***	***	***	***
CO 14	10/28/2019	***	***	***	***	***	***	***	***	***
CO 14	3/31/2020	77.6	7.84	9.07	15.0	0.402	<0.025	<0.100	0.532	106
CO 14	6/10/2020	13.8	7.64	7.20	24.4	0.244	<0.030	<0.100	0.482	5.6
CO 14	9/21/2020	***	***	***	***	***	***	***	***	***
CO 14	Removed from Monitoring Program September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

*** - outfall was dry

TABLE B.10 - HISTORICAL ANALYTICAL DATA - SME 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 2	3/12/2013	6.0	7.12	9.28	14.17	0.28	0.032	<0.100	0.47	8.1
SME 2	5/8/2013	26.2	7.67	6.46	21.40	0.24	0.042	<0.100	0.92	21.0
SME 2	9/23/2013	7.3	6.92	5.51	26.24	<0.100	0.039	<0.100	0.34	7.1
SME 2	12/10/2013	11.8	5.71	11.05	11.01	0.31	0.100	0.15	0.42	7.0
SME 2	2/6/2014	19.9	4.21	14.38	6.13	0.39	0.053	<0.100	0.59	14.0
SME 2	6/26/2014	14.8	8.16	7.22	26.98	0.11	<0.025	<0.100	0.38	8.7
SME 2	9/30/2014	6.0	7.97	5.33	26.53	<0.100	<0.025	<0.100	0.52	7.4
SME 2	11/19/2014	9.5	7.06	3.53	10.20	0.14	0.039	0.16	<0.25	6.8
SME 2	3/23/2015	11.1	7.96	9.34	17.60	0.24	<0.025	<0.100	0.45	10.0
SME 2	4/22/2015	8.8	7.93	11.46	24.50	0.13	<0.025	<0.100	0.48	9.1
SME 2	9/30/2015	7.4	7.62	12.67	25.91	0.10	<0.025	0.101	0.497	8.7
SME 2	11/19/2015	22.0	6.55	14.30	19.12	0.22	0.062	0.219	1.21	82.3
SME 2	3/15/2016	8.2	7.86	13.43	20.73	<0.100	<0.025	<0.100	0.486	6.3
SME 2	6/29/2016	7.6	8.23	7.24	30.4	0.19	<0.025	<0.100	0.290	8.0
SME 2	8/9/2016	10.3	8.01	6.58	30.6	<0.100	<0.025	<0.100	0.585	8.2
SME 2	12/7/2016	6.0	7.52	6.86	12.7	<0.100	<0.025	0.101	0.469	5.8
SME 2	3/2/2017	11.8	8.03	8.55	15.2	0.267	<0.025	<0.100	0.720	11.4
SME 2	6/21/2017	5.2	7.18	4.64	26.6	<0.100	<0.025	<0.100	0.886	11.4
SME 2	8/17/2017	6.5	7.76	6.43	30.6	<0.100	<0.025	<0.100	0.729	15.3
SME 2	10/26/2017	5.2	7.03	6.87	17.6	<0.100	<0.025	<0.100	0.382	8.5
SME 2	3/27/2018	11.1	7.44	8.64	12.9	0.161	<0.025	<0.100	<0.25	17.5
SME 2	6/26/2018	10.8	7.97	6.43	29.6	0.111	<0.025	<0.100	0.731	9.9
SME 2	8/1/2018	29.6	7.39	6.46	23.4	0.371	0.099	0.128	0.423	24.8
SME 2	12/11/2018	9.7	7.82	9.99	7.9	0.212	<0.025	0.166	0.368	5.1

TABLE B.10 - HISTORICAL ANALYTICAL DATA - SME 2

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 2	4/17/2019	5.0	7.82	7.80	20.5	0.105	<0.025	<0.100	0.783	6.0
SME 2	6/11/2019	12.3	6.68	3.43	24.4	<0.100	<0.025	<0.100	0.676	9.2
SME 2	8/28/2019	6.6	7.83	6.26	29.2	<0.100	<0.025	<0.100	0.452	5.9
SME 2	10/28/2019	24.9	7.64	7.42	16.8	<0.100	<0.025	0.107	0.341	18.2
SME 2	3/31/2020	9.5	7.02	7.31	18.2	<0.100	<0.025	<0.100	0.521	10.2
SME 2	6/10/2020	10.4	7.81	6.40	27.0	0.117	<0.030	<0.100	0.367	8.0
SME 2	9/21/2020	NS	7.84	8.02	23.6	<0.100	<0.030	<0.100	<0.250	11.0
SME 2	12/17/2020	13.3	8.04	9.04	9.2	0.272	0.041	<0.100	0.342	6.7
SME 2	3/18/2021	27.3	8.20	12.80	18.4	0.193	0.033	<0.100	0.528	13.8
SME 2	5/5/2021	0.0	7.29	6.72	21.2	0.560	0.039	<0.100	0.768	6.80
SME 2	9/2/2021	*	*	6.31	27.5	0.134	<0.030	<0.100	0.562	11.8
SME 2	11/23/2021	<1.0	7.98	10.03	14.6	0.170	<0.0300	<0.100	<0.250	9.2
SME 2	1/10/2022	14.5	7.84	11.04	8.8	0.338	<0.0300	0.117	0.672	16.1
SME 2	Removed form Monitoring Program April 2022									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.11 - HISTORICAL ANALYTICAL DATA - GD 6

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 6	3/12/2013	10.3	8.03	9.65	11.90	0.21	0.036	<0.100	0.29	5.8
GD 6	5/8/2013	18.5	6.81	2.35	19.02	0.23	0.033	<0.100	0.40	8.3
GD 6	9/23/2013	6.0	7.28	5.17	26.93	<0.100	<0.025	<0.100	0.36	5.8
GD 6	12/10/2013	26.4	5.98	11.41	10.64	0.37	0.041	<0.100	0.17	8.6
GD 6	2/6/2014	15.5	4.34	15.80	6.85	0.26	0.057	<0.100	0.16	5.5
GD 6	6/26/2014	14.4	8.31	8.95	27.29	<0.100	<0.025	<0.100	0.42	7.0
GD 6	9/30/2014	7.1	8.35	6.53	26.78	<0.100	<0.025	<0.100	0.55	7.0
GD 6	11/19/2014	13.4	7.17	3.36	9.67	0.22	<0.025	0.28	0.38	9.8
GD 6	3/23/2015	16.5	7.95	8.95	18.40	0.22	<0.025	<0.100	0.26	8.2
GD 6	4/22/2015	14.9	7.59	10.82	19.80	0.22	<0.025	<0.100	0.28	8.0
GD 6	9/30/2015	14.1	8.19	12.31	25.47	<0.100	<0.025	0.103	0.974	12.4
GD 6	11/19/2015	42.5	6.97	15.87	17.75	0.468	0.037	0.131	0.768	16.0
GD 6	3/15/2016	16.1	7.68	11.58	19.98	0.124	0.043	<0.100	0.500	7.9
GD 6	6/29/2016	10.4	8.86	9.64	31.50	<0.100	<0.025	<0.100	0.400	11.2
GD 6	8/9/2016	10.4	8.26	6.98	30.70	<0.100	<0.025	<0.100	0.621	10.3
GD 6	12/7/2016	11.5	7.43	8.13	14.3	0.365	<0.025	<0.100	0.485	7.5
GD 6	3/2/2017	14.3	8.05	8.02	14.70	0.250	<0.025	<0.100	0.509	9.0
GD 6	6/21/2017	7.7	7.67	4.99	26.8	<0.100	<0.025	0.11	0.926	21.0
GD 6	8/17/2017	7.0	8.02	7.72	31.2	<0.100	<0.025	<0.100	0.677	13.2
GD 6	10/26/2017	8.3	6.25	7.84	15.8	0.126	<0.025	<0.100	0.385	12.0
GD 6	3/27/2018	10.1	7.97	9.00	12.1	0.233	<0.025	1.76	<0.25	10.9
GD 6	6/26/2018	8.0	8.02	6.78	29.6	0.108	<0.025	<0.100	0.782	9.6
GD 6	8/1/2018	25.4	7.66	7.52	22.7	0.335	0.090	0.138	0.636	21.9
GD 6	12/11/2018	13.8	7.97	10.92	8.2	0.397	<0.025	<0.100	0.362	5.8

TABLE B.11 - HISTORICAL ANALYTICAL DATA - GD 6

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 6	4/17/2019	9.0	7.10	8.00	20.5	0.198	<0.025	<0.100	0.624	9.6
GD 6	6/11/2019	17.9	7.07	3.68	23.8	<0.100	<0.025	<0.100	0.728	12.4
GD 6	8/28/2019	9.1	7.94	6.32	28.5	<0.100	<0.025	<0.100	0.607	6.5
GD 6	10/28/2019	18.4	7.48	6.63	16.4	0.198	<0.025	<0.100	0.467	9.9
GD 6	3/31/2020	16.0	6.06	8.86	16.1	0.212	<0.025	0.127	<0.250	8.40
GD 6	6/10/2020	7.4	7.04	6.36	26.5	0.127	<0.030	<0.100	0.832	10.4
GD 6	9/21/2020	NS	7.96	8.48	21.4	<0.100	<0.030	<0.100	<0.250	8.60
GD 6	12/17/2020	0.5	7.96	10.08	9.0	0.309	<0.030	<0.100	0.377	7.40
GD 6	3/18/2021	75.6	7.97	9.21	17.0	0.241	<0.030	0.183	0.364	31.6
GD 6	5/5/2021	5.7	7.55	8.62	19.2	7.95	<0.030	0.124	0.542	12.3
GD 6	9/2/2021	*	*	6.24	27.1	0.139	<0.030	0.305	3.44	25.4
GD 6	11/23/2021	<1.0	7.61	8.28	15.6	0.132	<0.0300	0.102	0.350	8.50
GD 6	1/10/2022	14.2	8.05	10.58	9.5	0.238	0.037	0.147	0.850	10.20
GD 6	4/7/2022	13.63	7.70	8.85	17.2	0.160	<0.0300	<0.100	0.433	9.90
GD 6	8/3/2022	10.1	7.71	7.21	29.7	<0.100	<0.0300	<0.100	0.588	5.30
GD 6	11/16/2022	23.9	7.47	9.78	12.2	0.166	<0.0300	<0.100	0.476	7.50
GD 6	2/13/2023	18.3	7.26	11.69	12.4	0.265	<0.0300	<0.100	0.559	7.10

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.12 - HISTORICAL ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 15	3/12/2013	32	7.41	8.91	14.40	<0.10	0.097	<0.100	0.53	9.0
CO 15	5/8/2013	27	7.51	8.04	18.10	0.10	<0.12	<0.100	0.59	11.0
CO 15	9/23/2013	13	7.09	4.01	27.18	<0.10	0.027	<0.100	0.34	11.0
CO 15	12/10/2013	42	6.09	11.25	9.83	0.18	0.068	<0.100	0.56	13.0
CO 15	2/6/2014	32	4.22	16.10	6.28	0.21	<0.025	<0.100	0.46	12.0
CO 15	6/26/2014	105	8.16	7.00	25.55	<0.100	0.140	<0.100	0.59	46.0
CO 15	9/30/2014	8	7.88	6.67	23.28	<0.100	<0.025	<0.100	<0.25	8.6
CO 15	11/19/2014	44	7.38	3.68	9.43	0.20	0.030	<0.100	0.32	12.0
CO 15	3/23/2015	56	7.85	9.53	18.50	0.14	0.067	<0.100	0.61	19.0
CO 15	4/22/2015	26	7.62	10.14	21.90	0.14	<0.025	<0.100	0.40	11.0
CO 15	9/30/2015	15	7.68	12.73	22.88	<0.100	<0.025	<0.100	0.75	11.8
CO 15	11/19/2015	50	7.30	19.45	16.98	0.24	0.042	0.183	0.42	17.5
CO 15	3/15/2016	29	7.66	12.39	19.83	<0.100	<0.025	<0.100	0.78	12.4
CO 15	6/29/2016	***	***	***	***	***	***	***	***	***
CO 15	8/9/2016	38	8.03	6.78	29.6	<0.100	<0.025	<0.100	<0.25	22.0
CO 15	12/7/2016	13.6	7.50	9.78	12.1	<0.100	<0.025	<0.100	0.67	14.8
CO 15	3/2/2017	38.2	7.77	8.32	16.0	0.15	<0.025	<0.100	0.52	17.4
CO 15	6/21/2017	6.4	7.56	5.12	26.7	<0.100	<0.025	<0.100	0.97	18.3
CO 15	8/17/2017	21.7	8.29	6.47	30.1	<0.100	<0.025	<0.100	0.69	12.4
CO 15	10/26/2017	10.8	4.43	8.24	13.6	<0.100	<0.025	<0.100	0.39	6.4
CO 15	3/27/2018	14.5	7.87	9.33	12.1	<0.100	<0.025	<0.100	<0.25	8.0
CO 15	6/26/2018	13.8	7.87	7.33	26.5	<0.100	<0.025	0.270	0.573	12.4
CO 15	8/1/2018	58.8	7.25	7.12	23.0	<0.100	0.040	0.122	0.852	71.5
CO 15	12/11/2018	111.3	8.73	11.94	7.0	0.168	<0.025	0.107	1.16	10.1

TABLE B.12 - HISTORICAL ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 15	4/17/2019	17.0	7.80	9.17	19.1	0.144	<0.025	<0.100	0.574	11.5
CO 15	6/11/2019	21.9	6.56	3.10	22.8	<0.100	<0.025	<0.100	1.00	9.8
CO 15	8/28/2019	70.8	8.07	7.52	25.7	0.166	0.026	0.130	1.54	20.4
CO 15	10/28/2019	30.7	7.31	9.63	15.0	0.120	<0.025	<0.100	0.61	10.2
CO 15	3/31/2020	61.8	6.46	9.25	15.7	0.102	0.0320	0.158	0.625	72.4
CO 15	6/10/2020	18.7	6.24	6.22	25.0	0.148	<0.030	<0.100	0.456	10.4
CO 15	9/21/2020	NS	7.31	8.18	17.9	<0.100	<0.030	<0.100	<0.250	5.6
CO 15	12/17/2020	2.8	8.98	10.87	10.0	0.161	<0.030	<0.100	0.685	15.6
CO 15	3/18/2021	63.1	8.46	15.75	19.8	0.193	<0.030	<0.100	0.554	26.0
CO 15	5/5/2021	3.8	7.47	9.06	19.3	7.78	<0.030	0.200	1.17	10.9
CO 15	9/2/2021	*	*	7.81	24.3	<0.100	<0.030	<0.100	0.926	13.8
CO 15	11/23/2021	2.0	7.87	10.67	15.2	<0.100	<0.030	<0.100	0.270	25.9
CO 15	1/10/2022	24.3	7.90	11.64	9.8	0.196	<0.0300	<0.100	<2.50	9.6
CO 15	4/7/2022	16.5	7.48	9.75	17.3	<0.100	0.0710	<0.100	0.853	11.7
CO 15	8/3/2022	12.8	8.15	7.92	27.0	0.131	<0.0300	<0.100	0.424	4.20
CO 15	11/16/2022	9.5	7.38	10.50	11.2	<0.100	<0.0300	<0.100	0.424	10.7
CO 15	2/13/2023	21.8	7.15	11.46	10.2	0.242	<0.0300	<0.100	0.717	7.50

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

*** - outfall was dry

* - meter malfunctioned in field

TABLE B.13 - HISTORICAL ANALYTICAL DATA - SME 7

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 7	12/17/2020	16.8	8.10	11.01	11.5	0.884	0.094	<0.100	0.541	19.4
SME 7	3/18/2021	111.0	8.93	10.25	18.3	0.429	0.093	0.270	0.407	78.2
SME 7	5/5/2021	8.2	6.06	8.01	18.4	1.090	0.112	0.244	1.240	36.4
SME 7	9/2/2021	*	*	7.91	22.6	0.491	0.179	0.275	2.490	77.6
SME 7	11/23/2021	<1.0	7.78	10.45	12.2	0.367	0.472	0.516	<0.250	<2.50
SME 7	1/10/2022	19.2	7.97	10.98	11.9	0.823	0.140	0.211	0.805	34.7
SME 7	4/7/2022	*	7.10	9.27	18.0	0.549	<0.0300	0.264	1.37	37.2
SME 7	8/3/2022	24.8	8.32	7.69	24.6	0.742	0.314	0.373	0.844	31.0
SME 7	11/16/2022	4.9	7.87	10.30	11.1	0.424	0.490	0.528	<0.250	3.80
SME 7	2/13/2023	34.3	7.12	11.11	11.4	0.737	<0.0300	0.115	1.01	36.2

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.14 - HISTORICAL ANALYTICAL DATA - SME 8

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 8	12/17/2020	0.30	7.72	11.22	9.10	0.312	<0.030	<0.100	<0.25	25.9
SME 8	3/18/2021	48.8	8.17	9.47	18.0	0.183	<0.030	<0.100	0.460	17.7
SME 8	5/5/2021	3.3	7.11	9.39	18.5	0.597	<0.030	0.118	0.366	60.3
SME 8	9/2/2021	*	*	7.87	25.9	0.150	<0.030	<0.100	0.269	39.2
SME 8	1/10/2022	9.5	7.42	11.82	9.2	0.328	<0.0300	<0.100	0.832	33.5
SME 8	Removed from Monitoring Program April 2022									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.15 - HISTORICAL ANALYTICAL DATA - SME 9

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 9	4/7/2022	5.17	7.78	9.32	17.0	<0.100	<0.0300	0.135	0.529	2.90
SME 9	8/3/2022	9.20	8.10	7.97	25.4	<0.100	<0.0300	<0.100	0.582	<2.50
SME 9	11/16/2022	2.90	7.50	9.86	12.2	<0.100	<0.0300	<0.100	<0.250	<2.50
SME 9	2/13/2023	10.3	7.43	11.93	10.2	<0.100	0.0900	<0.100	0.783	2.60

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.16 - HISTORICAL ANALYTICAL DATA - SME 10

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 10	4/7/2022	4.94	7.82	9.16	18.0	<0.100	<0.0300	<0.100	0.477	2.80
SME 10	8/3/2022	10.3	8.08	6.35	25.5	<0.100	<0.0300	<0.100	0.940	4.10
SME 10	11/16/2022	9.80	7.18	8.03	12.2	<0.100	<0.0300	<0.100	0.516	4.60
SME 10	2/13/2023	19.1	7.32	11.34	9.7	0.185	<0.0300	<0.100	0.773	4.00

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - meter malfunctioned in field

TABLE B.17 - HISTORICAL ANALYTICAL DATA - HB 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
HB 3	3/12/2013	33.3	7.54	9.48	13.90	0.19	0.081	<0.100	0.83	49.0
HB 3	5/20/2013	14.5	8.21	6.82	27.80	0.17	<0.025	<0.100	0.60	17.0
HB 3	9/23/2013	21.3	8.02	4.89	25.70	<0.100	0.037	<0.100	0.60	19.0
HB 3	12/10/2013	48.4	7.90	8.65	10.10	<0.100	0.140	0.15	0.62	20.0
HB 3	2/6/2014	32.0	7.22	12.24	5.90	0.48	0.030	<0.100	0.37	13.0
HB 3	6/26/2014	12.0	8.20	7.12	NS	<0.100	<0.025	<0.100	0.37	12.0
HB 3	9/30/2014	29.5	8.05	6.01	24.78	<0.100	<0.025	<0.100	0.48	30.0
HB 3	11/19/2014	56.1	7.85	8.83	8.80	0.11	0.098	0.12	0.44	51.0
HB 3	3/23/2015	27.0	8.21	8.40	24.20	0.26	<0.025	<0.100	0.46	35.0
HB 3	4/22/2015	25.0	7.91	8.36	21.90	0.20	<0.025	<0.100	0.66	22.0
HB 3	9/30/2015	22.0	7.89	5.05	25.70	<0.100	<0.025	<0.100	0.91	23.0
HB 3	11/19/2015	32.0	7.83	7.37	17.40	0.377	0.045	<0.100	<0.25	30.2
HB 3	3/15/2016	28.8	8.52	7.97	19.10	0.295	0.087	<0.100	<0.25	23.8
HB 3	6/29/2016	17.3	8.02	2.77	30.61	<0.100	<0.025	<0.100	0.51	20.9
HB 3	8/9/2016	11.3	7.91	4.31	30.19	<0.100	<0.025	<0.100	0.703	14.3
HB 3	12/7/2016	16.0	7.93	8.44	12.81	0.111	<0.025	0.126	0.730	17.0
HB 3	3/2/2017	50.0	7.75	3.90	14.33	0.334	<0.025	0.115	0.969	57.1
HB 3	7/5/2017	23.1	7.29	5.36	27.00	<0.100	<0.025	<0.100	0.812	28.5
HB 3	8/16/2017	13.7	7.35	5.04	27.00	<0.100	<0.025	<0.100	0.763	12.7
HB 3	10/25/2017	11.7	6.64	9.93	18.5	<0.100	<0.025	<0.100	0.322	20.4
HB 3	3/28/2018	13.2	7.99	9.47	17.6	0.359	<0.025	<0.100	<0.25	20.2
HB 3	6/29/2018	14.6	7.67	5.55	26.0	<0.100	<0.025	<0.100	0.464	18.2
HB 3	8/2/2018	28.3	7.40	5.64	25.1	<0.100	<0.025	<0.100	0.952	35.3
HB 3	12/10/2018	24.8	7.55	10.98	7.9	0.363	<0.025	0.141	0.426	27.6

TABLE B.17 - HISTORICAL ANALYTICAL DATA - HB 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
HB 3	4/15/2019	22.4	7.73	8.27	19.6	0.233	<0.025	<0.100	<0.250	35.5
HB 3	6/12/2019	12.4	8.13	6.77	26.6	0.129	<0.025	<0.100	<0.250	52.3
HB 3	8/27/2019	78.1	8.21	8.75	29.1	<0.100	<0.025	0.179	0.634	7.30
HB 3	10/29/2019	28.2	7.82	9.88	18.3	<0.100	<0.025	0.166	0.517	17.6
HB 3	3/30/2020	8.9	7.79	8.91	18.5	0.234	<0.025	<0.100	1.20	18.4
HB 3	6/16/2020	20.4	7.33	7.01	26.3	<0.100	<0.030	<0.100	0.30	14.6
HB 3	9/21/2020	12.1	7.80	7.69	23.5	<0.100	<0.030	<0.100	0.28	8.30
HB 3	12/17/2020	31.16	8.07	9.94	9.1	0.195	<0.030	<0.100	0.588	20.4
HB 3	3/18/2021	1.80	7.47	9.62	16.0	0.369	<0.030	<0.100	0.252	23.0
HB 3	5/5/2021	28.31	7.50	7.71	22.0	0.207	<0.030	<0.100	<0.250	35.1
HB 3	9/2/2021	19.2	7.61	5.30	27.4	<0.100	<0.030	<0.100	0.689	23.6
HB 3	11/23/2021	51.55	7.15	10.59	11.2	0.137	<0.0300	<0.100	<0.250	10.5
HB 3	1/11/2022	26.9	7.75	11.26	12.8	0.200	<0.0300	<0.10	0.550	23.6
HB 3	4/7/2022	27.8	7.61	9.40	18.1	0.268	<0.0300	<0.100	0.329	21.0
HB 3	8/2/2022	31.2	8.05	5.89	28.9	<0.100	<0.0300	<0.100	0.273	33.7
HB 3	11/16/2022	10.73	7.71	9.53	12.9	<0.100	<0.0300	<0.100	0.604	7.40
HB 3	2/14/2023	15.0	7.25	11.10	11.7	0.414	<0.0300	<0.100	0.471	11.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.18 - HISTORICAL ANALYTICAL DATA - SME 4

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 4	12/17/2020	17.70	7.69	10.82	9.80	0.387	<0.03	<0.10	0.263	17.8
SME 4	3/18/2021	2.20	7.25	9.20	17.60	0.319	<0.030	<0.100	0.331	21.6
SME 4	5/5/2021	20.02	7.86	7.81	21.0	0.213	<0.030	<0.100	<0.250	27.5
SME 4	11/23/2021	48.51	7.64	10.41	10.6	0.164	<0.0300	<0.100	<0.250	9.2
SME 4	1/11/2022	17.30	7.39	11.35	13.40	0.44	<0.0300	<0.10	0.97	15.6
SME 4	4/7/2022	21.6	7.55	9.30	16.7	0.273	0.060	<0.100	0.254	20.9
SME 4	8/2/2022	14.0	7.79	6.24	29.1	0.102	<0.0300	<0.100	0.274	6.00
SME 4	11/16/2022	9.91	7.69	9.45	12.5	<0.100	<0.0300	<0.100	0.382	10.5
SME 4	2/14/2023	15.8	7.27	10.99	11.3	0.416	<0.0300	<0.100	0.484	22.5

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.19 - HISTORICAL ANALYTICAL DATA - GD 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 5	3/13/2013	11.6	8.33	9.29	10.20	0.26	<0.025	<0.10	0.34	9.6
GD 5	5/20/2013	14.0	8.28	7.76	22.60	<0.100	<0.025	<0.10	0.62	9.0
GD 5	9/23/2013	11.5	7.67	6.78	27.10	<0.100	0.027	<0.10	0.45	8.0
GD 5	12/10/2013	57.9	7.97	9.10	9.10	0.10	0.088	0.10	0.47	18.0
GD 5	2/6/2014	45.9	7.14	9.88	7.20	0.17	0.038	<0.100	0.37	17.0
GD 5	6/26/2014	17.0	7.90	6.54	NS	<0.100	<0.025	<0.100	0.34	12.0
GD 5	9/30/2014	22.5	8.28	7.53	25.22	<0.100	<0.025	<0.100	<0.25	18.0
GD 5	11/19/2014	42.9	8.15	9.30	9.40	0.11	0.051	<0.100	0.43	26.0
GD 5	3/23/2015	24.0	8.14	8.58	15.90	0.12	<0.025	<0.100	0.34	15.0
GD 5	4/22/2015	25.0	7.81	7.78	21.70	0.14	<0.025	<0.100	0.65	13.0
GD 5	9/30/2015	18.0	8.03	6.27	26.30	<0.100	<0.025	0.115	0.557	17.3
GD 5	11/19/2015	90.0	7.63	7.34	16.60	0.168	0.042	<0.100	<0.250	42.8
GD 5	3/15/2016	23.7	8.80	7.47	19.40	<0.100	<0.025	<0.100	0.435	13.2
GD 5	6/29/2016	21.0	8.02	2.27	30.37	<0.100	0.074	<0.100	0.490	15.0
GD 5	8/9/2016	11.8	8.25	5.55	30.20	<0.100	<0.025	<0.100	0.412	11.0
GD 5	12/7/2016	10.0	7.73	10.61	11.96	<0.100	<0.025	<0.100	0.337	6.8
GD 5	3/2/2017	12.3	7.81	4.49	14.26	0.118	<0.025	<0.100	0.491	13.0
GD 5	7/5/2017	15.0	7.32	5.83	26.9	<0.100	<0.025	<0.100	0.730	22.7
GD 5	8/16/2017	8.0	7.89	6.22	28.0	<0.100	<0.025	<0.100	0.404	9.0
GD 5	10/25/2017	9.2	7.36	7.35	18.7	<0.100	<0.025	<0.100	0.347	14.6
GD 5	3/28/2018	6.1	8.18	9.47	18.5	0.127	<0.025	<0.100	<0.250	6.06
GD 5	6/29/2018	16.3	7.76	5.66	27.5	<0.100	<0.025	<0.100	0.689	19.60
GD 5	8/2/2018	18.4	7.59	6.02	25.7	<0.100	<0.025	<0.100	0.332	26.40
GD 5	12/10/2018	37.7	7.87	11.30	7.3	<0.100	<0.025	0.190	0.523	22.3

TABLE B.19 - HISTORICAL ANALYTICAL DATA - GD 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 5	4/15/2019	29.7	7.69	8.02	19.3	0.128	<0.025	1.20	0.411	29.0
GD 5	6/12/2019	6.0	8.02	7.64	27.2	<0.100	<0.025	<0.100	<0.250	9.3
GD 5	8/27/2019	75.2	7.15	7.98	28.7	<0.100	<0.025	0.165	0.506	10.9
GD 5	10/29/2019	29.0	7.85	9.42	17.8	<0.100	<0.025	<0.100	0.477	21.0
GD 5	3/30/2020	14.5	7.65	8.86	19.1	0.130	<0.025	<0.100	0.320	12.1
GD 5	6/16/2020	16.4	7.69	7.75	27.2	<0.100	<0.030	<0.100	0.561	7.4
GD 5	9/21/2020	10.8	7.65	6.33	23.2	<0.100	<0.030	<0.100	<0.250	7.9
GD 5	12/17/2020	28.7	7.62	9.96	9.7	0.122	<0.030	0.113	0.422	19.8
GD 5	3/18/2021	3.4	7.15	8.98	16.9	0.127	<0.030	<0.100	0.600	30.6
GD 5	5/5/2021	36.10	7.84	7.74	19.8	0.204	<0.030	<0.100	<0.250	36.8
GD 5	9/2/2021	10.28	7.84	6.90	26.5	<0.100	<0.030	<0.100	0.510	16.1
GD 5	11/23/2021	27.7	7.70	10.54	11.3	<0.100	<0.0300	<0.100	<0.250	8.8
GD 5	1/11/2022	26.8	7.28	12.25	10.1	0.300	<0.0300	<0.10	0.510	12.1
GD 5	4/7/2022	16.4	7.72	9.32	17.2	0.157	<0.0300	<0.100	0.300	14.4
GD 5	8/2/2022	13.0	7.86	6.60	29.1	<0.100	<0.0300	<0.100	<0.250	6.40
GD 5	11/16/2022	6.95	7.75	9.56	13.4	<0.100	<0.0300	<0.100	0.312	8.67
GD 5	2/14/2023	18.8	7.18	10.85	11.4	0.255	<0.0300	<0.100	0.606	11.5

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.20 - HISTORICAL ANALYTICAL DATA - GD 7

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 7	3/12/2013	9.7	7.98	11.63	15.27	0.39	0.037	<0.100	0.31	8.8
GD 7	5/8/2013	26.1	7.72	7.46	18.40	0.24	0.063	<0.100	<0.56	20.0
GD 7	9/23/2013	10.9	7.05	6.31	26.50	<0.100	0.026	<0.100	0.54	9.6
GD 7	12/10/2013	41.9	8.02	9.68	7.50	0.34	0.084	0.11	0.32	40.0
GD 7	2/6/2014	28.0	7.27	13.32	4.40	0.52	0.034	<0.100	0.61	13.0
GD 7	6/26/2014	6.2	8.45	7.04	NS	<0.100	<0.025	<0.100	0.52	8.7
GD 7	9/30/2014	11.9	7.87	6.32	24.39	<0.100	<0.025	<0.100	0.41	13.0
GD 7	11/19/2014	19.6	8.53	10.10	9.60	0.14	<0.025	0.13	0.46	15.0
GD 7	3/23/2015	13.0	8.28	8.87	15.40	0.27	<0.025	<0.100	0.35	10.0
GD 7	4/22/2015	28.0	7.99	6.40	20.20	0.24	<0.025	<0.100	0.47	24.0
GD 7	9/30/2015	8.3	7.89	5.18	24.90	<0.100	<0.025	<0.100	0.59	9.1
GD 7	11/19/2015	45.0	7.78	8.23	15.60	0.344	0.051	<0.100	<0.250	34.3
GD 7	3/15/2016	17.2	8.46	8.51	17.80	0.261	<0.025	<0.100	0.397	13.9
GD 7	6/29/2016	10.7	7.90	2.22	30.32	<0.100	0.048	<0.100	0.490	8.6
GD 7	8/9/2016	6.5	7.97	4.08	29.31	<0.100	<0.025	<0.100	0.471	5.7
GD 7	12/7/2016	9.5	7.88	10.14	12.39	<0.100	<0.025	<0.100	0.355	7.8
GD 7	3/2/2017	10.8	7.80	4.57	13.35	0.36	<0.025	<0.100	0.514	14.4
GD 7	6/29/2017	9.4	8.18	6.59	26.4	<0.100	<0.025	<0.100	0.440	13.4
GD 7	8/16/2017	8.5	7.84	5.66	29.0	<0.100	<0.025	<0.100	0.358	15.3
GD 7	10/25/2017	9.9	7.73	6.93	19.8	<0.10	<0.025	<0.100	0.416	18.4
GD 7	3/28/2018	7.6	8.16	9.33	14.9	0.350	<0.025	<0.100	<0.250	9.19
GD 7	6/29/2018	14.2	7.79	5.56	27.5	<0.100	<0.025	<0.100	0.625	14.60
GD 7	8/2/2018	18.5	7.62	5.51	27.0	<0.100	0.027	<0.100	0.450	32.10
GD 7	12/10/2018	40.8	7.06	11.05	8.0	0.378	<0.025	0.149	0.390	48.7

TABLE B.20 - HISTORICAL ANALYTICAL DATA - GD 7

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 7	4/15/2019	30.1	7.83	7.85	19.2	0.230	<0.025	<0.100	<0.250	12.0
GD 7	6/12/2019	7.4	7.24	6.68	27.2	0.132	<0.025	<0.100	<0.250	9.3
GD 7	8/27/2019	45.3	7.35	9.35	29.1	<0.100	<0.025	0.156	0.604	6.3
GD 7	10/29/2019	17.6	7.77	8.14	17.2	<0.100	<0.025	<0.100	0.414	17.0
GD 7	3/30/2020	7.8	7.77	10.38	21.1	<0.100	<0.025	<0.100	0.343	12.8
GD 7	6/16/2020	9.1	8.12	8.25	27.3	<0.100	<0.030	<0.100	0.322	8.3
GD 7	9/21/2020	13.6	7.42	12.45	23.7	<0.100	<0.030	<0.100	<0.250	9.60
GD 7	12/17/2020	14.4	7.75	10.21	9.5	0.373	<0.030	<0.100	<0.250	18.20
GD 7	3/18/2021	1.2	7.37	9.75	15.4	0.312	<0.030	<0.100	0.387	23.00
GD 7	5/5/2021	19.74	7.59	7.64	21.4	<0.100	<0.030	<0.100	0.661	40.3
GD 7	9/2/2021	13.57	7.75	6.38	27.6	0.107	<0.030	0.122	0.324	34.40
GD 7	11/23/2021	25.2	7.62	11.21	11.7	0.197	<0.0300	<0.100	<0.250	11.10
GD 7	1/11/2022	46.0	7.38	12.59	9.7	0.410	<0.0300	<0.10	<0.50	15.20
GD 7	4/7/2022	17.4	7.61	9.33	17.2	0.280	<0.0300	0.162	0.361	23.4
GD 7	8/2/2022	10.2	7.86	6.29	29.3	<0.100	<0.0300	<0.100	<0.250	4.30
GD 7	11/16/2022	5.25	7.75	9.00	14.4	<0.100	0.0430	<0.100	0.509	8.53
GD 7	2/14/2023	23.4	7.17	10.96	11.5	0.399	<0.0300	0.106	0.610	20.3

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.21 - HISTORICAL ANALYTICAL DATA - GD 9

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 9	2/6/2014	33.6	7.20	11.27	5.50	0.40	0.063	0.12	0.60	14.0
GD 9	6/26/2014	45.0	8.22	6.08	NS	<0.100	0.029	0.12	0.41	34.0
GD 9	9/30/2014	12.4	8.30	6.93	24.61	<0.100	<0.025	<0.100	0.30	15.0
GD 9	11/19/2014	22.8	8.13	9.38	9.30	0.16	0.082	0.25	0.74	15.0
GD 9	3/23/2015	25.0	8.16	7.58	15.80	0.15	<0.025	<0.100	0.64	18.0
GD 9	4/22/2015	18.0	7.58	5.58	20.70	0.15	<0.025	<0.100	0.65	14.0
GD 9	9/30/2015	9.6	7.93	5.37	25.70	<0.100	<0.025	<0.100	0.64	10.8
GD 9	11/19/2015	40.0	7.67	NS	16.50	0.254	0.096	0.116	<0.250	16.7
GD 9	3/15/2016	14.8	8.49	7.66	17.30	0.33	0.044	<0.100	<0.250	12.1
GD 9	6/29/2016	43.7	8.20	1.76	29.77	<0.100	<0.025	<0.100	0.65	67.2
GD 9	8/9/2016	11.0	8.07	4.14	29.00	<0.100	<0.025	<0.100	0.468	9.4
GD 9	12/7/2016	26.0	7.99	8.01	11.99	<0.100	<0.025	0.13	0.378	38.3
GD 9	3/2/2017	10.7	7.70	4.26	13.60	0.269	<0.025	<0.100	0.673	11.2
GD 9	6/29/2017	15.8	8.37	5.85	26.4	<0.100	<0.025	<0.100	0.722	15.7
GD 9	8/16/2017	11.3	7.82	5.52	29.60	<0.100	<0.025	<0.100	0.384	18.2
GD 9	10/25/2017	18.9	7.50	6.68	18.9	<0.100	0.025	<0.100	0.375	29.7
GD 9	3/28/2018	10.2	8.21	9.75	15.8	0.230	<0.025	<0.100	<0.250	12.4
GD 9	6/29/2018	11.0	7.73	5.45	27.6	<0.100	<0.025	<0.100	0.507	13.9
GD 9	8/2/2018	13.0	7.55	5.17	26.0	0.110	0.067	<0.100	0.600	20.8
GD 9	12/10/2018	26.4	7.90	11.05	7.9	0.292	0.047	0.244	0.442	22.8
GD 9	4/15/2019	221.5	7.51	8.09	20.0	0.194	0.034	<0.100	<0.250	178
GD 9	6/12/2019	7.3	7.21	8.61	27.0	0.116	<0.025	<0.100	<0.250	29.0
GD 9	8/27/2019	76.5	7.81	8.22	28.8	<0.100	<0.025	0.146	0.385	9.3
GD 9	10/29/2019	22.3	7.35	8.91	17.9	<0.100	<0.025	<0.100	0.491	15.0

TABLE B.21 - HISTORICAL ANALYTICAL DATA - GD 9

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 9	3/30/2020	18.3	7.56	8.54	18.4	0.243	<0.025	0.121	<0.250	16.4
GD 9	6/16/2020	11.4	8.15	7.94	27.1	<0.100	<0.030	<0.100	0.352	11.5
GD 9	9/21/2020	11.6	7.38	6.41	23.3	<0.100	<0.030	<0.100	<0.250	9.0
GD 9	12/17/2020	12.33	7.71	10.62	9.7	0.336	<0.030	<0.100	0.261	13.1
GD 9	3/18/2021	1.70	7.24	8.83	15.5	0.189	<0.030	<0.100	0.576	18.6
GD 9	5/5/2021	23.76	7.68	7.08	21.0	0.176	0.036	<0.100	0.564	29.0
GD 9	9/2/2021	13.46	7.73	6.29	27.9	<0.100	<0.030	<0.100	0.311	25.8
GD 9	11/23/2021	39.41	7.84	10.71	13.9	0.113	<0.0300	0.124	<0.250	33.9
GD 9	1/11/2022	271.50	7.42	11.43	10.4	0.360	<0.030	<0.10	0.760	13.3
GD 9	4/7/2022	14.0	7.60	8.79	18.2	0.236	<0.0300	0.124	0.306	15.1
GD 9	8/2/2022	10.4	7.89	6.62	29.1	<0.100	<0.0300	<0.100	<0.250	7.40
GD 9	11/16/2022	4.52	7.81	9.41	14.1	<0.100	<0.0300	<0.100	0.399	5.70
GD 9	2/14/2023	16.1	7.17	11.09	11.6	0.362	<0.0300	<0.100	0.484	12.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.22 - HISTORICAL ANALYTICAL DATA - SME 1

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 1	3/12/2013	13.1	8.19	8.26	13.10	0.54	0.110	0.11	0.34	16.0
SME 1	5/8/2013	24.0	7.64	8.96	16.00	0.15	0.063	<0.100	0.42	14.0
SME 1	9/23/2013	14.2	8.26	7.87	27.70	<0.100	0.053	<0.100	0.80	15.0
SME 1	12/10/2013	46.3	8.05	9.15	7.60	0.55	0.210	0.26	0.47	21.0
SME 1	2/6/2014	61.0	7.22	11.34	5.90	0.55	0.110	0.13	0.50	23.0
SME 1	6/26/2014	14.0	8.49	7.05	NS	<0.100	<0.025	<0.100	0.31	13.0
SME 1	9/30/2014	27.6	8.25	7.46	24.67	<0.100	0.044	0.11	0.61	34.0
SME 1	11/19/2014	40.1	8.31	10.86	7.80	0.74	0.270	0.29	0.55	19.0
SME 1	3/23/2015	21.0	8.26	8.52	17.30	0.51	0.073	0.10	<0.250	14.0
SME 1	4/22/2015	29.0	7.14	7.97	18.50	0.40	0.039	<0.100	0.38	18.0
SME 1	9/30/2015	15.0	8.34	7.03	26.40	<0.100	0.052	0.135	0.807	15.3
SME 1	11/19/2015	50.0	7.92	7.04	15.90	0.401	0.084	0.134	<0.250	23.2
SME 1	3/15/2016	26.2	8.44	7.21	18.30	0.454	0.047	<0.100	<0.250	17.7
SME 1	6/29/2016	21.2	8.80	3.29	30.67	<0.100	0.180	0.245	0.620	20.3
SME 1	8/9/2016	15.3	8.55	4.98	28.87	<0.100	0.089	0.154	0.547	12.6
SME 1	12/7/2016	31.0	7.96	10.20	11.98	0.413	0.209	0.271	0.378	17.7
SME 1	3/2/2017	14.0	7.75	4.31	12.34	0.671	0.127	0.208	0.345	15.0
SME 1	6/29/2017	19.2	9.11	9.21	25.8	<0.100	0.028	0.000	0.530	18.3
SME 1	8/16/2017	10.6	8.12	6.58	29.7	<0.100	<0.025	0.111	0.520	12.7
SME 1	10/25/2017	5.4	8.02	8.32	17.3	0.368	0.121	0.151	0.288	16.9
SME 1	3/28/2018	19.3	8.10	9.18	17.6	0.633	0.106	0.000	<0.250	19.8
SME 1	6/29/2018	20.7	7.84	6.37	26.2	0.312	0.121	0.241	0.670	23.3
SME 1	8/2/2018	28.5	7.48	5.82	23.9	0.296	0.145	0.136	0.495	29.5
SME 1	12/10/2018	32.0	7.45	11.48	8.0	0.259	<0.025	<0.100	0.336	31.0

TABLE B.22 - HISTORICAL ANALYTICAL DATA - SME 1

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 1	4/15/2019	42.2	7.89	7.89	19.7	0.390	0.063	<0.100	0.360	35.0
SME 1	6/12/2019	12.2	7.34	8.73	27.2	<0.100	<0.025	<0.100	<0.250	9.7
SME 1	8/27/2019	135.2	7.45	8.51	28.8	<0.100	<0.025	0.161	0.356	7.1
SME 1	10/29/2019	14.5	7.95	9.21	17.6	0.129	0.049	0.134	0.272	11.0
SME 1	3/30/2020	13.3	7.35	8.61	19.3	0.462	<0.025	<0.100	<0.250	13.3
SME 1	6/16/2020	11.6	8.58	10.36	27.0	<0.100	0.031	0.129	0.485	11.4
SME 1	9/21/2020	13.8	7.71	6.92	22.2	<0.100	<0.030	<0.100	<0.250	9.0
SME 1	12/17/2020	23.19	7.66	10.68	9.2	0.577	0.072	<0.100	0.300	20.9
SME 1	3/18/2021	14.10	7.24	9.54	15.7	0.263	0.112	<0.100	0.580	90.4
SME 1	5/5/2021	28.83	7.43	8.53	20.1	0.122	<0.030	<0.100	0.402	34.0
SME 1	9/2/2021	23.89	7.80	6.93	25.8	0.458	0.190	0.218	0.353	35.8
SME 1	11/23/2021	18.42	7.91	11.34	12.4	<0.100	0.076	0.165	<0.250	12.7
SME 1	1/11/2022	161.2	7.55	11.29	10.2	8.200	0.054	<0.10	1.800	17.0
SME 1	4/7/2022	112.9	7.65	9.26	17.2	0.431	0.192	0.255	0.544	140
SME 1	8/2/2022	12.0	8.10	7.98	29.2	<0.100	<0.0300	<0.100	0.281	6.30
SME 1	11/16/2022	5.78	7.86	9.45	14.3	<0.100	<0.0300	<0.100	0.306	7.90
SME 1	2/14/2023	15.5	7.26	11.23	11.0	0.372	<0.0300	<0.100	0.281	11.3

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.23 - HISTORICAL ANALYTICAL DATA - GD 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 3	3/13/2013	11.6	8.00	9.28	10.70	0.29	0.028	<0.100	0.44	11.0
GD 3	5/20/2013	11.7	8.09	7.01	23.40	0.15	0.026	<0.100	0.63	13.0
GD 3	9/23/2013	12.4	7.80	6.50	26.40	<0.100	0.025	<0.100	0.58	10.0
GD 3	12/10/2013	45.7	7.85	9.23	9.30	0.21	0.085	0.14	0.64	23.0
GD 3	2/6/2014	90.2	7.13	10.58	6.10	0.21	<0.025	0.12	0.68	27.0
GD 3	6/26/2014	15.0	8.13	8.00	NS	0.12	<0.025	<0.100	0.40	14.0
GD 3	9/30/2014	19.5	8.11	6.69	25.06	<0.100	<0.025	<0.100	0.32	19.0
GD 3	11/19/2014	18.1	8.36	10.88	9.3	<0.100	<0.025	<0.100	0.26	15.0
GD 3	3/23/2015	13.0	8.32	7.84	16.5	0.22	<0.025	<0.100	0.34	10.0
GD 3	4/22/2015	26.0	7.86	6.74	20.6	0.18	0.079	<0.100	0.36	21.0
GD 3	9/30/2015	10.0	7.94	4.91	24.9	0.103	<0.025	0.126	0.74	11.5
GD 3	11/19/2015	40.0	7.61	7.74	16.0	0.250	<0.025	0.101	<0.250	22.0
GD 3	3/15/2016	25.5	8.04	8.62	18.7	0.420	0.071	<0.100	<0.250	11.7
GD 3	6/29/2016	6.0	7.84	2.78	29.94	<0.100	0.088	<0.100	<0.250	10.7
GD 3	8/9/2016	8.3	7.98	5.09	30.01	<0.100	<0.025	<0.100	0.393	10.0
GD 3	12/7/2016	5.9	7.91	10.55	12.0	<0.100	<0.025	<0.100	0.356	8.1
GD 3	3/2/2017	14.0	8.21	5.01	14.35	0.237	<0.025	0.135	0.649	15.6
GD 3	7/5/2017	11.2	7.48	6.23	27.3	<0.100	<0.025	<0.100	0.560	14.4
GD 3	8/16/2017	7.4	8.01	6.24	28.8	<0.100	<0.025	<0.100	0.387	8.5
GD 3	10/25/2017	8.9	7.54	7.25	19.1	<0.100	<0.025	<0.100	0.390	13.6
GD 3	3/28/2018	9.1	8.06	9.34	16.6	0.241	<0.025	<0.100	<0.250	10.8
GD 3	6/29/2018	12.9	7.68	5.63	27.3	<0.100	<0.025	<0.100	0.511	12.7
GD 3	8/2/2018	13.4	7.69	5.72	26.6	<0.100	<0.025	<0.100	0.569	20.8
GD 3	12/10/2018	41.4	7.40	11.09	6.8	<0.100	<0.025	0.128	0.519	31.3

TABLE B.23 - HISTORICAL ANALYTICAL DATA - GD 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 3	4/15/2019	15.3	7.71	8.02	19.9	0.233	<0.025	<0.100	<0.250	14.7
GD 3	6/12/2019	9.6	7.24	8.31	27.3	<0.100	<0.025	<0.100	<0.250	13.0
GD 3	8/27/2019	202.8	7.18	8.33	28.8	<0.100	<0.025	0.159	0.434	6.5
GD 3	10/29/2019	26.2	7.84	9.63	17.2	<0.100	<0.025	<0.100	0.453	13.0
GD 3	3/30/2020	17.4	7.58	8.83	18.8	0.216	<0.025	<0.100	0.281	18.0
GD 3	6/16/2020	11.6	8.03	8.20	27.5	<0.100	<0.030	<0.100	0.363	9.5
GD 3	9/21/2020	13.5	7.51	6.73	23.4	<0.100	<0.030	0.106	<0.250	9.8
	Removed from Monitoring Program September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.24 - HISTORICAL ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 3	3/13/2013	17.1	7.84	7.44	11.30	0.20	0.038	<0.100	0.69	15.0
SME 3	5/20/2013	18.5	8.11	6.09	23.60	0.17	0.028	<0.100	0.69	19.0
SME 3	9/23/2013	15.3	*	5.32	26.50	<0.100	0.029	<0.100	0.53	13.0
SME 3	12/10/2013	48.3	7.69	8.85	9.60	<0.100	0.086	<0.100	0.62	20.0
SME 3	2/6/2014	82.7	7.09	10.62	6.30	0.25	<0.025	<0.100	0.69	33.0
SME 3	6/26/2014	50.0	8.04	7.03	NS	<0.100	0.047	<0.100	0.53	30.0
SME 3	9/30/2014	17.3	8.08	5.98	25.33	<0.100	<0.025	<0.100	0.66	18.0
SME 3	11/19/2014	22.4	8.30	10.40	9.30	0.12	0.035	<0.100	<0.250	19.0
SME 3	3/23/2015	25.0	8.13	7.72	21.20	0.24	0.026	<0.100	0.46	16.0
SME 3	4/22/2015	12.0	7.76	6.70	21.80	0.15	<0.025	<0.100	0.45	14.0
SME 3	9/30/2015	18.0	7.96	6.19	25.60	0.125	<0.025	0.129	0.42	24.4
SME 3	11/19/2015	65.0	7.56	7.44	15.80	0.253	0.032	<0.100	<0.250	37.8
SME 3	3/15/2016	68.4	8.35	7.51	19.20	0.295	<0.025	<0.100	<0.250	78.8
SME 3	6/29/2016	17.7	7.80	2.56	30.16	<0.100	0.062	<0.100	0.37	15.3
SME 3	8/9/2016	14.8	7.52	3.43	29.53	<0.100	<0.025	<0.100	0.564	10.8
SME 3	12/7/2016	8.5	7.90	10.91	11.85	<0.100	<0.025	0.147	1.780	9.4
SME 3	3/2/2017	14.6	7.95	4.60	13.64	0.272	<0.025	<0.100	0.733	17.0
SME 3	7/5/2017	12.5	7.54	5.88	27.3	<0.100	0.039	<0.100	0.628	16.3
SME 3	8/16/2017	11.5	7.86	5.00	28.1	<0.100	0.07	<0.100	0.446	18.5
SME 3	10/25/2017	15.3	7.42	8.23	19.4	<0.100	0.053	0.106	0.376	49.7
SME 3	3/28/2018	8.9	7.98	9.44	17.4	0.220	<0.025	<0.100	<0.250	11.2
SME 3	6/29/2018	15.8	7.53	5.39	26.9	<0.100	<0.025	<0.100	0.800	115.0
SME 3	8/2/2018	30.0	7.59	5.66	26.4	<0.100	<0.025	0.108	0.981	56.0
SME 3	12/10/2018	33.1	7.21	10.68	7.0	<0.100	<0.025	0.127	0.433	27.1

TABLE B.24 - HISTORICAL ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 3	4/15/2019	552.6	7.78	7.65	19.7	0.234	<0.025	0.285	0.271	371
SME 3	6/12/2019	7.8	7.48	6.87	27.1	<0.100	<0.025	<0.100	<0.250	10.7
SME 3	8/27/2019	55.3	7.91	8.41	29.2	<0.100	<0.025	0.149	0.389	7.0
SME 3	10/29/2019	22.4	7.77	8.44	17.2	<0.100	<0.025	<0.100	0.390	15.4
SME 3	3/30/2020	14.4	7.51	8.91	18.8	0.239	<0.025	<0.100	0.657	18.2
SME 3	6/16/2020	9.2	8.06	7.95	27.1	<0.100	<0.030	0.102	0.466	10.1
SME 3	9/21/2020	15.3	7.67	6.50	23.0	<0.100	<0.030	<0.100	0.660	10.7
SME 3	9/2/2021	102.33	7.75	5.64	26.3	<0.100	0.057	0.234	1.24	267
SME 3	1/11/2022	109.4	7.58	11.17	9.9	0.390	<0.0300	<0.10	0.520	15.4
SME 3	4/7/2022	32.3	7.69	8.99	16.6	0.181	<0.0300	<0.100	0.406	27.0
SME 3	8/2/2022	11.0	7.81	6.35	29.2	<0.100	<0.0300	<0.100	<0.250	5.60
SME 3	11/16/2022	7.3	7.76	9.28	13.6	<0.100	<0.0300	<0.100	0.294	10.3
SME 3	2/14/2023	33.2	7.18	10.81	10.8	0.325	<0.0300	<0.100	0.351	66.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.25 - HISTORICAL ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 5	3/12/2013	5.98	8.38	9.87	10.80	0.30	0.031	<0.100	0.39	7.2
SS 5	5/8/2013	24.4	7.38	7.19	16.80	0.16	<0.12	<0.100	0.62	21.0
SS 5	9/23/2013	13.8	8.00	5.44	25.80	<0.100	0.029	<0.100	1.30	15.0
SS 5	12/10/2013	22.8	8.25	9.10	7.70	0.24	0.043	0.11	0.67	13.0
SS 5	2/6/2014	27.5	7.20	12.09	5.40	0.39	<0.025	<0.100	0.86	12.0
SS 5	6/26/2014	11.0	8.53	7.01	NS	<0.100	<0.025	<0.100	0.40	11.0
SS 5	9/30/2014	11.2	7.64	6.82	24.44	<0.100	<0.025	<0.100	0.45	11.0
SS 5	11/19/2014	14.1	8.96	13.13	8.50	<0.100	<0.025	<0.100	0.35	9.6
SS 5	3/23/2015	18.0	8.50	8.99	17.70	0.26	<0.025	<0.100	0.46	11.0
SS 5	4/22/2015	19.0	7.76	6.71	20.20	0.15	<0.025	<0.100	0.47	13.0
SS 5	9/30/2015	11.0	8.26	6.61	25.30	<0.100	<0.025	<0.100	0.606	9.9
SS 5	11/19/2015	19.0	7.86	8.47	15.90	0.239	<0.025	<0.100	<0.250	11.0
SS 5	3/15/2016	20.0	8.37	8.47	17.20	0.264	<0.025	0.225	0.279	9.5
SS 5	6/29/2016	14.7	8.01	3.81	29.77	<0.100	0.066	<0.100	0.480	13.2
SS 5	8/9/2016	11.6	7.86	3.16	29.40	<0.100	<0.025	<0.100	0.464	12.6
SS 5	12/7/2016	6.6	7.94	6.70	12.30	<0.100	<0.025	0.12	0.420	8.0
SS 5	3/2/2017	14.0	7.78	3.92	12.77	0.334	<0.025	<0.100	0.766	16.0
SS 5	7/5/2017	8.4	7.77	7.19	28.90	<0.100	<0.025	<0.100	0.474	12.0
SS 5	8/16/2017	10.2	8.10	4.83	29.90	<0.100	<0.025	<0.100	0.493	15.1
SS 5	10/25/2017	7.5	8.24	8.36	19.2	<0.100	<0.025	<0.100	0.531	11.8
SS 5	3/28/2018	7.0	8.53	10.23	18.5	0.248	<0.025	<0.100	<0.250	8.33
SS 5	6/29/2018	10.4	7.93	5.50	27.5	<0.100	<0.025	<0.100	0.605	13.3
SS 5	8/2/2018	13.5	7.58	6.04	25.8	<0.100	<0.025	<0.100	0.554	12.8
SS 5	12/10/2018	21.9	7.01	11.15	7.3	0.146	<0.025	<0.100	0.522	16.7

TABLE B.25 - HISTORICAL ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 5	4/15/2019	15.5	7.35	7.77	19.4	0.168	<0.025	<0.100	0.374	11.7
SS 5	6/12/2019	10.0	8.44	8.78	26.6	<0.100	<0.025	<0.100	<0.250	11.0
SS 5	8/27/2019	24.5	8.66	9.02	28.9	<0.100	<0.025	0.168	0.508	7.1
SS 5	10/29/2019	18.7	8.20	9.33	18.1	0.105	<0.025	0.198	0.631	10.4
SS 5	3/30/2020	9.2	8.35	11.07	20.8	0.127	<0.025	<0.100	0.399	10.6
SS 5	6/16/2020	10.5	8.41	7.99	27.9	<0.100	<0.030	<0.100	0.534	9.7
SS 5	9/21/2020	16.5	7.36	11.45	22.6	<0.100	<0.030	<0.100	0.512	11.0
SS 5	12/17/2020	8.64	8.02	11.24	9.6	0.200	<0.030	<0.100	0.428	10.1
SS 5	3/18/2021	0.60	7.36	9.03	15.7	0.191	<0.030	<0.100	0.570	14.6
SS 5	5/5/2021	38.40	7.55	7.72	20.5	0.108	<0.030	<0.100	0.576	32.2
SS 5	9/2/2021	9.62	8.00	8.54	28.6	<0.100	<0.030	<0.100	0.431	14.4
SS 5	11/23/2021	10.84	7.40	10.89	13.7	0.126	<0.0300	<0.100	<0.250	7.7
SS 5	1/11/2022	46.0	7.64	11.13	11.1	0.320	<0.0300	<0.10	1.300	10.4
SS 5	4/7/2022	20.7	7.80	8.85	17.9	0.122	<0.0300	<0.100	0.516	15.6
SS 5	8/2/2022	11.9	8.38	7.32	30.6	<0.100	<0.0300	<0.100	0.812	7.80
SS 5	11/16/2022	5.32	8.07	10.21	14.0	<0.100	<0.0300	<0.100	0.314	8.30
SS 5	2/14/2023	11.2	7.35	11.62	12.7	0.284	0.0930	<0.100	0.344	10.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.26 - HISTORICAL ANALYTICAL DATA - SME 5

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 5	12/17/2020	15.24	7.80	10.94	10.00	0.371	<0.030	<0.100	0.258	17.7
SME 5	3/18/2021	1.70	7.83	9.59	15.90	0.316	<0.030	<0.100	0.317	23.0
SME 5	5/5/2021	50.11	7.80	7.96	21.2	<0.100	<0.030	<0.100	0.410	60.6
SME 5	9/2/2021	15.15	8.02	6.42	28.2	0.128	<0.030	<0.100	0.325	31.8
SME 5	11/23/2021	68.29	7.78	10.42	14.9	0.231	<0.0300	<0.100	<0.250	14.0
SME 5	1/11/2022	24.90	7.66	10.46	14.7	0.450	0.035	<0.10	1.50	16.6
SME 5	4/7/2022	55.4	7.99	9.43	17.4	0.290	<0.0300	<0.100	0.385	25.4
SME 5	8/2/2022	12.0	8.26	7.16	30.4	0.102	<0.0300	<0.100	0.277	7.30
SME 5	11/16/2022	7.26	7.91	9.00	14.7	0.113	<0.0300	<0.100	0.347	11.1
SME 5	2/14/2023	15.1	7.17	10.93	12.2	0.425	<0.0300	<0.100	0.302	12.3

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.27 - HISTORICAL ANALYTICAL DATA - SME 6

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 6	12/17/2020	13.6	7.96	10.89	10.1	0.368	<0.03	<0.10	<0.25	16.7
SME 6	3/18/2021	3.3	7.65	9.84	15.5	0.358	<0.030	<0.100	0.618	47.2
SME 6	5/5/2021	62.3	7.75	7.80	19.9	0.183	<0.030	<0.100	0.403	82.8
SME 6	9/2/2021	13.3	8.19	6.72	27.7	0.131	<0.030	0.430	0.353	19.0
SME 6	11/23/2021	9.8	7.68	10.35	15.1	0.231	<0.0300	<0.100	<0.250	11.2
SME 6	1/11/2022	24.4	7.72	11.24	10.2	0.450	<0.0300	<0.10	2.40	16.9
SME 6	4/7/2022	31.4	7.95	9.63	18.0	0.270	<0.0300	<0.100	0.373	28.8
SME 6	8/2/2022	11.1	8.25	8.26	30.9	<0.100	<0.0300	<0.100	<0.250	8.40
SME 6	11/16/2022	8.0	7.87	9.34	14.0	<0.100	<0.0300	<0.100	0.308	11.3
SME 6	2/14/2023	17.7	7.31	10.83	12.8	0.374	<0.0300	<0.100	0.319	14.9

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.28 - HISTORICAL ANALYTICAL DATA - RC 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 14	3/12/2013	28.3	8.23	7.53	10.3	<0.100	0.088	<0.100	0.61	21.0
RC 14	5/8/2013	29.5	6.72	1.78	21.4	0.14	<0.12	<0.100	0.63	16.0
RC 14	9/23/2013	18.4	7.86	6.68	24.7	<0.100	<0.025	<0.100	0.58	13.0
RC 14	12/10/2013	40.0	8.45	9.50	8.2	<0.100	0.100	0.11	0.69	16.0
RC 14	2/6/2014	66.6	7.15	10.94	4.9	0.16	0.036	0.11	0.70	18.0
RC 14	6/26/2014	6.2	8.21	6.30	NS	<0.100	<0.025	<0.100	0.39	5.9
RC 14	9/30/2014	12.4	7.20	6.20	23.5	<0.100	<0.025	<0.100	0.40	12.0
RC 14	9/19/2014	50.3	8.20	10.10	7.5	<0.100	0.085	0.13	0.52	28.0
RC 14	3/23/2015	70.0	8.03	7.80	18.2	0.26	0.070	<0.100	1.10	34.0
RC 14	4/22/2015	30.0	7.77	7.25	18.1	0.20	<0.025	<0.100	0.40	15.0
RC 14	9/30/2015	17.0	8.28	5.63	24.4	<0.100	<0.025	<0.100	0.454	12.6
RC 14	11/19/2015	95.0	7.32	6.07	17.71	0.137	<0.025	0.135	0.633	36.0
RC 14	3/15/2016	85.0	8.13	7.73	18.5	0.106	<0.025	0.304	0.434	69.6
RC 14	6/29/2016	17.2	7.58	2.17	28.53	<0.100	0.037	<0.100	0.460	17.5
RC 14	8/9/2016	10.4	7.05	2.35	28.53	<0.100	<0.025	<0.100	0.547	8.5
RC 14	12/7/2016	7.9	7.21	6.47	11.62	<0.100	<0.025	<0.100	0.252	8.6
RC 14	3/2/2017	18.0	7.32	3.55	12.69	0.12	<0.025	<0.100	0.608	14.6
RC 14	7/5/2017	17.7	7.55	6.56	25.7	0.279	0.041	<0.100	0.357	35.0
RC 14	8/16/2017	9.8	7.72	5.54	26.7	0.21	0.042	<0.100	0.400	12.4
RC 14	10/25/2017	18.7	7.64	7.26	17.1	0.24	0.088	0.149	0.465	27.2
RC 14	3/28/2018	9.9	8.03	9.00	18.3	0.148	<0.025	<0.100	<0.25	10.9
RC 14	6/29/2018	12.9	7.64	5.89	27.1	<0.100	<0.025	<0.100	0.722	13.8
RC 14	8/2/2018	21.7	7.30	5.56	23.7	<0.100	0.055	<0.100	0.848	17.3
RC 14	12/10/2018	35.1	7.13	10.63	7.3	<0.100	0.038	0.169	1.400	16.9

TABLE B.28 - HISTORICAL ANALYTICAL DATA - RC 14

GADSDEN-ETOWAH MS4 MONITORING

		FIELD PARAMETERS				LABORATORY ANALYSIS				
MONITORING POINT ID	DATE	TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 14	4/15/2019	45.8	7.68	7.67	19.5	0.108	<0.025	<0.100	0.403	36.0
RC 14	6/12/2019	11.0	8.03	7.39	25.3	0.120	<0.025	<0.100	0.250	12.3
RC 14	8/27/2019	76.4	8.36	8.78	28.4	<0.100	<0.025	0.141	0.391	8.8
RC 14	10/29/2019	17.4	7.90	9.83	17.7	<0.100	<0.025	<0.100	0.478	10.6
RC 14	3/30/2020	12.9	8.10	10.01	21.9	<0.100	<0.025	<0.100	0.451	15.7
RC 14	6/16/2020	11.5	6.79	8.01	26.9	0.141	<0.030	<0.100	0.560	11.4
RC 14	9/21/2020	13.7	7.49	9.65	21.9	<0.100	<0.030	0.202	0.307	8.2
RC 14	12/17/2020	25.8	7.72	10.40	9.3	0.261	<0.030	<0.100	0.497	14.4
RC 14	3/18/2021	25.8	7.72	10.40	9.3	0.261	<0.030	<0.100	0.497	14.4
RC 14	5/5/2021	33.45	7.68	7.99	20.9	<0.100	<0.030	<0.100	0.566	30.4
RC 14	9/2/2021	16.75	7.87	7.11	25.7	0.210	0.040	<0.100	0.350	23.2
RC 14	11/23/2021	24.6	7.96	10.57	13.3	<0.100	<0.0300	0.103	<0.250	40.2
RC 14	1/11/2022	66.4	7.40	11.82	10.4	0.170	<0.0300	<0.10	1.500	20.6
RC 14	4/7/2022	99.0	7.76	8.27	17.6	<0.100	<0.0300	0.101	0.548	178
RC 14	8/2/2022	12.9	8.29	7.67	30.2	<0.100	<0.0300	<0.100	0.332	11.1
RC 14	11/16/2022	6.84	7.79	9.06	12.4	<0.100	<0.0300	<0.100	<0.250	9.20
RC 14	2/14/2023	36.9	6.92	10.48	12.2	0.107	<0.0300	<0.100	0.423	17.9

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

Appendix III – Laboratory Reports

Laboratory Report No. L1585276, dated February 20, 2023

Laboratory Report No. L1585663, dated February 24, 2023

ANALYTICAL REPORT

February 20, 2023

S&ME - Huntsville

Sample Delivery Group:	L1585276
Samples Received:	02/14/2023
Project Number:	22820261
Description:	
Site:	LAND
Report To:	Ms. Sarah Yeldell 360 D Quality Circle NW Suite 450 Huntsville, AL 35806

Entire Report Reviewed By:

Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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AT 5 L1585276-01 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 13:00 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2005793	1	02/14/23 16:15	02/14/23 16:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2005228	1	02/16/23 10:46	02/17/23 22:46	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006103	1	02/15/23 22:57	02/15/23 22:57	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008435	1	02/16/23 10:46	02/18/23 17:13	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:09	02/14/23 19:09	CRB	Mt. Juliet, TN

GD 8 L1585276-02 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 12:50 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2005793	1	02/14/23 16:15	02/14/23 16:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2005228	1	02/16/23 10:46	02/17/23 22:52	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006103	1	02/15/23 22:59	02/15/23 22:59	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008435	1	02/16/23 10:46	02/18/23 17:18	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:10	02/14/23 19:10	CRB	Mt. Juliet, TN

RC 2 L1585276-03 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 13:40 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2005793	1	02/14/23 16:15	02/14/23 16:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006780	1	02/16/23 17:18	02/18/23 23:59	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006103	1	02/15/23 23:00	02/15/23 23:00	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008717	1	02/16/23 17:18	02/18/23 19:31	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:10	02/14/23 19:10	CRB	Mt. Juliet, TN

SS 13 L1585276-04 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 12:00 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2005793	1	02/14/23 16:15	02/14/23 16:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006780	1	02/16/23 17:18	02/18/23 23:29	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006103	1	02/15/23 23:01	02/15/23 23:01	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008717	1	02/16/23 17:18	02/18/23 19:36	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:10	02/14/23 19:10	CRB	Mt. Juliet, TN

SS 14 L1585276-05 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 12:12 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2005793	1	02/14/23 16:15	02/14/23 16:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006780	1	02/16/23 17:18	02/18/23 23:33	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006103	1	02/15/23 23:02	02/15/23 23:02	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008717	1	02/16/23 17:18	02/18/23 19:43	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:11	02/14/23 19:11	CRB	Mt. Juliet, TN

GD 12 L1585276-06 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 12:30 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2005793	1	02/14/23 16:15	02/14/23 16:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006780	1	02/16/23 17:18	02/18/23 23:38	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006103	1	02/15/23 23:08	02/15/23 23:08	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008717	1	02/16/23 17:18	02/18/23 19:44	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:11	02/14/23 19:11	CRB	Mt. Juliet, TN

GD 6 L1585276-07 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 11:20 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2005793	1	02/14/23 16:15	02/14/23 16:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2004310	1	02/15/23 08:41	02/17/23 15:54	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006103	1	02/15/23 23:09	02/15/23 23:09	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2006986	1	02/15/23 08:41	02/15/23 23:48	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:11	02/14/23 19:11	CRB	Mt. Juliet, TN

CO 15 L1585276-08 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 10:46 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2005793	1	02/14/23 16:15	02/14/23 16:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2004310	1	02/15/23 08:41	02/17/23 16:02	CAT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006103	1	02/15/23 23:13	02/15/23 23:13	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2006986	1	02/15/23 08:41	02/16/23 00:09	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:11	02/14/23 19:11	CRB	Mt. Juliet, TN

SME 7 L1585276-09 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 10:10 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2005793	1	02/14/23 16:15	02/14/23 16:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006780	1	02/16/23 17:18	02/18/23 23:39	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006103	1	02/15/23 23:14	02/15/23 23:14	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008717	1	02/16/23 17:18	02/18/23 19:45	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:12	02/14/23 19:12	CRB	Mt. Juliet, TN

SME 9 L1585276-10 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 10:54 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2005793	1	02/14/23 16:15	02/14/23 16:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006780	1	02/16/23 17:18	02/18/23 23:40	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006103	1	02/15/23 23:15	02/15/23 23:15	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008717	1	02/16/23 17:18	02/18/23 19:47	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:12	02/14/23 19:12	CRB	Mt. Juliet, TN

SME 10 L1585276-11 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 11:00 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2005793	1	02/14/23 16:15	02/14/23 16:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006780	1	02/16/23 17:18	02/18/23 23:42	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006103	1	02/15/23 23:16	02/15/23 23:16	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008717	1	02/16/23 17:18	02/18/23 19:48	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:13	02/14/23 19:13	CRB	Mt. Juliet, TN

L1585276-12 L1585276-12 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 13:05 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2005793	1	02/14/23 16:15	02/14/23 16:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006780	1	02/16/23 17:18	02/18/23 23:43	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2005610	1	02/16/23 00:53	02/16/23 00:53	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008717	1	02/16/23 17:18	02/18/23 19:49	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:14	02/14/23 19:14	CRB	Mt. Juliet, TN

L1585276-13 L1585276-13 WW

Collected by: Nathanael Wade | Collected date/time: 02/13/23 10:15 | Received date/time: 02/14/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006201	1	02/15/23 08:02	02/15/23 09:00	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006780	1	02/16/23 17:18	02/18/23 23:44	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2005610	1	02/16/23 00:54	02/16/23 00:54	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008717	1	02/16/23 17:18	02/18/23 19:50	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2005966	1	02/14/23 19:14	02/14/23 19:14	CRB	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Craig Cothron
Project Manager

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	38.0		5.00	1	02/14/2023 16:19	WG2005793

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.301		0.250	1	02/17/2023 22:46	WG2005228

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.699		0.100	1	02/15/2023 22:57	WG2006103

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/18/2023 17:13	WG2008435

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0810		0.0300	1	02/14/2023 19:09	WG2005966

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	16.5		2.50	1	02/14/2023 16:19	WG2005793

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.316		0.250	1	02/17/2023 22:52	WG2005228

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.237		0.100	1	02/15/2023 22:59	WG2006103

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/18/2023 17:18	WG2008435

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/14/2023 19:10	WG2005966

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	5.30		2.50	1	02/14/2023 16:19	WG2005793

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.636	J5	0.250	1	02/18/2023 23:59	WG2006780

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.273		0.100	1	02/15/2023 23:00	WG2006103

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/18/2023 19:31	WG2008717

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/14/2023 19:10	WG2005966

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	5.60		2.50	1	02/14/2023 16:19	WG2005793

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	1.00		0.250	1	02/18/2023 23:29	WG2006780

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.459		0.100	1	02/15/2023 23:01	WG2006103

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/18/2023 19:36	WG2008717

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/14/2023 19:10	WG2005966

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	4.30		2.50	1	02/14/2023 16:19	WG2005793

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.749		0.250	1	02/18/2023 23:33	WG2006780

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.501		0.100	1	02/15/2023 23:02	WG2006103

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/18/2023 19:43	WG2008717

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0520		0.0300	1	02/14/2023 19:11	WG2005966

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	2.90		2.50	1	02/14/2023 16:19	WG2005793

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.750		0.250	1	02/18/2023 23:38	WG2006780

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.277		0.100	1	02/15/2023 23:08	WG2006103

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/18/2023 19:44	WG2008717

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/14/2023 19:11	WG2005966

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	7.10		2.50	1	02/14/2023 16:19	WG2005793

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.559		0.250	1	02/17/2023 15:54	WG2004310

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.265		0.100	1	02/15/2023 23:09	WG2006103

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND	J6	0.100	1	02/15/2023 23:48	WG2006986

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/14/2023 19:11	WG2005966

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	7.50		2.50	1	02/14/2023 16:19	WG2005793

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.717		0.250	1	02/17/2023 16:02	WG2004310

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.242		0.100	1	02/15/2023 23:13	WG2006103

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/16/2023 00:09	WG2006986

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/14/2023 19:11	WG2005966

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	36.2		5.00	1	02/14/2023 16:19	WG2005793

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	1.01		0.250	1	02/18/2023 23:39	WG2006780

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.737		0.100	1	02/15/2023 23:14	WG2006103

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.115		0.100	1	02/18/2023 19:45	WG2008717

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/14/2023 19:12	WG2005966

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	2.60		2.50	1	02/14/2023 16:19	WG2005793

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.783		0.250	1	02/18/2023 23:40	WG2006780

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	ND		0.100	1	02/15/2023 23:15	WG2006103

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/18/2023 19:47	WG2008717

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0900		0.0300	1	02/14/2023 19:12	WG2005966

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	4.00		2.50	1	02/14/2023 16:19	WG2005793

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.773		0.250	1	02/18/2023 23:42	WG2006780

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.185		0.100	1	02/15/2023 23:16	WG2006103

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/18/2023 19:48	WG2008717

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/14/2023 19:13	WG2005966

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	35.4		5.00	1	02/14/2023 16:19	WG2005793

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.606		0.250	1	02/18/2023 23:43	WG2006780

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.702		0.100	1	02/16/2023 00:53	WG2005610

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.106		0.100	1	02/18/2023 19:49	WG2008717

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0750		0.0300	1	02/14/2023 19:14	WG2005966

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	35.8		5.00	1	02/15/2023 09:00	WG2006201

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.957		0.250	1	02/18/2023 23:44	WG2006780

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.730		0.100	1	02/16/2023 00:54	WG2005610

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.141		0.100	1	02/18/2023 19:50	WG2008717

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	0.0910		0.0300	1	02/14/2023 19:14	WG2005966

Method Blank (MB)

(MB) R3891210-2 02/14/23 16:19

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1585168-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585168-01 02/14/23 16:19 • (DUP) R3891210-4 02/14/23 16:19

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	113	117	1	2.90		5

L1585259-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585259-01 02/14/23 16:19 • (DUP) R3891210-5 02/14/23 16:19

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	51.4	68.6	1	28.6	P1	5

Laboratory Control Sample (LCS)

(LCS) R3891210-3 02/14/23 16:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	832	108	85.7-114	

Method Blank (MB)

(MB) R3891822-1 02/15/23 09:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1584048-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1584048-01 02/15/23 09:00 • (DUP) R3891822-3 02/15/23 09:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	ND	ND	1	0.000		5

L1585308-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585308-01 02/15/23 09:00 • (DUP) R3891822-4 02/15/23 09:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	710	1730	1	83.6	J3	5

Laboratory Control Sample (LCS)

(LCS) R3891822-2 02/15/23 09:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	684	88.5	85.7-114	

Method Blank (MB)

(MB) R3892147-1 02/17/23 15:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1585276-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-07 02/17/23 15:54 • (DUP) R3892147-3 02/17/23 15:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.559	0.632	1	12.3		20

L1585276-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-08 02/17/23 16:02 • (DUP) R3892147-6 02/17/23 16:04

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.717	0.730	1	1.80		20

Laboratory Control Sample (LCS)

(LCS) R3892147-2 02/17/23 15:31

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	14.7	13.6	92.5	75.2-120	

L1585276-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585276-07 02/17/23 15:54 • (MS) R3892147-4 02/17/23 15:57 • (MSD) R3892147-5 02/17/23 15:58

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	0.559	5.11	5.19	91.0	92.6	1	90.0-110			1.55	20

L1585276-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1585276-08 02/17/23 16:02 • (MS) R3892147-7 02/17/23 16:05

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	0.717	5.74	100	1	90.0-110	

Method Blank (MB)

(MB) R3892209-1 02/17/23 22:24

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1585276-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-01 02/17/23 22:46 • (DUP) R3892209-3 02/17/23 22:48

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.301	0.344	1	13.3		20

L1585276-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-02 02/17/23 22:52 • (DUP) R3892209-6 02/17/23 22:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.316	0.278	1	12.8		20

Laboratory Control Sample (LCS)

(LCS) R3892209-2 02/17/23 22:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	14.7	13.7	93.2	75.2-120	

L1585276-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585276-01 02/17/23 22:46 • (MS) R3892209-4 02/17/23 22:49 • (MSD) R3892209-5 02/17/23 22:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	0.301	4.92	5.12	92.4	96.4	1	90.0-110			3.98	20

L1585276-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1585276-02 02/17/23 22:52 • (MS) R3892209-7 02/17/23 22:57

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	0.316	5.29	99.5	1	90.0-110	

QUALITY CONTROL SUMMARY

L1585276-03,04,05,06,09,10,11,12,13

Method Blank (MB)

(MB) R3892340-1 02/18/23 23:21

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1585276-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-03 02/18/23 23:59 • (DUP) R3892340-3 02/18/23 23:25

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.636	0.641	1	0.783		20

L1585276-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-04 02/18/23 23:29 • (DUP) R3892340-6 02/18/23 23:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	1.00	0.959	1	4.19		20

Laboratory Control Sample (LCS)

(LCS) R3892340-2 02/18/23 23:23

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	14.7	16.1	110	75.2-120	

L1585276-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585276-03 02/18/23 23:59 • (MS) R3892340-4 02/18/23 23:27 • (MSD) R3892340-5 02/18/23 23:28

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	0.636	6.34	6.30	114	113	1	90.0-110	J5	J5	0.633	20

Sample Narrative:

MS: Matrix spike failure due to matrix.

MSD: Matrix spike failure due to matrix.

L1585276-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1585276-04 02/18/23 23:29 • (MS) R3892340-7 02/18/23 23:32

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	1.00	6.39	108	1	90.0-110	

Method Blank (MB)

(MB) R3891377-1 02/16/23 00:51

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1585277-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585277-01 02/16/23 00:56 • (DUP) R3891377-3 02/16/23 00:57

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.483	0.482	1	0.207		20

L1585319-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1585319-09 02/16/23 01:16 • (DUP) R3891377-6 02/16/23 01:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	1.33	1.36	1	2.23		20

Laboratory Control Sample (LCS)

(LCS) R3891377-2 02/16/23 00:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.57	103	90.0-110	

L1585277-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585277-01 02/16/23 00:56 • (MS) R3891377-4 02/16/23 00:58 • (MSD) R3891377-5 02/16/23 01:00

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50	0.483	3.11	3.16	105	107	1	90.0-110			1.59	20

L1585319-09 Original Sample (OS) • Matrix Spike (MS)

(OS) L1585319-09 02/16/23 01:16 • (MS) R3891377-7 02/16/23 01:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	1.33	3.98	106	1	90.0-110	

Method Blank (MB)

(MB) R3891365-1 02/15/23 22:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1585182-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585182-01 02/15/23 22:42 • (DUP) R3891365-3 02/15/23 22:43

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	1.22	1.21	1	0.823		20

L1585276-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-07 02/15/23 23:09 • (DUP) R3891365-6 02/15/23 23:10

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.265	0.267	1	0.752		20

Laboratory Control Sample (LCS)

(LCS) R3891365-2 02/15/23 22:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.56	102	90.0-110	

L1585182-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585182-01 02/15/23 22:42 • (MS) R3891365-4 02/15/23 22:45 • (MSD) R3891365-5 02/15/23 22:46

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50	1.22	3.75	3.79	101	103	1	90.0-110			1.06	20

L1585276-07 Original Sample (OS) • Matrix Spike (MS)

(OS) L1585276-07 02/15/23 23:09 • (MS) R3891365-7 02/15/23 23:11

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	0.265	2.92	106	1	90.0-110	

Method Blank (MB)

(MB) R3891370-1 02/15/23 23:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1585276-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-07 02/15/23 23:48 • (DUP) R3891370-3 02/15/23 23:50

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

L1585276-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-08 02/16/23 00:09 • (DUP) R3891370-6 02/16/23 00:10

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3891370-2 02/15/23 23:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	2.47	2.36	95.5	83.2-116	

L1585276-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585276-07 02/15/23 23:48 • (MS) R3891370-4 02/16/23 00:07 • (MSD) R3891370-5 02/16/23 00:08

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	ND	2.14	2.28	85.6	91.2	1	90.0-110	J6		6.33	20

Method Blank (MB)

(MB) R3892332-1 02/18/23 16:55

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1585276-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-01 02/18/23 17:13 • (DUP) R3892332-3 02/18/23 17:14

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

L1585276-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-02 02/18/23 17:18 • (DUP) R3892332-6 02/18/23 17:19

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3892332-2 02/18/23 16:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	2.47	2.37	96.0	83.2-116	

L1585276-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585276-01 02/18/23 17:13 • (MS) R3892332-4 02/18/23 17:15 • (MSD) R3892332-5 02/18/23 17:17

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	ND	2.37	2.41	91.1	92.7	1	90.0-110			1.67	20

L1585276-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1585276-02 02/18/23 17:18 • (MS) R3892332-7 02/18/23 17:21

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Phosphorus,Total	2.50	ND	2.43	97.2	1	90.0-110	

Method Blank (MB)

(MB) R3892336-1 02/18/23 19:27

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1585276-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-03 02/18/23 19:31 • (DUP) R3892336-3 02/18/23 19:33

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

L1585276-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-04 02/18/23 19:36 • (DUP) R3892336-10 02/18/23 19:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3892336-2 02/18/23 19:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	2.47	2.48	100	83.2-116	

L1585276-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585276-03 02/18/23 19:31 • (MS) R3892336-4 02/18/23 19:34 • (MSD) R3892336-5 02/18/23 19:35

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	ND	2.55	2.52	102	101	1	90.0-110			1.18	20

QUALITY CONTROL SUMMARY

L1585276-01,02,03,04,05,06,07,08,09,10,11,12,13

Method Blank (MB)

(MB) R3890821-1 02/14/23 19:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1585276-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-01 02/14/23 19:09 • (DUP) R3890821-3 02/14/23 19:09

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	0.0810	0.0790	1	2.50		20

L1585276-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1585276-12 02/14/23 19:14 • (DUP) R3890821-4 02/14/23 19:14

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	0.0750	0.0780	1	3.92		20

Laboratory Control Sample (LCS)

(LCS) R3890821-2 02/14/23 19:07

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.229	93.7	85.0-115	

L1585276-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585276-13 02/14/23 19:14 • (MS) R3890821-5 02/14/23 19:15 • (MSD) R3890821-6 02/14/23 19:15

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	0.0910	0.621	0.564	106	94.6	1	80.0-120			9.62	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville. AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Report to:
Ms. Sarah Yeldell

Email To: **syeldell@smeinc.com**

Project Description:

City/State Collected: Gadsden, AL

Please Circle: PT MT CT ET

Phone: **256-837-8882**

Client Project # ~~4482-20-044~~ 22820261

Lab Project # **QOREHAL-448220044**

Collected by (print): Nathaniel Wade

Site/Facility ID # **LAND**

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres							Remarks	Sample # (lab only)
							Pres Chk		x2	x2								
AT 5	G	WW	-2'	2-13	1300	4	X	X	X	X								-01
GD 8		WW			1250	4	X	X	X	X								-02
RC 2		WW			1240	4	X	X	X	X								-03
SS 13		WW			1200	4	X	X	X	X								-04
SS 14		WW			1212	4	X	X	X	X								-05
GD 12		WW			1230	4	X	X	X	X								-06
GD 6		WW			1120	4	X	X	X	X								-07
CO 15		WW			1046	4	X	X	X	X								-08
SME 7		WW			1010	4	X	X	X	X								-09
SME 9		WW			1054	4	X	X	X	X								10

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 6094 5470 3768

Trip Blank Received: Yes / (No)
HCL / MeoH
TBR

Temp: NSAC °C Bottles Received: 2.0+0=2.0 52

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	2-13-23	14:00	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Kaycie

Date: 2/14/23 Time: 930

Chain of Custody Page 1 of 2

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1585276
D060

Acctnum: **QOREHAL**
Template: **T181690**
Prelogin: **P972124**
PM: **034 - Craig Cothron**
PB: BW 12/27

Shipped Via: **FedEX Ground**

Sample Receipt Checklist

COC Seal Present/Intact:	__NP	Y __N
COC Signed/Accurate:		Y __N
Bottles arrive intact:		Y __N
Correct bottles used:		Y __N
Sufficient volume sent:		Y __N
If Applicable		
VOA Zero Headspace:		__Y __N
Preservation Correct/Checked:		Y __N
RAD Screen <0.5 mR/hr:		Y __N

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville. AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Report to:
Ms. Sarah Yeldell

Email To: **syeldell@smeinc.com**

Project Description:

City/State Collected:

Please Circle: PT MT CT ET

Phone: **256-837-8882**

Client Project #
4482-20-044

Lab Project #
QOREHAL-448220044

Collected by (print):

Site/Facility ID #
LAND

P.O. #

Collected by (signature):

Immediately
Packed on Ice N____ Y____

Rush? (Lab MUST Be Notified)
____ Same Day ____ Five Day
____ Next Day ____ 5 Day (Rad Only)
____ Two Day ____ 10 Day (Rad Only)
____ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Chain of Custody Page 2 of 2

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG #

Table #

Acctnum: **QOREHAL**
Template: **T181690**
Prelogin: **P972124**
PM: **034 - Craig Cothron**
PB: BW 12/27

Shipped Via: **FedEX Ground**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres	Pres Chk	Remarks	Sample # (lab only)
SME 10	G	WW	-2'	2-13	1100	4	X	X	X	X			-11
SME 12	1	WW	1	1	1305	4	X	X	X	X			-12
SME 13	1	WW	1	1	1015	4	X	X	X	X			-13

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 6094 5470 3779

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: NSAC 2.5+0=2.5 °C Bottles Received: 52	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Kayla	Date: 2/14/23 Time: 930	Hold: / Condition: NCF / OK

$\vec{v}_1 \cdot \vec{v}_2$

ANALYTICAL REPORT

February 24, 2023

S&ME - Huntsville

Sample Delivery Group:	L1585663
Samples Received:	02/15/2023
Project Number:	22820261
Description:	
Site:	BOAT
Report To:	Ms. Sara Yeldell 360 D Quality Circle NW Suite 450 Huntsville, AL 35806

Entire Report Reviewed By:

Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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HB-3 L1585663-01 WW

Collected by: Nathanael Wade | Collected date/time: 02/14/23 10:40 | Received date/time: 02/15/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006552	1	02/15/23 12:55	02/15/23 16:36	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006793	1	02/16/23 17:42	02/19/23 21:31	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2005610	1	02/16/23 01:30	02/16/23 01:30	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2009010	1	02/16/23 17:42	02/19/23 21:47	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2006721	1	02/15/23 16:17	02/15/23 16:17	CAH	Mt. Juliet, TN

SME-4 L1585663-02 WW

Collected by: Nathanael Wade | Collected date/time: 02/14/23 10:50 | Received date/time: 02/15/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006552	1	02/15/23 12:55	02/15/23 16:36	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006793	1	02/16/23 17:42	02/19/23 21:06	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2005610	1	02/16/23 01:31	02/16/23 01:31	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2009010	1	02/16/23 17:42	02/19/23 21:38	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2006721	1	02/15/23 16:18	02/15/23 16:18	CAH	Mt. Juliet, TN

GD-5 L1585663-03 WW

Collected by: Nathanael Wade | Collected date/time: 02/14/23 11:05 | Received date/time: 02/15/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006552	1	02/15/23 12:55	02/15/23 16:36	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006793	1	02/16/23 17:42	02/19/23 21:07	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006827	1	02/16/23 23:59	02/16/23 23:59	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2009010	1	02/16/23 17:42	02/19/23 21:42	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2006721	1	02/15/23 16:19	02/15/23 16:19	CAH	Mt. Juliet, TN

GD-7 L1585663-04 WW

Collected by: Nathanael Wade | Collected date/time: 02/14/23 11:30 | Received date/time: 02/15/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006552	1	02/15/23 12:55	02/15/23 16:36	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006793	1	02/16/23 17:42	02/19/23 21:08	LDT	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006827	1	02/17/23 00:00	02/17/23 00:00	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2009010	1	02/19/23 20:24	02/20/23 18:41	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2006721	1	02/15/23 16:19	02/15/23 16:19	CAH	Mt. Juliet, TN

GD-9 L1585663-05 WW

Collected by: Nathanael Wade | Collected date/time: 02/14/23 11:40 | Received date/time: 02/15/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006552	1	02/15/23 12:55	02/15/23 16:36	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006795	1	02/17/23 11:37	02/19/23 01:57	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006827	1	02/17/23 00:02	02/17/23 00:02	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008768	1	02/17/23 11:37	02/19/23 02:35	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2006721	1	02/15/23 16:19	02/15/23 16:19	CAH	Mt. Juliet, TN

SME-1 L1585663-06 WW

Collected by: Nathanael Wade | Collected date/time: 02/14/23 11:45 | Received date/time: 02/15/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006591	1	02/15/23 12:57	02/15/23 15:03	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006795	1	02/17/23 11:37	02/19/23 02:02	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006827	1	02/17/23 00:38	02/17/23 00:38	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008768	1	02/17/23 11:37	02/19/23 02:40	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2006721	1	02/15/23 16:19	02/15/23 16:19	CAH	Mt. Juliet, TN

SS-5 L1585663-07 WW

Collected by: Nathanael Wade | Collected date/time: 02/14/23 12:30 | Received date/time: 02/15/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006591	1	02/15/23 12:57	02/15/23 15:03	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006795	1	02/17/23 11:37	02/19/23 02:06	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006827	1	02/17/23 00:12	02/17/23 00:12	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008768	1	02/17/23 11:37	02/19/23 02:44	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2006721	1	02/15/23 16:19	02/15/23 16:19	CAH	Mt. Juliet, TN

SME-5 L1585663-08 WW

Collected by: Nathanael Wade | Collected date/time: 02/14/23 12:40 | Received date/time: 02/15/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006591	1	02/15/23 12:57	02/15/23 15:03	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006795	1	02/17/23 11:37	02/19/23 02:54	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006827	1	02/17/23 00:13	02/17/23 00:13	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008768	1	02/17/23 11:37	02/19/23 02:48	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2006721	1	02/15/23 16:21	02/15/23 16:21	CAH	Mt. Juliet, TN

SME-6 L1585663-09 WW

Collected by: Nathanael Wade | Collected date/time: 02/14/23 12:55 | Received date/time: 02/15/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006591	1	02/15/23 12:57	02/15/23 15:03	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006795	1	02/17/23 11:37	02/19/23 02:55	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006827	1	02/17/23 00:14	02/17/23 00:14	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008768	1	02/17/23 11:37	02/19/23 02:49	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2006721	1	02/15/23 16:21	02/15/23 16:21	CAH	Mt. Juliet, TN

RC-14 L1585663-10 WW

Collected by: Nathanael Wade | Collected date/time: 02/14/23 13:10 | Received date/time: 02/15/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006591	1	02/15/23 12:57	02/15/23 15:03	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006795	1	02/17/23 11:37	02/19/23 02:56	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006827	1	02/17/23 00:15	02/17/23 00:15	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008768	1	02/17/23 11:37	02/19/23 02:51	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2006721	1	02/15/23 16:21	02/15/23 16:21	CAH	Mt. Juliet, TN

SME 3 L1585663-11 WW

Collected by: Nathanael Wade
Collected date/time: 02/14/23 11:15
Received date/time: 02/15/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006591	1	02/15/23 12:57	02/15/23 15:03	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006795	1	02/17/23 11:37	02/19/23 02:58	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006827	1	02/17/23 00:17	02/17/23 00:17	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008768	1	02/17/23 11:37	02/19/23 02:52	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2006721	1	02/15/23 16:21	02/15/23 16:21	CAH	Mt. Juliet, TN

SME 11 L1585663-12 WW

Collected by: Nathanael Wade
Collected date/time: 02/14/23 10:55
Received date/time: 02/15/23 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG2006591	1	02/15/23 12:57	02/15/23 15:03	AS	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG2006795	1	02/17/23 11:37	02/19/23 02:59	JCS	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2006827	1	02/17/23 00:18	02/17/23 00:18	JCS	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2008768	1	02/17/23 11:37	02/19/23 02:53	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG2006721	1	02/15/23 16:22	02/15/23 16:22	CAH	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Craig Cothron
Project Manager

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	11.6		3.33	1	02/15/2023 16:36	WG2006552

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.471		0.250	1	02/19/2023 21:31	WG2006793

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.414		0.100	1	02/16/2023 01:30	WG2005610

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/19/2023 21:47	WG2009010

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/15/2023 16:17	WG2006721

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	22.5		6.25	1	02/15/2023 16:36	WG2006552

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.484		0.250	1	02/19/2023 21:06	WG2006793

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.416		0.100	1	02/16/2023 01:31	WG2005610

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/19/2023 21:38	WG2009010

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/15/2023 16:18	WG2006721

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	11.5		3.33	1	02/15/2023 16:36	WG2006552

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.606		0.250	1	02/19/2023 21:07	WG2006793

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.255		0.100	1	02/16/2023 23:59	WG2006827

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/19/2023 21:42	WG2009010

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/15/2023 16:19	WG2006721

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	20.3		4.18	1	02/15/2023 16:36	WG2006552

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.610		0.250	1	02/19/2023 21:08	WG2006793

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.399		0.100	1	02/17/2023 00:00	WG2006827

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	0.106		0.100	1	02/20/2023 18:41	WG2009010

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/15/2023 16:19	WG2006721

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	12.6		4.10	1	02/15/2023 16:36	WG2006552

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.484		0.250	1	02/19/2023 01:57	WG2006795

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.362		0.100	1	02/17/2023 00:02	WG2006827

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/19/2023 02:35	WG2008768

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/15/2023 16:19	WG2006721

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	11.3		3.33	1	02/15/2023 15:03	WG2006591

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.281		0.250	1	02/19/2023 02:02	WG2006795

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.372		0.100	1	02/17/2023 00:38	WG2006827

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/19/2023 02:40	WG2008768

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/15/2023 16:19	WG2006721

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	10.4		3.33	1	02/15/2023 15:03	WG2006591

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.344		0.250	1	02/19/2023 02:06	WG2006795

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.284		0.100	1	02/17/2023 00:12	WG2006827

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus,Total	ND		0.100	1	02/19/2023 02:44	WG2008768

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	0.0930	J6	0.0300	1	02/15/2023 16:19	WG2006721

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	12.3		3.33	1	02/15/2023 15:03	WG2006591

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.302		0.250	1	02/19/2023 02:54	WG2006795

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.425		0.100	1	02/17/2023 00:13	WG2006827

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/19/2023 02:48	WG2008768

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/15/2023 16:21	WG2006721

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	14.9		3.33	1	02/15/2023 15:03	WG2006591

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.319		0.250	1	02/19/2023 02:55	WG2006795

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.374		0.100	1	02/17/2023 00:14	WG2006827

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/19/2023 02:49	WG2008768

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/15/2023 16:21	WG2006721

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	17.9		3.33	1	02/15/2023 15:03	WG2006591

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.423		0.250	1	02/19/2023 02:56	WG2006795

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.107		0.100	1	02/17/2023 00:15	WG2006827

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/19/2023 02:51	WG2008768

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/15/2023 16:21	WG2006721

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	66.4		10.0	1	02/15/2023 15:03	WG2006591

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.351		0.250	1	02/19/2023 02:58	WG2006795

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.325		0.100	1	02/17/2023 00:17	WG2006827

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/19/2023 02:52	WG2008768

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/15/2023 16:21	WG2006721

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Suspended Solids	12.8		3.33	1	02/15/2023 15:03	WG2006591

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Kjeldahl Nitrogen, TKN	0.280		0.250	1	02/19/2023 02:59	WG2006795

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate-Nitrite	0.415		0.100	1	02/17/2023 00:18	WG2006827

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphorus,Total	ND		0.100	1	02/19/2023 02:53	WG2008768

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Phosphate,Ortho	ND		0.0300	1	02/15/2023 16:22	WG2006721

Method Blank (MB)

(MB) R3891831-1 02/15/23 16:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1585657-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585657-01 02/15/23 16:36 • (DUP) R3891831-3 02/15/23 16:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	320	330	1	3.08		5

L1585658-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585658-01 02/15/23 16:36 • (DUP) R3891831-4 02/15/23 16:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	153	167	1	8.34	P1	5

Laboratory Control Sample (LCS)

(LCS) R3891831-2 02/15/23 16:36

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	784	101	85.7-114	

Method Blank (MB)

(MB) R3891823-1 02/15/23 15:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Suspended Solids	U		2.50	2.50

L1585667-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585667-01 02/15/23 15:03 • (DUP) R3891823-3 02/15/23 15:03

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	213	220	1	3.08		5

L1585667-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1585667-02 02/15/23 15:03 • (DUP) R3891823-4 02/15/23 15:03

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	ND	ND	1	5.41	P1	5

Laboratory Control Sample (LCS)

(LCS) R3891823-2 02/15/23 15:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773	768	99.4	85.7-114	

Method Blank (MB)

(MB) R3892470-1 02/19/23 20:33

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1585503-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1585503-03 02/19/23 20:52 • (DUP) R3892470-6 02/19/23 20:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.606	0.540	1	11.5		20

Laboratory Control Sample (LCS)

(LCS) R3892470-2 02/19/23 20:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	14.7	15.3	104	75.2-120	

Method Blank (MB)

(MB) R3892346-1 02/19/23 01:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1585663-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1585663-05 02/19/23 01:57 • (DUP) R3892346-3 02/19/23 01:58

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.484	0.437	1	10.2		20

L1585663-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1585663-06 02/19/23 02:02 • (DUP) R3892346-6 02/19/23 02:03

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	0.281	0.311	1	10.1		20

Laboratory Control Sample (LCS)

(LCS) R3892346-2 02/19/23 01:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Kjeldahl Nitrogen, TKN	14.7	14.7	100	75.2-120	

L1585663-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585663-05 02/19/23 01:57 • (MS) R3892346-4 02/19/23 01:59 • (MSD) R3892346-5 02/19/23 02:01

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Kjeldahl Nitrogen, TKN	5.00	0.484	5.06	5.70	91.5	104	1	90.0-110			11.9	20

L1585663-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1585663-06 02/19/23 02:02 • (MS) R3892346-7 02/19/23 02:05

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	5.00	0.281	5.42	103	1	90.0-110	

Method Blank (MB)

(MB) R3891377-1 02/16/23 00:51

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1585277-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585277-01 02/16/23 00:56 • (DUP) R3891377-3 02/16/23 00:57

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.483	0.482	1	0.207		20

L1585319-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1585319-09 02/16/23 01:16 • (DUP) R3891377-6 02/16/23 01:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	1.33	1.36	1	2.23		20

Laboratory Control Sample (LCS)

(LCS) R3891377-2 02/16/23 00:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.57	103	90.0-110	

L1585277-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585277-01 02/16/23 00:56 • (MS) R3891377-4 02/16/23 00:58 • (MSD) R3891377-5 02/16/23 01:00

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50	0.483	3.11	3.16	105	107	1	90.0-110			1.59	20

L1585319-09 Original Sample (OS) • Matrix Spike (MS)

(OS) L1585319-09 02/16/23 01:16 • (MS) R3891377-7 02/16/23 01:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	1.33	3.98	106	1	90.0-110	

QUALITY CONTROL SUMMARY

L1585663-03,04,05,06,07,08,09,10,11,12

Method Blank (MB)

(MB) R3891812-1 02/16/23 23:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1585717-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585717-01 02/17/23 00:19 • (DUP) R3891812-9 02/17/23 00:21

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.104	0.104	1	0.000		20

L1585663-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1585663-06 02/17/23 00:38 • (DUP) R3891812-11 02/17/23 00:40

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.372	0.376	1	1.07		20

Laboratory Control Sample (LCS)

(LCS) R3891812-2 02/16/23 23:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.57	103	90.0-110	

L1585717-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1585717-01 02/17/23 00:19 • (MS) R3891812-10 02/17/23 00:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	0.104	2.65	102	1	90.0-110	

L1585663-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585663-06 02/17/23 00:38 • (MS) R3891812-12 02/17/23 00:45 • (MSD) R3891812-13 02/17/23 00:46

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50	0.372	2.91	2.91	102	102	1	90.0-110			0.000	20

Method Blank (MB)

(MB) R3892345-1 02/19/23 02:33

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1585663-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1585663-05 02/19/23 02:35 • (DUP) R3892345-3 02/19/23 02:37

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

L1585663-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1585663-06 02/19/23 02:40 • (DUP) R3892345-6 02/19/23 02:42

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3892345-2 02/19/23 02:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	2.47	2.33	94.3	83.2-116	

L1585663-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585663-05 02/19/23 02:35 • (MS) R3892345-4 02/19/23 02:38 • (MSD) R3892345-5 02/19/23 02:39

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	ND	2.46	2.39	96.6	93.8	1	90.0-110			2.89	20

Method Blank (MB)

(MB) R3892473-1 02/19/23 20:38

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphorus,Total	U		0.0350	0.100

L1585503-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585503-01 02/19/23 20:41 • (DUP) R3892473-3 02/19/23 20:42

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.323	0.324	1	0.309		20

L1585503-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1585503-03 02/19/23 20:47 • (DUP) R3892473-6 02/19/23 20:49

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphorus,Total	0.343	0.335	1	2.36		20

Laboratory Control Sample (LCS)

(LCS) R3892473-2 02/19/23 20:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphorus,Total	2.47	2.46	99.6	83.2-116	

L1585503-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585503-01 02/19/23 20:41 • (MS) R3892473-4 02/19/23 20:43 • (MSD) R3892473-5 02/19/23 20:45

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphorus,Total	2.50	0.323	2.74	2.72	96.7	95.9	1	90.0-110			0.733	20

Method Blank (MB)

(MB) R3891266-1 02/15/23 16:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1585663-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1585663-01 02/15/23 16:17 • (DUP) R3891266-3 02/15/23 16:18

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

L1585663-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1585663-12 02/15/23 16:22 • (DUP) R3891266-6 02/15/23 16:23

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3891266-2 02/15/23 16:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phosphate,Ortho	0.245	0.261	107	85.0-115	

L1585663-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1585663-07 02/15/23 16:19 • (MS) R3891266-4 02/15/23 16:20 • (MSD) R3891266-5 02/15/23 16:20

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	0.0930	0.462	0.460	73.8	73.4	1	80.0-120	J6	J6	0.434	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville. AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Report to:
Ms. Sara Yeldell

Email To: syeldell@smeinc.com

Project Description:

City/State Collected:

Please Circle: PT MT CT ET

Phone: 256-837-8882

Client Project # ~~44872-23-0044~~ 22820261

Lab Project # QOREHAL-448220044B

Collected by (print): Nathanael Webb

Site/Facility ID # BOAT

P.O. #

Collected by (signature):

Immediately Packed on Ice N___ Y✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Chain of Custody Page 1 of 2

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1585263
F167

Acctnum: QOREHAL
Template: T203454
Prelogin: P972134
PM: 034 - Craig Cothron
PB: BW 12/27

Shipped Via: FedEX Ground

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres	Remarks	Sample # (lab only)
HB-3	G	WW	-5'	2-14	10:40	4	X	X	X	X		-01
SME-4		WW			10:50	4	X	X	X	X		-02
GD-5		WW			11:05	4	X	X	X	X		-03
GD-7		WW			11:30	4	X	X	X	X		-04
GD-9		WW			11:40	4	X	X	X	X		-05
SME-1		WW			11:45	4	X	X	X	X		-06
SS-5		WW			12:30	4	X	X	X	X		-07
SME-5		WW			12:40	4	X	X	X	X		-08
SME-6		WW			12:55	4	X	X	X	X		-09
RC-14		WW			13:10	4	X	X	X	X		-10

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: ✓Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
	2-14-23	1430			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: 48	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2-15-23 Time: 0830	Hold: / Condition: NCF / OK

Company Name/Address:
S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville. AL 35806

Billing Information:
Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Report to:
Ms. Sara Yeldell

Email To: **syeldell@smeinc.com**

Project Description:

City/State Collected:

Please Circle: PT MT CT ET

Phone: **256-837-8882**

Client Project # ~~44972-23-0044~~ 22820261

Lab Project # **QOREHAL-448220044B**

Collected by (print):

Site/Facility ID # **BOAT**

P.O. #

Collected by (signature):

Immediately
Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PORTHO 100ml Amb NoPres	PT 250mlHDPE-H2SO4	TKN / NO2NO3 250mlHDPE-H2SO4	TSS 1L-HDPE NoPres							Remarks	Sample # (lab only)
SME3	G	WW	~5'	2-14	11:15	4	X	X	X	X								-11
SME11	1	WW	1	1	10:55	4	X	X	X	X								-12
		WW				4	X	X	X	X								

Chain of Custody Page 2 of 2

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1585163

Table #

Acctnum: **QOREHAL**
Template: **T203454**
Prelogin: **P972134**
PM: **034 - Craig Cothron**
PB: BW 12/27

Shipped Via: **FedEX Ground**

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: ✓Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / (No) HCL / MeoH TBR	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: 18	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2-15-23 Time: 0830	Hold: / Condition: NCF / OK

U5585663

Tracking Numbers	Temperature
5528 5954 7794	NSA6 1.3
5882 7552 9627	↓ 3.3

Appendix D – Public Education and Involvement

THE CITY OF HOKES BLUFF
CONTROL MEASURE 1 - PUBLIC EDUCATION AND OUTREACH
See Section 5.0 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	**Maintain the Storm Water Webpage:** Maintain the webpage and provide additional educational materials each reporting period.	The City added the 2022 SWMPP and 2021-2022 Annual Report to the webpage. 152 views were recorded for the webpage.	The City will continue to maintain the webpage and provide additional educational materials each reporting period.	The Storm Water webpage and web site recorded hit information are attached. (See Documents 1-1 and 1-2)	The number of webpage hits increased during the reporting period. 122 views were recorded during the previous reporting period. http://cityofhokesbluff.com/city-government/stormwater-access/	NO
2	**Distribute Storm Water Educational Material:** Prepare storm water education material to increase awareness on storm water topics. Distribute education material once per year with garbage bills.	150 materials were distributed via City Hall, Library, and Nutrition Center The March 2023 garbage bills included a storm water awareness message.	The City will distribute education materials through inclusion in garbage collection bills at least once per year. The City may also distribute educational materials at local events.	A copy of the sanitation bill and educational materials are attached. (See Documents 1-3 and 1-4)		NO
3	**Storm Water Awareness Messages:** Publicize storm water messages at public events, high traffic areas, and/or on municipal vehicles.	Storm water awareness messages were distributed via signs at athletic events, municipal vehicles, electronic signs.	The City will continue to publicize storm water messages at public events, high traffic areas, and/or on municipal vehicles.	Examples of the storm water messages are attached. (See Documents 1-5, 1-6, 1-7, 1-8, and 1-9)		NO
4	**Provide Information on Construction Site Storm Water Impacts:** Provide information on how construction site runoff can impact storm water quality to individuals requesting plan review and building/development permits.	0 permits were issued	The City will provide educational materials on how construction site runoff can impact storm water quality to individuals requesting building/development permits.	A copy of the educational materials is attached. (See Document 1-10)		NO
5	**Annual Report and SWMPP Availability:** Provide the SWMPP and the current Annual Report on the Storm Water Management webpage.	The 2021-2022 Annual Report and the 2022 SWMPP were added to the Storm water management webpage. 0 comments/questions received	The City will provide the 2022-2023 Annual Report for public viewing on the City's website.	The Storm Water webpage and web site recorded hit information are attached. (See Documents 1-1 and 1-2)	http://cityofhokesbluff.com/city-government/stormwater-access/	NO
6	**Seek Public Input:** Following completion of the SWMPP and/or each year's Annual Report, an announcement will be publicized using the electronic sign in front of City Hall.	**INCOMPLETE** The City did not advertise publication of the Annual Report or SWMPP using the electronic sign or any other method, and no feedback was received.	Following completion of the 2022-2023 Annual Report, an announcement seeking input on the SWMPP and Annual Report will be publicized using the electronic sign at City Hall.			NO
7	**Gadsden-Etowah MS4 Steering Committee Meetings:** Coordinate and/or participate in meetings of the Gadsden-Etowah Storm Water Steering Committee.	1 City employee attended the Steering Committee meeting held **July 20, 2022**.	The City will continue to participate in meetings of the Gadsden-Etowah Storm Water Steering Committee.	The attendance record, agenda, and training materials for the meeting are attached. (See Document 1-11)		NO

THE CITY OF HOKES BLUFF
CONTROL MEASURE 1 - PUBLIC EDUCATION AND OUTREACH
See Section 5.0 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
8	**Alabama Stormwater Association Participation:** City personnel will participate in meetings, seminars, or other events held by the Alabama Stormwater Association, when possible.	Due to scheduling conflicts, the City did not participate in an ASA meeting, seminar, or other event.	City personnel will participate in meetings, seminars, or other events held by the Alabama Stormwater Association (ASA) when possible.			NO
9	**Promote Water Quality Awareness Week:** Promote an annual *Water Quality Awareness Week* through City resources.	The City designated **May 2-6, 2022** as Water Quality Awareness Week. The event was promoted using the City's Electronic Sign.	The City will designate and promote May 2-5, 2023 as *Water Quality Awareness Week.*	The Mayor's proclamation and a photo of the sign promotion are attached. (See Documents 1-12 and 1-13)		NO
10	**Promote and participate in the Etowah County Water Festival:** Promote and participate in the annual *Etowah County Water Festival* .	The Etowah County Water Festival was held **February 24, 2023**. The City donated $1,000 to the 2023 festival. 2 City employees participated in the event.	The City will participate in and promote the 2024 *Etowah County Water Festival.*	A copy of the donation check, a photo of City volunteers, the KEB programs summary are attached. (See Documents 1-14, 1-15, 1-16)	Adult Volunteers: 55 High School and College Presenters: 148 4th Grade Teachers: 58 4th Grade Students: 1092	NO
11	**Public Reporting and Tracking System:** Promote the reporting number and form for reporting non-compliant construction sites, illicit discharges, impaired waterways, and violations of ordinances related to storm water pollution. Evaluate the efficacy of the program.	0 complaints received 0 complaints addressed 0 complaints resolved The reporting program was evaluated and are proposed at this time.	The City will continue to provide a contact number on the Storm Water Awareness webpage and track received reports and the City's responses to the received reports. The City will evaluate the current public reporting and tracking methods.	The Storm Water webpage and the illicit discharge door hangar are attached. (See Documents 1-1 and 2-7)		NO
12	**Coordinate and Promote an Annual community Cleanup Day:** Coordinate a community cleanup day at Hokes Bluff City Block , Mill Pond, and/or Hokes Bluff Ferry Park annually.	Community Clean Up Day was held on **May 21, 2022.** The clean up day was advertised using the Electronic Sign. 40 people received educational materials. 6 city employees/representatives participated.	The City will hold a Community Cleanup Day on **May 6, 2023**.	A photo of the electronic sign promotion and copies of the volunteer assignments are attached. (See Documents 1-17 and 1-18)		NO
13	**Promote and Participate in Anti-Litter/Cleanup Events:** Partner with Keep Etowah Beautiful, Clean Water Partnership of Alabama, and/or Alabama Power to support, sponsor, and/or promote anti-litter and cleanup events.	1 partnership activity was conducted. Renew Our Rivers was promoted using the electronic sign. 4 City employees/representatives participated.	The City will support, promote, or sponsor clean-up events in association with Keep Etowah Beautiful, Clean Water Partnership of Alabama, and/or Alabama Power.	The KEB notification for Renew Our Rivers, a photo of the electronic sign promotion, and a newspaper article about the event are attached . (See Documents 1-19, 1-20, and 1-21)	**Renew Our Rivers:** September 26 - October 1, 2022	NO
14	**Litter Ordinance:** Ordinance No. HB-2009-002 (dated November 12, 2009) Section XI defines littering as an unlawful act.	0 enforcements as a result of the Ordinance	The City will continue to enforce the litter ordinance.	The Ordinance is provided in Appendix E of the 2022 SWMPP.		NO

THE CITY OF HOKES BLUFF

CONTROL MEASURE 1 - PUBLIC EDUCATION AND OUTREACH

See Section 5.0 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
15	**Brush Pickup:** Provide brush pickup on the first and third Monday of each month.	480 pickups scheduled 20,000 pounds of debris collected	The City will continue to perform brush pickup on the first and third Monday of each month.	An example work order is attached. (See Document 1-22)		NO
16	**Used Oil Collection and Metal Recycling:** Collect used oil and scrap metal at the City Shop.	2 tons of materials collected.	The City will continue to manage a collection facility at the City Shop for used oil and scrap metal.	Photos of the waste oil collection location is attached. (See Document 1-23)		NO
17	**No Littering Signs:** Maintain and add "No Littering" signs as necessary.	6 "No Littering" signs added	The City continue to maintain the "No Littering" signs and place additional signs if necessary.	A photo of a "No Littering" sign is attached. (See Document 1-24)		NO
18	**Program Evaluation:** Utilize collected information to evaluate the effectiveness of the Public Education and Involvement Program.	The program was evaluated, and it was determined that additional public education on the public reporting method is needed.	The City will publicize the reporting number in at least one of the distributed educational materials distributed during the 2023-2024 reporting period. The City will evaluate the effectiveness of the current program and makes changes as necessary.			NO
	Additional Strategy: Continuing Education	1 City employee participated in the 2022 IECA Field Day held **May 19, 2022**. 1 City employee participated in the IECA Installer Training held **May 17, 2022**. 1 City employee participated in the AAFM 2022 Fall Conference held **October 17-19, 2022**.		Agendas and proof of attendance is attached. (See Document 1-25).		

Welcome to Hokes Bluff

Stormwater Access

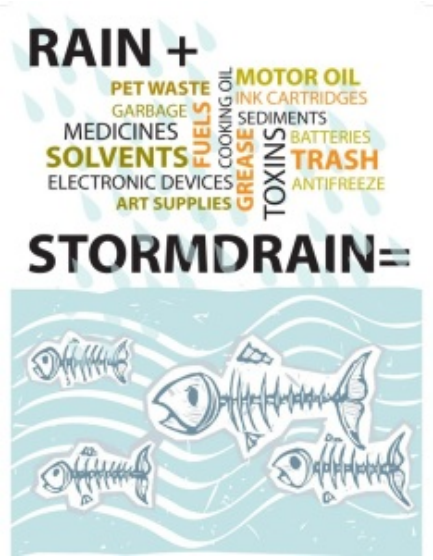


Citizens may provide input on the development, revision, and implementation of the SWMPP by calling City Hall @ 256-492-2414 or electronically by using the form provided on this page. Additionally reports of non-compliant construction sites, illicit discharges (including spills or illegal dumping), impaired waterways, and violations of ordinances should be reported by either method listed above.

Solution to Pollution

As stormwater flows over driveways, lawns, and sidewalks, it picks up debris, chemicals, dirt, and other pollutants. Stormwater can flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water. Polluted runoff is the nation's greatest threat to clean water.

By practicing healthy household habits, homeowners can keep common pollutants like pesticides, pet waste, grass clippings, and automotive fluids off the ground and out of stormwater. Adopt these healthy household habits and help protect lakes, streams, rivers, wetlands, and coastal waters. Remember to share the habits with your neighbors!



Healthy Household Habits for Clean Water

Vehicle and Garage

- Use a commercial car wash or wash your car on a lawn or other unpaved surface to minimize the amount of dirty, soapy water flowing into the storm drain and eventually into your local waterbody.
- Check your car, boat, motorcycle, and other machinery and equipment for leaks and spills. Make repairs as soon as possible. Clean up spilled fluids with an absorbent material like kitty litter or sand, and don't rinse the spills into a nearby storm drain. Remember to properly dispose of the absorbent material.
- ***Recycle*** used oil and other automotive fluids at participating service stations. Don't dump these chemicals down the storm drain or dispose of them in your trash.

Lawn and Garden

- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Avoid application if the forecast calls for rain; otherwise, chemicals will be washed into your local stream.
- Select native plants and grasses that are drought- and pestresistant. Native plants require less water, fertilizer, and pesticides.
- Sweep up yard debris, rather than hosing down areas. Compost or recycle yard waste when possible.
- Don't overwater your lawn. Water during the cool times of the day, and don't let water run of into the storm drain.
- Cover piles of dirt and mulch being used in landscaping projects to prevent these pollutants from blowing or washing off your yard and into local waterbodies. Vegetate bare spots in your yard to prevent soil erosion.

Home Repair and Improvement

- Before beginning an outdoor project, locate the nearest storm drains and protect them from debris and other materials.
- Sweep up and properly dispose of construction debris such as concrete and mortar.
- Use hazardous substances like paints, solvents, and cleaners in the smallest amounts possible, and follow the directions on the label. Clean up spills immediately, and dispose of the waste safely. Store substances properly to avoid leaks and spills.
- Purchase and use nontoxic, biodegradable, recycled, and recyclable products whenever possible.
- Clean paint brushes in a sink, not outdoors. Filter and reuse paint thinner when using oil-based paints. Properly dispose of excess paints through a household hazardous waste collection program, or donate unused paint to local organizations.

- Reduce the amount of paved area and increase the amount of vegetated area in your yard. Use native plants in your landscaping to reduce the need for watering during dry periods. Consider directing downspouts away from paved surfaces onto lawns and other measures to increase infiltration and reduce polluted runoff.

Pet Care

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method.
- Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Swimming Pool and Spa

- Drain your swimming pool only when a test kit does not detect chlorine levels.
- Whenever possible, drain your pool or spa into the sanitary sewer system.
- Properly store pool and spa chemicals to prevent leaks and spills, preferably in a covered area to avoid exposure to stormwater.

Septic System Use and Maintenance

- Have your septic system inspected by a professional at least every 3 years, and have the septic tank pumped as necessary (usually every 3 to 5 years).
- Care for the septic system drainfield by not driving or parking vehicles on it. Plant only grass over and near the drainfield to avoid damage from roots.
- Flush responsibly. Flushing household chemicals like paint, pesticides, oil, and antifreeze can destroy the biological treatment taking place in the system. Other items, such as diapers, paper towels, and cat litter, can clog the septic system and potentially damage components.

Storm drains connect to waterbodies!

Related Links

Storm Water Management Program Plan 2022

2021-2022 Annual Report

2020-2021 Annual Report

2019-2020 Annual Report

2018-2019 Annual Report

2017-2018 Annual Report

Gadsden and Etowah 2017 SWMPP

Polluted Runoff Information

Stormwater Homepage | Stormwater | US EPA

City of Hokes Bluff MS4 SWMP 2015

http://adem.alabama.gov/programs/water/permitting.cnt

For Permitting Information go to: http://www.adem.state.al.us/DeptForms/default.cnt

CONTACT US

City of Hokes Bluff
3301 Alford Bend Road.
Hokes Bluff, AL 35903
Phone: (256) 492-2414

Mon - Fri
8:00 am - 12:30 pm
1:30 pm - 4:30 pm
*Close at 1 pm, every 3rd Wed.

Copyright - 2014 - City of Hokes Bluff

iter Access

May 6 May 7 May 8 May 9 May 10 May 11 May 12 May 13 May 14 May 15

All-time insights

Total views

Months and years | Average per day | Recent weeks

0000	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2015			12	13	5	11	14	9	7	16	4	13	104
2016	7	7	13	12	13	15	8	12	11	7	7	17	129
2017	8	11	10	15	13	29	12	9	10	5	12	8	142
2018	5	7	6	3	19	8	3	4	5	3	14	10	87
2019	13	9	10	8	10	6	6	19	8	6	7	4	106
2020	7	8	0	0	9	2	3	11	7	6	3	3	59
2021	10	19	16	6	29	12	9	4	7	4	5	10	131
2022	4	10	22	2	22	8	7	18	9	12	14	11	139
2023	11	8	10	3	12								44

Fewer Views More Views

Jetpack

AN AUTOMATTIC AIRLINE

HOKES BLUFF SANITATION
P.O. BOX 2338
EAST GADSDEN, AL 35903
(256) 492-2414

PRESORTED
FIRST-CLASS MAIL
U.S. POSTAGE
PAID
GADSDEN, AL
PERMIT NO. 217

2013 **3/15/2023**

SERVICES	Meter Readings Current	Previous	Usage	CHARGES
Trash	0	0	0	75.00
Total Due				$75.00
***After Due Date Penalty		4.50	$ 79.50	***

CUSTOMER ACCOUNT	DUE DATE PAST DUE AFTER THIS DATE
2013	4/30/2023

TOTAL DUE UPON RECEIPT	AFTER DUE DATE PAY
75.00	79.50

MAIL THIS STUB WITH YOUR PAYMENT

Walt Simmons
5739 Earl Street
Hokes Bluff AL 35903

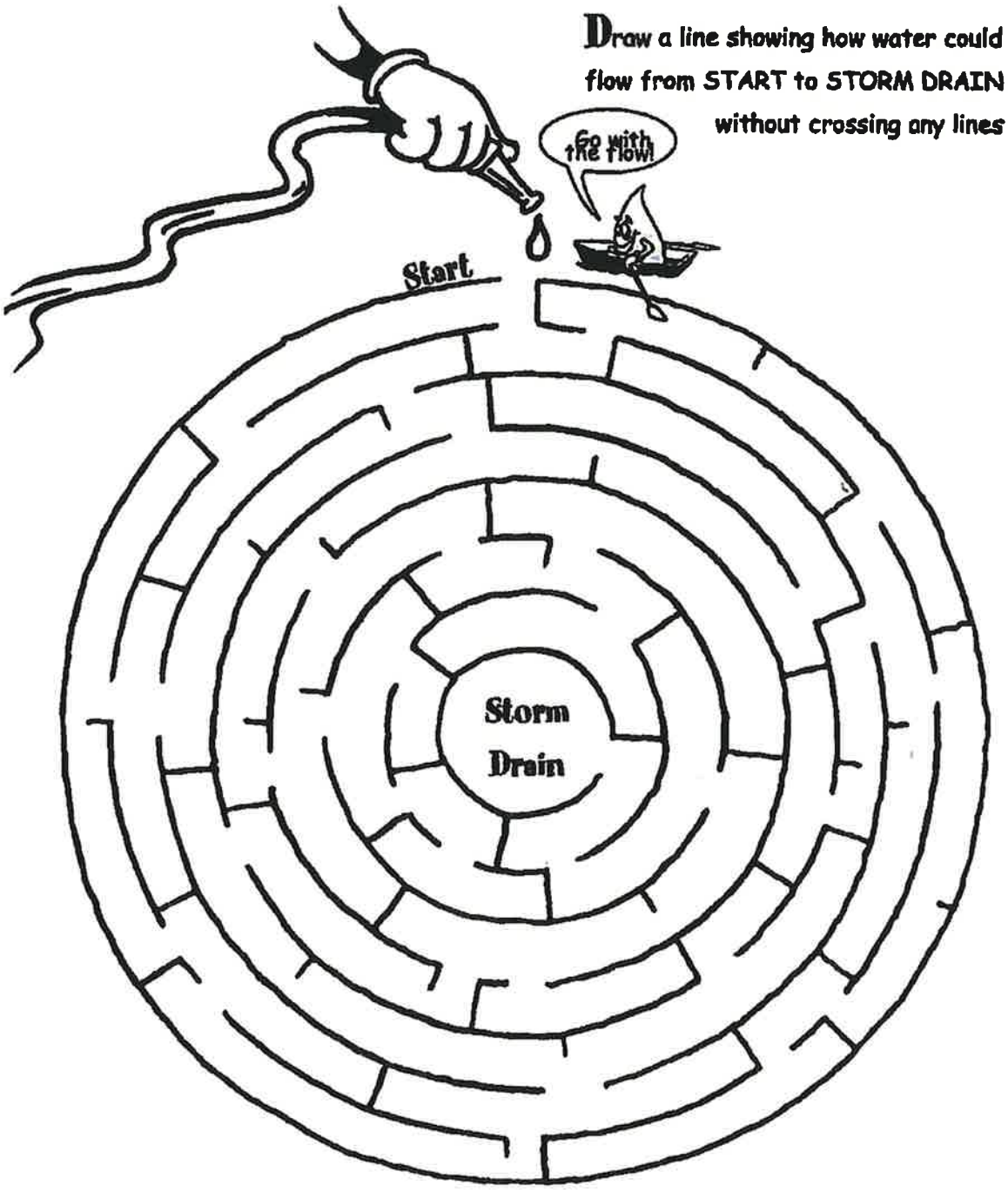
Last payment received 1/30/23 for $75.00.

ONLY RAIN DOWN THE STORM DRAIN. Make a difference! Protect, Conserve. Save. Sanitation drive thru located at the end of city hall building will open April 10th 8-12:30 & 1:30-4:30. All sanitation business will be handled through the drive thru.

363

Stormwater Maze

Draw a line showing how water could flow from START to STORM DRAIN without crossing any lines



The Dirty Dozen

When stormwater carries pollutants from thousands of Alabama homes into gutters, it adds up to a big problem for our streams and rivers. Hidden in the puzzle below are a dozen common stormwater contaminants from household sources.

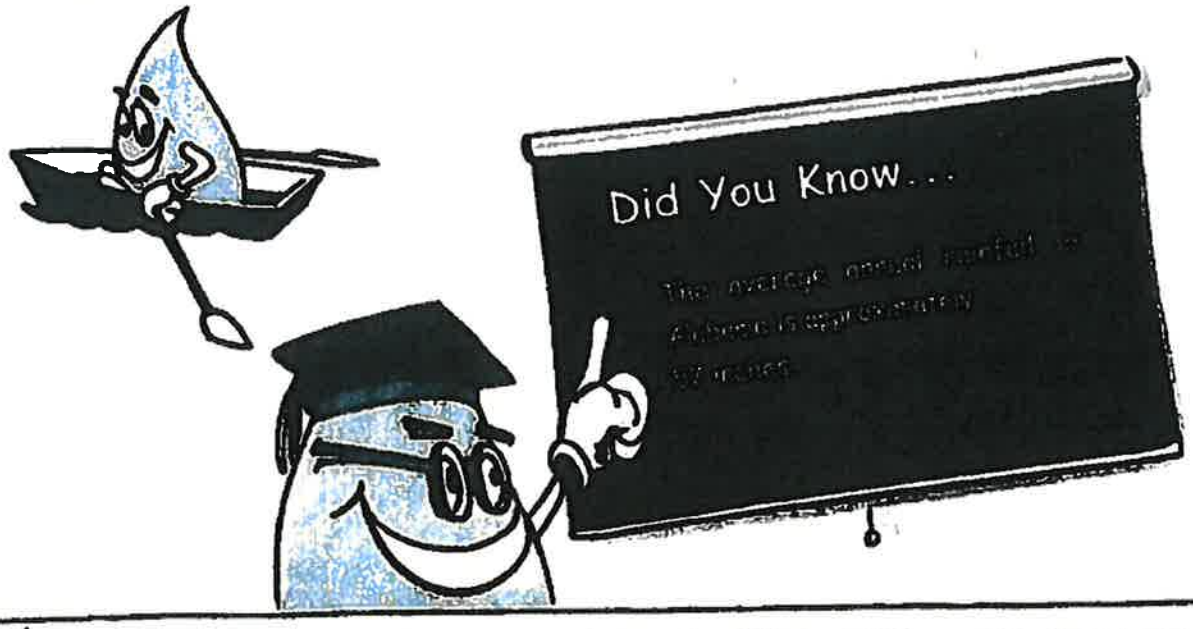
Can you find and circle all 12?

P	P	W	E	F	F	U	Z	G	R	A	S	S
A	H	E	Z	E	E	R	F	I	T	N	A	C
I	E	T	S	D	R	N	X	W	Q	O	C	L
N	R	S	L	I	T	C	P	C	I	A	A	I
T	B	A	D	C	I	R	F	L	M	O	R	P
Y	I	W	S	I	L	E	A	V	E	S	W	P
W	C	T	R	T	I	C	D	S	L	B	A	I
N	I	E	X	S	Z	Z	A	E	H	P	S	N
C	D	P	A	E	E	D	W	R	A	S	H	G
H	E	F	U	P	R	E	A	G	X	D	W	S
T	R	I	D	V	W	B	U	R	E	T	A	N

1. Paint
2. Oil
3. Antifreeze
4. Dirt
5. Leaves
6. Grass clippings
7. Pet waste
8. Pesticide
9. Herbicide
10. Fertilizer
11. Trash
12. Car wash water







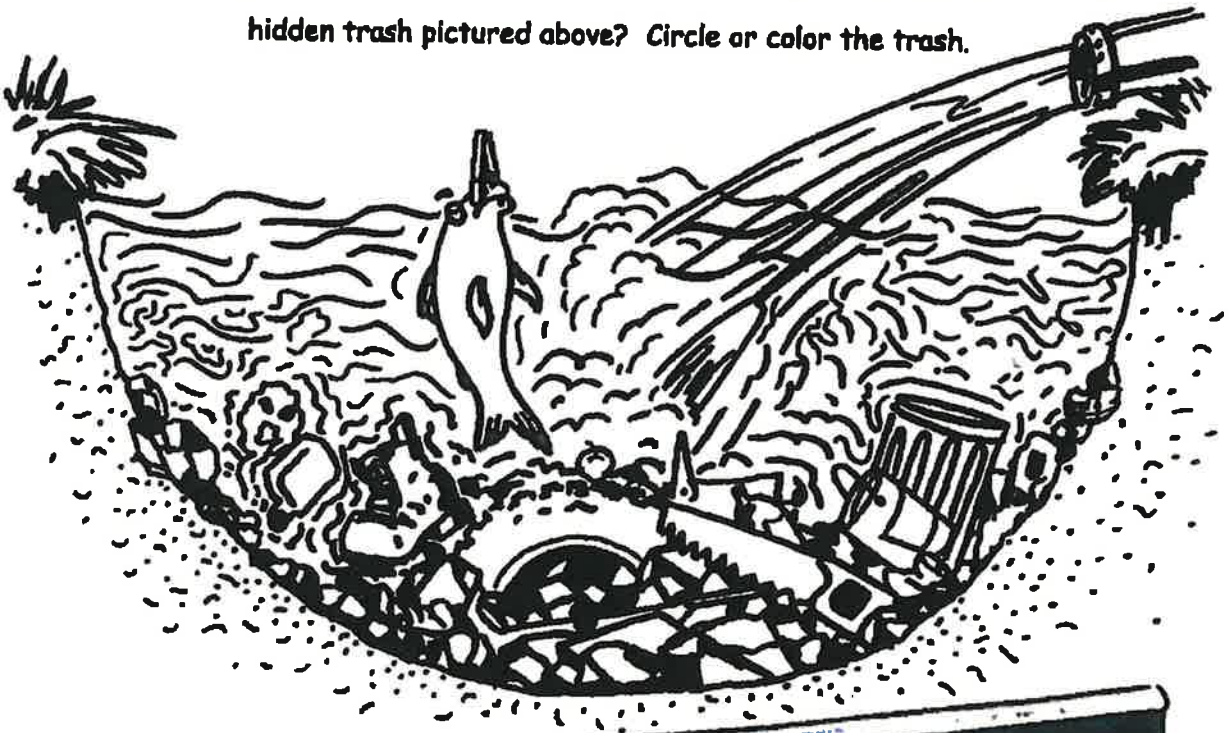
Summer Reading Program

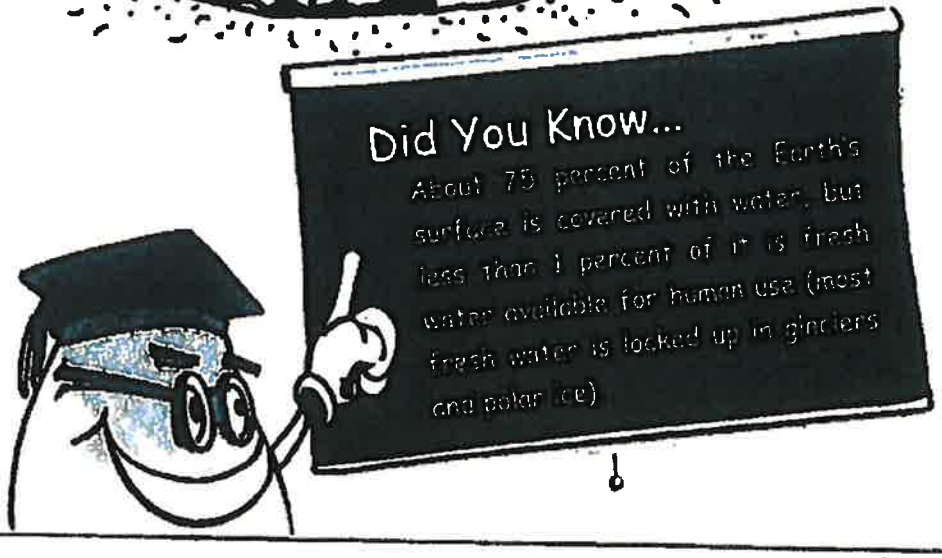
Eliminating Trash From Our Streams





Help Droplet clean this stream. What doesn't belong? Can you find all of the hidden trash pictured above? Circle or color the trash.





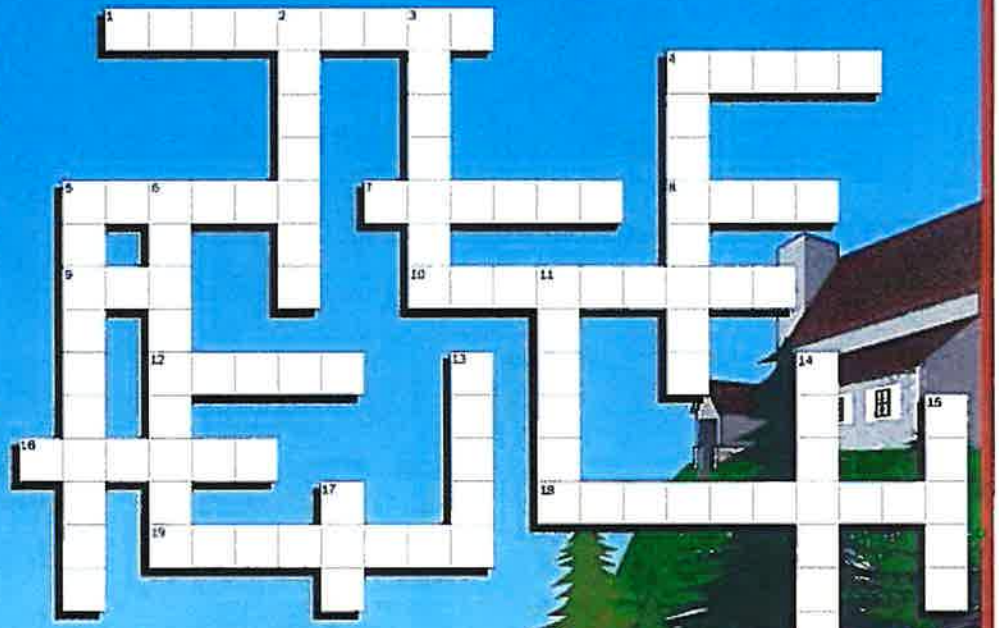
Take the Stormwater Runoff Challenge

Across:

1) The area of land that drains into an estuary, lake, stream, or groundwater is known as a _____
4) The _____ of speeding boats can erode shorelines.
5) Maintaining your _____ tank will help to prevent bacteria and nutrients from leaking into groundwater and surface waters.
7) Wetland plants act like a natural water _____, removing harmful pollutants from stormwater runoff.
8) Leave your grass clippings on your _____ to reduce the need for commercial fertilizers.
9) A single quart of motor _____, if disposed of improperly, can pollute 2 million gallons of water.
10) Fertilizers and animal wastes contain _____ that "feed" algae and other aquatic plants harmful to water quality.
12) Polluted runoff from both rural and _____ sources has a significant impact on water quality.
16) Storm _____ don't always connect to sewage treatment plants, so runoff can flow directly to rivers, lakes, and coastal waters.
18) Follow directions carefully when applying _____ on your lawn—more isn't always better.
19) Polluted runoff (also called _____ source pollution) comes from so many places that it's hard to "pinpoint" a source.
20) Yard and vegetable food waste are suitable additions to a _____ pile.

Down:

2) Don't dump used motor oil into storm drains. _____ it!
3) _____ of soil from barren land can cloud nearby streams.
4) _____ prevent flooding, improve water quality, and provide habitat for waterfowl, fish, and wildlife.
5) Marking "Do Not Dump, Drains to Bay" on a _____ is one way to educate people about polluted runoff.
6) Excess sediment, nutrients, toxics, and pathogens are all types of runoff _____.
11) Polluted _____ is the nation's #1 water quality problem.
13) The cattail is one wetland _____ that helps purify polluted runoff.
14) Too much _____ in water can harm aquatic life.
15) Proper crop and animal management on _____ helps to control water pollution.
17) _____ impact development helps control stormwater pollution through conservation approaches and techniques.



Choices:

compost	nonpoint	sediment
drains	nutrients	septic
erosion	oil	storm drain
farms	plant	urban
fertilizer	pollution	wakes
filter	recycle	watershed
lawn	runoff	wetlands
Low		

EPA United States Environmental Protection Agency

For more information, please visit EPA's Polluted Runoff web site at www.epa.gov/nps

Contact name and agency

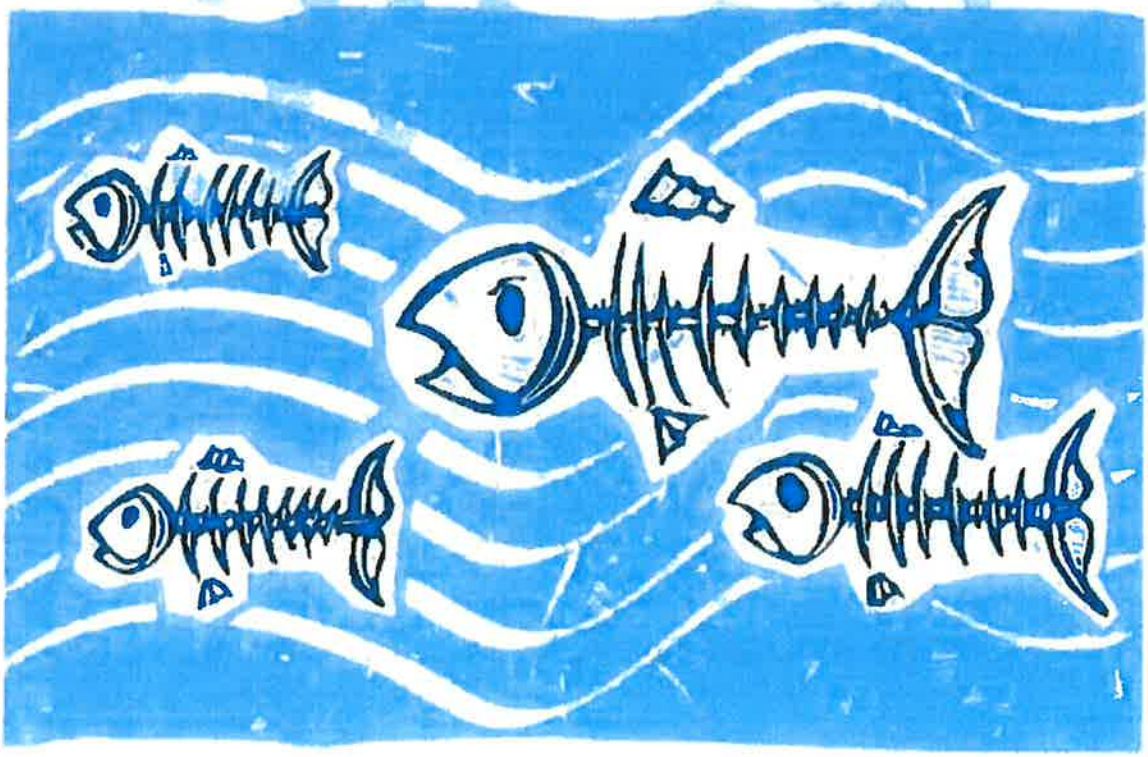
Contact phone number and e-mail

Printed with soy based inks on recycled paper

RAIN +

PET WASTE
GARBAGE
MEDICINES
SOLVENTS
ELECTRONIC DEVICES
ART SUPPLIES
FUELS
COOKING OIL
GREASE
TOXINS
MOTOR OIL
INK CARTRIDGES
SEDIMENTS
BATTERIES
TRASH
ANTIFREEZE

STORMDRAIN=



Football Program Ad


Alabama
56565MU
MUNICIPAL
WHEN IT RAINS
IT DRAINS


HOKES BLUFF
ATHLETIC CLUB
WE SUPPORT ALL SPORTS
PONDER
ELECTRIC
492-5535
RESIDENTIAL & COMMERCIAL
WHEN IT RAINS
IT DRAINS
WIZARD
PRODUCTS
JASON LATHAM
256-390-5742

Radio Advertisement

HOKES BLUFF RESIDENTS,

BELIEVE IT OR NOT, ONE OF THE BIGGEST THREATS TO OUR WATER QUALITY IS PLAIN OLD DIRT WASHING INTO OUR RIVERS, LAKES, AND STREAMS FROM LAWNS, ROADS, DRIVEWAYS AND CONSTRUCTION SITES. THE SEDIMENT BECOMES A POLLUTION IN OUR WATERWAYS.

WHAT CAN YOU DO TO PREVENT EROSION?

SEED OR MULCH ANY BARE SOIL ON YOIUR LAND.

PLANT PERINIALS, SHRUBS AND TREES THAT THRIVE IN OUR CLIMATE.

SET UP EROSION CONTROLS WHEN DOING SMALL CONSTRUCTION PROJECTS.

CHECK OUT OUR WEBSITE @

WWW.CITYOFHOKESBLUFF.COM/STORMWATERAWARENESS

AND REMEMBER! WHEN IT RAINS!!! IT DRAINS!!!!


WHEN IT RAINS
IT DRAINS
www.cityofhokesbluff.com
Stormwater Awareness

ties and a library. We offer shopping and dining options, and one of the best school systems in north Alabama. In addition, we are home to one of the most valuable assets a city can have – pure spring drinking water from Tawannah Springs.

If there is a message you would like to send to the Hokes Bluff community, what would that be?

We always want to thank our citizens and those of our surrounding area for investing in our community. Without those who choose to shop and buy in Hokes Bluff, supporting us, our limitations would be greatly affected. Services would suffer, infrastructure would decline, and our city would not and could not thrive. We believe the most important element of our community is our people.

CITY OF HOKES BLUFF



Hokes Bluff City Council from left to right: Councilman David Bankson, Councilman Larry Sandlin, Mayor Scott Reeves, Councilman Chuck Robinson, Councilman Walt Simmons, Councilman Garry Young

IT DRAINS

www.cityofhokesbluff.com

01 Alford Bend Road • Hokes Bluff, AL (256) 492-24

ETOWAH COUNTY

current

& 2022 BUYERS GUIDE



A LIMITLESS SKY

How one young man put his head in the clouds and created his own picture of success

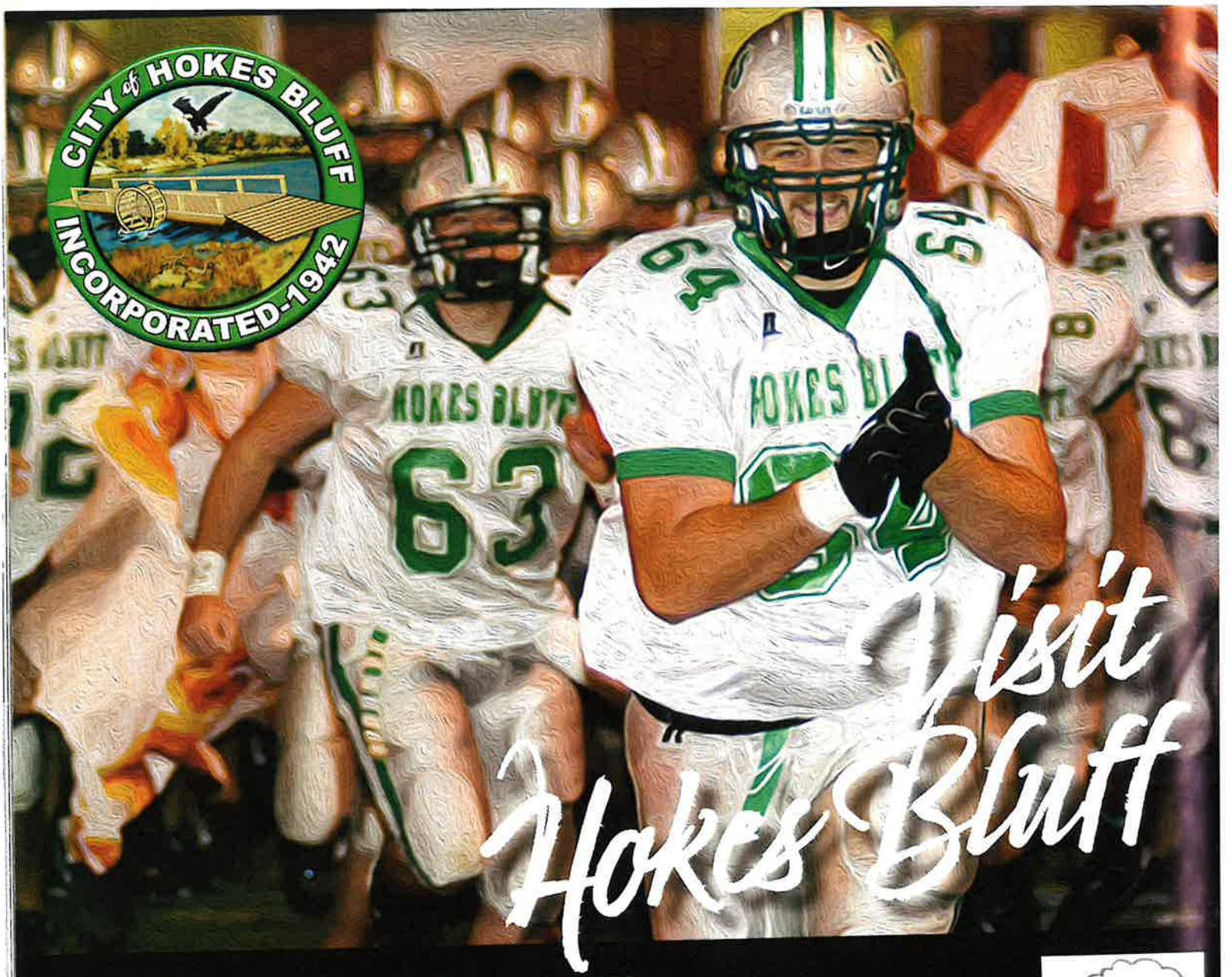
Page 6

Residency Makes a Return

Page 10

EQWIP Connects Business & Industries

Page 26



★OUSTANDING SCHOOL SYSTEM
★HOME OF THE HOKES BLUFF EAGLES
★14 STATE CHAMPIONSHIP TEAMS

WHEN IT RAINS IT DRAINS

MAYOR: SCOTT REEVES, COUNCII: David Bankson, Larry Sandlin, Chuck Robinson, Walt Simmons, Garry Young



3301 Alford Bend Road, Hokes Bluff, AL 35903
(256) 492-2414 | www.cityofhokesbluff.com


HOKES BLUFF
LADY
EAGLES
VISITOR INNING HOME
H E
BALL STRIKE OUT
pepsi
Mtn Dew
BLUFF
#470
"Market on the Bluff"
MARKET and AMISH GOODS
GIFTS · BASKETS and BALLOONS · BAIT
256-492-5040
WHEN IT RAINS
IT DRAINS

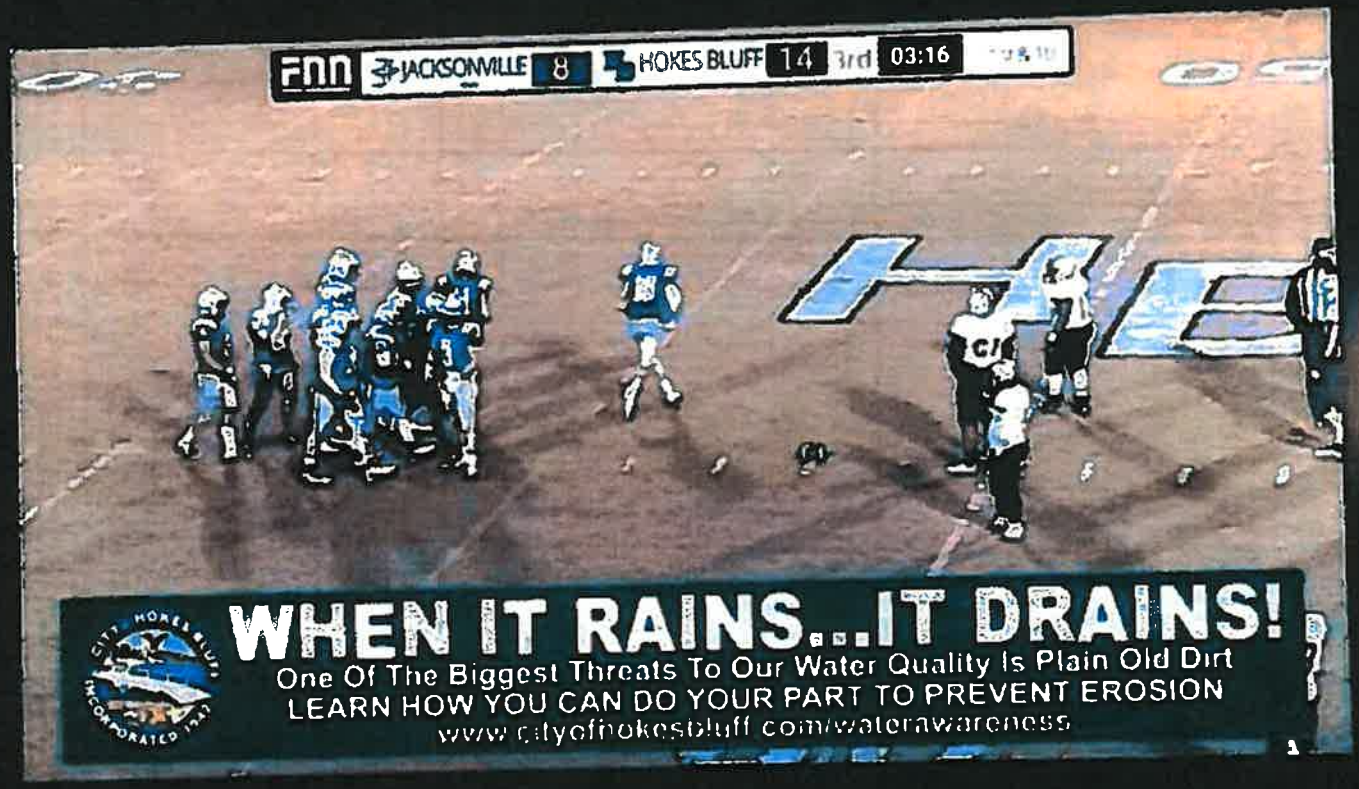
Hokes Bluff Eagles! We Believe! Lets Win Tonight and What Can You Do to help keep our City Clean and Protect our waters?



- Respect and protect our river
  - Don't litter, pick up trash others leave behind
  - Recycle your cans & water bottles
  - Encourage others to do the same
- Good Neighbor Practices
  - Bring back whatever you take to the river (cans, bottles, etc.)
  - Consider use of reusable containers
  - Mesh bags for single-use containers






FNN
JACKSONVILLE 8
HOKES BLUFF 14
3rd
03:16
WHEN IT RAINS...IT DRAINS!
One Of The Biggest Threats To Our Water Quality Is Plain Old Dirt
LEARN HOW YOU CAN DO YOUR PART TO PREVENT EROSION
www.cityofhokesbluff.com/waterawareness


HOKES BLUFF
CITY FEST
WHEN IT RAINS
IT DRAINS
WWW.CITYOFHOKESBLUFF.COM

WEISS LAKE ANTIQUE POWER ASSOCIATION & THE CITY of HOKES BLUFF

THE 14TH ANNUAL

"G" ROUNDUP

OCTOBER 7TH & 8TH, 2022 ✷ HOKES BLUFF CITY PARK

5891 GILLILAND STREET, HOKES BLUFF

FEATURING

ALLIS-CHALMERS "G"





& ALL AC TRACTORS





All makes & models of tractors and small engines are welcome at no charge!

Overnight security will be provided Thursday & Friday Nights.

Lodging may be found at www.GreaterGadsden.com.

For vendor or show information contact Lenn Hill at (256) 490-6134 or dhill2@bellsouth.net

Stormwater and the Construction Industry

Protect Natural Features



- Minimize clearing.
- Minimize the amount of exposed soil.
- Identify and protect areas where existing vegetation, such as trees, will not be disturbed by construction activity.
- Protect streams, stream buffers, wild woodlands, wetlands, or other sensitive areas from any disturbance or construction activity by fencing or otherwise clearly marking these areas.

Construction Phasing



- Sequence construction activities so that the soil is not exposed for long periods of time.
- Schedule or limit grading to small areas.
- Install key sediment control practices before site grading begins.
- Schedule site stabilization activities, such as landscaping, to be completed immediately after the land has been graded to its final contours.

Vegetative Buffers



- Protect and install vegetative buffers along waterbodies to slow and filter stormwater runoff.
- Maintain buffers by mowing or replanting periodically to ensure their effectiveness.

Silt Fencing



- Inspect and maintain silt fences after each rainstorm.
- Make sure the bottom of the silt fence is buried in the ground.
- Securely attach the material to the stakes.
- Don't place silt fences in the middle of a waterway or use them as a check dam.
- Make sure stormwater is not flowing around the silt fence.

Maintain your BMPs!

www.epa.gov/npdes/menuofbmps

Site Stabilization



- Vegetate, mulch, or otherwise stabilize all exposed areas as soon as land alterations have been completed.

Construction Entrances



- Remove mud and dirt from the tires of construction vehicles before they enter a paved roadway.
- Properly size entrance BMPs for all anticipated vehicles.
- Make sure that the construction entrance does not become buried in soil.

Slopes



- Rough grade or terrace slopes.
- Break up long slopes with sediment barriers, or under drains, or divert stormwater away from slopes.

Dirt Stockpiles



- Cover or seed all dirt stockpiles.

Storm Drain Inlet Protection



- Use rock or other appropriate material to cover the storm drain inlet to filter out trash and debris.
- Make sure the rock size is appropriate (usually 1 to 2 inches in diameter).
- If you use inlet filters, maintain them regularly.

Arvil Alford/City of Hokes Bluff
(256) 492-2414 cell 312-1191

ATTENDANCE RECORD FOR
STORM WATER STEERING COMMITTEE
WEDNESDAY, JULY 20, 2022, 1:00 P.M.
ROOM 305, GADSDEN CITY HALL

NAME	REPRESENTING	TELEPHONE/EMAIL
Jeramy Ward	City of Gadsden	256-549-4527/jward@cityofgadsden.com
Judd Rich	City OF Southside	256-613-9161 juddrich@CityOFSouthside.com
ROBERT NAIL	ETOWAH COUNTY	256-549-5358 / RNAIL@ETOWAHCOUNTY.ORG
Mel Smith	" "	" MSmith@etowahcounty.org
Jason Nicholson	City of Attalla	256-441-9200 jnicholson@cityofattallaal.org
Todd Means	City of Glencoe	256-458-1506 toddMeans@CityofGlencoe.org
Lisa Lowman	City of Hokes Bluff	(256)-490-4352 lisa.lowman@cityofhokesbluff.com
Joel Garmon	City of Rainbow City	256-413-1230 jgarmon@rbcalabama.com
Grant Williams	S&ME,	919-609-2491 gwilliams@smeinc.com
Nathanael Wade	S&ME	256-651-9355 nwade@SmeinC.Com
SARAH YELDELL	S&ME	256-837-8882 Syeldell@smeinc.com
Patrick Curwen	S&ME	717-364-8057 pcurwen@smeinc.com
Travis Overton	S&ME	256-590-1442 toverton@smeinc.com
Heath Williams	City of Gadsden	256-549-4580 hwilliams@cityofgadsden.com

Gadsden-Etowah Storm Water Steering Committee Meeting

AGENDA

July 20, 2022

1:00 p.m.

Gadsden City Hall, Room 411

- Call to Order
- New Permit/SWMP
- Meet and Greet with S&ME
- Remarks by Committee
- Adjournment

Oct - Training

Biggest Change in Permit
Public Education

Quarterly Inspection of all Construction Sights

Gadsden-Etowah MS4

MS4 Outfall Inspections

July 20, 2022

1

Purpose

2

Outfall Reconnaissance Inventory

- Outfall Reconnaissance Inventory is a **stream walk to inventory outfalls**
- ORI is typically conducted during the first permit cycle
- Intended to identify existing outfalls and establish the outfall map
- After ORI is complete, implement outfall inspection program

3

Dry-Weather Outfall Inspections

- Inspections of known outfalls are required by MS4 permits as part of the Illicit Discharge Detection and Elimination program
- Dry-weather screening determines if an illicit discharge is occurring or has occurred
- ORI determines the list of known outfalls, inspection is the follow-up
- Outfall inspections conducted using the same procedures as ORI

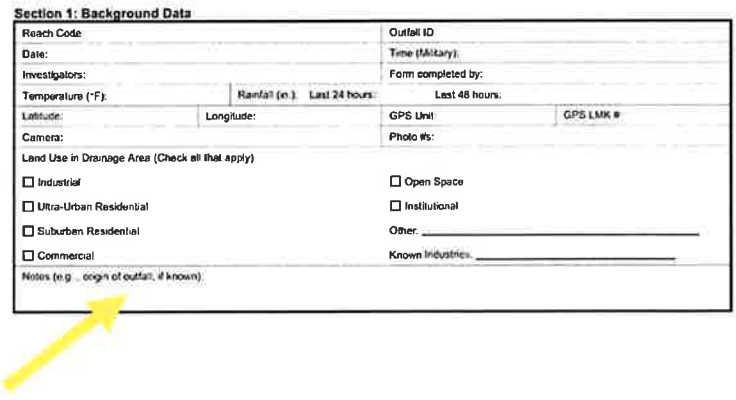
4

Field Observations

5

ORI Sheets

- Complete **EVERY** section
- Sheets are double-sided
- Use Notes in Section 1 to record helpful information
  - Origin of outfall, if known
  - Explanation of outfall numbering, if unusual factors are present



Section 1: Background Data

Reach Code:		Outfall ID:	
Date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply)

☐ Industrial	☐ Open Space
☐ Ultra-Urban Residential	☐ Institutional
☐ Suburban Residential	Other: _____
☐ Commercial	Known Industries: _____

Notes (e.g., origin of outfall, if known)

6

Major/Minor Classification

- Pipes are classified based on **total area of opening** (>36 inches or >12 inches for industrial)
  - Need dimensions of pipe openings
  - Need contributing land use (Section 1 of ORI Form)
- Ditches are classified based on **drainage area** (>50 acres or >2 acres for industrial)
  - Need an idea of where the discharge is coming from
  - Need contributing land use (Section 1 of ORI Form)

7

Pipe Materials



RCP
Reinforced Concrete Pipe



CMP
Corrugated Metal Pipe



HDPE
High Density Polyethylene Plastic

8

Flow

- **Trickle is an option** in Section 2
- Flow calculated by measuring how long it takes to fill a known volume
- Record measurements in Section 3 and calculate in the office

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other _____	☐ Circular ☐ Elliptical ☐ Box ☐ Other _____	☐ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions _____	In Water ☐ No ☐ Partially ☐ Fully With Sediment ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other _____		Depth _____ Top Width _____ Bottom Width _____	
☐ In-Stream	(applicable when collecting samples)				
[illegible]ent?	☐ Yes ☐ No	*If No, Skip to Section 5*			
Flow Descriptor (if present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS					
PARAMETER		RESULT	UNIT	EQUIPMENT	
☐ Flow	Volume		Liter	Bottle	
	Time to fill		Seconds	Stop Watch	

PARAMETER	RESULT	UNITS	PARAMETER	RESULT	UNITS
Temperature		°F	Nitrate		mg/L
pH		S.U.	Nitrite		mg/L
Ammonia		mg/L	Phosphate		mg/L
Chlorine		mg/L	Potassium		mg/L
Conductivity		mS/cm	Total Dissolved Solids		ppm
Detergents		mg/L	Turbidity		mg/L

9

What is an MS4 outfall?

10

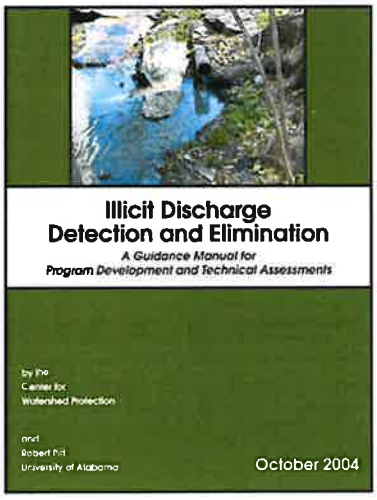
MS4 Outfall Definition

- Definition provided by 40 CFR 122.26(b)(9)
- **"The point where a municipal separate storm sewer discharges to waters of the United States."**
- Does not include:
  - Open conveyances connecting two municipal separate storm sewers
  - Pipes, tunnels, or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States

11

MS4 Outfall Definition

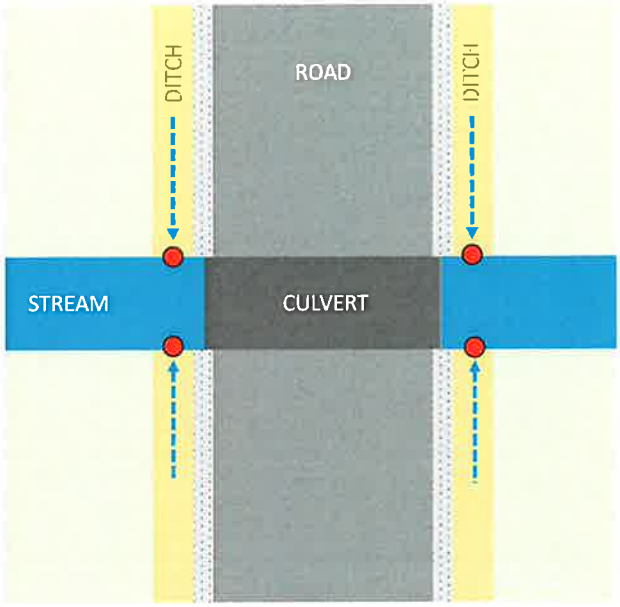
- Alabama has not established more specific criteria
- **CWP IDDE Guidance Manual** – October 2004
  - Chapter 7 introduces the Outfall Reconnaissance Inventory
  - Chapter 11 details how to conduct the ORI



12

Roadways

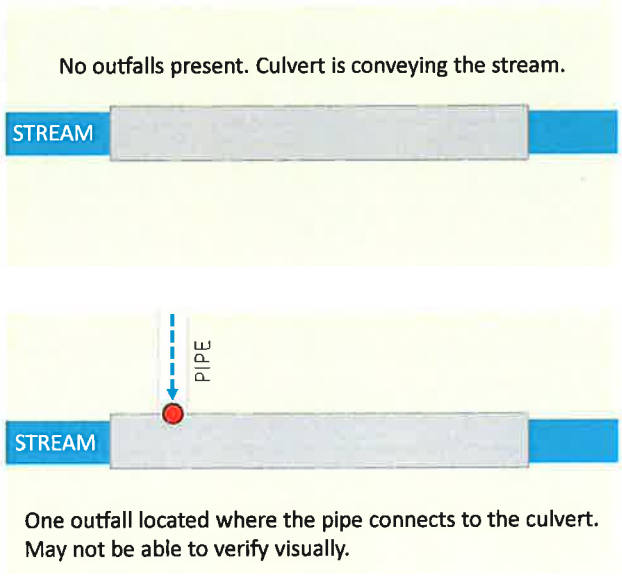
- Expect **four outfalls** where a stream crosses under a road
- The culvert under the road is NOT an outfall
- Include road name and quadrant on field sheet in Section 1 under Notes (e.g., "SE quad Mill Road")



13

Culverts

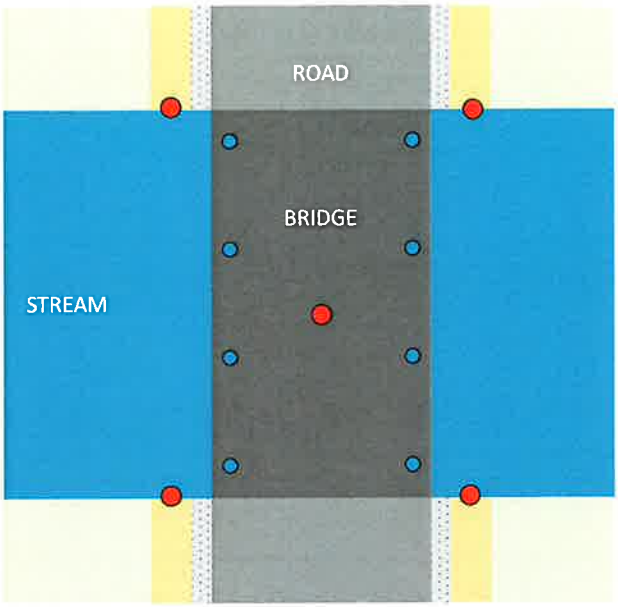
- Pipes, tunnels, or other conveyances which connect segments of the same stream are NOT outfalls
- Pipes entering a culvert carrying a stream ARE outfalls, but cannot be inspected
- **Culverts are considered a confined space** and require training and planning to enter



14

Bridges

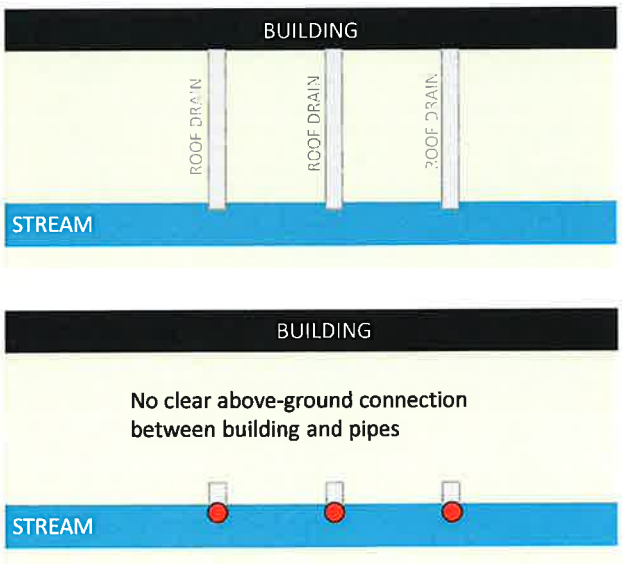
- Bridge scuppers (drains) are not counted separately
- The entire bridge is considered an outfall
- Outfall is identified at the center point of the bridge



15

Roof Drains

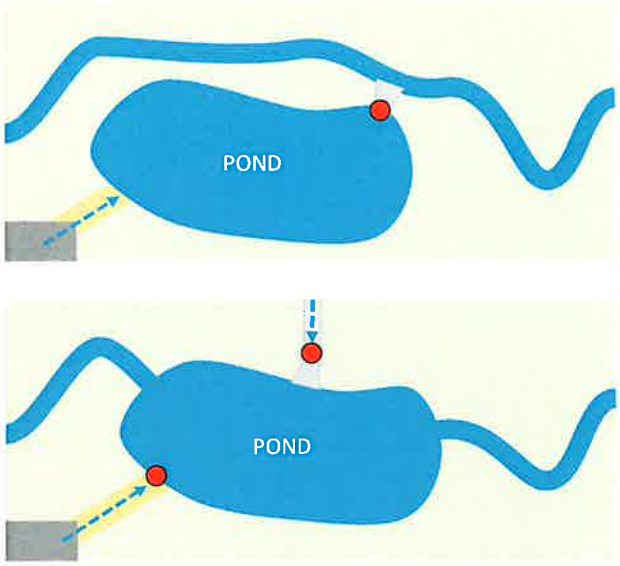
- Pipes that are clearly connected to roof downspouts via above-ground connections are NOT outfalls
- Pipes that appear to only drain roof downspouts but that are **subsurface** must be marked as outfalls



16

Ponds

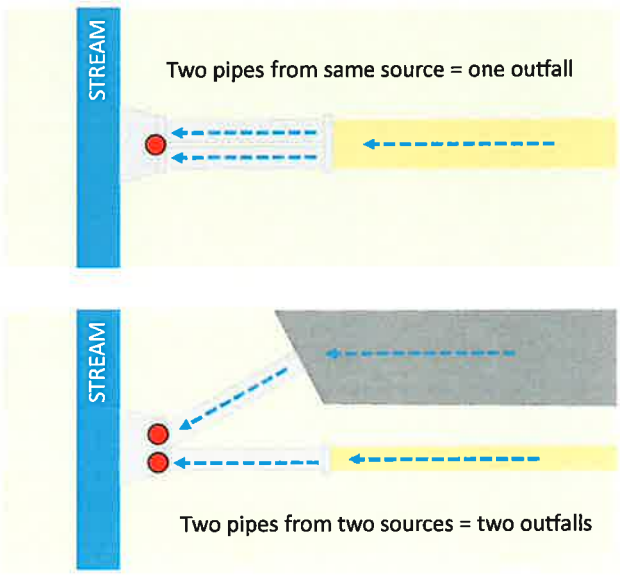
- Points that discharge into a pond that is not "in-line" with a stream are NOT outfalls
- Points that discharge into a pond that is "in-line" with a stream ARE outfalls



17

Multiple Pipes

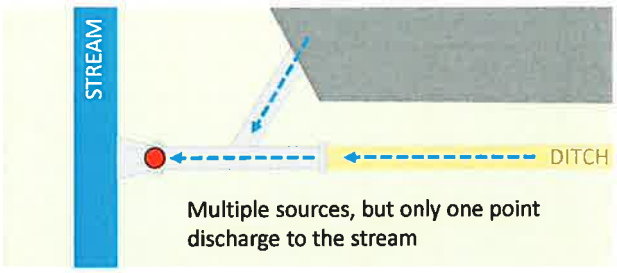
- Multiple pipes or culverts conveying flow from the same source are considered one outfall
- Pipes conveying separate flows to separate points at the stream are considered separate outfalls

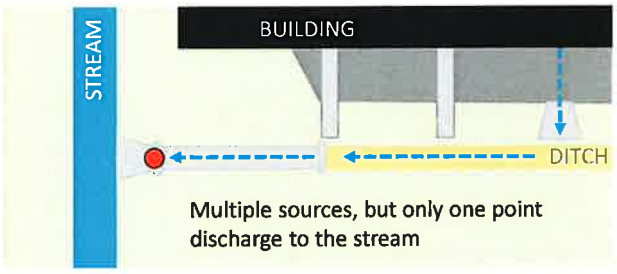


18

Multiple Sources

- Only the point discharge to the stream is counted, even if multiple sources are present

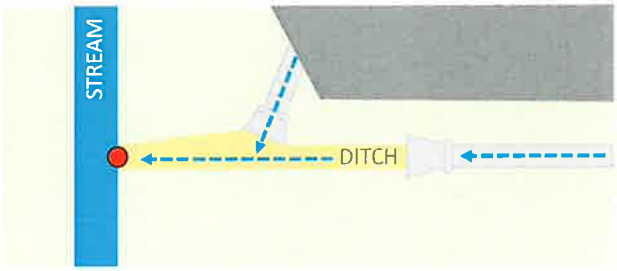


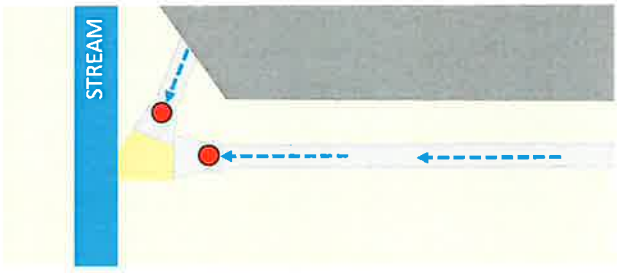


19

Multiple Sources

- Sometimes it's subjective
- **Use your best judgement!**





20

Open Drainage

- Sheet flow is NOT an outfall
- For erosion related to sheet flow, look at the source
- No set parameters for classifying earthen ditches
- Measure and record depth, width at top, width at bottom





21

Things That Aren't Outfalls

- Visible above-ground roof drains
- Weep holes from retaining walls or headwalls
- Cross-drainage culverts
- Discharges into ditches or other conveyances that do not convey a natural stream

22

Questions?

23

State of Alabama}
County of Etowah}
City of Hokes Bluff}

Resolution No. 2022-04-12

A RESOLUTION RECOGNIZING WATER QUALITY AWARENESS WEEK

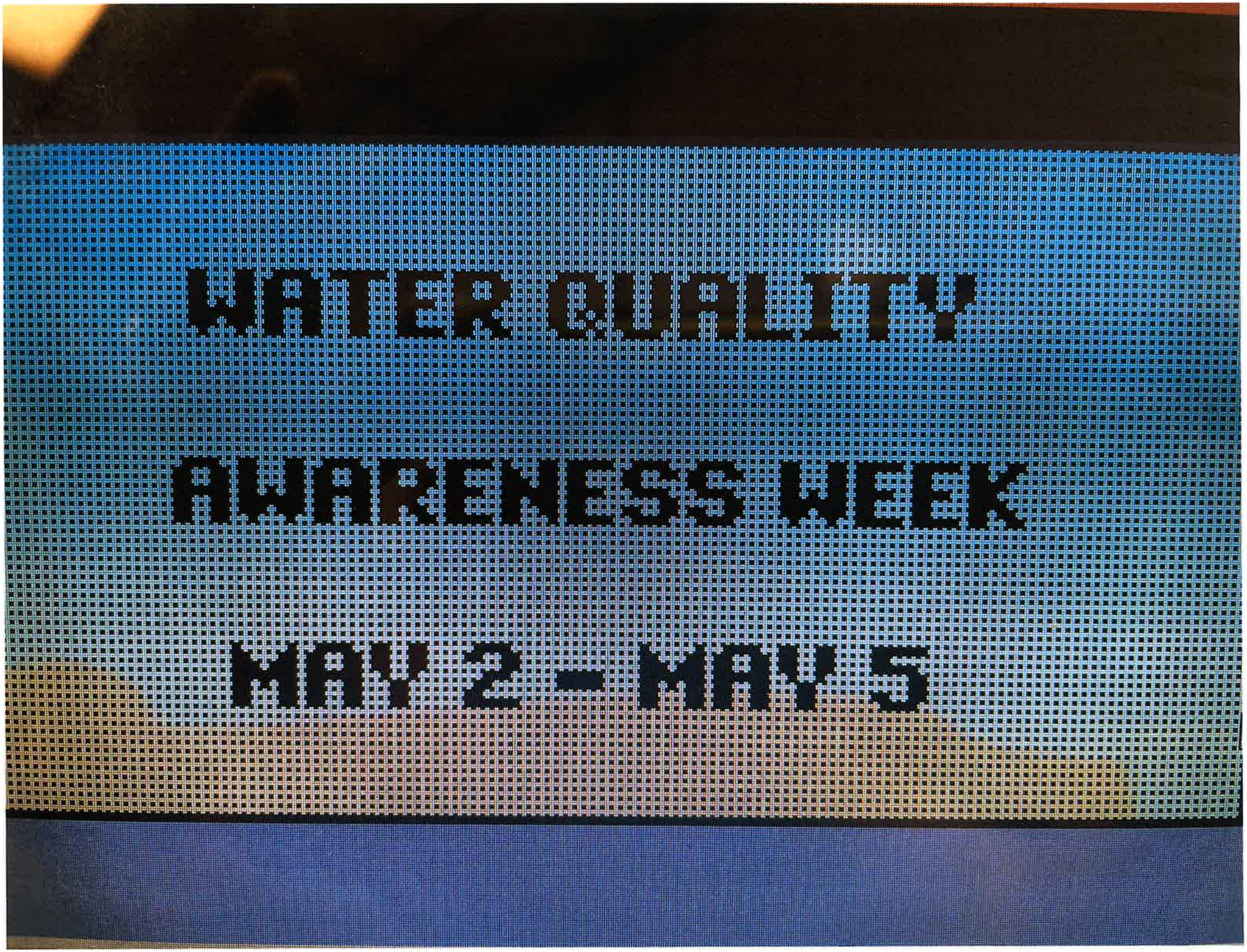
NOW, THEREFORE, we, the City Council of the City of Hokes Bluff, Alabama do hereby recognize the week of May 2-6, 2022 as "Water Quality Awareness Week," and ask our citizens to observe clean water and storm water prevention throughout the year in our city.

IN WITNESS WHEREOF, we have hereunto set our hand and caused the seal of the City of Hokes Bluff, Alabama to be affixed this 12 th day of April 2022.

Mayor Scott Reeves

ATTEST:

Lisa C. Johnson, CMC
City Clerk/Treasurer


WATER QUALITY
AWARENESS WEEK
MAY 2 - MAY 5

016577
61-394/622

CITY OF HOKES BLUFF
GENERAL REVENUE ACCOUNT
P.O. BOX 2338
E. GADSDEN, AL 35903

PEOPLES INDEPENDENT BANK
HOKES BLUFF, ALABAMA 35903

DATE 1/10/2023

PAY TO THE ORDER OF Etowah County Water Festival $ **1,000.00

One Thousand and 00/100********** DOLLARS

Etowah County Water Festival
c/o Keep Etowah Beautiful
Attn: Lisa Dover
P. O. Box 8621
Gadsden, AL 35902

Memo 2023 Water Festival Contract

TWO SIGNATURES REQUIRED

AUTHORIZED SIGNATURE

⑈016577⑈ ⑆062203942⑆ 20 006 009⑈

CITY OF HOKES BLUFF GENERAL REVENUE ACCOUNT 016577

Etowah County Water Festival		1/10/2023	
1346 · MS4 STORMWATER EXPENSES	Contract for Services-To conduct the 2023 Annual Festival to promote water quality and protection of natural resources and for the education of the 4th graders in Etowah County		1,000.00

CASH-PEOPLES GE	2023 Water Festival Contract	1,000.00

CITY OF HOKES BLUFF GENERAL REVENUE ACCOUNT 016577

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CASH-PEOPLES GE	2023 Water Festival Contract	1,000.00

IT Job # 3418

SPONSORSHIP FORM

Contribution Levels

Gold Level	$1,000.00 & up
Silver Level	$250.00 & up
Bronze Level	Contribution under $250.00

With a donation of $250 or more,* your organization's logo will appear on the t-shirts and you will receive a certificate of appreciation. Gold level sponsors will receive be invited to the volunteer luncheon on the day of the festival.

****

☑ Yes, my organization would like to provide financial support for the Etowah County Water Festival.

☐ No, my organization will be unable to participate at this time.

Gold Level Amount of Contribution $ 1,000.00

Indicate Contribution Level

Contributor's Name (Contact) Lisa Lowman / Mayor Scott Reeves

Name of Organization City of Hokes Bluff

Address 3301 Alford Bend Rd

City, State & Zip Hokes Bluff, AL 35903

Phone: (256) 492-2414

Fax No.: (256) 492-2416

Email Address lisa.lowman@cityofhokesbluff.com
mayorgsreeves@cityofhokesbluff.com

Please make check payable to Etowah County Water Festival

Mail Sponsor Form and check No Later Than January 13, 2023 to:

Lisa Dover
Keep Etowah Beautiful
P.O. Box 8621
Gadsden, AL 35902

***Please include a camera ready copy of your logo.**


Etowah County Water Festival
2022-2023
Cleaner Water
One Drop at a Time



KEEP ETOWAH BEAUTIFUL, INC.
COMMUNITY PROGRAMS FOR
2022-2023

GAC: Volunteers: 495 Tons: 6.83

RENEW OUR RIVERS:
Volunteers: 272 Tons: 1.58

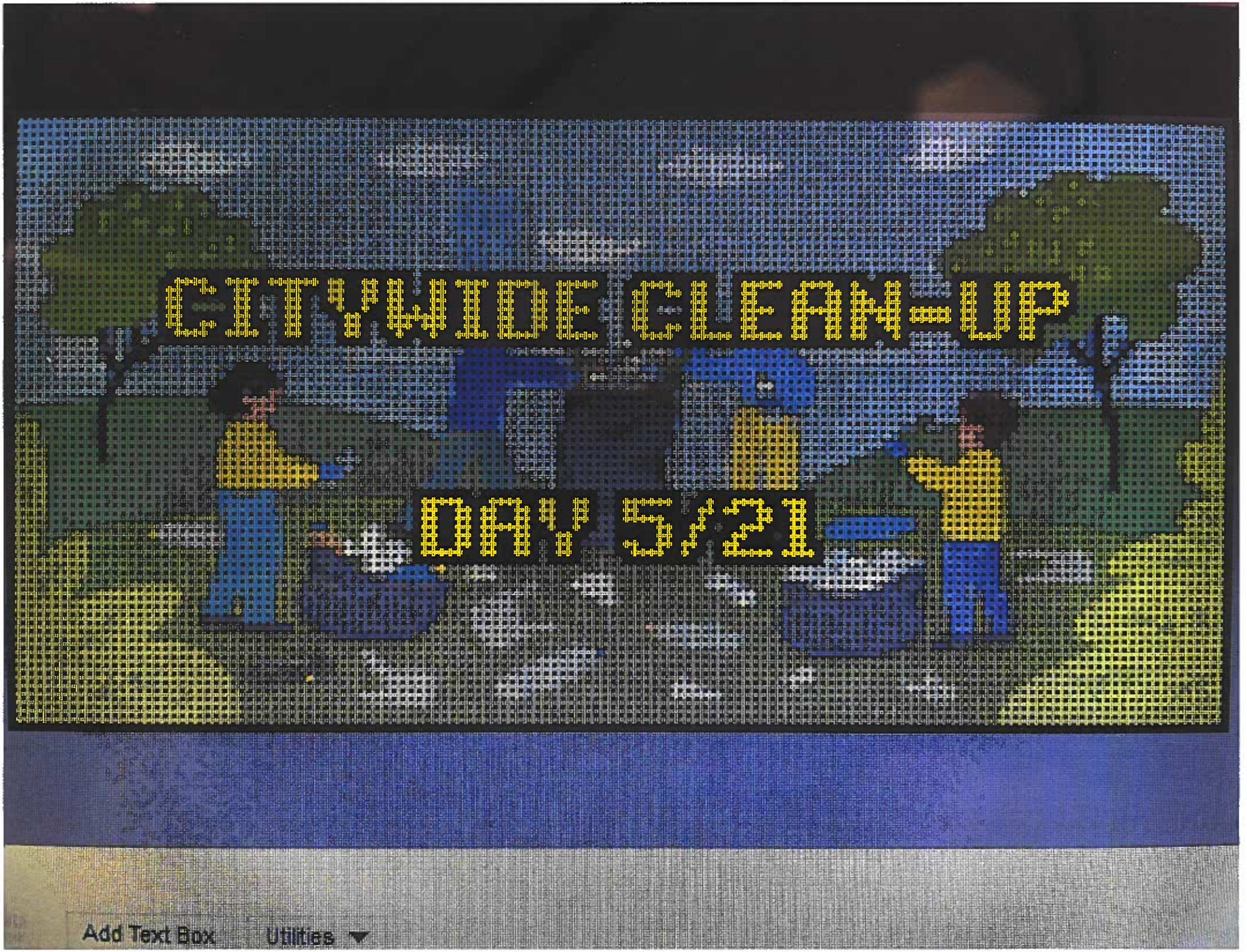
CLEAN CAMPUS CERTIFICATION AND PROGRAM:
K-12 Grade Students: 1125 Teachers: 65

WATER FESTIVAL: Held virtual with activities and supplies
Adult Volunteers: 55
High School & College Presenters: 148
4th Grade Teachers: 58
4th Grade Students: 1092

INFLUENCE PROGRAM:

Days – 214 Miles 279.30 Tons: 29.87

Recyclable Litter: 38.00 tons


CITYWIDE CLEANUP
DAY 5K21
Add Text Box
Utilities

THINGS TO DO

SALES: 334-261-3600
FAX: 334-240-3162
www.aci.alabama.gov

ALABAMA CORRECTIONAL INDUSTRIES
a division of
ALABAMA DEPARTMENT OF CORRECTIONS

CUSTOMER SERVICE: JACQUELIN THOMAS (334) 261-3618 | ASHLEY OWENS (334) 261-3655 | MAIN OFFICE (334) 261-3600
P.O. Box 70084
1400 Lloyd Street
Montgomery, AL 36107-0084

CLEAN UP DAY - LIST

Item	Time Needed	Done
Call Correctional Industries		☐
MAIN ST. FROM MAIN ST. STORAGE TO DOWNTOWN 4 WAY STOP		☐
NEW BETHEL FCM CHURCH		☐
FROM DOWNTOWN 4 WAY STOP TO OLD 278		☐
HB FIRST BAPTIST		☐
ALFORD'S BEND RD - FROM RED LIGHT TO APPALACHIAN HWY.		☐
HB FIRE DEPT.		☐
EASTVIEW, MORRIS, MCMILLAN, COTHRAN, GODFREY, GARAWAY, CAINES,		☐
HB FUM CHURCH		☐
ROCKY FORD FROM MAIN TO POSEY RD.		☐
UBB CHURCH		☐
CADDELL CIRCLE (ENTIRE STREET)		☐
CROSS CREEK CHURCH		☐
SHOPPING CENTER		☐
BOY SCOUTS		☐
GILMORE, CENTRAL, 6TH ST., FROM RED LIGHT TO MILL POND		☐
GIRL SCOUTS		☐
3RD ST. FROM APPALACHIAN TO POSEY RD.		☐
MODERN WOODMEN		☐
BRADLEY AVE.		☐
HB AG DEPT.		☐
		☐
		☐

Notes:

www.aci.alabama.gov

		Phone	Email
Sales Manager:	Forrest W. Farmer	(334) 261-3623	Forrest.Farmer@doc.alabama.gov
Sales -	Robert Lachney	(334) 261-3603	Robert.Lachney@doc.alabama.gov
Sales -	Debra Webb	(334) 261-3602	Debra.Webb@doc.alabama.gov
Marketing & Print Sales -	Ty Story	(334) 239-1563	Ty.Story@doc.alabama.gov

Citywide Clean-up Day Sign-In Sheet

Date.

✓	BIG OAK GARAGE	POSEY CIRCLE, 3RD ST., GIDLEY,
✓	HB METHODIST CHURCH	MORRIS, COTHRAN, McMAHAN, EASTVIEW
✓	NEW BETHEL FCM	MAIN ST., FROM STORAGE BUILDINGS TO 4-WAY
✓	HBFD	ALFORD'S BEND
✓	GIRL SCOUTS	6TH, GILMORE, CENTRAL, SHOPPING CENTER,
✓	CROSSCREEK CHURCH	CADDELL,
✓	HB AG,	BRADLEY, MAIN ST.

Lisa Lowman

From: mayorgsreeves@cityofhokesbluff.com
Sent: Friday, August 26, 2022 11:03 AM
To: lisa.johnson@cityofhokesbluff.com
Subject: FW: Renew Our Rivers

From: Lisa Dover <keb@etowahcounty.org>
Sent: Tuesday, August 23, 2022 1:48 PM
To: Deborah Gathier <dgaither@cityofgadsden.com>; Jen Weathington <jweathington@cityofgadsden.com>; Martha Elrod <elrod205@comcast.net>; Freshwater Todd <tmsek@bellsouth.net>; Jonathon W. Horton <jhorton@etowahcounty.org>; Wiley McLain <wiley@rbcalabama.com>; Todd Means <toddmeans@cityofglencoe.net>; Kay Payne <kay@rainbow-logistics.com>; Martin A. Windham <MAWINDHA@southernco.com>; Mike Hilton <mhilton@cityofgadsden.com>; Brandon T. Beck <beckbr@dot.state.al.us>; Harris Tim <tim.harris@buffalorock.com>; Jamie Duncan <jduncan@attalla.k12.al.us>; Kathy Boggs <kathydboggs@gmail.com>; shassell@etowahcounty.org; Mel Smith <msmith@etowahcounty.org>; Cody Adams <adamsju@dot.state.al.us>; Scott Reeves <mayorgsreeves@cityofhokesbluff.com>; Dana Snyder <dsnyder@cityofsouthside.com>; Robert Nail <rnail@etowahcounty.org>; Williams Meleah <mwilliams@gadsdenwater.org>; Keith Peek <kpeek@etowahcounty.org>; Osbourne Cindy <cityclerk@cityofsouthside.com>; Ward Jeramy <jward@cityofgadsden.com>; Reed Kim <kim_reed@ecboe.org>; Mary Lumpkin <bimarina@bucksisland.com>; Hugh Stump <huaust3@gmail.com>; Gregory Harwood <gharwood@etowahcounty.org>; Mike Lankford <mlankford@gadsdenwater.org>; Jason Nicholson <jason.attalla@gmail.com>; Gene Phifer <eugenephifer@att.net>; Lackey Rickey <rlackey423@bellsouth.net>; Bedwell Anita <bedwell3@aol.com>; Jimmy Whittemore <jwhittemore@cityofsouthside.com>; St.Clair Brandon <bstclair@gadsdenwater.org>; Jackson Ty <tjackson@cityofgadsden.com>; Jennifer Lowman <jl7726@att.com>; Mary Lumpkin <mary@bucksisland.com>; Jimmy Sewell <james_sewell@ecboe.org>; Hayes Work Brian <jbhayes@southernco.com>; Jeff Harris <JeHarri@southernco.com>; Breonna Cole <bcole@cityofgadsden.com>; Debbie Carden <dlcarden@bellsouth.net>; Clelland, Michael B. <MBCLELLA@southernco.com>; Chad Hare <chare@gadsdenwater.org>; Heath Williamson <hwilliamson@cityofgadsden.com>; Windham Nancy <nwindham@bellsouth.net>; Sherman Guyton <sguyton@cityofgadsden.com>; davetumlin <davetumlin@comcast.net>; Gwin Perry <pgwin819@gmail.com>; Hildebrant Steve <sehildeb@southernco.com>; Yarbrough Brittany <byarbrou@southernco.com>; Blackwell, William Keith <kblackwell@gadsdencityschools.org>
Subject: Renew Our Rivers

Committee Members,

I am excited to announce that our Renew Our Rivers Cleanup this year is scheduled for the week of September 26th if all goes well and we do not have national health emergency!!!

Since this will be our first one in a couple of years, I am planning on a small and simple cleanup. We will work on Tuesday, Wednesday, and a half day on Thursday for the actual cleanup, but will have the trash drop off as in years past going from Monday to noon on Saturday.

Since everything is happening at a faster pace this year, I will be communicating primarily by email so if you have any questions please email or call me.

We will be setting up at Coosa Landing, as in the past, and serve lunch for all three days at this location. We will also have supplies available starting that Monday, September 26th probably around 1 p.m.

I look forward to having everyone back together but I still want us to be safe, so I will have masks and hand sanitizer for anyone who wants them. I know it will not be the same as in years past but hopefully this will be the start of getting things back to normal.

Also, instead of having lunch at Buck's, KEB is working with one of the gentlemen that cooked for Mary over the years. I know it's not the same and everyone will miss meeting at Buck's, but hopefully we can go back next year to Mary and the wonderful people from Buck's that have spoiled us over the years.

If you and your group wants to participate with us please email or call me to let me know. I totally understand if you are unable to this year!!

Let me know if you have any questions!

Lisa

--

Lisa Dover
Executive Director
Keep Etowah Beautiful, Inc.
keb@etowahcounty.org
Office: 256-549-0900
Fax: 256-549-1325





Photo: Volunteers from a previous Renew Our Rivers cleanup pose with the trash and debris they collected from the Coosa. (Courtesy of Greater Gadsden Area Tourism)

10-06-2022

By Emma Kirkemier, News Editor

The week of September 26 to October 1 marked the Coosa River/Neely Henry Lake leg of the statewide cleanup known as Renew Our Rivers.

"Renew Our Rivers — and I take great pride in all of them, but — that is a program that started here that has spread not only throughout the state of Alabama but other areas in the Southeast," said Keep Etowah Beautiful Director Lisa Dover.

Renew Our Rivers is an Alabama Power sponsored, volunteer-based program in which participants remove litter from the area's waterways, shorelines and land. Gadsden and Etowah County have participated in Renew Our Rivers for about 22 years.

“Everybody this year renewed my faith in a lot of people and a lot of things,” Dover said.

Dover said 272 volunteers turned out for this year’s cleanup, collecting a total of 1.58 tons of trash and debris.

Participants worked along the shorelines of the Coosa, in the river itself and further inland. Litter from dry land can wind up in the river, Dover pointed out, and vice versa.

“I had people out actually in boats picking up,” she said. “I had groups working the shoreline areas of the river. My saying is — and we started this years ago — litter will affect the land and the river system, because if you don’t get it off the land it can wind up in the river. And then when you have floods and it raises the water, it can put that litter right back on the shorelines again.”

A driving force of the project is the Influence Program, a partnership with Keep Etowah Beautiful in which inmates of the Etowah County Detention Center volunteer to remove litter and debris from local roadways.

“Supervised by a detention deputy, inmates daily walk the roadways of Etowah County picking up litter and other debris,” said the Etowah County Sheriff’s Office website. “Inmates selected for the Influence Program are nonviolent offenders who volunteer for the job. After a background check, they are approved by jail administration.”

These volunteers also join mass cleanups like river cleanups.

“The Etowah County Sheriff’s Office is working to clean up the county by joining the efforts of Renew Our Rivers,” the website said. “More than 35 inmates from the Substance Abuse Prevention Program spend time each [year] picking up trash and removing debris from the river banks of the Coosa River.”

Renew Our Rivers started in Etowah County as "Renew Our Coosa," created by Alabama Power employee Gene Phifer.

"This is where it all started at 22 years ago, when he (Phifer) was at the steam plant and saw trash going down behind the river and wanted to do something to make a difference in this community," Dover said. "What was so different about Renew Our Coosa [from] river cleanups in the past [was] this time, we brought community partners in. They asked us to join and to participate, and then it just went off from there."

Despite his retirement from Alabama Power, Phifer and his family are still "very much involved" in the cleanup. Dover said that Phifer is a mentor to her and encouraged her to do the work she does now.

"The community partners (and) the volunteers, once again, they do so much to make a difference in the community," Dover said. "We're only as good as our people are, and our people are wonderful."

Public partners of Keep Etowah Beautiful include the cities of Gadsden, Rainbow City, Glencoe, Southside, Hokes Bluff, the Etowah County Sheriff's Office, the Etowah County Commission, Etowah County Engineer Department, Gadsden-Etowah Emergency Management Association and the Alabama Department of Transportation.

Private-sector partners include Alabama Power, Gadsden Water Works, Campers Unlimited, Buffalo Rock, AT&T, Buck's Island, the Gadsden Beautification Board, the Neely Henry Lake Association, WCKA Radio and Turtle Water.

"To be honest with you, as much as this turned out to be bigger than I anticipated, I am really excited about next year," Dover said. "Hopefully we are going to be in a good place next year and can kind of bring more people in and get this out a little bit earlier for everybody to participate."

"This is an ongoing program that I encourage everybody, even when we're not having these events, if you're out and about that you do it year-round," Dover said.

Although its litter-busting work goes on year-round, the three main events hosted each year by KEB include a land-focused cleanup called the Great American Cleanup, an educational program for fourth graders called the Water Festival and Renew Our Rivers.

"This Water Festival is actually set up for the fourth-grade teachers and their students," Dover said. "We bring them in to Gadsden State, and then we'd have high schoolers come in and be our presenters."

Keep Etowah Beautiful hosts other school-centered programs including the Message in the Bottle poster contest and its Clean Campus initiative. Dover noted that the organization has also participated in local disaster relief efforts, often working with Gadsden/Etowah County EMA.

"One year when we had a tornado — and it's been several years ago — and it came across the county and it hit the Sardis area real hard," she said. "We were actually about to start Renew Our Rivers, but because we had neighbors in need up there, we took the workers that would have been out on the river and took and worked in that area."

KEB helped first responders clear local waterways after Southside was struck by a tornado in 2018.

"I think the thing about Keep Etowah Beautiful that I love is that we bring so many different people in to work together, and everybody focuses on trying to do what's best for their community and do the right thing," Dover said.

Share more, enjoy more. Go to

Brush / Limb List

March 6 2023

4325 Tawannah Circle
4608 Pinehill Place.
2750 Hwy 278 E
4397 Tawannah Circle W.
4356 Tawannah Circle E
5073 Louise St.
3242 Gazaway Street
3690 Williams Street
3600 Williams St.
5478 Johnson Street
2744 Alford Bend Road
2392 Verandah Trace
4811 Pinehill Place.
2704 Rexford St. will be on riverwalk.
2482 Barnes Drive.
2665 Alford Bend Rd - will be on sunset (corner of sunset/ABR)
2801 Wexter St. if Trees in ditch?
5480 2nd st.


POUR OIL IN TANK
PLACE EMPTY
CONTAINERS IN
TRASH CAN
THANKS


CAUTION
BRIDGE
MAY ICE IN
WINTER
LIMIT
11
TONS
NO
LITTERING
NO
DUMPING
ADEM

IECA

International Erosion Control Association®

Protecting Soil and Water Resources

Certificate of PDH Credit

May it be known by all who read this that on 05/17/2022

Scott Ryan

has successfully completed

2022 Auburn University Installer Training - Conference Registration

and has earned 10.00 PDH (Professional Development Hour)

Executive Director

IECA President

IECA

International Erosion Control Association®

Protecting Soil and Water Resources

Certificate of PDH Credit

May it be known by all who read this that on 05/19/2022

Scott Ryan

has successfully completed

2022 Auburn University Field Day - Field Day Attendee Registration

and has earned 6.00 PDH (Professional Development Hour)

Executive Director

IECA President

Certificate of Attendance

For participation in the

Alabama Association of Floodplain Managers

2022 Fall Conference

Orange Beach, Alabama

This Certificate awards 11 professional development hours to:

Scott Ryan

For attendance and participation at the
AAFM Fall Conference held October 17 - 19, 2022

Chuck Lay, CFM

October 19, 2022

Chuck Lay
President
ALABAMA ASSOCIATION OF
FLOODPLAIN MANAGERS

Appendix E - Illicit Discharge Detection and Elimination

THE CITY OF HOKES BLUFF
CONTROL MEASURE 2 - ILLICIT DISCHARGE DETECTION AND ELIMINATION
See Section 6.1 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	**Evaluate IDDE Ordinance:** Evaluate Ordinance No. HB-2012-002 annually on its effectiveness in addressing identified illicit discharges and preventing repeat offenders.	0 number of complaints received 0 illicit discharges identified 0 violations resolved The City evaluated the ordinance and determined that no changes are necessary at this time.	The City will evaluate the effectiveness of Ordinance No. HB-2012-002 and update it as needed.	A copy of Ordinance HB-2012-002 is provided in Appendix E of the 2022 SWMPP.		NO
2	**MS4 Map:** Maintain and update the MS4 Map showing known outfalls from the Hokes Bluff MS4.	0 civil plans provided to City 0 verified new outfalls	The City will continue to maintain an updated MS4 map for the Hokes Bluff MS4.	The updated Storm Water System Map is attached (See Document 2-1)		NO
3	**Identify Priority Areas:** Identify which drainage basins are considered Priority Areas for each reporting period.	14 drainage basins have been identified and IDP Assessment was performed on each basin. 2 Priority Areas were identified. Drainage basins I and K had the highest IDP score. 0 drainage basins newly listed as a priority area 0 drainage basins de-listed from priority area list	The City will re-evaluate the drainage basins and determine the Priority Areas for the reporting period.	A map showing the Hokes Bluff MS4 drainage basins and the table showing IDP scores are attached. (See Documents 2-2 and 2-3)		NO
4	**Outfall Reconnaissance Inventory for New MS4 Areas:** Implement a stream-walking program designed to identify outfalls to the MS4 within the newly-added MS4 areas.	No areas were added to the Hokes Bluff MS4 during the reporting period.	Should the City limits or Urbanized Area boundary change, the City will implement a stream-walking program designed to identify outfalls to the MS4 within the newly-added MS4 areas.			NO
5	**Outfall Reconnaissance Inventory for Previously Unidentified Outfalls:** Identify, inspect, and screen previously unknows outfalls at time of discovery. Add the outfalls to the MS4 outfall inventory and map.	0 new outfalls identified	Previously unknown outfalls encountered during dry-weather inspections of known outfalls will be identified, inspected, and screened at the time of discovery. Outfalls encountered during other field observations will be reported to the Building Inspector to be added to the outfall database for verification and inspection.	The current outfall inventory and the updated Storm Water System Map are attached (See Documents 2-4 and 2-1)		NO
6	**Verification of Potential Outfalls Identified During Plan Review:** Verify potential outfalls identified during review of as-built drawings or during the final inspection.	0 as-built drawings submitted 0 new outfalls identified	Outfalls identified during review of the as-built drawings or from the final inspection will be added to the outfall inventory and map as “Potential Outfalls” and will be inspected during the scheduled ORI activities.			NO

THE CITY OF HOKES BLUFF

CONTROL MEASURE 2 - ILLICIT DISCHARGE DETECTION AND ELIMINATION

See Section 6.1 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
7	**Outfall Reconnaissance Inventory (ORI) During Dry Weather:** Conduct dry weather outfall inspections on a minimum of 15% of all known outfalls during each reporting period.	18 outfalls inspected (19%) 0 new outfalls identified 1 outfall removed from inventory 95 outfalls total	The City will continue to inspect a minimum of 15% of all known outfalls during each reporting period. Outfalls in Priority Areas will be inspected once every 3 years.	The current outfall inventory, a list of the inspected outfalls, and the inspection forms are attached. (See Documents 2-4, 2-5, and 2-6).	Outfall H1-007 was confirmed by the property owner to be a roof downspout and was therefore removed from the outfall inventory.	NO
8	**Suspect Discharge Screening:** Screen dry-weather flows that are observed at an outfall during inspection.	0 dry weather flows 0 suspect discharges determined	The City will continue to screen dry-weather flows observed during outfall inspections as detailed in Section 8.9 of the IDDE Program.	A summary of the inspected outfalls and copies of the outfall inspection forms are attached. (See Documents 2-5 and 2-6)		NO
9	**Suspect Discharge Sampling:** Sample dry weather flows during observation for flows that have a severity index of 3 on one or more indicators in Section 4 of the ORI Field Sheet.	0 dry weather flows 0 suspect discharges determined 0 samples collected 0 confirmed illicit discharges	The City will collect samples of suspect discharges for further analysis as detailed in Section 8.10 of the IDDE Program.		No samples were collected	NO
10	**Outfall Ranking:** Analyze data from to designate outfalls as having obvious, suspect, possible, or unlikely discharge potential.	0 obvious illicit discharges 0 suspect illicit discharges	The City will analyze data from each Outfall Reconnaissance Inventory Field Sheet to designate the observed outfall as having obvious, suspect, possible, or unlikely discharge potential.	A summary of the inspected outfalls showing the outfall rankings is attached. (See Document 2-5)		NO
11	**Illicit Discharge Investigation:** Perform illicit discharge investigations to determine the source of a discharge problem and the responsible party.	0 illicit discharge investigations 0 illicit discharges confirmed 0 illicit discharges eliminated	Obvious and suspect illicit discharges will be investigated according to the schedule detailed in Section 9.0 of the IDDE Program.		No illicit discharge investigations were needed	NO
12	**Corrective Action Record Keeping:** Create a case log detailing pertinent information when a suspect illicit discharge or illicit connection is identified.	0 illicit discharges confirmed 0 illicit discharges eliminated 0 illicit discharge corrective action pending	When a suspect illicit discharge or illicit connection is identified, a case log detailing pertinent information will be created to document information related to the resolution of the illicit discharge.		No corrective actions were needed	NO
13	**Illicit Discharge Elimination:** Report identified illicit discharges to the appropriate City department or agency for corrective action.	0 illicit discharges referred to other agencies 0 illicit discharges eliminated	The City will report identified illicit discharges to the appropriate city department for corrective actions.		No correspondence was needed	NO

THE CITY OF HOKES BLUFF

CONTROL MEASURE 2 - ILLICIT DISCHARGE DETECTION AND ELIMINATION

See Section 6.1 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
14	**Distribute Storm Water Educational Material:** Provide educational materials highlighting identification and reporting of potential illicit discharges on the City's Storm Water Management and/or in locations such as the City Hall or the Public Library.	25 materials placed 152 views were recorded for the webpage	The City will provide educational materials highlighting identification and reporting of potential illicit discharges on the City's storm water webpage and/or place educational materials at City owned locations such as the City Hall or the Public Library.	The illicit discharge door hangar, a screenshot of the storm water webpage, and copies of the educational materials are attached. (See Documents 2-7, 1-1, and 1-4)		NO
15	**Public Reporting and Tracking System:** Promote the reporting number and form for reporting non-compliant construction sites, illicit discharges, impaired waterways, and violations of ordinances related to storm water pollution. Evaluate the efficacy of the program.	0 complaints received 0 complaints addressed 0 complaints resolved The reporting program was evaluated and are proposed at this time.	The City will continue to provide a contact number on the Storm Water Awareness webpage and track received reports and the City's responses to the received reports. The City will evaluate the current public reporting and tracking methods.	The Storm Water webpage and the illicit discharge door hangar are attached. (See Documents 1-1 and 2-7)		NO
16	**Municipal Employee Training:** Train Municipal Employees in the identification of illicit discharges annually.	S&ME addressed illicit discharge identification in the Annual Training conducted on **March 15, 2023**. 5 City employees attended training.	The City will train personnel on the identification of illicit discharges and procedures for reporting illicit discharges within the City organization.	Attendance records and training materials are attached. (See Document 2-8)		NO
17	**Notify ADEM of Illicit Discharges from an Adjacent MS4:** Notify the appropriate MS4 and the ADEM Water Division within 48 hours of observation of a suspect illicit discharge from an adjacent MS4.	0 suspect illicit discharges reported to other agencies	Should the City identify a suspect illicit discharge originating within a neighboring MS4, the City will notify the appropriate MS4 and the ADEM Water Division within 48 hours.		No correspondence was needed	NO
18	**Notify ADEM of Unpermitted Industrial Sites:** Report unpermitted facilities that require an NPDES permit to the Industrial Section of ADEM.	0 unpermitted facilities reported to ADEM	Unpermitted facilities will be reported to the Industrial Permits Section of ADEM.		No correspondence was needed	NO

REFERENCE:
GIS base layers were obtained from Esri. This map is for informational purposes only. All feature locations displayed are approximated and are not based on civil survey information, unless stated otherwise.

0 0.5 1
Miles

N

Alford Bend Rd
Appalachian Hwy
Bachelor Chapel Rd
Dry Creek
Big Cove Creek
Coal Creek
278
Alford Bend Rd
Posy Rd
Rabbittown Rd
Little Cove Creek
Ford Valley Rd
Big Cove Creek

Legend
- Outfall
- Hokes Bluff MS4

HOKES BLUFF MS4 OUTFALLS

CITY OF HOKES BLUFF, ALABAMA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040055

SCALE:	1:32,000
DATE:	03/30/2022
PROJECT NUMBER	215660D
FIGURE NO.	5

REFERENCE:
GIS base layers were obtained from Esri. This map is for informational purposes only. All feature locations displayed are approximated and are not based on civil survey information, unless stated otherwise.

0 0.5 1 Miles

N

Alford Bend Rd
Appalachian Hwy
Bachelor Chapel Rd
Dry Creek
Big Cove Creek
Coal Creek
Little Cove Creek
Rabbittown Rd
Posy Rd
Ford Valley Rd
278

BB
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Legend
Hokes Bluff MS4

DRAINAGE BASINS FOR IDP ASSESSMENT

CITY OF HOKES BLUFF, ALABAMA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040055

SCALE: 1:32,000
DATE: 03/30/2022
PROJECT NUMBER 215660D
FIGURE NO. 6

HOKES BLUFF MS4 IDDE

TABLE 1 - ILLICIT DISCHARGE POTENTIAL (IDP) SCORES
2022-2023 REPORTING PERIOD

BASIN ID	IDP CALCULATION	PRIORITY AREA
A	6	NO
B	6	NO
C	6	NO
D	5	NO
E	6	NO
F	6	NO
G	5	NO
H	5	NO
I	8	YES*
J	5	NO
K	8	YES*
L	6	NO
M	5	NO
N	5	NO
O	5	NO
P	5	NO
Q	5	NO
R	6	NO
S	5	NO
T	6	NO
U	6	NO
V	5	NO
W	5	NO
X	5	NO
Y	5	NO
Z	6	NO
AA	5	NO
BB	6	NO
CC	5	NO
DD	5	NO
EE	5	NO

*Considered a priority area due to highest IDP score.

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: A DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is in Gadsden, Glencoe, and Hokes Bluff

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	10-50 years	< 10 years	10-50 years	> 50 years	2
					TOTAL IDP	6

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: B DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is in Glencoe and Hokes Bluff

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	10-50 years	< 10 years	10-50 years	> 50 years	2
					TOTAL IDP	6

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: C DATE OF EVALUATION: 11/28/2022

COMMENTS: Most of basin within Hokesbluff MS4

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Residential	Residential	Business	Industrial	1
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	1	0 sites	1-5 sites	> 5 sites	2
4	AVERAGE AGE OF DEVELOPMENT	10-50 years	< 10 years	10-50 years	> 50 years	2
					TOTAL IDP	6

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: D DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is in Glencoe and Hokes Bluff

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Residential	Residential	Business	Industrial	1
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	10-50 years	< 10 years	10-50 years	> 50 years	2
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: E

DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is in Glencoe and Hokesbluff

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	10-50 years	< 10 years	10-50 years	> 50 years	2
					TOTAL IDP	6

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: F DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural. Fox Chase Subdivision (1997).

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	10-50 years	< 10 years	10-50 years	> 50 years	2
					TOTAL IDP	6

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: G DATE OF EVALUATION: 11/28/2022

COMMENTS: Most of basin within Hokes Bluff MS4. Cedar Ridge Subdivion (2002).

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Residential	Residential	Business	Industrial	1
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	10-50 years	< 10 years	10-50 years	> 50 years	2
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: H DATE OF EVALUATION: 11/28/2022

COMMENTS: Most of basin within Hokes Bluff MS4

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Residential	Residential	Business	Industrial	1
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	10-50 years	< 10 years	10-50 years	> 50 years	2
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: I DATE OF EVALUATION: 11/28/2022

COMMENTS: Most of basin within Hokes Bluff MS4

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	4	0 sites	1-5 sites	> 5 sites	2
4	AVERAGE AGE OF DEVELOPMENT	> 50 years	< 10 years	10-50 years	> 50 years	3
					TOTAL IDP	8

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: J DATE OF EVALUATION: 11/28/2022

COMMENTS:

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	< 10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: L DATE OF EVALUATION: 11/28/2022

COMMENTS:

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	10-50 years	< 10 years	10-50 years	> 50 years	2
					TOTAL IDP	6

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: K DATE OF EVALUATION: 11/28/2022

COMMENTS: Most of basin within Hokes Bluff; small portion in Glencoe

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	1	0 sites	1-5 sites	> 5 sites	2
4	AVERAGE AGE OF DEVELOPMENT	> 50 years	< 10 years	10-50 years	> 50 years	3
					TOTAL IDP	8

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: M DATE OF EVALUATION: 11/28/2022

COMMENTS:

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Residential	Residential	Business	Industrial	1
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	10-50 years	< 10 years	10-50 years	> 50 years	2
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: N DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: O

DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: P DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: Q DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: R DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	1	0 sites	1-5 sites	> 5 sites	2
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	6

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: S DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: T

DATE OF EVALUATION: 11/28/2022

COMMENTS:

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	10-50 years	< 10 years	10-50 years	> 50 years	2
					TOTAL IDP	6

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: U DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	1	0 sites	1-5 sites	> 5 sites	2
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	6

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: V DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: W

DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: X DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: Y

DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: Z

DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	10-50 years	< 10 years	10-50 years	> 50 years	2
					TOTAL IDP	6

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: AA

DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: BB

DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	1	0 sites	1-5 sites	> 5 sites	2
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	6

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: CC DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: DD

DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

ILLICIT DISCHARGE POTENTIAL WORKSHEET

SUBWATERSHED: EE

DATE OF EVALUATION: 11/28/2022

COMMENTS: Basin is zoned as agricultural.

			IDP RANKING VALUES			
	CRITERION	RESULT	1	2	3	IDP SCORE
1	LAND USE / ZONING	Business/Agricultural	Residential	Business	Industrial	2
2	# OF ILLICIT DISCHARGE REPORTS IN PAST 2 YEARS	0	0 reports	1-5 reports	> 5 reports	1
3	# OF POTENTIAL GENERATING SITES	0	0 sites	1-5 sites	> 5 sites	1
4	AVERAGE AGE OF DEVELOPMENT	<10 years	< 10 years	10-50 years	> 50 years	1
					TOTAL IDP	5

TOTAL IDP > 9 = PRIORITY AREA

HOKES BLUFF MS4 ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM

TABLE 2 - IDENTIFIED OUTFALLS

	OUTFALL ID #	LOCATION (LAT/LONG)		OUTFALL DESCRIPTION			RECEIVING WATER BODY	DATE IDENTIFIED	DATE INSPECTED	FLOW (YES/NO)	OUTFALL CHARACTERIZATION
				CLOSED/OPEN	MATERIAL	MAJOR/MINOR					
	BASIN I										
1	**I2-001**	33.995578	-85.856153	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/12/2015	3/23/2018	NO	UNLIKELY
2	**I2-002**	33.995687	-85.856534	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/12/2015	1/22/2020	NO	UNLIKELY
3	**I2-003**	33.995498	-85.856854	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/12/2015	1/6/2023	NO	UNLIKELY
4	**I2-004**	33.995443	-85.856906	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/13/2015	1/22/2020	NO	UNLIKELY
5	**I3-005**	33.994839	-85.859930	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/13/2015	3/23/2018	NO	UNLIKELY
6	**I3-006**	33.994734	-85.860064	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/13/2015	3/23/2016	NO	UNLIKELY
7	**I3-007**	33.995794	-85.860672	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	2/13/2015	1/22/2020	NO	UNLIKELY
8	**I3-008**	33.995788	-85.861185	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	2/13/2015	1/22/2020	NO	UNLIKELY
9	**I3-009**	33.995782	-85.861570	CLOSED PIPE	CMP	MINOR	UT OF COOSA RIVER	2/13/2015	1/22/2020	NO	UNLIKELY
10	**I3-010**	33.995777	-85.861783	CLOSED PIPE	RCP	MAJOR	UT OF COOSA RIVER	2/13/2015	1/6/2023	NO	UNLIKELY
11	**I3-011**	33.997226	-85.864420	OPEN DRAINAGE	EARTHEN/RIPRAP	MINOR	UT OF COOSA RIVER	2/13/2015	1/22/2020	NO	UNLIKELY
12	**I3-012**	33.997328	-85.864453	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	2/13/2015	3/16/2019	NO	OBVIOUS
13	**I3-013**	33.997333	-85.864340	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/13/2015	1/22/2020	NO	UNLIKELY
14	**I3-014**	33.997411	-85.864354	CLOSED PIPE	PLASTIC	MINOR	UT OF COOSA RIVER	2/13/2015	1/6/2023	NO	UNLIKELY
15	**I3-015**	33.998695	-85.865191	CLOSED PIPE	STEEL	MINOR	UT OF COOSA RIVER	2/13/2015	1/22/2020	NO/SUBMERGED	POTENTIAL
16	**I3-016**	33.998706	-85.865198	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/13/2015	1/22/2020	NO	UNLIKELY
17	**I3-017**	33.998682	-85.865221	CLOSED PIPE	STEEL	MINOR	UT OF COOSA RIVER	2/13/2015	1/22/2020	NO/SUBMERGED	POTENTIAL
18	**I3-018**	33.998683	-85.865236	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/13/2015	1/22/2020	NO	UNLIKELY
19	**I3-019**	33.998788	-85.865317	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/13/2015	1/22/2020	NO	UNLIKELY
20	**I3-020**	33.999176	-85.865340	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/13/2015	1/22/2020	NO	UNLIKELY
21	**I4-021**	33.993654	-85.858457	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/13/2015	1/6/2023	NO	UNLIKELY
	BASIN K										
22	**K1-001**	33.985706	-85.878395	CLOSED PIPE	HDPE	MINOR	UT OF BIG COVE CREEK	2/12/2015	3/16/2018	YES	UNLIKELY
23	**K1-002**	33.985706	-85.878682	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/22/2020	NO	UNLIKELY
24	**K1-003**	33.987537	-85.877073	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/22/2020	NO	UNLIKELY
25	**K1-005**	33.989230	-85.874180	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/22/2020	NO	UNLIKELY
26	**K1-006**	33.989273	-85.874199	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/22/2020	YES	UNLIKELY
27	**K2-009**	33.989485	-85.872042	CLOSED PIPE	STEEL	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/6/2023	NO	UNLIKELY
28	**K2-010**	33.989480	-85.872022	CLOSED PIPE	HDPE	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/22/2020	NO	UNLIKELY
29	**K2-011**	33.989479	-85.871896	CLOSED PIPE	PVC	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/22/2020	NO	UNLIKELY
30	**K2-012**	33.989479	-85.871894	CLOSED PIPE	PLASTIC	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/22/2020	NO	UNLIKELY
31	**K2-013**	33.989477	-85.871775	CLOSED PIPE	PLASTIC	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/22/2020	NO	UNLIKELY
32	**K2-014**	33.989474	-85.871745	CLOSED PIPE	PLASTIC	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/6/2023	NO	UNLIKELY
33	**K2-015**	33.989492	-85.871562	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK	2/12/2015	3/9/2021	YES	UNLIKELY
34	**K2-016**	33.989456	-85.871567	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK	2/12/2015	3/9/2021	NO	UNLIKELY
35	**K2-017**	33.989488	-85.871448	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK	2/12/2015	3/9/2021	NO	UNLIKELY
36	**K2-018**	33.989212	-85.870978	CLOSED PIPE	PVC	MINOR	UT OF BIG COVE CREEK	2/12/2015	3/9/2021	NO	UNLIKELY
37	**K2-019**	33.989202	-85.870978	CLOSED PIPE	PVC	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/6/2023	NO	UNLIKELY
38	**K3-020**	33.991202	-85.872557	OPEN DRAINAGE	EARTHEN/RIP-RAP	MINOR	UT OF BIG COVE CREEK	2/12/2015	3/11/2021	NO	UNLIKELY
39	**K3-021**	33.991344	-85.872530	OPEN DRAINAGE	EARTHEN	MINOR	UT OF BIG COVE CREEK	2/12/2015	3/11/2021	NO	UNLIKELY

HOKES BLUFF MS4 ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM

TABLE 2 - IDENTIFIED OUTFALLS

	BASIN G										
40	**G1-002**	34.003196	-85.873381	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	11/12/2015	3/11/2021	NO	UNLIKELY
41	**G1-003**	34.001900	-85.871940	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	11/12/2015	3/16/2019	NO	UNLIKELY
42	**G1-004**	34.001765	-85.871668	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	11/12/2015	1/6/2023	NO	UNLIKELY
43	**G1-005**	34.000799	-85.871521	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	11/12/2015	3/9/2021	NO	UNLIKELY
44	**G1-006**	34.000543	-85.871583	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	11/12/2015	3/9/2021	NO	UNLIKELY
45	**G1-007**	34.999887	-85.871693	CLOSED PIPE	STEEL	MAJOR	UT OF COOSA RIVER	11/12/2015	2018 & 1/22/20 & 3	YES	UNLIKELY
46	**G2-001**	34.000583	-85.868390	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	11/12/2015	3/9/2021	NO	UNLIKELY
47	**G2-002**	34.000581	-85.868434	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	12/11/2015	3/9/2021	NO	UNLIKELY
48	**G2-003**	34.000659	-85.868444	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	12/11/2015	3/9/2021	NO	UNLIKELY
49	**G2-004**	34.000687	-85.868421	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	12/11/2015	3/9/2021	NO	UNLIKELY
50	**G2-005**	34.001688	-85.869020	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	12/11/2015	3/9/2021	NO	UNLIKELY
51	**G2-006**	34.001905	-85.869571	CLOSED PIPE	PLASTIC	MINOR	UT OF COOSA RIVER	12/11/2015	3/9/2021	NO	UNLIKELY
52	**G2-007**	34.002422	-85.870231	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	12/11/2015	3/9/2021	NO	UNLIKELY
53	**G2-008**	34.002968	-85.871641	CLOSED PIPE	STEEL	MINOR	UT OF COOSA RIVER	12/11/2015	3/16/2019	YES	UNLIKELY
54	**G2-010**	34.002964	-85.871972	CLOSED PIPE	STEEL	MINOR	UT OF COOSA RIVER	12/11/2015	1/6/2023	NO	UNLIKELY
55	**G3-001**	34.999253	-85.875588	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	11/12/2015	3/11/2021	NO	UNLIKELY
56	**G3-002**	34.999373	-85.876102	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	11/12/2015	3/11/2021	NO	UNLIKELY
57	**G3-003**	34.999048	-85.876373	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	11/12/2015	3/11/2021	NO	UNLIKELY
58	**G3-004**	34.999007	-85.877091	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	11/12/2015	3/11/2021	NO	UNLIKELY
59	**G3-005**	34.998653	-85.877734	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	11/12/2015	1/6/2023	NO	UNLIKELY
	BASIN H										
60	**H1-001**	34.005898	-85.860080	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	12/11/2015	1/6/2023	NO	UNLIKELY
61	**H1-003**	34.005922	-85.859882	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	12/11/2015	9/28/2021	NO	UNLIKELY
62	**H1-004**	34.005961	-85.859907	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	12/11/2015	9/28/2021	NO	UNLIKELY
63	**H1-005**	34.005929	-85.859862	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	12/11/2015	9/28/2021	NO	UNLIKELY
64	**H1-006**	34.006972	-85.858724	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	12/11/2015	9/28/2021	NO	UNLIKELY
65	**H1-008**	34.008132	-85.858610	CLOSED PIPE	PVC	MINOR	UT OF COOSA RIVER	12/11/2015	9/28/2021	NO	UNLIKELY
66	**H1-009**	34.008188	-85.858597	CLOSED PIPE	PVC	MINOR	UT OF COOSA RIVER	12/11/2015	9/28/2021	NO	UNLIKELY
67	**H2-001**	34.008001	-85.866575	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	1/5/2016	1/6/2023	NO	UNLIKELY
68	**H2-002**	34.008566	-85.866480	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	1/5/2016	9/28/2021	NO	UNLIKELY
69	**H2-003**	34.008947	-85.864152	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/5/2016	3/23/2018	YES	UNLIKELY
70	**H2-004**	34.008966	-85.864106	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/5/2016	3/23/2018	YES	UNLIKELY
71	**H2-005**	34.010109	-85.860293	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/5/2016	3/23/2018	YES	UNLIKELY
72	**H2-006**	34.010960	-85.859587	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/5/2016	3/23/2019	YES	UNLIKELY
73	**H3-001**	34.001894	-85.859543	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	1/5/2016	3/23/2018	NO	UNLIKELY
74	**H3-002**	34.001797	-85.859711	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/5/2016	9/28/2021	NO	UNLIKELY
75	**H3-003**	34.001801	-85.859746	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/5/2016	1/6/2023	NO	UNLIKELY

HOKES BLUFF MS4 ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM

TABLE 2 - IDENTIFIED OUTFALLS

	BASIN Z										
76	**Z-001**	34.007591	-85.839171	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	10/24/2016	3/23/2018	YES	UNLIKELY
77	**Z-002**	34.007598	-85.839439	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	10/24/2016	9/28/2021	NO	UNLIKELY
78	**Z-003**	34.009438	-85.838254	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	10/24/2016	1/6/2023	NO	UNLIKELY
79	**Z-004**	34.009485	-85.838164	OPEN DRAINAGE	EARTHEN/RIP-RAP	MINOR	UT OF COOSA RIVER	10/24/2016	9/28/2021	NO	UNLIKELY
80	**Z-005**	34.009520	-85.838175	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	10/24/2016	1/6/2023	NO	UNLIKELY
81	**Z-006**	34.011217	-85.836898	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	10/24/2016	9/28/2021	NO	UNLIKELY
82	**Z-007**	34.011213	-85.836972	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	10/24/2016	9/28/2021	NO	UNLIKELY
83	**Z-008**	34.006770	-85.836801	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	10/24/2016	9/28/2021	NO	UNLIKELY
84	**Z-009**	34.006694	-85.836720	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	10/24/2016	9/28/2021	NO	UNLIKELY
85	**Z-010**	34.001340	-85.833271	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	10/24/2016	9/28/2021	NO	UNLIKELY
86	**Z-011**	34.001356	-85.833267	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	10/24/2016	9/28/2021	NO	UNLIKELY
	BASIN J										
87	**J-001**	33.989319	-85.850497	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	1/16/2017	3/23/2018	NO	UNLIKELY
	BASIN T										
88	**T-002**	34.000178	-85.835759	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/16/2017	9/28/2021	NO	UNLIKELY
89	**T-003**	34.000246	-85.835960	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/16/2017	9/28/2021	NO	UNLIKELY
	BASIN C										
90	**C-001**	34.005913	-85.919584	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	3/20/2017	1/6/2023	NO	UNLIKELY
91	**C-002**	34.005880	-85.919488	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	3/20/2017	9/28/2021	NO	UNLIKELY
92	**C-003**	34.005745	-85.915036	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	3/20/2017	9/28/2021	NO	UNLIKELY
93	**C-004**	34.005703	-85.915028	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	3/20/2017	9/28/2021	NO	UNLIKELY
94	**C-005**	34.005746	-85.915125	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	3/20/2017	9/28/2021	NO	UNLIKELY
95	**C-006**	34.008264	-85.922413	CLOSED PIPE	RCP	MINOR	BIG COVE CREEK	3/23/2018	1/6/2023	NO	UNLIKELY

HOKES BLUFF MS4 ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM

TABLE 3 - FY2022-2023 OUTFALL INSPECTIONS

OUTFALL ID #	LOCATION (LAT/LONG)		OUTFALL DESCRIPTION			RECEIVING WATER BODY	DATE IDENTIFIED	DATE INSPECTED	FLOW (YES/NO)	OUTFALL CHARACTERIZATION
			CLOSED/OPEN	MATERIAL	MAJOR/MINOR					
I2-003	33.995498	-85.856854	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/12/2015	1/6/2023	NO	UNLIKELY
I3-010	33.995777	-85.861783	CLOSED PIPE	RCP	MAJOR	UT OF COOSA RIVER	2/13/2015	1/6/2023	NO	UNLIKELY
I3-014	33.997411	-85.864354	CLOSED PIPE	PLASTIC	MINOR	UT OF COOSA RIVER	2/13/2015	1/6/2023	NO	UNLIKELY
I4-021	33.993654	-85.858457	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	2/13/2015	1/6/2023	NO	UNLIKELY
K2-009	33.989485	-85.872042	CLOSED PIPE	STEEL	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/6/2023	NO	UNLIKELY
K2-014	33.989474	-85.871745	CLOSED PIPE	PLASTIC	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/6/2023	NO	UNLIKELY
K2-019	33.989202	-85.870978	CLOSED PIPE	PVC	MINOR	UT OF BIG COVE CREEK	2/12/2015	1/6/2023	NO	UNLIKELY
G1-004	34.001765	-85.871668	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	11/12/2015	1/6/2023	NO	UNLIKELY
G2-010	34.002964	-85.871972	CLOSED PIPE	STEEL	MINOR	UT OF COOSA RIVER	12/11/2015	1/6/2023	NO	UNLIKELY
G3-005	33.998653	-85.877734	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	11/12/2015	1/6/2023	NO	UNLIKELY
H1-001	34.005898	-85.860080	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	12/11/2015	1/6/2023	NO	UNLIKELY
H1-007*	34.007835	-85.858608	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	12/11/2015	1/6/2023	NO	UNLIKELY
H2-001	34.008001	-85.866575	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	1/5/2016	1/6/2023	NO	UNLIKELY
H3-003	34.001801	-85.859746	OPEN DRAINAGE	EARTHEN	MINOR	UT OF COOSA RIVER	1/5/2016	1/6/2023	NO	UNLIKELY
Z-003	34.009438	-85.838254	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	10/24/2016	1/6/2023	NO	UNLIKELY
Z-005	34.009520	-85.838175	CLOSED PIPE	HDPE	MINOR	UT OF COOSA RIVER	10/24/2016	1/6/2023	NO	UNLIKELY
C-001	34.005913	-85.919584	CLOSED PIPE	RCP	MINOR	UT OF COOSA RIVER	3/20/2017	1/6/2023	NO	UNLIKELY
C-006	34.008264	-85.922413	CLOSED PIPE	RCP	MINOR	BIG COVE CREEK	3/23/2018	1/6/2023	NO	UNLIKELY

*Outfall H1-007 was confirmed by the property owner to be a roof downspout and therefore removed from the outfall inventory.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: C-001		Outfall ID: **C-001**	
Date: 01/06/2022		Time (Military): 1234	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 55	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 34.005913	Longitude: -85.919584	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☒ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Conveyance of stormwater along Walker Drive.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other:	☒ Circular ☐ Elliptical ☐ Box ☐ Other:	☒ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 16"	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

C-001
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: C-001
GPS: 34.005913°, -85.919584°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall C-001, facing north.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: Conveyance of stormwater along Walker Drive.		Outfall ID: **C-006**	
Date: 03/03/2022		Time (Military): 1238	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 54	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 34.008264	Longitude: -85.922413	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☒ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Conveyance of stormwater along Cove Circle South

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other:	☒ Circular ☐ Elliptical ☐ Box ☐ Other:	☒ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 16"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

C-006
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: C-006
GPS: 34.008264°, -85.922413°
Date of Photo: January 6, 2022
Receiving Water Body: Big Cove Creek



Photo 1 View of minor outfall C-006, facing east.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: G		Outfall ID: **G1-004**	
Date: 01/06/2022		Time (Military): 1207	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 54	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 34.001765	Longitude: -85.871668	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ■ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Originates from residential home. Buried deep into sediment.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
■ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ■ HDPE ☐ Steel ☐ Other:	■ Circular ☐ Elliptical ☐ Box ☐ Other:	■ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 4"	In Water: ■ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ■ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ■ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

G1-004
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☒ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	Outfall is broken, cracked, and buried into the sediment
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall is buried into ground

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: G1-004
GPS: 33.001765°, -85.871668°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall G1-004, facing east.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: G		Outfall ID: **G2-010**	
Date: 01/06/2022		Time (Military): 1211	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 55	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 34.002964	Longitude: -85.871972	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ■ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Conveyance of stormwater along Applachian Way.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
■ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ■ Steel ☐ Other:	■ Circular ☐ Elliptical ☐ Box ☐ Other:	■ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 15"	In Water: ☐ No ■ Partially ☐ Fully With Sediment: ☐ No ■ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ■ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

G2-010
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☒ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	Outfall folded in and partially crushed
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: G2-010
GPS: 34.002964°, -85.871972°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall G2-010, facing north.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: G		Outfall ID: **G3-005**	
Date: 03/03/2022		Time (Military): 1219	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 55	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 33.998653	Longitude: -85.877734	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ■ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Conveyance of stormwater along Riverview Drive.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other:	☐ Circular ☐ Elliptical ☐ Box ☐ Other:	☐ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
■ **Open drainage**	☐ Concrete ■ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ■ Parabolic ☐ Other:		Depth: 18" Top Width: 36" Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ■ No ***If No, Skip to Section 5***				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

G3-005
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: G3-005
GPS: 33.998653°, -85.877734°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall G3-005, facing south.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: H		Outfall ID: **H1-007**	
Date: 01/06/2022		Time (Military): 1042	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 51	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 34.005898	Longitude: -85.860080	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ■ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):
Residential home on Clinton Way.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
■ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ■ HDPE ☐ Steel ☐ Other:	■ Circular ☐ Elliptical ☐ Box ☐ Other:	■ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 4"	In Water: ■ No ☐ Partially ☐ Fully With Sediment: ■ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ■ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

H1-007
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☒ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	Outfall is cracked
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: H1-001
GPS: 34.005898°, -85.860080°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall H1-001, facing northwest.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: H		Outfall ID: **H1-007**	
Date: 01/06/2022		Time (Military): 1050	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 51	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 34.007835	Longitude: -85.858608	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☒ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Residential home on Clinton Way. Homeowner confirmed that pipe was from roof downspout. therefore, outfall will be removed from inventory

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☒ HDPE ☐ Steel ☐ Other:	☒ Circular ☐ Elliptical ☐ Box ☐ Other:	☒ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 4"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

H1-007
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: H1-007
GPS: 34.007835°, -85.858608°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall H1-007, facing west.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: H		Outfall ID: **H2-001**	
Date: 01/06/2022		Time (Military): 1055	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 51	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 34.008001	Longitude: -85.866575	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☒ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):
Conveyance of stormwater along Bradley Avenue.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other:	☒ Circular ☐ Elliptical ☐ Box ☐ Other:	☒ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 18"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

H2-001
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: H2-001
GPS: 34.008001°, -85.866575°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall H2-001, facing south.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: H		Outfall ID: **H3-003**	
Date: 01/06/2022		Time (Military): 1104	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 51	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 34.001801	Longitude: -85.859746	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ■ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):
Conveyance of stormwater along Sunset Drive.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other:	☐ Circular ☐ Elliptical ☐ Box ☐ Other:	☐ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
■ **Open drainage**	☐ Concrete ■ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ■ Parabolic ☐ Other:		Depth: 4" Top Width: 24" Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ■ No ***If No, Skip to Section 5***				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

H3-003
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: H3-003
GPS: 34.001801°, -85.859746°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall H3-003, facing west.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: |		Outfall ID: **I2-003**	
Date: 01/06/2022		Time (Military): 1130	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 54	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 33.995498	Longitude: -85.856854	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ■ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Conveyance of stormwater from nearby residential neighborhood and Eastview Avenue.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other:	☐ Circular ☐ Elliptical ☐ Box ☐ Other:	☐ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
■ **Open drainage**	☐ Concrete ■ Earthen ☐ Rip-rap ☐ Other:	■ Trapezoid ☐ Parabolic ☐ Other:		Depth: 20" Top Width: 90" Bottom Width: 24"	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ■ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

I2-003
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: I2-003
GPS: 33.995498°, -85.856854°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall I2-003, facing northwest.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin:		Outfall ID: **I3-010**	
Date: 01/06/2022		Time (Military): 1119	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 53	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 33.995777	Longitude: -85.861783	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☒ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):
Conveyance of stormwater from nearby residential neighborhood. Travels under Eastview Avenue.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other:	☐ Circular ☒ Elliptical ☐ Box ☐ Other:	☐ Single ☒ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 48" x 30"	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

I3-010
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

One of the outfalls is partially blocked by sediment, the other is clear.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: I3-010
GPS: 33.995777°, -85.861783°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of major outfall I3-010, facing north and towards Eastview Avenue.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: I		Outfall ID: **I3-014**	
Date: 01/06/2022		Time (Military): 1112	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 53	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 33.997411	Longitude: -85.864354	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ■ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):
Possible origin nearby residential home.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
■ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ■ Other: plastic	■ Circular ☐ Elliptical ☐ Box ☐ Other:	■ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 3/4"	In Water: ■ No ☐ Partially ☐ Fully With Sediment: ■ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ■ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

I3-014
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☒ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	Outfall is cracked.
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: I3-014
GPS: 33.997411°, -85.864354°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall I3-014, facing north.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: I		Outfall ID: **I4-021**	
Date: 01/06/2022		Time (Military): 1137	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 54	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 33.993654	Longitude: -85.858457	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ■ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Conveyance of stormwater from nearby residential neighborhood and Carnes Street.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other:	☐ Circular ☐ Elliptical ☐ Box ☐ Other:	☐ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
■ **Open drainage**	☐ Concrete ■ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ■ Parabolic ☐ Other:		Depth: 7" Top Width: 32" Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ■ No ***If No, Skip to Section 5***				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

I4-021
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: I4-021
GPS: 33.993654°, -85.858457°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall I4-021, facing east.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: K		Outfall ID: **K2-009**	
Date: 01/06/2022		Time (Military): 1157	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 54	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 33.989485	Longitude: -85.872042	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Open Space
- ■ Ultra-Urban Residential
- ☐ Institutional
- ☐ Suburban Residential
- Other: _____
- ☐ Commercial
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Originating from covered storage area of a residential home

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
■ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ■ Steel ☐ Other:	■ Circular ☐ Elliptical ☐ Box ☐ Other:	■ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 8"	In Water: ■ No ☐ Partially ☐ Fully With Sediment: ■ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ■ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

K2-009
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☒ Spalling, Cracking or Chipping ☐ Peeling Paint ☒ Corrosion	Outfall is rusted and chipping
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: K2-009
GPS: 33.989485°, -85.872042°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of Big Cove Creek



Photo 1 View of minor outfall K2-009, facing east.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: K		Outfall ID: **K2-014**	
Date: 01/06/2022		Time (Military): 1155	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 54	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 33.989474	Longitude: -85.871745	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Open Space
- ■ Ultra-Urban Residential
- ☐ Institutional
- ☐ Suburban Residential
- Other: _____
- ☐ Commercial
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Originating from a residential home.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
■ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ■ Other: plastic	■ Circular ☐ Elliptical ☐ Box ☐ Other:	■ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 1.5"	In Water: ■ No ☐ Partially ☐ Fully With Sediment: ■ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ■ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

K2-014
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☒ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	Outfall is chipping.
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: K2-014
GPS: 33.989474°, -85.871745°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of Big Cove Creek



Photo 1 View of minor outfall K2-014, facing south.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: K		Outfall ID: **K2-019**	
Date: 01/06/2022		Time (Military): 1147	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 54	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 33.989202	Longitude: -85.870978	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Open Space
- ☒ Ultra-Urban Residential
- ☐ Institutional
- ☐ Suburban Residential
- Other: _____
- ☐ Commercial
- Known Industries: _____

Notes (e.g., origin of outfall, if known): Originating from a residential home.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☐ RCP ☐ CMP ☒ PVC ☐ HDPE ☐ Steel ☐ Other:	☒ Circular ☐ Elliptical ☐ Box ☐ Other:	☒ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 1"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

K2-019
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: K2-019
GPS: 33.989202°, -85.870978°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of Big Cove Creek



Photo 1 View of minor outfall K2-019, facing east.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: Z		Outfall ID: **Z-003**	
Date: 01/06/2022		Time (Military): 1028	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 45	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 34.009438	Longitude: -85.838254	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ■ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):
Conveyance of storm water along Euclid Road. Standing Water present but no flow observed.

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
■ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ■ HDPE ☐ Steel ☐ Other:	■ Circular ☐ Elliptical ☐ Box ☐ Other:	■ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 15"	In Water: ☐ No ■ Partially ☐ Fully With Sediment: ☐ No ■ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ■ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

Z-003
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

None observed.

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: Z-003
GPS: 34.009438°, -85.838254°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall Z-003, facing north.

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Drainage Basin: Z		Outfall ID: **Z-005**	
Date: 01/06/2022		Time (Military): 1022	
Investigators: E. Kennedy and A. Harris		Form completed by: A. Harris	
Temperature (°F): 45	Rainfall Last 24 hours: 0 (in.)	Last 48 hours: 0 (in.)	
Latitude: 34.009520	Longitude: -85.838175	GPS Unit: Trimble Geo7x	GPS LMK #: NA
Camera: iPhone		Photo #s: One photo attached	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☒ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):
Conveyance of storm water along Euclid Road. Outfall was collapsed

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☒ HDPE ☐ Steel ☐ Other:	☒ Circular ☐ Elliptical ☐ Box ☐ Other:	☒ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions: 15"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☒ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ Rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☒ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
Flow Method 1	Volume		Liter	Bottle
	Time to fill		Seconds	Stop watch
Flow Method 2	Flow depth		Inches	Tape measure
	Flow width		Feet, Inches	Tape measure
	Length of travel		Feet, Inches	Tape measure
	Time of travel		Seconds	Stop watch
Temperature			°F	Thermometer
pH			pH Standard Units	Probe
Ammonia			mg/L	Test strip
Chlorine (optional)			mg/L	Test strip / probe

Z-005
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables (Not including trash)	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☒	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	Outfall is collapsed and fully blocked.
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☒ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☒ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☒ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall completely collapsed

City of Hokes Bluff
IDDE MS4 Compliance
Hokes Bluff, Etowah County, Alabama
S&ME Project No. 4482-14-062

Outfall Number: Z-005
GPS: 34.009520°, -85.838175°
Date of Photo: January 6, 2022
Receiving Water Body: Unnamed tributary of the Coosa River



Photo 1 View of minor outfall Z-005, facing north.

Stormwater runoff is precipitation from rain or snowmelt that flows over the ground. As it flows, it can pick up debris, chemicals, dirt, and other pollutants and deposit them into a storm sewer system or waterbody.

Anything that enters a storm sewer system is discharged *untreated* into the waterbodies we use for swimming, fishing, and providing drinking water.

Remember: Only Rain Down the Drain

To keep the stormwater leaving your home or workplace clean, follow these simple guidelines:



- Use pesticides and fertilizers sparingly.
- Repair auto leaks.
- Dispose of household hazardous waste, used auto fluids (antifreeze, oil, etc.), and batteries at designated collection or recycling locations.
- Clean up after your pet.
- Use a commercial car wash or wash your car on a lawn or other unpaved surface.
- Sweep up yard debris rather than hosing down areas. Compost or recycle yard waste when possible.
- Clean paint brushes in a sink, not outdoors. Properly dispose of excess paints through a household hazardous waste collection program.
- Sweep up and properly dispose of construction debris like concrete and mortar.



Stormwater Pollution Found in Your Area!

This is not a citation.

This is to inform you that our staff found the following pollutants in the storm sewer system in your area. This storm sewer system leads directly to

_____

- ❑ Motor oil
- ❑ Oil filters
- ❑ Antifreeze/ transmission fluid
- ❑ Paint
- ❑ Solvent/degreaser
- ❑ Cooking grease
- ❑ Detergent
- ❑ Home improvement waste (concrete, mortar)
- ❑ Pet waste
- ❑ Yard waste (leaves, grass, mulch)
- ❑ Excessive dirt and gravel
- ❑ Trash
- ❑ Construction debris
- ❑ Pesticides and fertilizers
- ❑ Other





_____

For more information or to report an illegal discharge of pollutants, please call:

Arvil Alford
City of Hokes Bluff
256-492-2414

EPA United States Environmental Protection Agency

WHEN IT RAINS IT DRAINS

www.epa.gov/npdes/stormwater

EPA 833-F-03-002
April 2003

CITY OF HOKES BLUFF

MS4 ANNUAL AWARENESS TRAINING

GADSDEN-ETOWAH MS4

MARCH 15, 2023

	PRINT NAME	SIGNATURE
1	Scott Ryan	Scott Ryan
2	Jimmy Hostad	
3	Wade Reed	Wade Reed
4	Phillip Griffith	Phillip Griffith
5	Chance Ford	Chance Ford
6		
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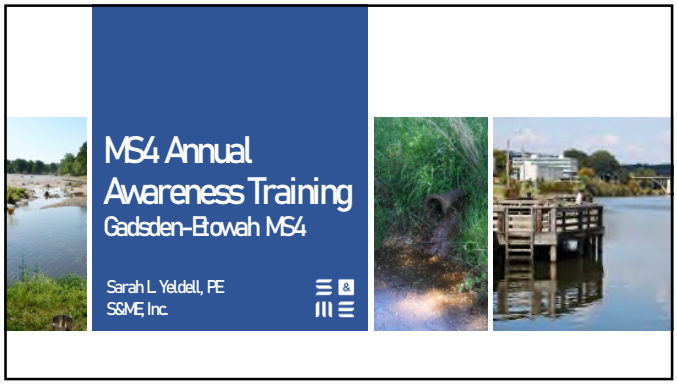


1



2

What is an MS4?

- **M**unicipal **S**eparate **S**torm **S**ewer **S**ystem
- An MS4 is a system of conveyances that is:
  - Owned by a state, city, or other public entity
  - Designed or used to collect or convey storm water
  - Not a combined sewer
  - Not part of a Publicly Owned Treatment Works

3

NPDES Background

- National Pollutant Discharge Elimination System
- NPDES program created in 1972 by the Clean Water Act
- Some pollution sources exempted from 1972 law
- Water Quality Act of 1987 expanded coverage to industrial stormwater and MS4s



4

MS4 History – Phase I Rule

- Storm Water Phase I Final Rule issued by the EPA in 1990
- Requires coverage of medium and large cities with populations of **100,000 or more**
- Large: population ≥ 250,000
- Medium: population between 100,000 and 250,000
- Around 855 Phase I MS4s nationwide
- Currently 27 Phase I MS4s in Alabama

5

MS4 History – Phase II Rule

- Storm Water Phase II Final Rule issued by the USEPA in 1999
- Requires coverage of small MS4s
- Populations less than 100,000 but located in an "**urbanized area**" as defined by the Census
- Provides exemptions for very small communities
- Around 6,700 Phase II MS4s nationwide
- Currently 54 Phase II MS4s in Alabama

6

Why does the MS4 program exist?

- Municipal conveyances collect pollutants from users within the city
- Cities have the ability to regulate at the local level
- Addresses pollutants at their source





7

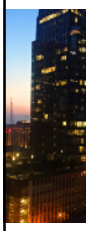
Common MS4 Pollutants

- Oil and grease from roadways
- Pesticides and fertilizers from lawns
- Sediment from construction sites
- Trash (cigarette butts, paper wrappers, plastic bottles)





8



MS4

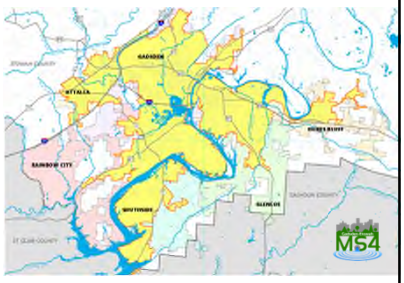
Urbanized Area



9

2010 Urbanized Area Definition

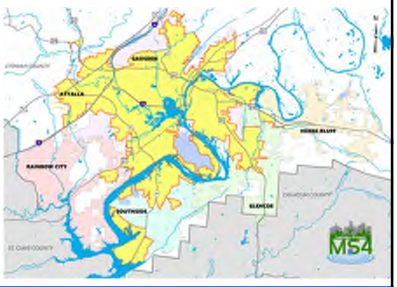
- Defined by the US Census Bureau
- **Urbanized area** Minimum population of 50,000
- **Core blocks** 1,000 people/sq mi
- **Surrounding blocks** 500 people/sq mi
- 497 Urbanized Areas in 2010 Census



10

2020 Census Changes

- **Urban area** Minimum population of 5,000 or 2,000 HUs
- **High-density nucleus** 1,275 HUs/sq mi
- **Initial urban core** 425 HUs/sq mi
- **Remainder of urban area** 200 HUs/sq mi



11

Interim Guidance

- EPA published interim guidance in July 2022
- Maps released in December 2022
- **Current MS4s will continue to be regulated**
- States may delay action until EPA provides direction
- Revisions to the Phase II regulations may be needed
- Alabama will not revise their MS4 program until specifically directed

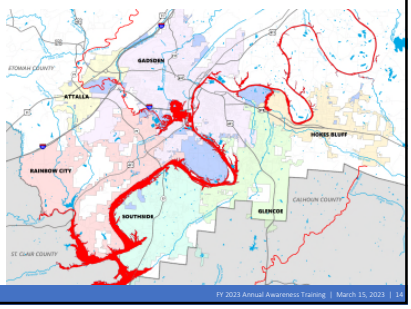
12



13

Impaired Waterbodies

- "Impaired" means the waterbody cannot be used for its **designated purpose**
- Neely Henry Lake
- Big Wills Creek



14

Neely Henry Impairments



- Neely Henry Lake is the primary receiving water for the Gadsden-Etowah MS4
- Neely Henry Lake first identified on the **1996 303(d) list** as being impaired

15

Neely Henry Impairments

- Nutrients
- pH
- Organic Enrichment
- Priority Organics (PCBs)



16

Neely Henry Total Maximum Daily Load

- TMDL established in 2008 for Nutrients and Dissolved Oxygen
- Specific distribution of discharges unknown
- How much from existing non-point sources?
- How much from MS4?
- The Gadsden-Etowah MS4 is required to achieve a **30% reduction in Total Phosphorus** discharge loading.

17

Sources of Phosphorous

- Construction runoff
- Lawn fertilizer
- Industrial sources
- Sanitary sewer overflows
- Failing septic systems
- Failing sewer infrastructure
- Cropland and pasture





18

Big Wills Creek Impairments



- Receives storm water from Attalla, Gadsden, and Rainbow City
- Big Wills Creek first identified on the **2018 303(d) list** as being impaired for pathogens
- Public health impacts
- E. coli can cause illness in people exposed to contaminated storm water

19

Sources of Pathogens

- Animal feeding operations
- Pasture grazing
- Collection system failure:
  - Failing septic systems
  - Sanitary sewer overflows
  - Aging sewer infrastructure





20



MS4 Implementation



21

SWMPP

- Storm Water Management Program Plan
- Required by Part III of the Phase II General Permit
- Details the steps each permittee will take
- SWMPPs revised in **2022**



22

Minimum Control Measures

- Public Education, Outreach, Participation, and Involvement
- **Illicit Discharge Detection and Elimination**
- Construction Site Runoff Control
- Post Construction Runoff Control
- **Pollution Prevention/Good Housekeeping for Municipal Operations**

23

Changes in 2021 Permit and 2022 SWMPP

- More public education and involvement
- New emphasis on soliciting public input
- Increased construction site inspection frequency
  - Once per month for Priority Sites
  - Once every three months for other construction sites
- Developers must be encouraged to use Low Impact Development

24

Required Municipal Training

- Pollution prevention
- Petroleum and chemical storage
- Waste management
- Illicit discharge identification
- Common illicit discharges





25



MS4

Municipal Pollution Prevention



26

Standard Operating Procedures

- Written SOPs are required by the MS4 permit
- Must detail good housekeeping practices for municipal facilities and operations
- Assess facilities and activities to determine pollution potential
- SOPs must be reviewed annually and updated if needed

27



Vehicle Washing



28

Pollutants from Vehicle Washing

- Pollutants include detergents, oils, grease, grit, and heavy metals
- Soap can harm fish and other aquatic life
- Phosphates in detergent can contribute to algae blooms
- As the algae decays, the process uses up oxygen, killing fish





29

Control Discharges

- Only wash vehicles in designated areas
- **Do <u>not</u> direct the wash water to a storm sewer or waterbody!**
- Sanitary sewer is the best method of wash water disposal
- Commercial car washes have pre-treatment and sanitary sewer connections
- Commercial facilities use less water

30

Control Discharges

- If no sanitary connection is available, wash vehicles on grass or gravel
- If washing must take place on pavement, direct flows to grassed areas
- Infiltration will help remove pollutants
- **Do not wash undercarriage**



31

Inlet Protection – Filter Booms

- Placed in front of a curb inlet or around a grate inlet to intercept flows
- Oil sorbent
- Sufficient capacity to retain grit and sediment from a minimum of one week's washing activity



Image Credit: New Pig Corporation

32

Filter Boom Maintenance

- Inspect booms prior to washing and at least once per week.
- Remove grit and sediment when accumulations reach 50% of the height of the roll.
- Dispose of the removed material in the trash.
- Oil sorbent booms will be replaced when saturated or according to the manufacture's recommendations.

33

Inlet Protection – Inlet Bags or Skimmers

- Placed inside an inlet catch basin to capture pollutants
- Oil sorbent
- Sufficient capacity to retain grit and sediment from a minimum of one week's washing activity



Image Credit: Dandy



Image Credit: BMP Supplies

34

Inlet Bag or Skimmer Maintenance

- Inspect catch basin BMPs prior to washing and at least once per week.
- Remove grit and sediment when accumulations reach 50% of the capacity of the inlet bag.
- Dispose of the removed material in the trash.
- Oil sorbent bags or skimmers will be replaced when saturated or according to the manufacture's recommendations.

35

"Eco-friendly" Cleaners

- **Biodegradable** soaps break down quicker
- **Phosphate-free** soaps don't contain phosphorous compounds
- Doesn't help with the solids and oils washed off the vehicle
- Still need to direct flows to grass



36



37

Pollutants from Paint and Paint Waste

- Water-based paints contain solid pigments that increase turbidity
- Water-based paints may also contain surfactants and thickeners
- Oil-based paint contains petroleum distillates and organic solvents
- Some paints may contain heavy metals
- Organic solvents used to clean oil-based paint from brushes and equipment are toxic

38

Paint and Paint Waste Storage

- Store paint and paint waste **indoors**, away from storm water
- Paint and paint waste containers should remain closed when not in use
- Clearly label containers to avoid confusion



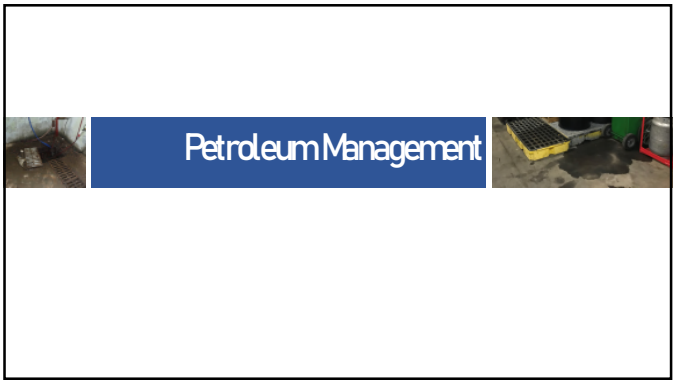
39

Equipment Cleaning

- Water-based paint brushes and equipment may be washed in a sink discharging to the sanitary sewer
- Oil-based paints and cleaning solvents must be containerized for disposal
- Never rinse brushes or paint containers into the street, gutter, or storm drain



40



41

Petroleum Pollutants

- Oil contains toxic components such as benzene
- Used oil can contain heavy metals
- One gallon of gasoline can contaminate approximately 750,000 gallons of water
- Oil poured down the drain can damage the wastewater treatment plant





42

Petroleum Storage

- Spill containment dikes must contain **110%** of the capacity of the **largest tank**
- Must be impervious construction
- Not concrete block, unless sealed or lined
- Concrete curbs are also protective for small spills
- Storm water must be inspected prior to discharge

43

Used Oil Management

- Must be sent for recycling
- Store used oil indoors
- Store used oil away from doors and aisles
- Use **closed containers**
- Clearly label used oil containers





44

Equipment Storage



- Store equipment under roof if possible
- Inspect floor or ground for staining
- Keep driving paths clear
- Move chemicals and oil away from doors or openings

45

Vehicle Maintenance

- Inspect parking areas for leaks or spills
- Identify leaking vehicles
- Repair vehicles promptly
- Clean up spills





46

Fueling Operations

- Spills can occur during fueling
- Do not “top off”
- Stay with vehicle while fueling
- Clean up any drips or spills
- Carry spill kits on municipal vehicles





47

Fueling Area Inspections

- Look for evidence of small spills
- Inspect pump and piping
- **Staining** on the pavement or gravel
- Physical **damage or deterioration**
- Leaks or drips
- Cracking or abnormal wear





48

Spill Clean Up





- **Do NOT use water to wash away spills**
- Use absorbent materials
- Dispose of materials properly when finished cleaning
- Under 25 gallons, no free liquids, can go to a lined landfill

49

Spill Reporting

- Reportable quantity for the release of oil into the environment, excluding water, is an amount of **25 gallons or more**
- **Any release of oil into water must be reported**
- During normal office hours:
  ADEM Decatur Field Office
  256-353-1713
- After hours:
  Alabama State Warning Point
  1-800-843-0699

50

Scrap Tire Management





51

Scrap Tire Management



- Government operations that generate 10 or more scrap tires per year are **Class Two Receivers**
- Storage limit of 300 scrap tires total
- Requirements:
  - Registration
  - Quarterly reporting
  - Maintain operating record
  - Tires must be removed by Permitted Transporters only

52

Scrap Tire Management

- No scrap tires may be exposed to the elements for more than **30 days**
- If exposed more than 7 days, receiver must have a **Vector Control Plan**
- Plan must be approved by ADEM



53

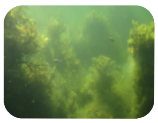
PHF Management



54

Fertilizers

- Fertilizers contain phosphorous or nitrogen
- Eutrophication is an excess of nutrients that causes dense vegetation growth in waterbodies
- Decomposition of vegetation uses oxygen





55

Pesticides

- Pesticides are used to address adult mosquitos, mosquito larvae, wasps, bees, fire ants, and rats
- Pesticides can be harmful to aquatic life and can contaminate drinking water







56

Pesticides

- Pyrethroids are synthetic insecticides
- Found in products for ant control; home lawn, garden, and landscape care; and structural pest control
- Found in mosquito control products
- Toxic to invertebrates and fish
- Highly toxic to bees





57

Herbicides

- Herbicides used to prevent regrowth in ditches
- Herbicides used in cemeteries and parks
- Aquatic herbicides used to control algae growth
- Herbicides can be toxic to fish and other aquatic life



58

ADEM PHF Permit Use Patterns

- **Mosquitos:** 6,400 acres of treatment area
- **Weed and Algae:** 100 surface acres of water or 100 linear miles at water's edge
- **Animal Pest Control:** 100 surface acres of water or 100 linear miles at water's edge
- **Forest Canopy:** 6,400 acres of treatment area
- Permit is not required if application is below the use threshold

59

PHF Permit – Gadsden Only

- Pesticide application by municipal personnel is regulated under **NPDES Permit ALG87-0020**
- Details provided in the Pesticide Discharge Management Plan
- Mosquito control only
- Anvil 2+2 ULV, synthetic pyrethroid
- Toxic to fish and bees

60

PHF Usage Best Practices

- Don't over-apply
- Check the weather - **don't spray before a rain event**
- Follow manufacture's recommendations for water setbacks
- Transfer or pour chemicals indoors, over impervious surfaces

61

PHF Storage and Disposal Best Practices

- Inspect storage areas of leaks or spills
- Containers must be labeled
- Dispose of damaged containers
- Keep containers closed when not in use
- Dispose of old, unusable, or obsolete chemicals
- Don't dump grass clippings into storm drains or waterways

62



63

What Are Illicit Discharges?

- Not authorized by NPDES permit
- Not authorized by ordinance
- Three types:
  - Continuous – constant flow
  - Intermittent – off and on
  - Transitory – one and done





64

Common Illicit Discharges

- Sewage – leaking or overflow
- Illegal dumping into storm drains
- Construction sites – paint, oil, sediment
- Unpermitted industrial discharges
- Swimming pools – chlorinated or saltwater

65

Signs of an Illicit Discharge

- Staining at inlets or in culverts
- Dry-weather flow
- Odor
- Sheen
- Foam



66

Illicit Discharge Detection

- **Outfall Reconnaissance Inventory**
- Visually inspect outfalls
- Record observations
- Perform field screening
- Collect samples



67

Illicit Discharge Reporting and Tracking



- Public reporting
- Municipal employee reporting
- Report must include location, date, time, and a brief description at a minimum
- Track reports in GIS or on map as part of outfall screening program

68

Illicit Discharge Elimination

- Trace sources using the storm system map and field inspection
- Pursue compliance
- Report unpermitted facilities to ADEM
- Fix leaks as soon as possible
- Public education
- Community collection days





69



MS4

Recognizing Illicit Discharges



70

Oil or Fuels

- **Color:** Rainbow sheen floating on top of water surface; water may be gray or milky
- Dark staining of surrounding surfaces may be present
- When disturbed, sheen will swirl together
- **Odor:** May have strong petroleum or gasoline smell
- **Turbidity and Floatables:** Oil sheen, red, brown, black streaks

71

Oil or Fuels



72

Oil or Fuels



73

Oil or Fuels



74

Oil or Fuels



75

Sewage

- **Color:** Gray
- **Odor:** Strong sewage smell, sulfur, fecal matter
- **Turbidity and Floatables:** Foam, bubbles, fecal solids, food wastes, toilet paper, etc.

Report observed SSOs

76

Sewage



77

Sewage



78

Sewage



79

Sewage



80

Sediment

- **Color:** Orange, yellow, red, chocolate milk
- **Odor:** None
- **Turbidity and Floatables:** Typically find deposits settled to bottom, water can be very turbid, may not be able to see bottom of stream

81

Sediment



82

Sediment



83

Sediment



84

Sediment



85

Soaps And Detergents

- **Color:** Milky white, grey, cloudy
- **Odor:** Fragrance like laundry detergent or soap, or none at all
- **Turbidity and Floatables:** Bubbles, foam, highly turbid

86

Soaps And Detergents



87

Soaps And Detergents



88

Soaps And Detergents



89

Swimming Pool Discharges

- Swimming pool discharges are authorized in Madison, provided they are:
  - pH neutral
  - Dechlorinated (less than 1 ppm of chlorine)
- Best practice is to discharge the pool water over a grassed surface to infiltrate
- Saltwater swimming pools should be discharged to the sanitary sewer **with prior approval** from the utility

90

Swimming Pool Discharges

- **Color:** None
- **Odor:** Chlorine or none at all
- **Turbidity and Floatables:** None
- Swimming pool discharges are distinguishable by location
- An observed swimming pool discharge should be reported



91

Iron Bacteria

Not an illicit discharge!

- **Color:** Red, reddish-orange, slimy, fuzzy
- **Odor:** Rotten, swampy, or none at all
- **Turbidity and Floatables:** Oily sheen that breaks apart when disturbed, "crumbs" settled on the bottom

92

Iron Bacteria

- The red or orange deposits are caused by bacteria that feed on dissolved iron
- The bacteria colonize the transition zone where deoxygenated water flows into oxygenated water
- The iron-oxide deposits settle to the bottom or remain suspended in the slime
- Iron bacteria are naturally-occurring and not harmful

93

Iron Bacteria



94

Iron Bacteria



95

Iron Bacteria



96

Iron Bacteria



97

Iron Bacteria



98

Illicit Discharge Reporting

- Observed illicit discharges should be immediately reported to your supervisor
- Supervisors should report to one of the following:

City	Report To	Phone	Email
Attalla	Jason Nicholson	256-441-9200	jnicholson@attallacity.org
Gadsden	Keener Morrow	256-549-4527	kmorrow@cityofgadsden.com
Glencoe	Todd Means	256-492-1424 x 5	toddmeans@cityofglencoe.org
Hokes Bluff	Lisa Lowman	256-492-2414 x 6	lisa.lowman@cityofhokesbluff.com
Rainbow City	Joel Garmon	256-413-1230	jgarmon@rbcalabama.com
Southside	Judd Rich	256-442-9775 x 131	juddrich@cityofsouthside.com

99

Illicit Discharge Reporting

- The report should contain the following information:
  - Date
  - Time
  - Location
  - Observed characteristics (e.g., odor, color, sheen, etc.)
- You are **NOT** required to investigate
- Just report what you observed

100



101

Appendix F – Construction Site Storm Water Runoff

THE CITY OF HOKES BLUFF
CONTROL MEASURE 3 - CONSTRUCTION SITE STORM WATER RUNOFF
See Section 7.1 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	**Erosion and Sediment Control Ordinance:** The City's Ordinance HB-2012-002 dated December 11, 2012 regulates storm water management within the City Evaluate the effectiveness of the Ordinance each reporting period	0 inspections completed 0 non-compliant construction site 0 enforcement actions 0 non-compliant sites reported to ADEM 0 repeat offenders The ordinance was evaluated and no changes were deemed necessary.	The City will evaluate the Ordinance annually on its effectiveness in addressing erosion and sediment control.	A copy of Ordinance HB-2012-002 is provided in Appendix E of the 2022 SWMPP.		NO
2	**BMP Training Program:** Conduct annual training for city personnel tasked with plan review. Certify city personnel tasked with conducting BMP Inspections.	1 employee attended annual training 1 received QCI training	The City personnel tasked with plan review will undergo annual training for on-site control measures. City personnel tasked with conducting BMP inspections will be certified under an ADEM approved Qualified Credential Inspector training program and will attend annual refreshers.	The QCI certificate is attached. (See Document 3-1)		NO
3	**Require Plan Submittal:** Require submission of a Sediment and Erosion Control Plan and Storm Water Management Plan with a building permit application to the City for review.	0 plans were reviewed	The City will continue to require the submittal of a site-specific BMP Plan with the application for a land disturbance permit.	A copy of the Application for Land Disturbance Permit is attached. (See Document 3-2)		NO
4	**Sediment and Erosion Control Plan Review Procedures:** Review the submitted Sediment and Erosion Control Plans within 30 days of receiving the plans.	0 plans were reviewed	Sediment and erosion control measures certified by a Qualified Credentialed Professional as defined in the Alabama Construction General Permit will be deemed adequate and will not be reviewed by County personnel.			NO
5	**Maintain Inventory of Qualifying Construction Sites:** Maintain a list of active qualifying construction sites within the MS4 boundary.	**INCOMPLETE** The City did not maintain an inventory of active qualifying construction sites within the MS4 boundary.	The City will maintain a list of active qualifying construction sites within the MS4 boundary.	The NOIs for the permitted sites are attached. (See Document 3-3, 3-4, and 3-5)	3 active qualifying construction sites located within the MS4 **ALR10C0Q5** Hokes Bluff Elementary **ALR10C1NM** River Vista Place **ALR10BHLX** Walkers Corner	NO
6	**Inspection of Qualifying Non-Priority Sites:** Inspect qualifying construction sites using the BMP Inspection Form every three months until permit termination.	**INCOMPLETE** 0 inspections completed 0 non-compliant construction site 0 enforcement actions 0 non-compliant sites reported to ADEM 0 repeat offenders	The City will inspect qualifying construction sites at least once every three months.	A blank Erosion and Sediment Control Inspection Form is attached. (See Document 3-6)	3 active qualifying construction sites located within the MS4 **ALR10C0Q5** Hokes Bluff Elementary **ALR10C1NM** River Vista Place **ALR10BHLX** Walkers Corner	NO

THE CITY OF HOKES BLUFF

CONTROL MEASURE 3 - CONSTRUCTION SITE STORM WATER RUNOFF

See Section 7.1 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
7	**Inspection of Priority Construction Sites:** If a site is a Priority Site inspect the site once a month using the BMP Inspection Form until permit termination.	0 priority construction sites located within the MS4	Should a Priority watershed be designated, the City will identify and inspect qualifying Priority construction sites once per month.		The Hokes Bluff MS4 does not currently incorporate any waterbodies or watersheds that are impaired for siltation or turbidity.	NO
8	**Re-inspection of Sites:** Re-inspect sites where deficiencies are noted and cannot be corrected during inspection. Use the BMP Inspection Form to complete re-inspections.	0 re-inspections completed 0 non-compliant construction site 0 enforcement actions 0 non-compliant sites reported to ADEM 0 repeat offenders	If deficiencies are noted during the routine inspection and cannot be corrected at the time of the inspection, the site will be scheduled for re-inspection.			NO
9	**Public Reporting and Tracking System:** Promote the reporting number and form for reporting non-compliant construction sites, illicit discharges, impaired waterways, and violations of ordinances related to storm water pollution. Evaluate the efficacy of the program.	0 complaints received 0 complaints addressed 0 complaints resolved The reporting program was evaluated and are proposed at this time.	The City will continue to provide a contact number on the Storm Water Awareness webpage and track received reports and the City's responses to the received reports. The City will evaluate the current public reporting and tracking methods.	The Storm Water webpage and the illicit discharge door hangar are attached. (See Documents 1-1 and 2-7)	The City will publicize the reporting number in at least one of the distributed educational materials distributed during the 2023-2024 reporting period.	NO
10	**Written Notice:** Provide a written notice to the property owner or permit holder if a violation of Stormwater Management Regulations or Land Disturbance Permit occurs.	0 written notices issued	The City will issue a written notice of violation to a property owner or permit holder if a violation of Stormwater Management Regulations or the Land Disturbance Permit occurs.			NO
11	**Compliance Order:** Issue a compliance order in the event a construction site continues to violate the terms of the permit if a Written Notice is not followed.	0 Compliance Orders issued	The City will issue a compliance order to a property owner or permit holder if a violation of Stormwater Management Regulations or the Land Disturbance Permit continues to occur.			NO
12	**Cease and Desist Order:** Issue a cease and desist order to the owner or operator of a noncompliant construction site if necessary.	0 Cease and Desist Orders issued	The City will issue a cease and desist order to a property owner or permit holder if a violation of Stormwater Management Regulations or the Land Disturbance Permit continues to occur.			NO
13	**Enforcement Tracking:** Maintain information regarding enforcement actions. Report the number of enforcement actions taken during the reporting period.	0 enforcement actions undertaken	The City will maintain records of enforcement actions taken.			NO

THE CITY OF HOKES BLUFF

CONTROL MEASURE 3 - CONSTRUCTION SITE STORM WATER RUNOFF

See Section 7.1 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
14	**Notify ADEM of Unpermitted Sites:** Notify ADEM of any construction site that is not permitted under to Alabama Construction General Permit.	0 unpermitted facilities reported to ADEM	The City will notify ADEM of any qualifying construction site that is not permitted under the Alabama Construction General Permit.			NO
15	**Notify ADEM of Non-Compliant Sites:** Notify ADEM of non-compliant sites where the City's enforcement actions did not result in compliance.	0 non-compliant sites reported to ADEM	The City will rely on the ADEM for construction NPDES enforcement when the City's enforcement actions have not resulted in compliance.			NO

ADEM
Alabama Department of Environmental Management

QCI Training Program

thompson
ENGINEERING

Certificate of Completion

is hereby granted to:

Scott Ryan

City of Hokes Bluff

for satisfactory completion of

Online Refresher

Training

QCI No. T7121

Expires 10/25/2023

This certificate confers four (4.0) professional development hours (PDHs) to students who require credits for licenses or certifications. Such PDHs are subject to the qualifying requirements of the licensing or certifying organization.

CITY OF HOKES BLUFF
APPLICATION FOR LAND DISTURBANCE PERMIT

Permit # _____
Date: _____

Fee Amount: _____

Property Location

Legal Description: Lot # _____ Block # _____ Subdivision _____
Street Address: _____ State: _____ Zip: _____

Is Property in Flood Plain: _____ Acreage Amount: _____

Applicant Name

_____ Email: _____

Address: _____ State: _____ Zip: _____
Phone #: (___) _____ Fax #: (___) _____ Mobile #: (___) _____

Property Owner Name

_____ Email: _____

Address: _____ State: _____ Zip: _____
Phone #: (___) _____ Fax #: (___) _____ Mobile #: (___) _____

Type of Construction

□ Residential □ Commercial □ Utility □ Other _____

Alabama Department of Environmental Management (ADEM)

NPDES Notice of Registration must be attached for one (1) acre or more.
Registration Number: _____

Construction Best Management Practice plan must be attached (BMP)

I certify; that I have read this application and that all information contained herein is true and correct; That I agree to comply with all City ordinances and state laws regulating building construction; That I am the owner or authorized to act as the owner's agent for the herein described work.

Signed: _____ Date: _____

FOR OFFICE USE ONLY

Erosion & Sediment Control Plan required _____Reviewed By: _____Bond Amount: _ Tree Conservation Plan required: _____Bond Amount: _____Landscape Plan Required: _____ Bond Amount: _____ Plan submitted to Landscape _____ Architect Approved: _____

(A bond is required for any approved Erosion & Sediment Control Plan or Landscape or Tree Conservation Plan. For clearing & grading, an Erosion Control Bond is required in the amount of $3,000 per acre or any portion thereof. Additional security bond equal to double the amounts required when work is performed in a flood way or flood plain.)

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ■ FAX (334) 271-7950

May 20, 2021

DOCK GRAHAM
BOATNER CONSTRUCTION COMPANY, INC.
114 HICKMAN ST
APT A
RAINBOW CITY, AL 35906

RE: Hokes Bluff Elementary School
Etowah County (055)

Dear Mr. Graham,

Based on your request, coverage under **General NPDES Permit Number ALR10C0Q5** is granted. The effective date of coverage is May 20, 2021.

Coverage under this permit does not authorize the discharge of any pollutant or wastewater that is not specifically identified in the permit and by the Notice of Intent.

You are responsible for compliance with all provisions of the permit including, but not limited to, the performance of required inspections and/or monitoring, and the preparation and implementation of a Construction Best Management Practices Plan (CBMPP) required by the permit.

The Alabama Department of Environmental Management encourages you to exercise pollution prevention practices and alternatives at your facility. Pollution prevention will assist you in complying with permit requirements.

A copy of the General NPDES Permit under which coverage of your discharges has been granted is enclosed. If you have any questions concerning this permit, please contact Stephanie Bailey by email at scbailey@adem.alabama.gov or by phone at (334) 394-4314.

Sincerely,

Jeffery W. Kitchens

Jeffery W. Kitchens, Chief
Water Division

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608-1211
(251) 304-1176 (205)
(251) 304-1189 (FAX)

GlobalSign RSA OV SSL CA 2018
Date: 2021.05.14 11:29:59 -05:00
Reason: Submission Data
Location: State of Alabama

Construction Stormwater (ALR100000) - NOI - New (Form 024)

version 4.0

(Submission #: HP8-A9A6-NKN0F, version 2)

Details

Submission ID HP8-A9A6-NKN0F

Form Input

Permittee Information

Permittee

Permittee Name
Boatner Construction Company, Inc.

Phone Type	Number	Extension
Business	256-442-3820	

Mailing Address

114 HICKMAN ST
APT A
RAINBOW CITY, AL 35906

Are you adding a Co-Permittee?
No

Responsible Official

Prefix
Mr.

First Name	Last Name
Dock	*Graham*

Title
President

Organization Name
Boatner Construction Company, Inc.

Phone Type	Number	Extension
Business	256-442-3820	

Email
dockgraham@boatnerconstruction.com

Physical/Delivery Address

114 HICKMAN ST
APT A
RAINBOW CITY, AL 35906

Facility/Site Information

Facility/Site Name
Hokes Bluff Elementary School

Permittee Organization Type
Corporation

Facility/Site Contact

Prefix
Mr.

First Name	Last Name
Greg	*Harper*

Title
Superintendent

Organization Name
Hokes Bluff Elementary School

Phone Type	Number	Extension
Mobile	256-458-6280	

Email
gregharper@boatnerconstruction.com

Do you have additional contacts associated with this site?
No

Facility/Site Address or Location Description
5375 Main Street
Located at intersection of
Hokes Bluff, AL 35903

Facility/Site County
Etowah

Detailed Directions to the Facility/Site
Heading eastbound on AL-74, turn left onto Appalachian Highway in Hokes Bluff. Continue straight for 0.8 miles, then turn right onto County Highway 71. The site is located on the right a quarter of a mile down the road, at the intersection of Co. Highway 71 and Central Avenue.

Facility/Site Front Gate Latitude and Longitude
33.99666307867179,-85.87017327547073

Is this a linear project?
No

Construction Site Type
Commercial

Primary SIC Code
1542-General Contractors-Nonresidential Buildings, Other than Industrial Buildings and Warehouses

Primary NAICS Code
236220-Commercial and Institutional Building Construction

Project Information

Brief Description of activity(s):
This project consists of improvements to several one-story school buildings and their surrounding area, as well as the addition of one new building entirely. Two new parking lots and bus loops will be constructed as well.

Total Facility/Site Area (acres)
11.13

Total Disturbed Area (acres)
6.97

Anticipated Commencement Date
5/3/2021

Anticipated Completion Date
6/1/2022

Will flocculants or other chemical stabilization products be used on site?
No

Are there any surface waters within 25 feet of your project's land disturbances?
No

Inspection Status

Was this facility/site inspected and found to be either under construction or in operation prior to a NPDES permit application being submitted to the Department?
No

Priority Construction Site

Please click here for the Alabama 303(d) list of Impaired Waters

Please click here for Information on Alabama TMDLs

Is this a Priority Construction Site as defined by Part V of the construction stormwater general permit? If yes, please attach a copy of the CBMPP that meets or exceeds the requirements of the construction stormwater general permit.
No

Outfalls (1 of 1)

Outfall: OF001

Feature Type
Outfall

Outfall - Point where the discharge leaves the site.

Outfall Identifier should have a prefix of 'OF' (i.e. OF001, OF002)

Outfall Identifier
OF001

Topo Map Identifier-Provide the point label from the topo map that correlates to the Outfall Point above.
SITE OUTFALL

Location of Outfall
33.994473191500795,-85.86832975147627

Receiving Water(s)

In the table below, please sequentially number (e.g. 1, 2, etc.) and list the named receiving waters that receive discharge from the facility's outfalls.

Please also indicate with an "X" if the discharges enter the named receiving water via an unnamed tributary or storm sewer prior to entering the named receiving waters. If the discharge does enter a storm sewer, please also indicate with an "X" if the storm sewer is under the jurisdiction of an MS4 permit.

Please also indicate with an "X", each waterbody use classification (WUC) that applies to the named receiving water."

RECEIVING WATER(S)

ID	Receiving Water	UT	Strm Sewer	MS4	A&I	F&W	LWF	PWS	SH	S
1	Coosa River	X	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED

Please select at least one Waterbody Use Classification using an "X". For a detailed list of water use classifications, please refer to ADEM Admin. Code Ch. 335-6-11. If the segment of the receiving water to which the facility discharges has not been assigned a water use classification, select "F&W" (Fish and Wildlife).

TYPES OF CONVEYANCES:
UT - Unnamed Tributary
Strm Swr - Storm Sewer System
MS4 - Permitted MS4 Storm Sewer System

WATER USE CLASSIFICATION DESCRIPTIONS:
A&I - Agricultural and Industrial Water Supply
F&W - Fish and Wildlife
LWF - Limited Warmwater Fishery
PWS - Public Water Supply
SH - Shell Harvesting
S - Swimming and Other Whole Body Contact Sports

Topographic Map Submittal

Topographic Map
ADEM Topo Map - Hokes Bluff Elem.pdf - 04/28/2021 02:48 PM
Comment
NONE PROVIDED

Qualified Credentialed Professional (QCP) Certification

QCP Designation
Professional Engineer (PE)

Registration / Certification Number
22094

Qualified Credentialed Professional (QCP)

Prefix
Mr.

First Name	Last Name
Houston	*Jenkins*

Title
President

Organization Name
JBW&T, INC.

Phone Type	Number	Extension
Business	256-547-6379	

Email
hjenkins@jbwt.com

Address
3736 S 11TH ST
GADSDEN, AL 35904

Duly Authorized Representative (DAR)

Pursuant to ADEM Administrative Code Rule 335-6-6-.09 (1), this NOI must be signed by a responsible official, as indicated below:

(a) In the case of a corporation, by a principal executive officer of at least the level of vice president, or a manager assigned or delegated in accordance with corporate procedures, with such delegation submitted in writing if required by the Department, who is responsible for manufacturing, production, or operating facilities and is authorized to make management decisions which govern the operation of the regulated facility;
(b) In the case of a partnership, by a general partner;
(c) In the case of a sole proprietorship, by the proprietor; or
(d) In the case of a municipal, state, federal, or other public entity by either a principal executive officer, or ranking elected official.

ADEM Administrative Code Rule 335-6-.09(2):

All reports required by permits and other information requested by the Department shall be signed by a person described in paragraph 335-6-6-.09(1) or by a duly authorized representative of that person. A person is a duly authorized representative only if:
(a) The authorization is made in writing by a person described in paragraph 335-6-6-.09(1);
(b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity and;
(c) The written authorization is submitted to the Department.

Will a duly authorized representative be submitting this NOI?
No

Revisions

Revision	Revision Date	Revision By
Revision 1	4/28/2021 8:35 AM	Houston Jenkins, Jr.
Revision 2	5/14/2021 11:11 AM	Dock Graham

Agreements and Signature(s)

SUBMISSION AGREEMENTS

- ☑ I am the owner of the account used to perform the electronic submission and signature.
- ☑ I have the authority to submit the data on behalf of the facility I am representing.
- ☑ I agree that providing the account credentials to sign the submission document constitutes an electronic signature equivalent to my written signature.
- ☑ I have reviewed the electronic form being submitted in its entirety, and agree to the validity and accuracy of the information contained within it to the best of my knowledge.

QCP

"I certify under penalty of law that a comprehensive Construction Best Management Practices Plan (CBMPP) for the prevention and minimization of all sources of pollution in stormwater and authorized related process wastewater runoff has been prepared under my supervision for this site/activity, and associated regulated areas/activities. The CBMPP meets the requirements of this permit and if properly implemented and maintained by the operator, discharges of pollutants in stormwater runoff can reasonably be expected to be effectively minimized to the maximum extent practicable according to the requirements of ADEM Administrative Code Chapter 335-6-6-.23 and this Permit. The CBMPP describes the erosion and sediment control measures that must be fully implemented and regularly maintained as needed at the permitted site in accordance with sound sediment and erosion control practices to ensure the protection of water quality."

Signed By Houston Jenkins, Jr. on 05/14/2021 at 11:21 AM

Responsible Official

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signed By Dock Graham on 05/14/2021 at 11:15 AM

GlobalSign RSA OV SSL CA 2018
Date: 2021.05.03 10:40:55 -05:00
Reason: Submission Data
Location: State of Alabama

Construction Stormwater (ALR100000) - NOI - New (Form 024)

version 4.0

(Submission #: HP8-A9A6-NKN0F, version 1)

Details

Submission ID HP8-A9A6-NKN0F

Form Input

Permittee Information

Permittee

Permittee Name
Boatner Construction Company, Inc.

Phone Type	Number	Extension
Business	256-442-3820	

Mailing Address

114 HICKMAN ST
APT A
RAINBOW CITY, AL 35906

Are you adding a Co-Permittee?
No

Responsible Official

Prefix
Mr.

First Name	Last Name
Dock	*Graham*

Title
President

Organization Name
Boatner Construction Company, Inc.

Phone Type	Number	Extension
Business	256-442-3820	

Email
dockgraham@boatnerconstruction.com

Physical/Delivery Address

114 HICKMAN ST
APT A
RAINBOW CITY, AL 35906

Facility/Site Information

Facility/Site Name
Hokes Bluff Elementary School

Permittee Organization Type
Corporation

Facility/Site Contact

Prefix
Mr.

First Name	Last Name
Greg	*Harper*

Title
Superintendent

Organization Name
Hokes Bluff Elementary School

Phone Type	Number	Extension
Mobile	256-458-6280	

Email
gregharper@boatnerconstruction.com

Do you have additional contacts associated with this site?
No

Facility/Site Address or Location Description
5375 Main Street
Located at intersection of
Hokes Bluff, AL 35903

Facility/Site County
Etowah

Detailed Directions to the Facility/Site
Heading eastbound on AL-74, turn left onto Appalachian Highway in Hokes Bluff. Continue straight for 0.8 miles, then turn right onto County Highway 71. The site is located on the right a quarter of a mile down the road, at the intersection of Co. Highway 71 and Central Avenue.

Facility/Site Front Gate Latitude and Longitude
33.99666307867179,-85.87017327547073

Is this a linear project?
No

Construction Site Type
Commercial

Primary SIC Code
1542-General Contractors-Nonresidential Buildings, Other than Industrial Buildings and Warehouses

Primary NAICS Code
236220-Commercial and Institutional Building Construction

Project Information

Brief Description of activity(s):
This project consists of improvements to several one-story school buildings and their surrounding area, as well as the addition of one new building entirely. Two new parking lots and bus loops will be constructed as well.

Total Facility/Site Area (acres)
11.13

Total Disturbed Area (acres)
6.97

Anticipated Commencement Date
5/3/2021

Anticipated Completion Date
6/1/2022

Will flocculants or other chemical stabilization products be used on site?
No

Are there any surface waters within 25 feet of your project's land disturbances?
No

Inspection Status

Was this facility/site inspected and found to be either under construction or in operation prior to a NPDES permit application being submitted to the Department?
No

Priority Construction Site

Please click here for the Alabama 303(d) list of Impaired Waters

Please click here for Information on Alabama TMDLs

Is this a Priority Construction Site as defined by Part V of the construction stormwater general permit? If yes, please attach a copy of the CBMPP that meets or exceeds the requirements of the construction stormwater general permit.
No

Outfalls (1 of 1)

Outfall: OF001

Feature Type
Outfall

Outfall - Point where the discharge leaves the site.

Outfall Identifier should have a prefix of 'OF' (i.e. OF001, OF002)

Outfall Identifier
OF001

Topo Map Identifier-Provide the point label from the topo map that correlates to the Outfall Point above.
SITE OUTFALL

Location of Outfall
33.994473191500795,-85.86832975147627

Receiving Water(s)

In the table below, please sequentially number (e.g. 1, 2, etc.) and list the named receiving waters that receive discharge from the facility's outfalls.

Please also indicate with an "X" if the discharges enter the named receiving water via an unnamed tributary or storm sewer prior to entering the named receiving waters. If the discharge does enter a storm sewer, please also indicate with an "X" if the storm sewer is under the jurisdiction of an MS4 permit.

Please also indicate with an "X", each waterbody use classification (WUC) that applies to the named receiving water."

RECEIVING WATER(S)

ID	Receiving Water	UT	Strm Sewer	MS4	A&I	F&W	LWF	PWS	SH	S
1	Coosa River	X	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED

Please select at least one Waterbody Use Classification using an "X". For a detailed list of water use classifications, please refer to ADEM Admin. Code Ch. 335-6-11. If the segment of the receiving water to which the facility discharges has not been assigned a water use classification, select "F&W" (Fish and Wildlife).

TYPES OF CONVEYANCES:
UT - Unnamed Tributary
Strm Swr - Storm Sewer System
MS4 - Permitted MS4 Storm Sewer System

WATER USE CLASSIFICATION DESCRIPTIONS:
A&I - Agricultural and Industrial Water Supply
F&W - Fish and Wildlife
LWF - Limited Warmwater Fishery
PWS - Public Water Supply
SH - Shell Harvesting
S - Swimming and Other Whole Body Contact Sports

Topographic Map Submittal

Topographic Map
ADEM Topo Map - Hokes Bluff Elem.pdf - 04/28/2021 02:48 PM
Comment
NONE PROVIDED

Qualified Credentialed Professional (QCP) Certification

QCP Designation
Professional Engineer (PE)

Registration / Certification Number
22094

Qualified Credentialed Professional (QCP)

Prefix
Mr.

First Name	Last Name
Houston	*Jenkins*

Title
President

Organization Name
JBW&T, INC.

Phone Type	Number	Extension
Business	256-547-6379	

Email
hjenkins@jbwt.com

Address
3736 S 11TH ST
GADSDEN, AL 35904

Duly Authorized Representative (DAR)

Pursuant to ADEM Administrative Code Rule 335-6-6-.09 (1), this NOI must be signed by a responsible official, as indicated below:

(a) In the case of a corporation, by a principal executive officer of at least the level of vice president, or a manager assigned or delegated in accordance with corporate procedures, with such delegation submitted in writing if required by the Department, who is responsible for manufacturing, production, or operating facilities and is authorized to make management decisions which govern the operation of the regulated facility;
(b) In the case of a partnership, by a general partner;
(c) In the case of a sole proprietorship, by the proprietor; or
(d) In the case of a municipal, state, federal, or other public entity by either a principal executive officer, or ranking elected official.

ADEM Administrative Code Rule 335-6-.09(2):

All reports required by permits and other information requested by the Department shall be signed by a person described in paragraph 335-6-6-.09(1) or by a duly authorized representative of that person. A person is a duly authorized representative only if:
(a) The authorization is made in writing by a person described in paragraph 335-6-6-.09(1);
(b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity and;
(c) The written authorization is submitted to the Department.

Will a duly authorized representative be submitting this NOI?
No

Agreements and Signature(s)

SUBMISSION AGREEMENTS

- ☑ I am the owner of the account used to perform the electronic submission and signature.
- ☑ I have the authority to submit the data on behalf of the facility I am representing.
- ☑ I agree that providing the account credentials to sign the submission document constitutes an electronic signature equivalent to my written signature.
- ☑ I have reviewed the electronic form being submitted in its entirety, and agree to the validity and accuracy of the information contained within it to the best of my knowledge.

QCP

"I certify under penalty of law that a comprehensive Construction Best Management Practices Plan (CBMPP) for the prevention and minimization of all sources of pollution in stormwater and authorized related process wastewater runoff has been prepared under my supervision for this site/activity, and associated regulated areas/activities. The CBMPP meets the requirements of this permit and if properly implemented and maintained by the operator, discharges of pollutants in stormwater runoff can reasonably be expected to be effectively minimized to the maximum extent practicable according to the requirements of ADEM Administrative Code Chapter 335-6-6-.23 and this Permit. The CBMPP describes the erosion and sediment control measures that must be fully implemented and regularly maintained as needed at the permitted site in accordance with sound sediment and erosion control practices to ensure the protection of water quality."

Signed By Houston Jenkins, Jr. on 04/28/2021 at 4:45 PM

Responsible Official

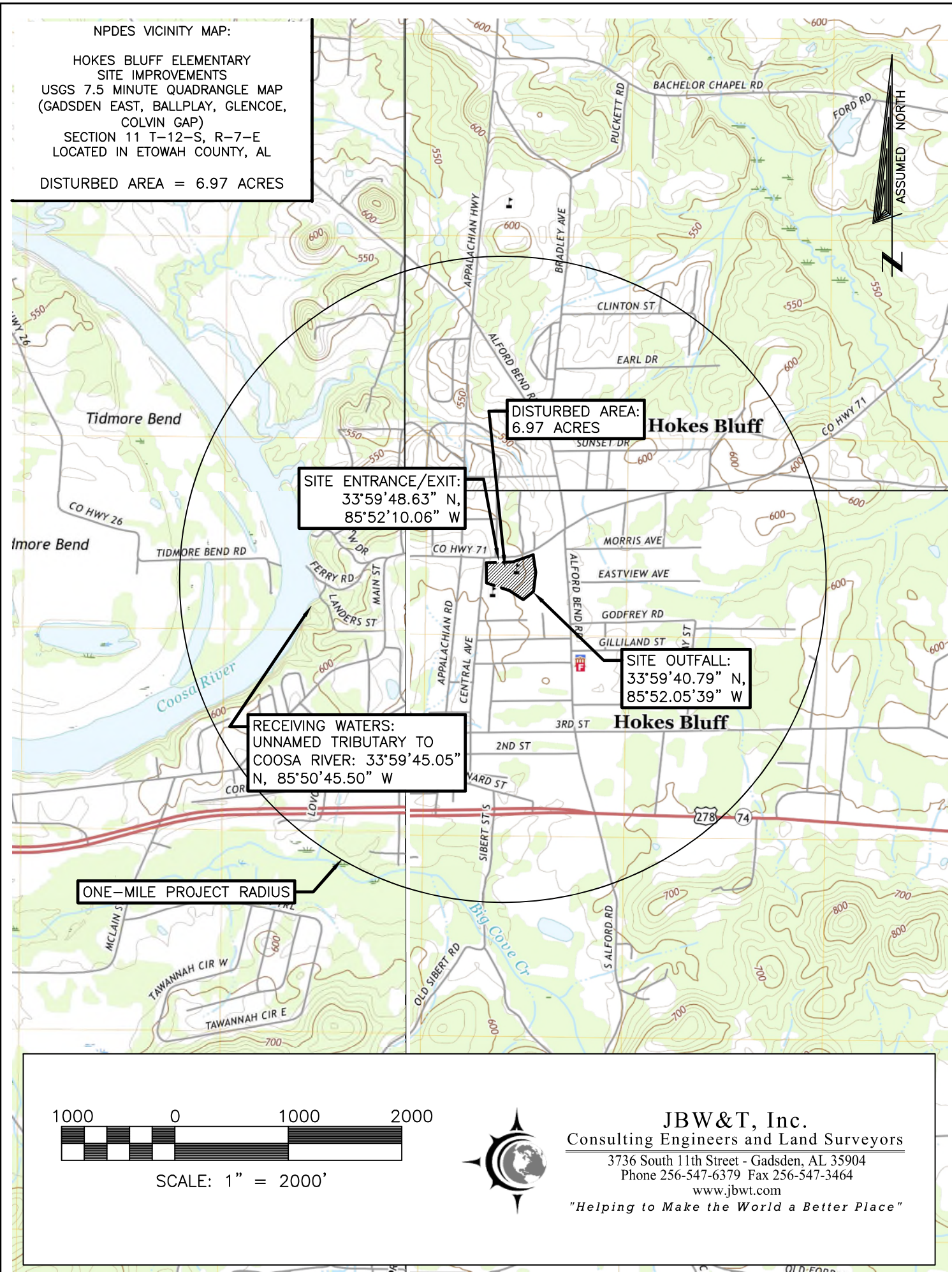
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signed By Linda Petty on 05/03/2021 at 10:31 AM

NPDES VICINITY MAP:

HOKES BLUFF ELEMENTARY
SITE IMPROVEMENTS
USGS 7.5 MINUTE QUADRANGLE MAP
(GADSDEN EAST, BALLPLAY, GLENCOE, COLVIN GAP)
SECTION 11 T-12-S, R-7-E
LOCATED IN ETOWAH COUNTY, AL

DISTURBED AREA = 6.97 ACRES



1000 0 1000 2000

SCALE: 1" = 2000'

JBW&T, Inc.
Consulting Engineers and Land Surveyors
3736 South 11th Street - Gadsden, AL 35904
Phone 256-547-6379 Fax 256-547-3464
www.jbwt.com
"Helping to Make the World a Better Place"

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ■ FAX (334) 271-7950

May 17, 2022

ANDREW HANCOCK
D.R. HORTON, INC. - BIRMINGHAM
2188 PARKWAY LAKE DR
HOOVER, AL 35244

RE: River Vista Place
River Vista Place
Hokes Bluff, AL 35903
Etowah County (055)

Dear Mr. Hancock:

Based on your request, coverage under **General NPDES Permit Number ALR10C1NM** has been modified. The effective date of coverage modification is **May 17, 2022.**

Coverage under this permit does not authorize the discharge of any pollutant or wastewater that is not specifically identified in the permit and by the Notice of Intent which resulted in the granting of coverage. Modification to Permit include adding Lot 7 to the current permit and updating the QCP contact for this site. The disturbed acreage will increase from the previous 4.24 acres to the new permitted area of 4.52 acres.

You are responsible for compliance with all provisions of the permit including but not limited to, the performance of required inspections and/or monitoring, and the preparation and implementation of a Construction Best Management Practices Plan (CBMPP) required by the permit.

The Alabama Department of Environmental Management encourages you to exercise pollution prevention practices and alternatives at your facility. Pollution prevention will assist you in complying with effluent limitations and permit regulations.

Prior to commencing land disturbance activities, the Department encourages you to view the video "Most Common Compliance Issues at Construction Sites" on the ADEM webpage at https://www.youtube.com/watch?v=xG-SIlJ2Mgc.

A copy of the General NPDES Permit under which coverage of your discharges has been granted is enclosed. If you have any questions concerning this permit, please contact Stephanie Bailey by email at scbailey@adem.alabama.gov or by phone at (334) 394-4314.

Sincerely,

Jeffery W. Kitchens

Jeffery W. Kitchens, Chief
Water Division
JWK/scb

Enclosure: Permit

File: NOI/56493

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608-1211
(251) 304-1176 (205)
(251) 304-1189 (FAX)

GlobalSign RSA OV SSL CA 2018
Date: 2022.05.02 10:29:28 -05:00
Reason: Submission Data
Location: State of Alabama

Construction Stormwater (ALR100000) - NOI - Modification/Transfer (Form 024)

version 4.11

(Submission #: HPH-7KVG-8QNDP, version 1)

Details

Submission ID HPH-7KVG-8QNDP

Form Input

Processing Information

Brief description of the action/change that has resulted in the request for permit modification(s):
This modifications updates the lot numbers to add Lot 7 to the current permit and update the QCP contact for this site. The disturbed acreage will increase from the previous 4.24 acres to the new permitted area of 4.52 acres.

Please indicate which of the following applies to this submission:
Modification

Are you adding a Co-Permittee?
No

This is the current Facility/Site Name:
NONE PROVIDED

Are you changing the Facility/Site Name?
No

Selecting 'No' to the question above will display "None Specified" under the Facility/Site Name indicating it will no longer be editable or displayed on this Modification form. The current Facility/Site Name is still stored in the AEPACS system.

Do you have additional contacts associated with this site?
No

Are you adding/changing receiving waters? If a priority site, submittal of updated CBMPP may be required.
No

Are you adding/changing outfall coordinates? If a priority site, submittal of updated CBMPP may be required.
No

Are you adding additional acreage? If a priority site, submittal of updated CBMPP is required. Please note, depending on the additional acreage request, issuance of a new, separate permit may be required. Please contact the permit writer for your county.
Yes

Is this a Priority Construction Site as defined by Part V of the construction stormwater general permit?
No

Form Submission Reason
Modification (GP)

Permit Information

Permit Number
ALR10C1NM

Permittee

Permittee Name
D.R. Horton, Inc. - Birmingham

Phone Type	Number	Extension
Business	2058221611	

Mailing Address

2188 Parkway Lake Dr

Hoover, AL 35244

Responsible Official

Prefix
Mr.

First Name	Last Name
Andrew	*Hancock*

Title
Division President

Organization Name
D.R. Horton, Inc. - Birmingham

Phone Type	Number	Extension
Business	2058221611	

Email
Ajhancock@drhorton.com

Physical/Delivery Address

2188 Parkway Lake Dr

Hoover, AL 35244

Additional Permit Contact(s) (1 of 1)

Please provide the contact information for any person needing notifications regarding this Notice of Intent (NOI).

Permit Contact

Prefix
NONE PROVIDED

First Name	Last Name
NONE PROVIDED	*NONE PROVIDED*

Title
NONE PROVIDED

Company Name
NONE PROVIDED

Phone Type	Number	Extension
NONE PROVIDED		

Email
NONE PROVIDED

Facility/Site Information

Permittee Organization Type
Corporation

Facility/Site Contact

Prefix
Mr.

First Name	Last Name
Thomas	*Zito*

Title
Assistant Land Development Project Manager

Organization Name
D.R. Horton, Inc. - Birmingham

Phone Type	Number	Extension
Business	2058221611	

Email
TVZitoii@DRHorton.com

Facility/Site Address or Location Description

River Vista Place

Hokes Bluff, AL 35903

Facility/Site County
Etowah

Detailed Directions to the Facility/Site
From I-59 heading towards Gadsden, take exit 183 onto HWY 431. Follow HWY 431 for approximately 6.75 miles and turn left onto HWY 278. Continue onto HWY 278 for about 4.85 miles and take a left onto McLain St N. Continue to the intersection and turn right onto Bernard St. then turn left onto Main St. The destination is on your left. River Vista Place subdivision.

Facility/Site Front Gate Latitude and Longitude
33.98952900000000,-85.88169000000001

Is this a linear project?
No

Construction Site Type
Single-Family Residential

Primary SIC Code
1521-General Contractors-Single-Family Houses

Primary NAICS Code
236115-New Single-Family Housing Construction (except For-Sale Builders)

Project Information

Brief Description of activity(s):
The permittee will be constructing single family residential homes located in River Vista Place. Site construction includes erosion control device installation, minor lot clearing, individual lot fine grading, home construction, and landscaping. The disturbed acreage of 4.52 will include construction on the 17 residential lots in River Vista Place.

Total Facility/Site Area (acres)
10.00

Total Disturbed Area (acres)
4.52

Anticipated Commencement Date
4/26/2022

Anticipated Completion Date
11/1/2023

Will flocculants or other chemical stabilization products be used on site?
No

Are there any surface waters within 25 feet of your project's land disturbances?
No

Receiving Water(s)

In the table below, please sequentially number (e.g. 1, 2, etc.) and list the named receiving waters that receive discharge from the facility's outfalls.

Please also indicate with an "X" if the discharges enter the named receiving water via an unnamed tributary or storm sewer prior to entering the named receiving waters. If the discharge does enter a storm sewer, please also indicate with an "X" if the storm sewer is under the jurisdiction of an MS4 permit.

Please also indicate with an "X", each waterbody use classification (WUC) that applies to the named receiving water."

RECEIVING WATER(S)

ID	Receiving Water	UT	Strm Sewer	MS4	A&I	F&W	LWF	PWS	SH	S
1	Big Cove Creek	x	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	X	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED

TYPES OF CONVEYANCES:
UT - Unnamed Tributary
Strm Swr - Storm Sewer System
MS4 - Permitted MS4 Storm Sewer System

WATER USE CLASSIFICATION DESCRIPTIONS:
A&I - Agricultural and Industrial Water Supply
F&W - Fish and Wildlife
LWF - Limited Warmwater Fishery
PWS - Public Water Supply
SH - Shell Harvesting
S - Swimming and Other Whole Body Contact Sports

Topographic Map Submittal

Topographic Map
DHI River Vista Place Permit Modification (04-26-2022).pdf - 04/26/2022 11:10 AM
DHI River Vista Quad Map (04-26-2022).pdf - 04/26/2022 11:10 AM
Comment
NONE PROVIDED

Qualified Credentialed Professional (QCP) Certification

QCP Designation
Professional Engineer (PE)

Registration / Certification Number
50298

Qualified Credentialed Professional

Prefix
NONE PROVIDED

First Name	Last Name
Joseph	*Schifano*

Title
Senior Project Engineer

Organization Name
Engineering Design Group, LLC

Phone Type	Number	Extension
Business	2054039158	

Email
Schifano@edgalabama.com

Address

120 Bishop Cir

Pelham, AL 35124

Duly Authorized Representative (DAR)

Pursuant to ADEM Administrative Code Rule 335-6-6-.09 (1), this NOI must be signed by a responsible official, as indicated below:

(a) In the case of a corporation, by a principal executive officer of at least the level of vice president, or a manager assigned or delegated in accordance with corporate procedures, with such delegation submitted in writing if required by the Department, who is responsible for manufacturing, production, or operating facilities and is authorized to make management decisions which govern the operation of the regulated facility;
(b) In the case of a partnership, by a general partner;
(c) In the case of a sole proprietorship, by the proprietor; or
(d) In the case of a municipal, state, federal, or other public entity by either a principal executive officer, or ranking elected official.

ADEM Administrative Code Rule 335-6-.09(2):

All reports required by permits and other information requested by the Department shall be signed by a person described in paragraph 335-6-6-.09(1) or by a duly authorized representative of that person. A person is a duly authorized representative only if:
(a) The authorization is made in writing by a person described in paragraph 335-6-6-.09(1);
(b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity and;
(c) The written authorization is submitted to the Department.

Will a duly authorized representative be submitting this NOI?
Yes

DAR Documentation
Thomas Zito Delegation of Signatory Authority.pdf - 04/26/2022 11:12 AM
Comment
NONE PROVIDED

Authorized Rep

Prefix
Mr.

First Name	Last Name
Thomas	*Zito*

Title
Assistant Land Development Project Manager

Organization Name
D.R. Horton, Inc. - Birmingham

Phone Type	Number	Extension
Business	2058221611	

Email
TVZitoii@DRHorton.com

Mailing Address

2188 Parkway Lake Dr

Hoover, AL 35244

[NO COUNTRY SPECIFIED]

Agreements and Signature(s)

SUBMISSION AGREEMENTS

- ☑ I am the owner of the account used to perform the electronic submission and signature.
- ☑ I have the authority to submit the data on behalf of the facility I am representing.
- ☑ I agree that providing the account credentials to sign the submission document constitutes an electronic signature equivalent to my written signature.
- ☑ I have reviewed the electronic form being submitted in its entirety, and agree to the validity and accuracy of the information contained within it to the best of my knowledge.

QCP

"I certify under penalty of law that a comprehensive Construction Best Management Practices Plan (CBMPP) for the prevention and minimization of all sources of pollution in stormwater and authorized related process wastewater runoff has been prepared under my supervision for this site/activity, and associated regulated areas/activities. The CBMPP meets the requirements of this permit and if properly implemented and maintained by the operator, discharges of pollutants in stormwater runoff can reasonably be expected to be effectively minimized to the maximum extent practicable according to the requirements of ADEM Administrative Code Chapter 335-6-6-.23 and this Permit. The CBMPP describes the erosion and sediment control measures that must be fully implemented and regularly maintained as needed at the permitted site in accordance with sound sediment and erosion control practices to ensure the protection of water quality."

Signed By Joseph Schifano, III on 05/02/2022 at 9:57 AM

Responsible Official

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signed By Thomas Zito on 04/27/2022 at 3:21 PM

Addendum 1

Construction Best Management Practices Plan for:

River Vista Place Subdivision

Gadsden, Alabama

Permittee:

D.R. Horton, Inc. - Birmingham
Andrew Hancock
2188 Parkway Lake Drive
Hoover, AL 35244
Phone: 205-822-1611
Email: Ajhancock@drhorton.com

CBMPP Contact(s) / QCP:

Engineering Design Group LLC
Joseph Schifano, P.E., P.L.S.
120 Bishop Circle Suite 300
Pelham, Alabama 35124
Phone: 205-403-9158
Email: Schifano@edgalabama.com

Addendum 1 Date:

April 26, 2022

Estimated Project Dates:

Project Start Date: November 2021
Project Completion Date: November 2023

Overview

This document is to serve as an addendum to the original CBMPP for River Vista Place. This addendum updates the lot numbers to add Lot 7 to the current permit and update the QCP contact for this site. Lots to be covered under this permit shall include: Lots 1-7 and 18-28. The disturbed acreage will increase from the previous 4.24 acres to the new permitted area of 4.52 acres. All appropriate BMPs are to be installed prior to the start of construction. Updated maps have been attached for reference.

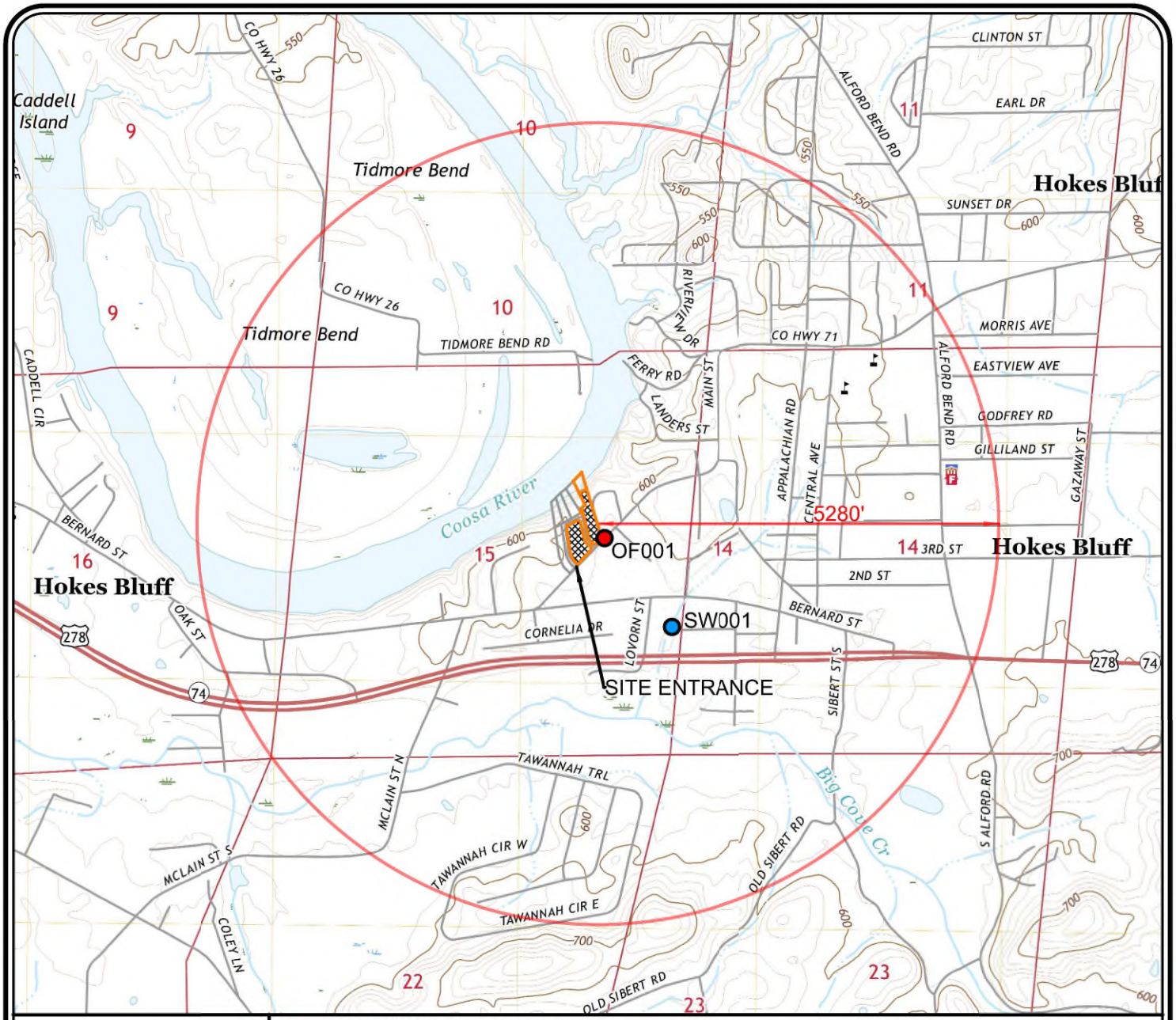
Project/ Construction Description

The permitee will be constructing single family residential homes located in River Vista Place. Site construction includes erosion control device installation, minor lot clearing, individual lot fine grading, home construction, and landscaping. The disturbed acreage of 4.52 will include construction on the 17 residential lots in River Vista Place.

Receiving Water Description

The project drains overland to a roadside drainage channel and then UT to Big Cove Creek. This site is not located within a priority construction zone. Project outfalls are shown in the accompanying site maps (See section 1.6). Big Cove Creek is not on the 2020 Alabama 303(d) list.

The associated Quad map is included and is to function as a representation of the lot locations and a depiction of the discharge location for the development.



KEY		
DISCHARGE POINT	- OVERALL PROPERTY BOUNDARY ±5.21 ACRES	- PROJECT/SITE ±10.00 ACRES
OUTFALL	- DISTURBED/PERMIT AREA ±4.52 ACRES	OUTFALLS DISCHARGE UT TO BIG COVE CREEK
	OF001 - 33.989767, -85.881341	SW001 - 33.986667, -85.878104

PROPOSED FOR D.R. HORTON, INC - BIRMINGHAM
RIVER VISTA PLACE - RESIDENTIAL HOMES
EXCERPT FROM USGS 7.5 MINUTE QUADRANGLE MAP
SECTION 15, TOWNSHIP 12S, RANGE 7E
GADSDEN, ALABAMA - ETOWAH COUNTY

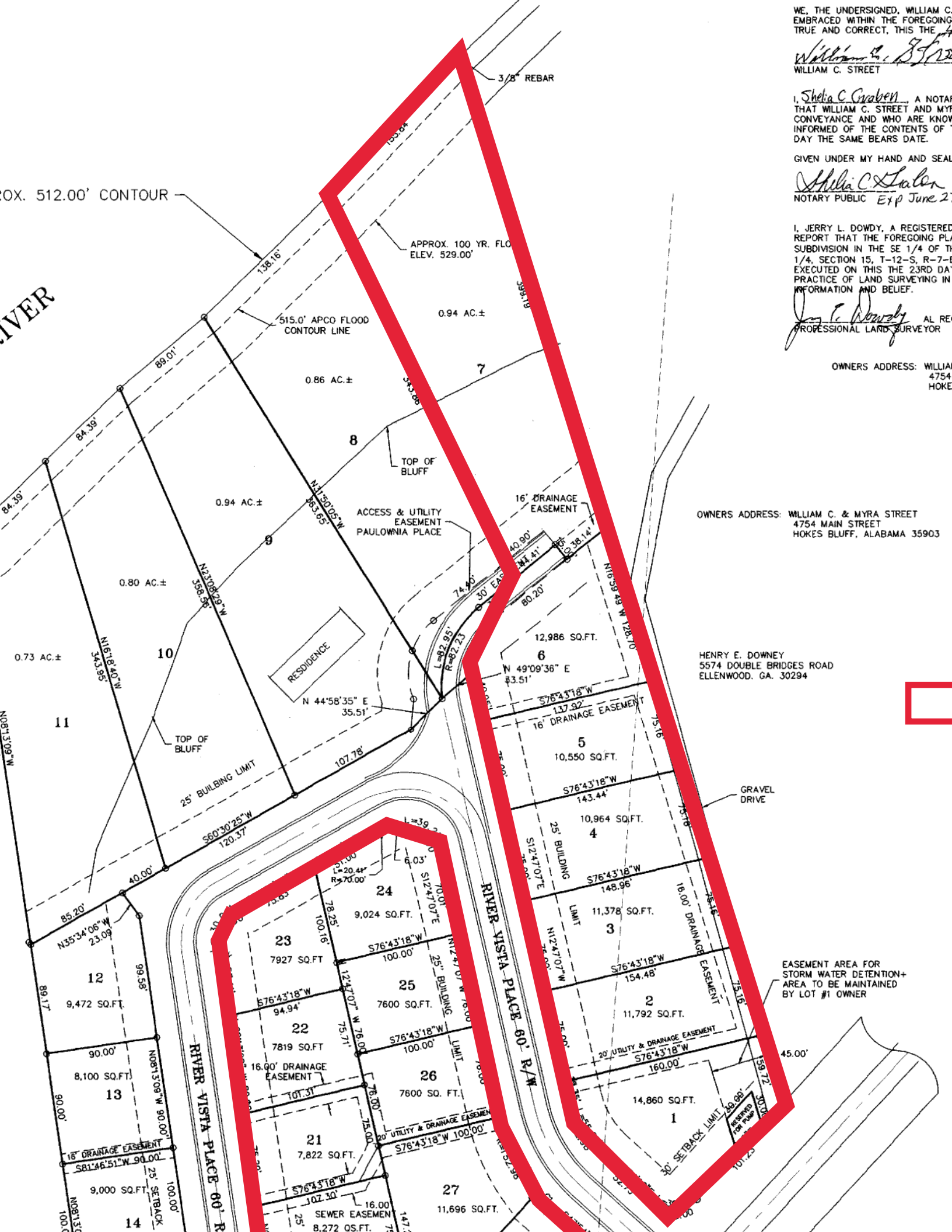
GRAPHIC SCALE

2000 0 1000 2000 4000

(IN FEET)
1 inch = 2000 ft.

EDG
ENGINEERING DESIGN GROUP, LLC
CIVIL ENGINEERING • LAND SURVEYING
(205) 403-9158

120 BISHOP CIRCLE, SUITE 300
PELHAM, AL 35124
TEL - (205) 403-9158
FAX - (205)4039175



WE, THE UNDERSIGNED, WILLIAM C.
EMBRACED WITHIN THE FOREGOING
TRUE AND CORRECT, THIS THE 4

William C. Street
WILLIAM C. STREET

I, Shelia C Graben, A NOTAR
THAT WILLIAM C. STREET AND MYR
CONVEYANCE AND WHO ARE KNOW
INFORMED OF THE CONTENTS OF
DAY THE SAME BEARS DATE.

GIVEN UNDER MY HAND AND SEAL

Shelia C Graben
NOTARY PUBLIC Exp June 2

I, JERRY L. DOWDY, A REGISTERED
REPORT THAT THE FOREGOING PLA
SUBDIVISION IN THE SE 1/4 OF T
1/4, SECTION 15, T-12-S, R-7-E
EXECUTED ON THIS THE 23RD DA
PRACTICE OF LAND SURVEYING IN
INFORMATION AND BELIEF.

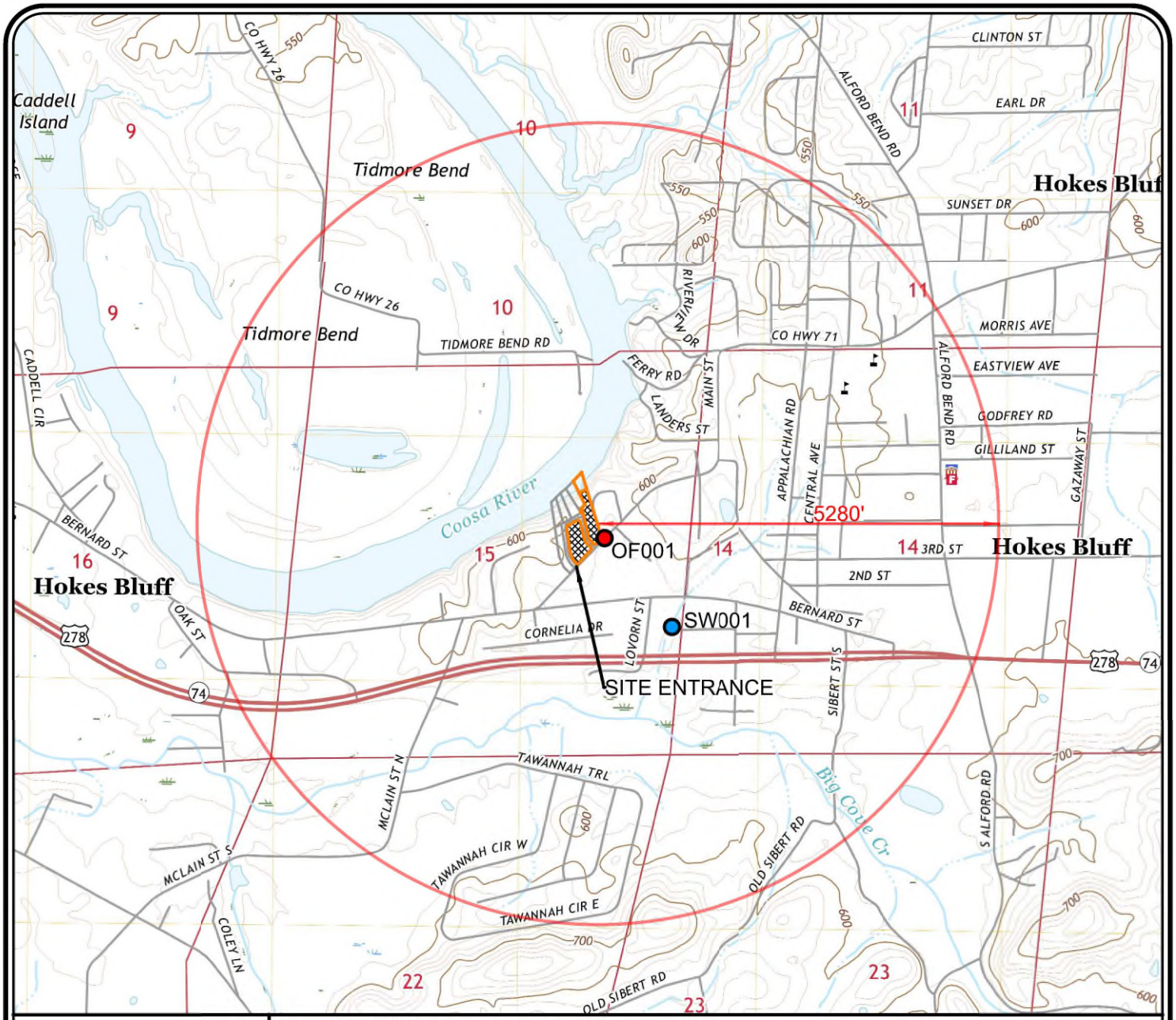
Jerry L. Dowdy
AL RE
PROFESSIONAL LAND SURVEYOR

OWNERS ADDRESS: WILLIA
4754
HOKE

OWNERS ADDRESS: WILLIAM C. & MYRA STREET
4754 MAIN STREET
HOKES BLUFF, ALABAMA 35903

HENRY E. DOWNEY
5574 DOUBLE BRIDGES ROAD
ELLENWOOD. GA. 30294

EASEMENT AREA FOR
STORM WATER DETENTION+
AREA TO BE MAINTAINED
BY LOT #1 OWNER



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PROPOSED FOR D.R. HORTON, INC - BIRMINGHAM
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EXCERPT FROM USGS 7.5 MINUTE QUADRANGLE MAP
SECTION 15, TOWNSHIP 12S, RANGE 7E
GADSDEN, ALABAMA - ETOWAH COUNTY

GRAPHIC SCALE

2000 0 1000 2000 4000

(IN FEET)
1 inch = 2000 ft.

EDG
ENGINEERING DESIGN GROUP, LLC
CIVIL ENGINEERING • LAND SURVEYING
(205) 403-9158

120 BISHOP CIRCLE, SUITE 300
PELHAM, AL 35124
TEL - (205) 403-9158
FAX - (205)4039175

DELEGATION OF SIGNATORY AUTHORITY

I, Andrew Hancock, Division President, hereby designate the individual and their described position below to be a duly authorized representative for the purpose of overseeing compliance with all environmental requirements, including the ADEM Administrative Code of Regulations. The designee is authorized to sign all reports required by the permits and other information requested by the Department. The designee is also authorized to sign the initial NOI Permit Application. The designee is further authorized to sign the NOT upon job completion.

Authorized Representative & Position: Thomas Zito - Assistant Land Development Project Manager

Signature of Authorized Representative:

Company: D.R. Horton, Inc. - Birmingham

Address: 2188 Parkway Lake Drive

City, State, Zip: Hoover, AL 35244

Contact Number: 205-490-5213

Effective Date of Authorization: 11/11/2021

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in ADEM Administrative Code 335-6-6-.09.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that a qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Responsible Official & Title: Andrew Hancock, Division President

Company: D.R. Horton, Inc. - Birmingham

Contact Number: 205-822-1611

Signature of Responsible Official:

Date: 11/11/2021

If an authorization under paragraph 335-6-6-.09(2) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of said paragraph must be submitted to the Department prior to or together with any reports or information signed by the newly authorized representative.

CERTIFICATE OF SECRETARY

The undersigned hereby certifies as follows:

1. He is a duly elected, qualified and acting Secretary of D.R. Horton, Inc. - Birmingham, an Alabama corporation *(the "Company")*, is familiar with the facts herein certified and is duly authorized to certify the same.

2. The following is a true, correct and complete copy of resolutions related to the subject matter as adopted by the Consent of Sole Director of the Company dated August 31, 2021 *(the "Resolutions")*. The Resolutions have not been amended, rescinded or modified and remain in full force and effect as of the date hereof.

Election of Assistant Secretary and NPDES Administrator

RESOLVED, that Thomas V. Zito, II is hereby elected to the office of Assistant Secretary of the Company *(the "Assistant Secretary")* in the Company's Birmingham Division *(the "Division")*, to serve until the next annual meeting of directors of the Company and until his successor is duly elected and qualified or until his earlier death, resignation or removal.

RESOLVED FURTHER, that the Assistant Secretary is hereby authorized and empowered, in the Division and in the name and on behalf of (i) the Company, (ii) any partnership of which the Company is a general partner, manager or agent, and (iii) any limited liability company of which the Company is a member, manager or agent *(collectively, the "Entities")* to sign, modify and terminate, from time to time as he deems it to be in the best interest of the Entities, permit applications, notifications, exemption requests, agreements, reports and documents related to federal, state or local implementation of National Pollutant Discharge Elimination System *("NPDES")* storm water or associated wetlands related matters for the Division including, but not limited to, independent contractor and subcontractor agreements, consultant agreements, Storm Water Pollution Prevention Plans *("SWPPPs")*, Notices of Intent *("NOIs")*, Notices of Termination *("NOTs")*, plans and other similar or equivalent agreements or documents for the Division relating to the business of the Entities but excluding any enforcement related documents including, but not limited to, settlement agreements and consent decrees.

IN WITNESS WHEREOF, the undersigned has signed on the 1st day of September, 2021.

Thomas B. Montaño

Thomas B. Montaño
Secretary

U:\JTEWALT\Min\Birm\21Sep01-COS.wpd

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

July 15, 2020

GAYLON PIERCE
MANAGING MEMBER
GAYLON PIERCE CONSTRUCTION LLC
2964 AL. HIGHWAY 77
SOUTHSIDE AL 35907

RE: Gaylon Pierce Construction Sites
Etowah County (055)

Dear Mr. Pierce:

Based on your request, coverage under **General NPDES Permit Number ALR10BHLX** is granted. The effective date of coverage is July 15, 2020**.**

Coverage under this permit does not authorize the discharge of any pollutant or wastewater that is not specifically identified in the permit and by the Notice of Intent.

You are responsible for compliance with all provisions of the permit including, but not limited to, the performance of required inspections and/or monitoring, and the preparation and implementation of a Construction Best Management Practices Plan (CBMPP) required by the permit.

The Alabama Department of Environmental Management encourages you to exercise pollution prevention practices and alternatives at your facility. Pollution prevention will assist you in complying with permit requirements.

A copy of the General NPDES Permit under which coverage of your discharges has been granted is enclosed. If you have any questions concerning this permit, please contact Stephanie Bailey by email at scbailey@adem.alabama.gov or by phone at (334) 394-4314.

Sincerely,

Jeffery W. Kitchens

Jeffery W. Kitchens, Chief
Water Division

JWK/scb

Enclosure: Permit

File: NOI

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

NOTICE OF INTENT – GENERAL PERMIT NUMBER ALR100000

NPDES PERMIT NUMBER ALR100000 IS A GENERAL PERMIT AUTHORIZING DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES THAT RESULT IN A TOTAL LAND DISTURBANCE OF ONE ACRE OR GREATER AND SITES LESS THAN ONE ACRE BUT ARE PART OF A LARGER COMMON PLAN OF DEVELOPMENT OR SALE

Mail to: Alabama Department of Environmental Management
Water Division
Stormwater Management Branch
Post Office Box 301463
Montgomery, Alabama 36130-1463

PLEASE COMPLETE ALL QUESTIONS. INCOMPLETE OR INCORRECT ANSWERS, OR MISSING SIGNATURES WILL DELAY PROCESSING. IF SPACE IS INSUFFICIENT, CONTINUE ON AN ATTACHED SHEET(S) AS NECESSARY. ATTACH CBMPP AND OTHER INFORMATION AS NEEDED. PLEASE TYPE OR PRINT LEGIBLY IN INK.

I. PERMITTEE INFORMATION Initial: ☒ Modification: ☐ Transfer: ☐ Renewal: ☐ Previous ALR10 _____

Permittee Name (Legal Name) Gaylon Pierce Construction LLC	Responsible Official Phone Number 2564422649
Responsible Owner/Operator or Official, and Title Gaylon Pierce, Managing Member	Responsible Official E-Mail Address agfenceco@att.net
Responsible Official (RO) Street/Physical Address 2964 Al. Highway 77	City, State, and Zip Code Southside, AL 35907
Responsible Official (RO) Mailing Address 2964 Al. Highway 77	City, State, and Zip Code Southside, AL 35907
☐ Corporation ☐ Individual ☐ Sole Proprietorship ☐ Partnership ☒ LLC ☐ LLP ☐ Government Agency ☐ Other _____	

II. FACILITY INFORMATION

Facility/Site Name Gaylon Pierce Construction Sites	Facility Contact and Title Gaylon Pierce, Managing Member
Facility Street Address or Location Description Reeves Street, Hokes Bluff, Al.	Facility Contact Company Name Gaylon Pierce Construction LLC
City: Hokes Bluff 35903 Zip Code: Etowah County(s):	Facility Contact Phone Number 256-442-2649
Facility Front Gate Latitude and Longitude (For linear projects, please include coordinates for both the beginning and ending points of the project.) Start: 34.010550, -85.91(End: ,	Facility Contact e-Mail Address: agfenceco@att.net
Detailed Directions to the Site East bound, entering Hokes Bluff on US 278, left on Caddell Circle approx. 2/3 mi. left on Walker Drive approx. 1/2 mi. Site on right.	

III. ACTIVITY DESCRIPTION

Brief Description of Construction / Land disturbance activity(s): Construction of single family dwellings	
(For Modifications Only) Brief description of the action/change that has resulted in the request for permit modification:	
Primary SIC Code: 1521	Primary NAICS Code: 236115

IV. PROPOSED SCHEDULE

Anticipated Activity schedule: Commencement date: 04/01/2020		Completion date: 09/30/2020
Area of the Registered site: Total site area in acres: 5.2	Total disturbed area in acres: 3.1	

VII. RECEIVING WATERS

Are there any surface waters within 25 feet of your project's earth disturbances? YES ☐ NO ☒

List name of receiving water(s), latitude & longitude (decimal or deg, min, sec) of location(s) that run-off enters the receiving water, and the waterbody classification. Please refer to ADEM Admin. Code 335-6-11 for a detailed list of water use classifications. (Attach a separate list if necessary)

Receiving Water	Latitude	Longitude	Waterbody Classification
UT to COVE CREEK	34.00870	-85.9191	F&W, PWS, S

V. PRIORITY CONSTRUCTION SITE

Is this a Priority Construction Site as defined by Part V of the construction stormwater general permit? Yes ☐ No ☒ If yes, attach/submit a copy of the CBMPP that meets or exceeds the requirements of Parts III A. and E. of the construction stormwater general permit.

VI. TOPOGRAPHIC MAP SUBMITTAL

Please attach a recent 7.5 minute series USGS topographic map(s) no larger than 11 by 17 inches (several pages may be necessary), showing the location of the Facility including site boundaries, area of disturbance, a 1 mile radius, perennial, intermittent, and ephemeral streams, lakes/springs/wells/wetlands and contour lines. The map should also show the point(s) at which stormwater runoff will exit (outfall) the facility and the point(s) where stormwater runoff from the site will enter the receiving water.

VIII. GENERAL INFORMATION

Will flocculants or other chemical stabilization products be used on site? Yes ☐ No ☒

IX. QUALIFIED CREDENTIALED PROFESSIONAL (QCP) CERTIFICATION

"I certify under penalty of law that a comprehensive Construction Best Management Practices Plan (CBMPP) for the prevention and minimization of all sources of pollution in stormwater and authorized related process wastewater runoff has been prepared under my supervision for this site/activity, and associated regulated areas/activities. The CBMPP meets the requirements of this permit and if properly implemented and maintained by the operator, discharges of pollutants in stormwater runoff can reasonably be expected to be effectively minimized to the maximum extent practicable according to the requirements of ADEM Administrative Code Chapter 335-6-6-.23 and this Permit. The CBMPP describes the erosion and sediment control measures that must be fully implemented and regularly maintained as needed at the permitted site in accordance with sound sediment and erosion control practices to ensure the protection of water quality."

QCP Designation/Description: Professional Engineer (PE)

Address 171 Woodland Dr, Rainbow City, AL 35906 Registration / Certification: 20141

Name and Title (type or Print) scott skipper, president Phone Number 256-390-9424

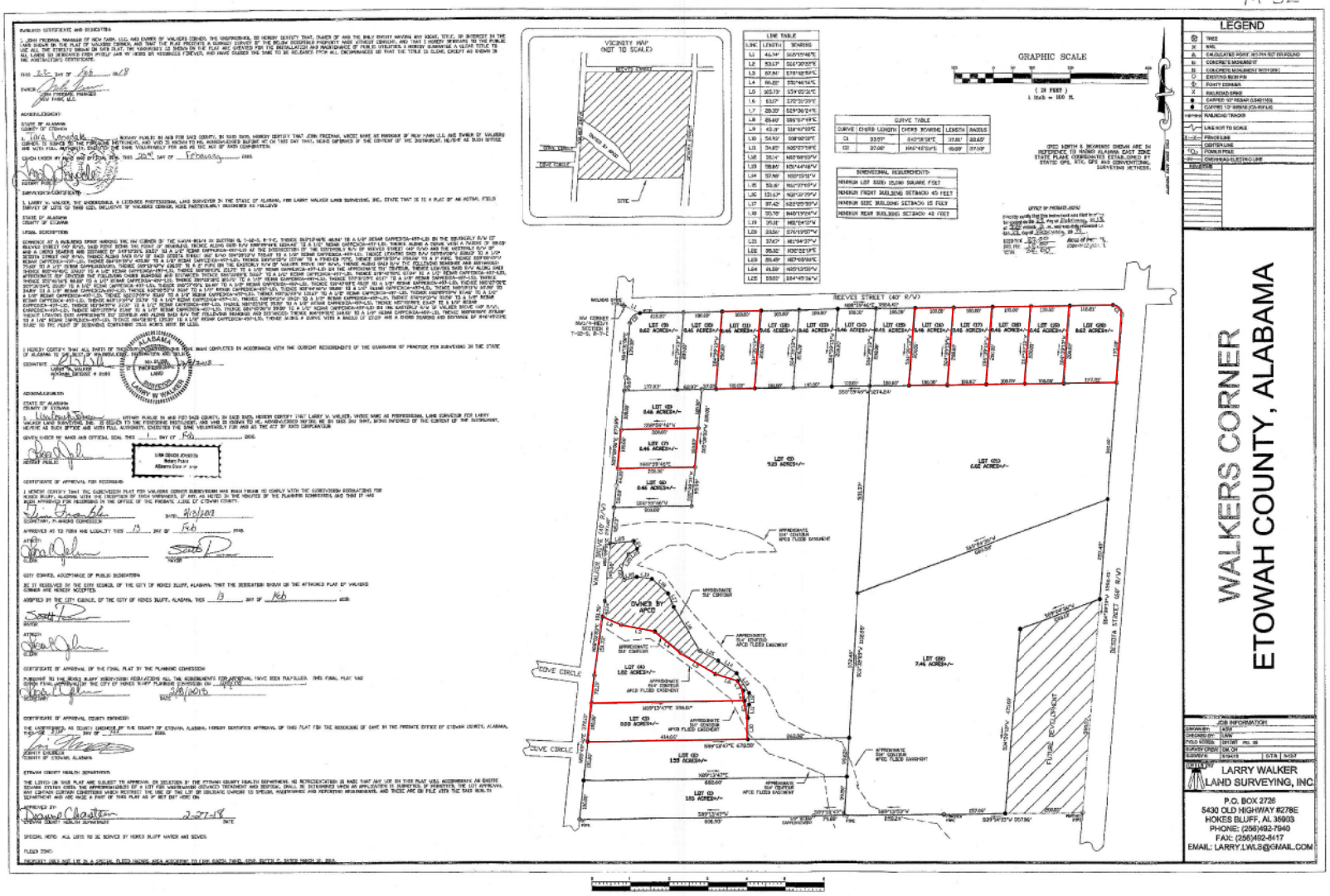
Signature _____ Date Signed 07/15/2020

X. OPERATOR - RESPONSIBLE OFFICIAL SIGNATURE

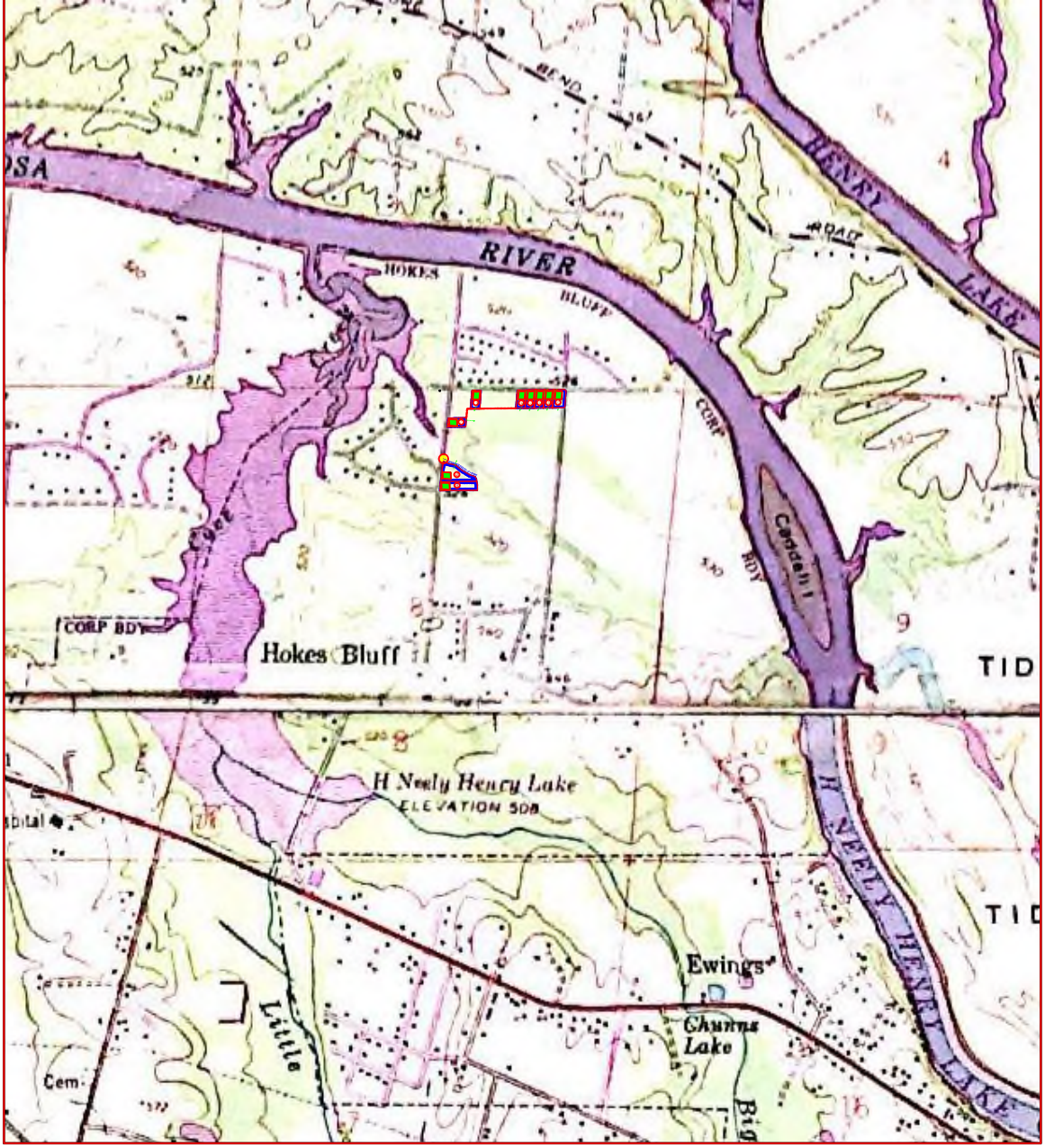
Pursuant to ADEM Administrative Code Rule 335-6-6-.09, this NOI must be signed by a Responsible Official of the permittee who is the operator, owner, the sole proprietor of a sole proprietorship, a general/controlling member or partner, a ranking elected official or other duly authorized representative for a unit of government; or an executive officer of at least the level of vice-president for a corporation, having overall responsibility and decision making for the site/activity. "I certify under penalty of law that this form, the CBMPP, and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the qualified credentialed professional (QCP) and other person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, correct, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment for knowing violations. I certify that this form has not been altered, and if copied or reproduced, is consistent in format and identical in content to the ADEM approved form. I further certify that the proposed discharges described in this registration have been evaluated for the presence of any non-construction and/or coal/mineral mining stormwater, or process wastewaters have been fully identified."

Name and Title (type or Print) Gaylon Pierce, Owner Official Title Member of LLC

Signature _____ Date Signed 07/13/2020



PERMITTEE: GAYLON PIERCE CONSTRUCTION LLC
CONTACT: GAYLON PIERCE, MANAGING MEMBER
FACILITY NAME: GAYLON PIERCE CONSTRUCTION SITES



GADSDEN EAST QUADRANGLE
GLENCOE QUADRANGLE

PREPARED BY:
SKIPPER ENGINEERING, INC.
171 WOODLAND DRIVE
RAINBOW CITY, ALABAMA 35906
256-390-9424
scott@skipperengineering.com

LEGEND
- OUTFALL FROM DISTURBED AREA ENTERS RECEIVING STREAM
- FACILITY BOUNDARY
- LOT NUMBERR OF SUBDIVISION
- DISTURBED AREA
- INTERMITTENT STREAM (UT OF COVE CREEK)

PERMITTEE: GAYLON PIERCE CONSTRUCTION LLC
CONTACT: GAYLON PIERCE, MANAGING MEMBER
FACILITY NAME: GAYLON PIERCE CONSTRUCTION SITES
BEING LOTS 3, 4, 7, 11, 16-20; WALKER'S CORNER SUBDIVISION
PLAT BOOK "M", PAGE 52, ETOWAH COUNTY, AL.
SCALE 1"= 1000'

Erosion and Sediment Control Inspection Report Form

Project Name and Location

Weather:

Rain in last 24 hrs (inches):

Owner / Permittee:

A. Current Construction / Active Areas:

Pollution Control Measures (BMP) Checklist:

____ Inlet Barrier (ie: gravel bags)
____ Sediment Barriers (ie: ditch checks)
____ Erosion Blankets, Hydromulch / Seed, etc
____ Stabilized Construction Entrance
____ Stream Crossings
____ Seed / Sod Areas
____ Sediment Basins & Discharge Locations
____ Borrow Areas
____ General Site Condition (trash, etc)

B. Problem Areas / Special Observations(*Note problem areas ONLY below*):

BMP	Location	Observations, Effectiveness, & Corrective Actions Ordered

C. Listing of Areas where construction operations have permanently or temporarily stopped; stabilization measures initiated.

D. Have items noted on last inspection been corrected? Yes No (if No, Explain:)

Note: Inspection comments above indicate deficiencies only. Deficiencies must be corrected within 24 hours, unless otherwise noted. All other BMP's on site are considered to be in good working condition.

Date of Inspection

Inspector Signature

6 Goals • No Sediment Leaves the Site • Lines of Defense Everywhere & Always • Cover Quickly • Protect the Swale, Ditch ,and Channel • Keep Clean Water Clean • Inspect, Clean & Fix

Appendix G – Post-Construction Storm Water Management

THE CITY OF HOKES BLUFF

CONTROL MEASURE 4 - POST-CONSTRUCTION STORM WATER MANAGEMENT

See Section 8.1 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	**Reducing Post-Construction Runoff Volume:** Ordinance No. HB-2012-002, Section 7 provides for post-construction storm water management measures to reduce runoff volume Evaluate the effectiveness of the Ordinance each reporting period	0 plans were reviewed 0 plans approved	The City will evaluate Ordinance HB-2012-00 annually on its effectiveness in reducing storm water pollution from new development or redevelopment.	A copy of Ordinance HB-2012-002 is provided in Appendix E of the 2022 SWMPP.		NO
2	**Encourage Low-Impact Development/Green Infrastructure Practices:** Provide information on green development to individuals requesting plan review and building/development permits.	0 plans incorporated LID design	The City will provide educational material on Green Infrastructure Practices.	Educational materials are attached. (See Document 4-1)		NO
3	**Evaluate Obstacles to Low Impact/Green Development:** Review and evaluate policies and ordinances to identify regulatory and policy impediments to the installation of green infrastructure and low-impact development techniques.	0 obstacles to Low Impact/Green Development were identified	The City will review and evaluate policies and ordinances related to building codes or other local regulations with the goal of identifying regulatory and policy impediments to the installation of green infrastructure and low-impact development techniques.			NO
4	**Require Plan Submittal:** Require a submission of a Storm Water Management Plan with the application for a Land Disturbance Permit.	0 plans reviewed 0 plans approved 0 plans rejected	The City will continue to require submittal of a plan showing post-construction stormwater management strategies.	A copy of the Application for Land Disturbance Permit is attached. (See Document 3-2)	Section 7.1 of Ordinance HB-2012-002 requires that an application for a Land Disturbance Permit include a plan showing post-construction strategies.	NO
5	**Plan Review Procedures:** Review each application for a Land Disturbance Permit and the accompanying plan. Evaluate the plan review criteria to determine if additional metrics are necessary.	0 plans reviewed 0 plans approved 0 plans rejected 0 additional metrics were deemed necessary	The City will review the plans showing post-construction storm water strategies submitted with the Land Disturbance Application. The City will evaluate the plan review criteria to determine if additional metrics are necessary.			NO
6	**Require As-Built Certification:** Require As-Built Plans be provided to the City after construction is complete. The plans are to include the final design specifications for all storm water management facilities.	0 as-built certifications submitted	The City will continue to require that as-built drawings be provided to the City after final construction of the storm water control is completed.			NO
7	**Post-Installation Inspections:** Conduct an inspection of post-construction BMPs for compliance with the approved plans prior to issuance of a Certificate of Occupancy.	0 post-construction BMPs installed 0 final inspections conducted	The City will perform inspections of new post-construction structures to verify they were completed according to the submitted plans, prior to the issuance of a Certificate of Occupancy.	An example inspection report is attached. (See Document 4-2)		NO

THE CITY OF HOKES BLUFF

CONTROL MEASURE 4 - POST-CONSTRUCTION STORM WATER MANAGEMENT

See Section 8.1 of the 2022 SWMPP

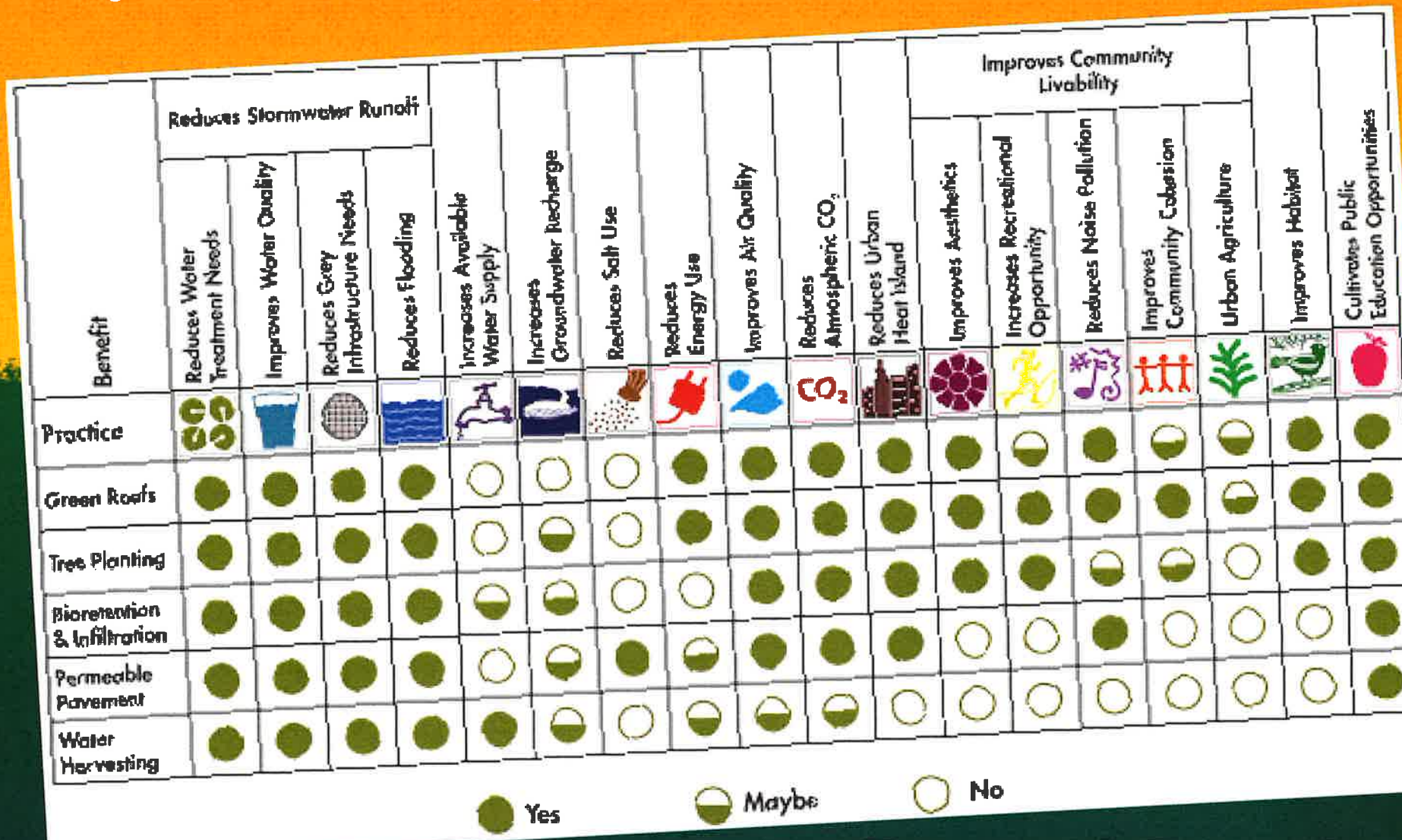
STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
8	**Require Long-Term Maintenance On Storm Water Controls:** Develop a policy by March 31, 2023 to require adequate long-term operation and maintenance of BMPs.	**INCOMPLETE** The City did not develop a policy by March 31, 2023 to require adequate long-term operation and maintenance of BMPs.	The City will develop a policy by **March 31, 2024** to require adequate long-term operation and maintenance of BMPs.			NO
9	**Inventory of Post-Construction Structural Controls:** Compile an inventory of post-construction structural controls located within the Hokes Bluff MS4. Update the inventory annually.	0 new structural BMPs added 0 total structural BMPs	The City will update the inventory of post-construction structural controls within the Hokes Bluff MS4, including those owned by the City.			NO
10	**Annual Inspection of City-owned Post-Construction Storm Water Controls:** Inspect post-construction BMPs within the MS4 a minimum of once per year.	0 inspections performed	The City will inspect post-construction BMPs within the Hokes Bluff MS4 at a minimum of once per year.	An example inspection report is attached. (See Document 4-2)		NO
11	**Corrective Actions for City-Owned Post-Construction Controls:** Perform maintenance or repairs if an inspection identifies a maintenance issue.	0 corrective actions taken	The City will perform maintenance or repairs on city-owned post-construction controls if necessary.	An example inspection report is attached. (See Document 4-2)		NO
12	**Procedures to Address Non-Compliant Post-Construction BMPs:** Maintain records of escalating enforcement actions of non-compliant post-construction BMPs.	0 enforcement actions taken	The City will maintain records of enforcement actions taken.			NO

Green Infrastructure and Low-Impact Development Technologies

The guiding principles of these technologies is to manage stormwater at their sources using natural means, and establish conditions so that hydrology and water quality of developed sites approaches that of undeveloped sites.

- Green roofs & vegetative walls
- Bioretention or rain gardens
- Bioswales
- Planter boxes
- Permeable pavement
- Urban tree canopy
- Rainwater harvesting
- Downspout disconnection
- Green streets and alleys
- Green parking

Green Infrastructure (GI) and Low-Impact Development (LID) Technologies



Benefits and Practices

Green Roofs and Vegetative Walls



A rooftop or building wall planted with a media membrane and native vegetation over a waterproofing membrane/root zone barrier, which may include a drainage and irrigation system.

Benefits:

- Reduces stormwater runoff
- Reduces energy use
- Improves air quality

Two categories of green roofs:

- *Extensive green roofs*: media depth 2-6 inches
- *Intensive green roofs*: media depth greater than 6 inches



Bioretention or Rain Gardens



Typically constructed with high-permeability media consisting of soil, sand and organic matter, designed to maximize infiltration, improve water quality, promote vegetative growth and biological transformation processes.

Designed with a ponding zone, storage volume capacity, stormwater overflow, and exfiltration/underdrain relief.

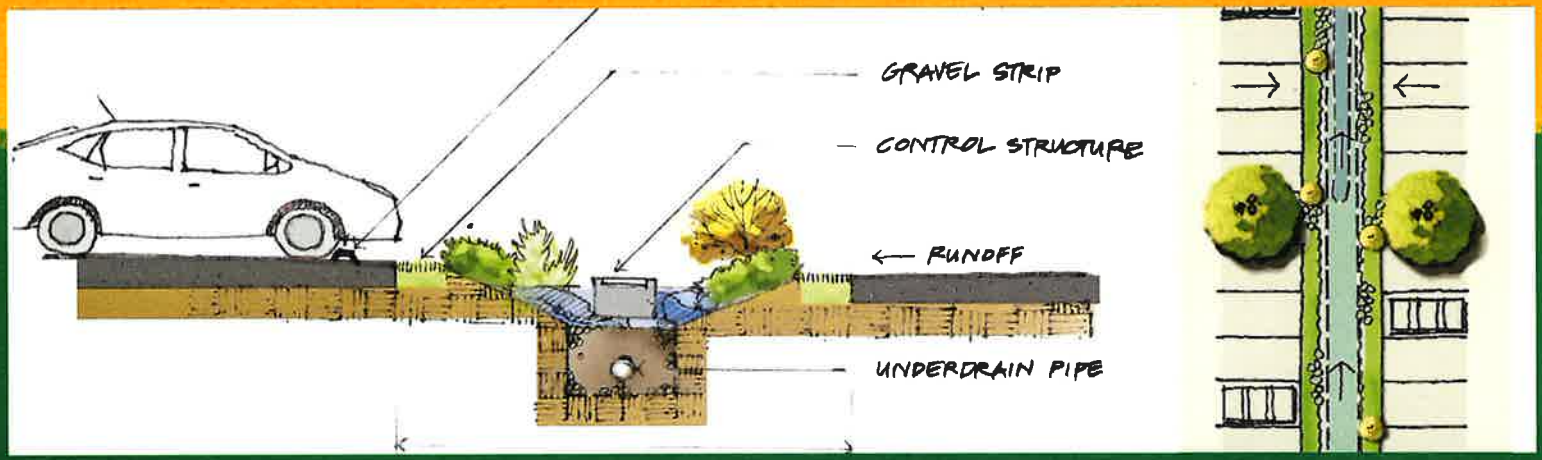
Ideally constructed:

- Areas where stormwater naturally collects
- Adjacent to roof runoff and impervious areas such as streets, parking lots, driveways

Benefits:

- Improves local aesthetics
- Traps and treats silts, fine particles, nutrients, heavy metals and bacteria from impacting downstream ecosystems
- Increases property value
- Increases biodiversity and habitat

Bioswales



Bioswales may be vegetated, mulched or xeriscaped linear channels that provide stormwater retention and infiltration.

Bioswales are a linear form of a bioretention system with a length-to-width ratio greater than 2:1, typical of standard bioretention construction.

Designed as an alternative to traditional stormwater piping, integrated into parking lots and road medians.

Planter Boxes



Planter boxes are urban bioretention systems with vertical concrete walls designed to collect and retain a specified volume of stormwater runoff and promote vegetative growth.



The design may have an open or closed bottom.

Collect stormwater runoff from sidewalks, parking lots and/or streets within the city right-of-way.

Permeable Pavement

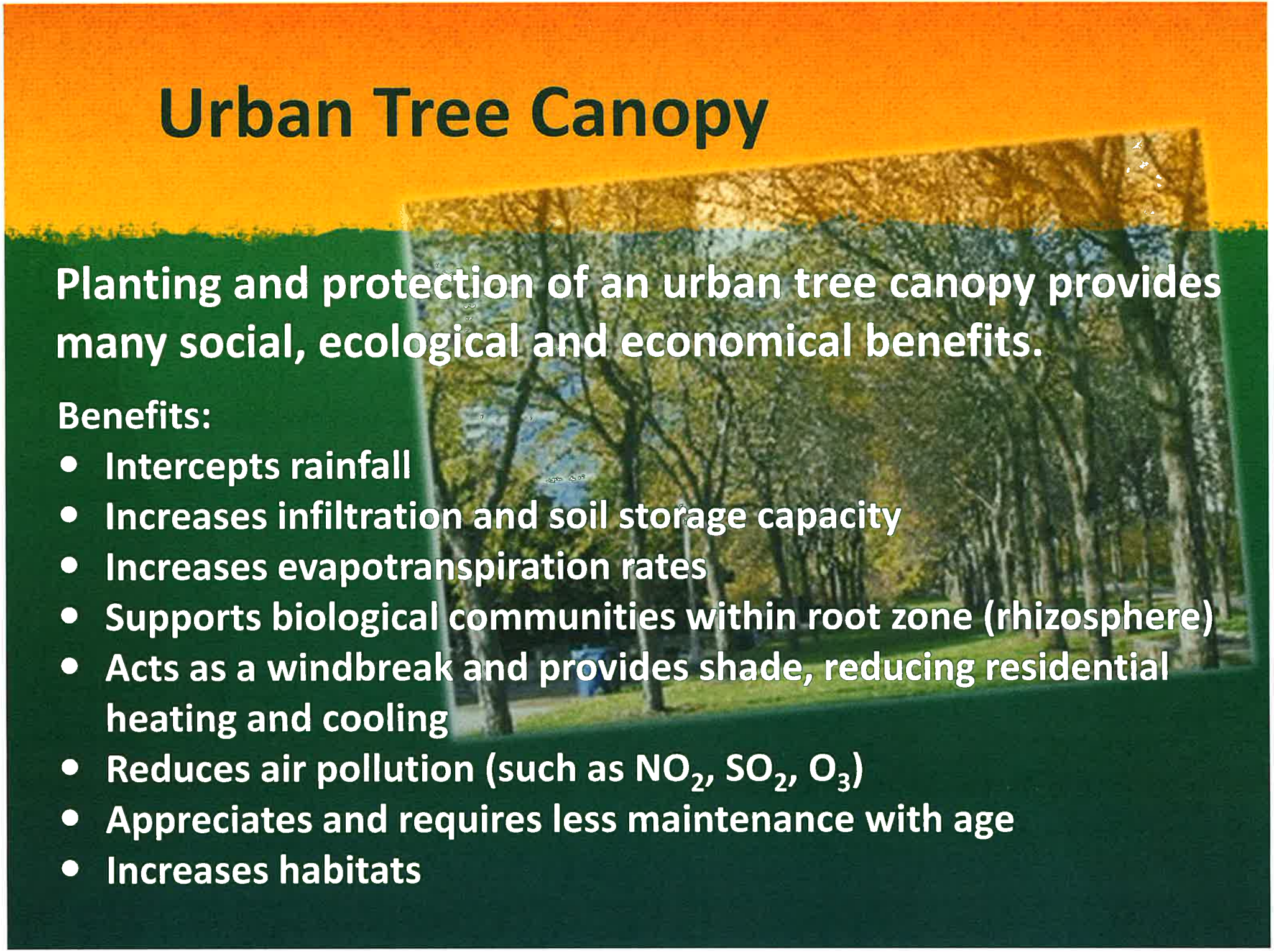
porous concrete, porous asphalt, interlocking permeable pavers



Surfaces that are similar to sidewalks and roadways in that they allow for vehicular traffic, but dissimilar due to their abilities to absorb and infiltrate stormwater runoff through their surfaces to underlying media layers.

Typically designed for low-volume traffic areas such as parking lots, driveways and sidewalks.

Urban Tree Canopy



Planting and protection of an urban tree canopy provides many social, ecological and economical benefits.

Benefits:

- Intercepts rainfall
- Increases infiltration and soil storage capacity
- Increases evapotranspiration rates
- Supports biological communities within root zone (rhizosphere)
- Acts as a windbreak and provides shade, reducing residential heating and cooling
- Reduces air pollution (such as NO_2, SO_2, O_3)
- Appreciates and requires less maintenance with age
- Increases habitats

Rainwater Harvesting

Capturing and storing of rainwater with cisterns or rain barrels to be used for onsite irrigation, toilet flushing, car washing and other purposes.



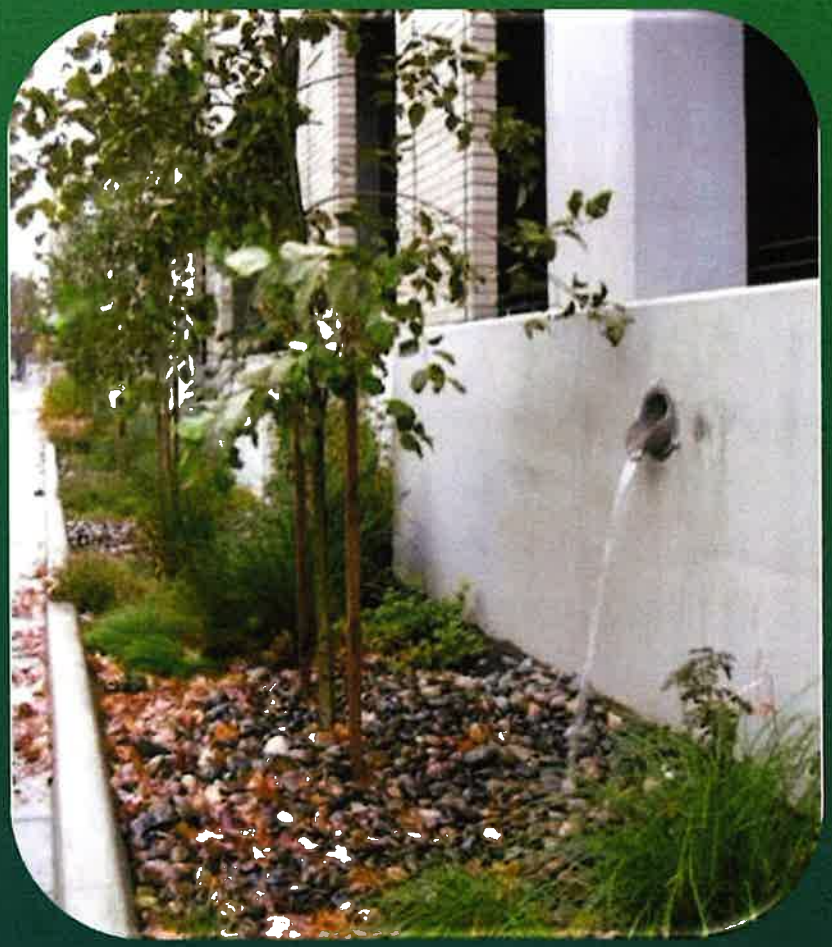


Downspout Disconnection

The process of redirecting roof runoff away from traditional storm sewer collection systems to rain gardens, bioswales, planter boxes and other GI technologies on site.

These systems allow for infiltration, improved water quality and treatment efficiency on site and at the runoff source.

Shown to reduce DCIA by 40-44%.





Green Streets and Alleys



The integration of permeable pavement, bioswales, planter boxes, bioretention and native vegetation into an urban streetscape.

These systems are designed to store storm event volume, promote evapotranspiration and biogeochemical processes.

Benefits:

- Improves water and air quality
- Enhances livability
- Increases property values
- Enhances pedestrian and bicycle access and safety
- Protects surface and groundwater resources
- Increases urban green space and wildlife habitat
- Reduces pollution
- Reduces stormwater into combined sewer systems
- Reduces pumping and wastewater treatment costs

Green Parking

Parking lots have low traffic volume, high impervious area and vegetative islands, making them great locations to implement green infrastructure design.





The most commonly used GI technologies are pervious pavement, porous concrete, interlocking pavers, rain gardens, bioswales and tree canopies.

Sources of Images

Source of most images: U.S. Environmental Protection Agency at **www.epa.gov**

What Is Green Infrastructure?
http://water.epa.gov/infrastructure/greeninfrastructure/gi_what.cfm

Slide 3 table from *The Value of Green Infrastructure: A Guide to Recognizing Its Economic, Environmental and Social Benefits* (page 3)
http://www.cnt.org/repository/gi-values-guide.pdf

City of Hokes Bluff Post-Construction Site Stormwater Management Inspection Report

General Information			
Project Name			
NPDES Tracking No.		**Location**	
Date of Inspection		**Start/End Time**	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Inspector's Qualifications			
Describe present phase of construction			
Type of Inspection: ❑ Regular ❑ Pre-storm event ❑ During storm event ❑ Post-storm event			
Weather Information			
Has there been a storm event since the last inspection? ❑Yes ❑No **If yes, provide:** Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):			
Weather at time of this inspection? ❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds ❑ Other: Temperature:			
Have any discharges occurred since the last inspection? ❑Yes ❑No **If yes, describe:**			
Are there any discharges at the time of inspection? ❑Yes ❑No **If yes, describe:**			

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1		❑Yes ❑No	❑Yes ❑No	
2		❑Yes ❑No	❑Yes ❑No	
3		❑Yes ❑No	❑Yes ❑No	
4		❑Yes ❑No	❑Yes ❑No	
5		❑Yes ❑No	❑Yes ❑No	
6		❑Yes ❑No	❑Yes ❑No	
7		❑Yes ❑No	❑Yes ❑No	
8		❑Yes ❑No	❑Yes ❑No	
9		❑Yes ❑No	❑Yes ❑No	
10		❑Yes ❑No	❑Yes ❑No	
11		❑Yes ❑No	❑Yes ❑No	

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
11		❑Yes ❑No	❑Yes ❑No	
12		❑Yes ❑No	❑Yes ❑No	
13		❑Yes ❑No	❑Yes ❑No	
14		❑Yes ❑No	❑Yes ❑No	
15		❑Yes ❑No	❑Yes ❑No	
16		❑Yes ❑No	❑Yes ❑No	
17		❑Yes ❑No	❑Yes ❑No	
18		❑Yes ❑No	❑Yes ❑No	
19		❑Yes ❑No	❑Yes ❑No	
20		❑Yes ❑No	❑Yes ❑No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	❑Yes ❑No	❑Yes ❑No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	❑Yes ❑No	❑Yes ❑No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	❑Yes ❑No	❑Yes ❑No	
4	Are discharge points and receiving waters free of any sediment deposits?	❑Yes ❑No	❑Yes ❑No	
5	Are storm drain inlets properly protected?	❑Yes ❑No	❑Yes ❑No	
6	Is the construction exit preventing sediment from being tracked into the street?	❑Yes ❑No	❑Yes ❑No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	❑Yes ❑No	❑Yes ❑No	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	❑Yes ❑No	❑Yes ❑No	

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	❑Yes ❑No	❑Yes ❑No	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	❑Yes ❑No	❑Yes ❑No	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	❑Yes ❑No	❑Yes ❑No	
12	(Other)	❑Yes ❑No	❑Yes ❑No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: _____

Signature: _____ **Date:** _____

Appendix H – Pollution Prevention for Municipal Operations

THE CITY OF HOKES BLUFF

CONTROL MEASURE 5 - POLLUTION PREVENTION AND GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

See Section 9.1 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	**Municipal Facilities Inventory:** Maintain an inventory of all municipal facilities, including facilities that have the potential to discharge pollutants. Update the inventory annually.	14 municipal facilities 9 facilities with pollution potential	The City will maintain an inventory listing all municipal facilities, including municipal facilities that have the potential to discharge pollutants via storm water runoff.	The municipal facility inventory is attached. (See Document 5-1)		NO
2	**Brush Pickup:** Provide brush pickup on the first and third Monday of each month.	480 pickups scheduled 20,000 pounds of debris collected	The City will continue to perform brush pickup on the first and third Monday of each month.	An example work order is attached. (See Document 1-22)		NO
3	**Coordinate and Promote an Annual community Cleanup Day:** Coordinate a community cleanup day at Hokes Bluff City Block , Mill Pond, and/or Hokes Bluff Ferry Park annually.	Community Clean Up Day was held on **May 21, 2022.** The clean up day was advertised using the Electronic Sign. 40 people received educational materials. 6 city employees/representatives participated.	The City will coordinate a cleanup day at Hokes Bluff City Block, Mill Pond, and/or Hokes Bluff Ferry Park.	A photo of the electronic sign promotion and copies of the volunteer assignments are attached. (See Documents 1-17 and 1-18)		NO
4	**Ferry Landing Cleanup:** Perform cleanups at Ferry Landing during May to October.	City employees performed weekly cleanups at Ferry Landing. 1K pounds of debris collected.	The City will maintain the Ferry Landing by performing cleanups during the months of May through October.	The payroll summary for City employees tasked with Ferry Landing cleanups is attached. (See Document 5-2)		NO
5	**Used Oil Collection and Metal Recycling:** Collect used oil and scrap metal at the City Shop.	2 tons of materials collected	The City will continue to manage a collection facility at the City Shop for used oil and scrap metal.	Photos of the waste oil collection location is attached. (See Document 1-23)		NO
6	**No Littering Signs:** Maintain and add "No Littering" signs as necessary.	6 "No Littering" signs added	The City continue to maintain the "No Littering" signs.	A photo of a "No Littering" sign is attached. (See Document 1-24)		NO
7	**Litter Ordinance:** Ordinance No. HB-2009-002 (dated November 12, 2009) Section XI defines littering as an unlawful act.	0 enforcements as a result of the Ordinance	The City will continue to enforce the litter ordinance.	The Ordinance is provided in Appendix E of the 2022 SWMPP.		NO
8	**Evaluate Effectiveness of Litter Reduction Program:** Evaluate the effectiveness of the litter reduction program.	The City evaluated its litter reduction program and determined no update is required.	The City will track the metrics identified in the 2022 SWMPP and evaluate the effectiveness of the program each reporting period.			NO

THE CITY OF HOKES BLUFF

CONTROL MEASURE 5 - POLLUTION PREVENTION AND GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

See Section 9.1 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
9	**Buildings SOP:** Evaluate the SOP for buildings by March 31 each year.	The City evaluated the SOP and determined no changes were necessary.	The City will evaluate the Buildings SOP by March 31, 2024.	The Buildings SOP is attached. (See Document 5-3)		NO
10	**IDDE SOP:** Evaluate the SOP for IDDE by March 31 each year.	The City evaluated the SOP and determined no changes were necessary.	The City will evaluate the IDDE SOP by March 31, 2024.	The IDDE SOP is attached. (See Document 5-4)		NO
11	**Parks SOP:** Evaluate the SOP for parks by March 31 each year.	The City evaluated the SOP and determined no changes were necessary.	The City will evaluate the Parks SOP by March 31, 2024.	The Parks SOP is attached. (See Document 5-5)		NO
12	**Streets/Storm Drain SOP:** Evaluate the SOP for streets/storm drain by March 31 each year.	The City evaluated the SOP and determined no changes were necessary.	The City will evaluate the Streets/Storm Drain SOP by March 31, 2024.	The Streets/Storm Drain SOP is attached. (See Document 5-6).		NO
13	**Vehicles SOP:** Evaluate the SOP for vehicles by March 31 each year.	The City evaluated the SOP and determined no changes were necessary.	The City will evaluate the Vehicles SOP by March 31, 2024.	The Vehicles SOP is attached. (See Document 5-7).		NO
14	**Potable Water SOP:** Evaluate the SOP for potable water by March 31 each year.	The City evaluated the SOP and determined no changes were necessary.	The City will evaluate the Potable Water SOP by March 31, 2024.	The Potable Water SOP is attached. (See Document 5-8).		NO
15	**Quarterly Inspection of Municipal Facilities:** Inspect municipal facilities that have the potential to discharge pollutants once per quarter.	36 inspections performed 0 deficiencies noted	The City will continue to inspect municipal facilities with potential to discharge pollutants via storm water runoff for good housekeeping practices once per quarter.	The municipal facility inventory and an example inspection checklist are attached. (See Documents 5-1 and 5-9)		NO
16	**Corrective Actions at Municipal Facilities:** Address noted deficiencies from quarterly inspections within 72 hours of the inspection.	0 deficiencies noted 0 deficiencies corrected 0 deficiencies re-inspected	The City will address noted deficiencies from quarterly inspections within 72 hours of the inspection.	The municipal facility inventory and an example inspection checklist are attached. (See Documents 5-1 and 5-9)		NO

THE CITY OF HOKES BLUFF

CONTROL MEASURE 5 - POLLUTION PREVENTION AND GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

See Section 9.1 of the 2022 SWMPP

STRATEGY NO.	STRATEGIES	2022-2023 IMPLEMENTATION STATUS	2023-2024 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
17	**Annual Employee Training:** Conduct annual training on good housekeeping practices, the developed SOPs, and potential threats to storm water quality.	The City conducted a training event on good housekeeping on **May 23, 2022**. 6 municipal employees attended the training S&ME addressed good housekeeping and best practices at municipal facilities in the Annual Training conducted on **March 15, 2023**. 5 municipal employees attended training	Appropriate City personnel will undergo annual training on good housekeeping practices, the developed SOPs, and potential threats to storm water quality.	Attendance records and training materials are attached. (See Documents 5-10 and 2-8)		NO

City of Hokes Bluff Municipal Facilities

1) City Shop & Warehouse-(including equipment, transit maintenance, public works, fleet maintenance, and parks and recreation equipment yard) (P)
2) Storage Building at City Hall
3) Police Station
4) Fire Hall training facility (P)
5) Hazardous Materials Storage shed at shop (P)
6) Park located on City Block
7) Swimming Pool (P)
8) Softball Concession Stand (P)
9) Babe Ruth Concession Stand (P)
10) Hokes Bluff Community Center(P)
11) Hokes Bluff Library
12) Hokes Bluff Ferry Park (P)
13) Hokes Bluff Mill Pond Park (P)
14) Boy Scout Cabin/ Archery Park on Colvin Gap Road

THE CITY OF HOKES BLUFF - GENERAL FUND
Payroll Summary
April through September 2022

Ferry Park
Mill Pond Park
Weekly Cleanup @ City Block Parks

	Coffey, Max G			Coleman, Joseph W			James, Larr...
	Hours	Rate	Apr - Sep 22	Hours	Rate	Apr - Sep 22	Hours
Employee Wages, Taxes and Adjustments							
Gross Pay							
Hourly Rate	484	10.00	4,840.00	765.25	12.00	9,183.00	752
Overtime Hourly Rate			0.00	10.5	18.00	189.00	
Total Gross Pay	484		4,840.00	775.75		9,372.00	752
Adjusted Gross Pay	484		4,840.00	775.75		9,372.00	752
Net Pay	484		4,840.00	775.75		9,372.00	752
Employer Taxes and Contributions							
Medicare Company			70.18			135.89	
Social Security Company			300.08			581.06	
Total Employer Taxes and Contributions			370.26			716.95	

THE CITY OF HOKES BLUFF - GENERAL FUND
Payroll Summary
April through September 2022

	James, Larry S		Latham, Matthew J			Peek, Trevor M	
	Rate	Apr - Sep 22	Hours	Rate	Apr - Sep 22	Hours	Rate
Employee Wages, Taxes and Adjustments							
Gross Pay							
Hourly Rate	13.00	9,776.00	422.5	10.00	4,225.00	411	10.00
Overtime Hourly Rate		0.00			0.00		
Total Gross Pay		9,776.00	422.5		4,225.00	411	
Adjusted Gross Pay		9,776.00	422.5		4,225.00	411	
Net Pay		9,776.00	422.5		4,225.00	411	
Employer Taxes and Contributions							
Medicare Company		141.75			61.26		
Social Security Company		606.11			261.95		
Total Employer Taxes and Contributions		747.86			323.21		

THE CITY OF HOKES BLUFF - GENERAL FUND
Payroll Summary
April through September 2022

	Peek, Trev...	Smith, Phillip B			TOTAL		
	Apr - Sep 22	Hours	Rate	Apr - Sep 22	Hours	Rate	Apr - Sep 22
Employee Wages, Taxes and Adjustments							
Gross Pay							
Hourly Rate	4,110.00	883.75	13.00	11,488.75	3,718.50		43,622.75
Overtime Hourly Rate	0.00	17.75	19.50	346.13	28.25		535.13
Total Gross Pay	4,110.00	901.5		11,834.88	3,746.75		44,157.88
Adjusted Gross Pay	4,110.00	901.5		11,834.88	3,746.75		44,157.88
Net Pay	4,110.00	901.5		11,834.88	3,746.75		44,157.88
Employer Taxes and Contributions							
Medicare Company	59.60			171.61			640.29
Social Security Company	254.82			733.77			2,737.79
Total Employer Taxes and Contributions	314.42			905.38			3,378.08

THE CITY OF HOKES BLUFF - GENERAL FUND
Payroll Summary
October 2022 through March 2023

	Coleman, Joseph W			James, Larry S	
	Hours	Rate	Oct '22 - Mar 23	Hours	Rate
Employee Wages, Taxes and Adjustments					
Gross Pay					
Hourly Rate	168	12.00	2,016.00	152	15.00
Total Gross Pay	168		2,016.00	152	
Adjusted Gross Pay	168		2,016.00	152	
Net Pay	168		2,016.00	152	
Employer Taxes and Contributions					
Medicare Company			29.24		
Social Security Company			125.00		
Total Employer Taxes and Contributions			154.24		

THE CITY OF HOKES BLUFF - GENERAL FUND
Payroll Summary
October 2022 through March 2023

	James, Larry S	Peek, Trevor M			Smith, Brandon...
	Oct '22 - Mar 23	Hours	Rate	Oct '22 - Mar 23	Hours
Employee Wages, Taxes and Adjustments					
Gross Pay					
Hourly Rate	2,040.00	7	10.00	70.00	21.5
Total Gross Pay	2,040.00	7		70.00	21.5
Adjusted Gross Pay	2,040.00	7		70.00	21.5
Net Pay	2,040.00	7		70.00	21.5
Employer Taxes and Contributions					
Medicare Company	29.58			1.01	
Social Security Company	126.48			4.34	
Total Employer Taxes and Contributions	156.06			5.35	

THE CITY OF HOKES BLUFF - GENERAL FUND
Payroll Summary
October 2022 through March 2023

	Smith, Brandon B		Smith, Phillip B		
	Rate	Oct '22 - Mar 23	Hours	Rate	Oct '22 - Mar 23
Employee Wages, Taxes and Adjustments					
Gross Pay					
Hourly Rate	11.00	236.50	495	15.00	6,473.00
Total Gross Pay		236.50	495		6,473.00
Adjusted Gross Pay		236.50	495		6,473.00
Net Pay		236.50	495		6,473.00
Employer Taxes and Contributions					
Medicare Company		3.43			93.86
Social Security Company		14.66			401.33
Total Employer Taxes and Contributions		18.09			495.19

THE CITY OF HOKES BLUFF - GENERAL FUND
Payroll Summary
October 2022 through March 2023

	Whalen, Luke B			TOTAL	
	Hours	Rate	Oct '22 - Mar 23	Hours	Rate
Employee Wages, Taxes and Adjustments					
Gross Pay					
Hourly Rate	20.5	11.00	225.50	864.00	
Total Gross Pay	20.5		225.50	864.00	
Adjusted Gross Pay	20.5		225.50	864.00	
Net Pay	20.5		225.50	864.00	
Employer Taxes and Contributions					
Medicare Company			3.27		
Social Security Company			13.98		
Total Employer Taxes and Contributions			17.25		

THE CITY OF HOKES BLUFF - GENERAL FUND
Payroll Summary
October 2022 through March 2023

	TOTAL
	Oct '22 - Mar 23
Employee Wages, Taxes and Adjustments	
Gross Pay	
Hourly Rate	11,061.00
Total Gross Pay	11,061.00
Adjusted Gross Pay	11,061.00
Net Pay	11,061.00
Employer Taxes and Contributions	
Medicare Company	160.39
Social Security Company	685.79
Total Employer Taxes and Contributions	846.18

BUILDINGS – Dumpsters/Garbage Storage

1. Preparation.
    a. Train employees on proper trash disposal.
    b. Locate dumpsters and trash cans in convenient, easily observable areas.
    c. Provide properly-labeled recycling bins to reduce the amount of garbage disposed.
    d. Install berms, curbing, or vegetation strips around storage areas to control water entering/ leaving storage areas.
    e. Whenever possible store garbage containers beneath a covered structure or inside to prevent contact with storm water.
2. Process.
    a. Inspect garbage bins for leaks regularly, and have repairs made immediately by responsible party.
    b. Request/use dumpsters, and trash cans with lids and without drain holes.
    c. Locate dumpsters on a flat, hard surface that does not slope or drain directly into the storm drain system.
3. Clean-up.
    a. Keep areas around dumpsters clean of all garbage.
    b. Have garbage bins emptied regularly to keep from overfilling.
    c. Wash out bins or dumpsters as needed to keep odors from becoming a problem.
4. Documentation
    a. Document training of employees

BUILDINGS – Parking Lot Maintenance

1. Preparation.

   a. Conduct regular employee training to reinforce proper housekeeping.

   b. Restrict parking in areas to be swept prior to and during sweeping using regulations as necessary.

   c. Perform regular maintenance and services in accordance with the recommended vehicle maintenance schedule on sweepers to increase and maintain efficiency.

2. Process.

   a. Sweep parking areas, as needed, or as directed by the city's responsible official.

   b. Hand sweep sections of gutter if soil and debris accumulate.

   c. Pick-up litter as required to keep parking areas clean and orderly.

3. Clean-up.

   a. Dispose of sweepings properly (appropriate solid waste facility).

   b. Street sweepers to be cleaned out in a manner as instructed by the manufacturer and in a location that swept materials cannot be introduced into a stormdrain.

   c. Swept materials will not be stored in locations where storm water could transport fines into the stormdrain system.

4. Documentation.

   a. Keep accurate logs to track swept parking areas and approximate quantities.

   b. Document training of employees.

IDDE - Call-in Inspections

1. Preparation

    a. Have a system in place to receive phone calls and collect information regarding suspected illicit discharges.

2. Process

    a. Use the Incident Tracking Sheet to collect the appropriate information from the caller. Then, transfer the Incident Tracking Sheet to the proper authority (ie. department head, stormwater specialist, construction inspector, code enforcement officer, or other assigned personnel).

    b. Promptly investigate reported incidents.

    c. If an illicit discharge of unknown source is confirmed, follow the procedure of SOP IDDE - Tracing Illicit Discharges.

    d. If an illicit discharge known source is confirmed, follow the procedure of SOP IDDE - Removing Illicit Discharges.

3. Clean up

    a. Clean catch basin, clean storm drain, or initiate spill response, as applicable. Follow relevant SOPs.

4. Documentation

    a. File all completed forms (ie. incident tracking, catch basins cleaning, storm drain cleaning.

    b. Document any further action taken.

    c. Review incidents reported by citizens on an annual basis to look for patterns of illicit discharges and to evaluate the call-in inspection program.

IDDE - Opportunistic Illicit Discharge Observation

1. Preparation

    a. Be alert for potential illicit discharges to the municipal storm water system while going about normal work activities.

2. Process

    a. Call the appropriate authority (ie. department head, stormwater specialist, construction inspector, code enforcement officer or a supervisor) if you see evidence of an illicit discharge.

    b. Assess the general area of the illicit discharge to see if you can identify its source.

    c. Whenever possible, take photographs of the suspected illicit discharge.

    d. Responding stormwater department personnel or code enforcement officer will complete the following:

        1. Use the IDDE Incident Tracking Sheet to document observations.
        2. Obtain sample for visual observation and complete an Outfall Inspection Form, if applicable.
        3. Follow the procedure of SOP IDDE - Tracing Illicit Discharges.

3. Clean-up

    a. Clean catch basin, clean storm drain, or initiate spill response, as needed. Follow relevant SOPs.

4. Documentation

    a. File all completed forms (ie. Incident Tracking Form, Outfall Inspection Form, Catch Basin Cleaning Form, and Storm Drain Cleaning Log).

    b. Document any further action taken.

IDDE - Outfall Inspections

1. Preparation:
   a. Know the past and present weather conditions. Conduct inspections during dry weather periods.
   b. Gather all necessary equipment including: tape measure, clear container, clipboard with necessary forms, flashlight, and camera (optional).
   c. Obtain maps showing outfall locations and identifiers.
   d. Obtain outfall description and observations from previous inspections, so the outfall can be accurately identified and observations compared.

2. Process
   a. Perform an inspection of each outfall at least once per year. Whenever, possible use the same personnel for consistency in observations.
   b. Identify each outfall with a consistent and unique identifier. For example "Howard Slough-#13". Use maps and previous inspection reports to confirm the outfall identity and location.
   c. If dry weather flow is present at the outfall, then document and evaluate the discharge by completing the following steps:

      1. Collect field samples for visual observations in a clean, clear container and in a manner that avoids stirring up sediment that might distort the observation.
      2. Characterize and record observations on basic sensory and physical indicators (e.g., outfall condition, flow, odor, color, oil sheen) on the Outfall Inspection Form.
      3. Compare observations to previous inspections.
      4. If the flow does not appear to be an obvious illicit discharge (e.g., flow is clear, odorless, etc.), attempt to identify the source of the flow (groundwater, intermittent stream, etc.)

   d. If an illicit discharge (such as raw sewage, petroleum products, paint, etc.) is encountered or suspected, follow the procedure of SOP IDDE - Tracing Illicit Discharges.

3. Cleanup - as necessary

4. Documentation
   a. File completed outfall inspection forms.
   b. Update maps if new outfalls are observed and inspected.

IDDE - Removing Illicit Discharges

1. Preparation

   a. Obtain available property ownership information for the source of the illicit discharge.

2. Process

   a. Determine who is financially responsible; and follow associated procedures as given below.

      For Private Property Owner:
      Contact Owner,
      Issue Notice of Violation for violations of the municipal ordinance, and
      Determine schedule for removal.

      For Municipal Facility:
      Notify appropriate municipal authority or department head,
      Schedule removal, and
      Remove illicit connection.

   b. Suspend access to storm drain if threats of serious physical harm to humans or the environment are possible.

   c. Direct responsible party to initiate repairs/corrections/cleanup. Coordinate with enforcement official for escalating penalties in accordance with the municipal ordinance.

   d. Repair/correct cause of discharge if municipality is responsible. Schedule the work through the appropriate municipal authority or department head..

   e. Seek technical assistance from the Weber-Morgan Health Department or Utah Department of Water Quality, if needed.

3. Clean up

   a. Confirm illicit discharge is removed or eliminated by follow-up inspection.

4. Documentation

   a. Maintain records of notice of violation and penalties.

   b. Document repairs, corrections, and any other actions required.

IDDE - Tracing Illicit Discharges

1. Preparation

    a. Review / consider information collected when illicit discharge was initially identified and document using Incident Tracking Form or Outfall Inspection Form.

    b. Obtain storm drain mapping for the area of the reported illicit discharge.

    c. Gather all necessary equipment including: tape measure, clear container, clipboard with necessary forms, flashlight, and camera (optional).

2. Process

    a. Survey the general area / surrounding properties to identify potential sources of the illicit discharge as a first step.

    b. Trace illicit discharges using visual inspections of upstream points as a second step. Use available mapping to identify tributary pipes, catch basins, etc.

    c. If the source of the illicit discharge cannot be determined by a survey of the area or observation of the storm drain system, then consider the following additional steps:

        1. Use weirs, sandbags, dams, or optical brightener monitoring traps to collect or pool intermittent discharges during dry weather.

        2. Smoke test or televise the storm drain system to trace high priority, difficult to detect illicit discharges.

        3. Dye test individual discharge points within suspected buildings.

        4. Consider collecting bacterial samples of flowing discharges to confirm/refute illicit discharge.

    d. If the source is located, follow SOP IDDE - Removing Illicit Discharges.

    e. If the source cannot be found, add the location to a future inspection program.

3. Clean up

    a. Clean catch basin, clean storm drain, or initiate spill response, as applicable. Follow relevant SOPs.

4. Documentation

    a. Document tracing results for future reference.

PARKS – Chemical Application Pesticides, Herbicides, Fertilizers

1. Preparation

   a. Make sure your state Chemical Handling Certification is complete and up-to-date before handling any chemicals.

   b. Calibrate fertilizer and pesticide application equipment to avoid excessive application.

   c. Use pesticides only if there is an actual pest problem and periodically test soils for determining proper fertilizer use

   d. Time and apply the application of fertilizers, herbicides or pesticides to coincide with the manufacturer's recommendation for best results ("Read the Label").

   e. Know the weather conditions. Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low(less than 5 mph).

2. Process

   a. Always follow the manufacturer's recommendations for mixing, application and disposal ("Read the Label").

   b. Do not mix or prepare pesticides for application near storm drains, preferably mix inside a protected area with impervious secondary containment (preferably indoors) so that spills or leaks will not contact soils.

   c. Employ techniques to minimize off-target application (e.g. spray drift, over broadcasting.) of pesticides and fertilizers.

3. Clean-up

   a. Sweep pavements or sidewalks where fertilizers or other solid chemicals have fallen, back onto grassy areas before applying irrigation water.

   b. Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.

   c. Always follow all federal and state regulations governing use, storage and disposal of fertilizers, herbicides or pesticides and their containers. ("Read the Label")

4. Documentation

   a. Keep copies of MSD sheets for all pesticides, fertilizers and other hazardous products used.

   b. Record fertilizing and pesticide application activities, including date, individual who did the application, amount of product used and approximate area covered.

PARKS – Cleaning Equipment

1. Preparation
    a. Review process with all Parks employees

2. Process
    a. Wipe off dirt, dust and fluids with disposable towel
    b. Wash equipment in approved wash station

3. Clean-up
    a. Dispose of towels in proper trash receptacle
    b. Sweep floor and dispose of debris.

PARKS – Mowing and Trimming

1. Preparation
    a. Process overview with all employees
    b. Check the oil and fuel levels of the mowers and other equipment; fill if needed.

2. Process
    a. Install temporary catch basin protection installed on affected basins
    b. Put on eye and hearing protection
    c. Mow and trim the lawn
    d. Sweep or blow clippings to grass areas
    e. Remove inlet protection

3. Clean-up
    a. Mowers are to be scraped and brushed at shop – dry spoils are dry swept and disposed of
    b. Wash equipment in approved wash station

PARKS – Open Space Management

1. Preparation

   a. Provide a regular observation and maintenance of parks, golf courses, and other pubic open spaces.

   b. Identify public open spaces that are used for stormwater detention and verify that detention areas are included on the storm drain system mapping, inspection schedules, and maintenance schedules.

2. Process

   a. Ensure that any storm drain or drainage system components on the property are properly maintained.

   b. Avoid placing bark mulch (or other floatable landscaping materials) in stormwater detention areas or other areas where stormwater runoff can carry the mulch into the storm drainage system.

   c. Follow all SOPs related to irrigation, mowing, landscaping, and pet waste management.

3. Clean Up

   a. Keep all outdoor work areas neat and tidy. Clean by sweeping instead of washing whenever possible. If areas must be washed, ensure that wash water will enter a landscaped area rather than the storm drain. Do not use soap for outdoor washing.

   b. Pick up trash on a regular basis.

4. Documentation

   a. Document any observed deficiencies for correction or repair.

PARKS – Pet Waste

1. Preparation

    a. Adopt and enforce ordinances that require pet owners to clean up pet wastes and use leashes in public areas. If public off-leash areas are designated, make sure they are clearly defined. Avoid designating public off-leash areas near streams and water bodies.

    b. Whenever practical and cost effective, install dispensers for pet waste bags and provide disposal containers at locations such as trail heads or parks where pet waste has been a problem. Provide signs with instructions for proper cleanup and disposal.

2. Process

    a. Check parks and trails for pet waste as needed.

    b. Check public open space for pet waste prior to mowing and watering.

    c. Provide ordinance enforcement as needed.

3. Clean up

    a. Remove all pet waste, provide temporary storage in a covered waste container, and dispose of properly. Preferred method of disposal is at a solid waste disposal facility.

4. Documentation

    a. Document problem areas for possible increased enforcement and/or public education signs.

PARKS – Planting Vegetation (Starters)

1. Preparation

   a. Call the Blue Stakes Center of Utah at least 2 working days before any digging will be done, to reveal the location of any underground utilities.

   b. Dial 811 or 1-800-662-4111

   c. Decide where any spoils will be taken.

2. Process

   a. Dig holes; place spoils near the hole where they may easily be placed back around roots. Avoid placing spoils in the gutter.

   b. Bring each plant near the edge of the hole dug for it.

   c. Check the depth of the hole, and adjust the depth if necessary. The depth of the hole for a tree should be as deep as the root ball, so that the top of the root ball is level with the top of the hole.

   d. Carefully remove pot or burlap.

   e. Place the plant in the hole.

   f. Backfill the hole with existing spoils, compost, and a litter fertilizer if desired. Do not use excessive amendments.

   g. Water the plant.

   h. Stake the plant, if necessary, to stabilize it.

3. Clean-up

   a. Move any extra spoils into truck or trailer. Place the spoils on a tarp if there is a likelihood that some of the dirt would be lost through openings in the bed.

   b. Sweep dirt from surrounding pavement(s) into the planter area

   c. Transport spoils to their designated fill or disposal area.

PARKS – Planting Vegetation (Seeds)

1. Preparation

   a. Call the Blue Stakes Center of Utah at least 2 working days before any digging will be done, to reveal the location of any underground utilities.

   b. Dial 811 or 1-800-662-4111

   c. Decide on the application rate, method, water source, and ensure adequate materials are on hand.

   d. Grade and prepare the soil to receive the seed. Place any extra soil in a convenient location to collect.

2. Process

   a. Place the seed and any cover using the pre-determined application method (and rate).

   b. Lightly moisten the seed.

3. Clean-up

   a. Move any extra spoils into truck or trailer. Place the spoils on a tarp if there is a likelihood that some of the dirt would be lost through openings in the bed.

   b. Sweep dirt, seed, and any cover material from surrounding pavement(s) into the planter area

   c. Transport spoils to their designated fill or disposal area.

PARKS – Transporting Equipment

1. Preparation
    a. Determine equipment needed for transport and method (trailer, truck bed) needed to transport equipment.
    b. Conduct pre- trip inspection of equipment
2. Process
    a. Load and secure equipment on trailer or truck
    b. Load and secure fuel containers for equipment usage
3. Clean-up
    a. Off load equipment
    b. Store equipment and trailer in proper locate on
    c. Conduct post-trip inspection of equipment
    d. Wash equipment, if needed, according to the SOP for Cleaning Equipment SOP
4. Documentation
    a. Pre-trip and post trip inspection report

STREETS/STORM DRAIN – Catch Basin Cleaning

1. Preparation:

   a. Clean sediment and trash off grate.

   b. Do visual inspection on outside of grate.

   c. Make sure nothing needs to be replaced.

   d. Do inside visual inspection to see what needs to be cleaned.

2. Process

   a. Clean using a high powered vacuum truck to start sucking out standing water and sediment.

   b. Use a high pressure washer to clean any remaining material out of catch basin, while capturing the slurry with the vacuum.

   c. After catch basin is clean, send the rodder of the vacuum truck downstream to clean pipe and pull back sediment that might have gotten down stream of pipe.

   d. Move truck downstream of pipe to next catch basin.

3. Clean-up

   a. When vacuum truck is full of sediment take it to the designated location to dump all the sediment out of truck into a drying bed.

   b. When it evaporates, clean it up with a backhoe, put it into a dump truck and take it to the landfill.

4. Documentation

   a. Keep logs of number of catch basins cleaned.

   b. Record the amount of waste collected.

   c. Keep any notes or comments of any problems.

STREETS/STORM DRAIN – Curb Painting

1. Preparation

   a. Calculate the amount of paint required for the job

   b. Use water based paints if possible.

   c. Determine whether the wastes will be hazardous or not and the required proper disposal of said wastes

   d. Determine locations of storm drain inlets and sewer inlets that may need to be protected

   e. Prepare surfaces to be painted without generating wastewater by sandblasting and/or scraping.

   f. Thoroughly sweep up all sand, blastings, and/or paint scrapings

   g. If paint stripping is needed, use a citrus-based paint remover whenever possible, which is less toxic than chemical strippers

   h. If wastewater will be generated, use curb, dyke, etc. around the activity to collect the filter and collect the debris.

2. Process

   a. Paint curb.

   b. Prevent over-spraying of paints and/or excessive sandblasting

   c. Use drip pans and drop clothes in areas of mixing paints and painting

   d. Store latex paint rollers and brushes in air tight bags to be reused later with the same color.

   e. Have available absorbent material and other BMP's ready for an accidental paint spill.

3. Clean-up

   a. Paint out brushes and rollers as much as possible. Squeeze excess paint from brushes and rollers back into the containers prior to cleaning them.

   b. Pour excess paint from trays and buckets back into the paint can containers and wipe with cloth or paper towels. Dispose of the towels according to the recommendations on the paint being used.

   c. Rinse water-based paint brushes in the sink after pre-cleaning. Never pour excess paint or wastewater from cleanup of paint in the storm drain.

   d. Cleanup oil based paints with paint thinner. Never clean oil based brushes in a sink or over a storm drain. Filter solvents for reuse if possible and/or store in approved drum for recycling.

   e. Dispose of waste collected by placing it in a garbage container. Left-over paint and solvents should be stored for later use (do not place these liquids in the garbage).

4. Documentation

   a. Write-up/report of any discharges into storm drain system

STREETS/STORM DRAIN – Detention Pond Cleaning

1. Preparation:

   a. Schedule the Pond cleaning work for a time when dry weather is expected.

   b. Remove any sediment and trash from grates, placing it in a truck for disposal.

   c. Do a visual inspection to make sure any grates, structures, manholes, boxes, and pipes are in good working order. Remove manhole covers and grates as necessary for inspecting.

2. Process

   a. Provide outlet protection where feasible to minimize the amount of debris that might leave basin during cleaning process.

   b. Start cleaning basin by using backhoe to remove debris and sediment off the bottom.

   c. Continue cleaning structures and pond bottom as necessary by sweeping and shoveling.

   d. Put all material removed from the pond into a dump truck.

   e. Some structures may require use of a vactor truck. If so use the same procedures described for cleaning catch basins.

3. Clean-up

   a. After cleaning basins, clean off the concrete pads using dry methods (sweeping and shoveling).

   b. Make sure they are swept up and clean.

   c. Take the material that was removed to the landfill for final disposal.

4. Documentation

   a. Keep a logs of each detention basins/pond cleaned including date, individuals involved in cleaning, and a description of the type of debris removed.

   b. Record the amount of waste collected.

   c. Keep any notes or comments of any problems.

STREETS/STORM DRAIN – Creek Management

1. Preparation

   a. Monitor streams on a regular basis (Suggested interval?).

   b. Check culverts and crossings after every storm.

   c. Maintain access to stream channels wherever possible.

   d. Identify areas requiring maintenance

   e. Determine what manpower or equipment will be required.

   f. Identify access and easements to area requiring maintenance.

   g. Determine method of maintenance that will be least damaging to the channel.

   h. Obtain Stream Alteration Permit.

2. Process

   a. Remove unwanted material (debris, branches, soil) from the creek channel and place it in a truck to be hauled away

3. Clean-up

   a. Stabilize all disturbed soils.

   b. Remove all tracking from paved surfaces near maintenance site, if applicable.

   c. Haul all debris or sediment removed from area to approved dumping site.

4. Documentation

   a. Keep log of actions performed including date and individuals involved.

   b. Record the amount of materials removed or imported.

   c. Keep any notes or comments of any problems.

   d. Use "before" and "after" photographs to document activities as applicable.

STREETS/STORM DRAIN – Ditch Management

1. Preparation

   a. Monitor ditches on a regular basis (Suggested interval?).

   b. Maintain access to ditch channels wherever possible.

   c. Contact affected property owners and utility owners.

2. Process

   a. Identify areas requiring maintenance

   b. Determine what manpower or equipment will be required.

   c. Identify access and easements to area requiring maintenance.

   d. Determine method of maintenance that will be least damaging to the channel and adjacent properties or utilities.

3. Clean-up

   a. Stabilize all disturbed soils.

   b. Remove all tracking from paved surfaces near maintenance site, if applicable.

   c. Haul all debris or sediment removed from area to approved dumping site.

4. Documentation

   a. Keep log of actions performed including date and individuals involved.

   b. Record the amount of materials removed or imported.

   c. Keep any notes or comments of any problems.

   d. Use "before" and "after" photographs to document activities as applicable.

STREETS/STORM DRAIN – Chip Seal

1. Preparation

   a. Clean and dry areas where materials are to be applied.

   b. Apply temporary covers to manholes and catch basins to prevent oil and materials from getting inside of them.

2. Process

   a. Apply emulsion at recommended rate.

   b. Spread chips closely behind emulsion distributor, slowly such that the chips do not roll when they hit the surface.

   c. Roll chips. Rollers follow closely behind the chip spreader. Roll entire surface twice.

   d. Maximum speed 5 mph.

3. Clean-up

   a. All loose aggregate is removed from the roadway by sweeping it up (see SOP for Street Sweeping).

   b. Excessive asphalt applications and spills are removed with shovels and scraping tools.

   c. Remove the temporary covers from manholes and catch basins. If it appears that any chip seal materials have gotten into the inlet boxes, remove the material according to the SOP for inlet boxes.

   d. Dispose of the waste material that has been swept and scraped up by taking it to the landfill.

4. Documentation

   a. Record location and date on the maintenance database and map

STREETS/STORM DRAIN – Slurry Seal

1. Preparation

   a. Remove weeds from the roads. Sweep areas where materials are to be applied, and allow to dry, if necessary. Verify that existing pavement has been inspected for detrimental effects of poor drainage.

   b. Cover/protect catch basins and manholes.

2. Process

   a. Apply materials in a smooth and uniform manner. Slurry material should not run onto adjacent pavement surface, curb and gutter or waterways.

3. Clean-up

   a. If loose aggregate is remaining in street or curb, sweep it up.

   b. Ensure that excess emulsion materials are removed from the site and stored for later use in an area or container that is not exposed to the weather.

   c. Remove covers/protection from catch basins and manholes, and vlaves.

4. Documentation

   a. Record location and date on the maintenance database and map

STREETS/STORM DRAIN – Overlays and Patching

1. Preparation

   a. Measure and mark locations of manholes and valves on the curb

   b. Manholes and catch basins are covered as needed to prevent oil and materials from getting inside the structures or system.

   c. Cracks should be properly sealed. Alligator cracks and potholes should be removed and patched. Rutting should be milled.

   d. Surface should be clean and dry.

   e. Uniform tack coat applied and cured prior to placement of overlay.

   f. If milling is required, install inlet protection as needed.

2. Process

   a. Check hot asphalt mix for proper temperature, percentage asphalt, gradation, air voids and any other agency requirements.

   b. Raise manhole lids and valves to elevation of new asphalt surface with riser rings.

   c. Surface texture should be uniform, no tearing or scuffing.

   d. Rolling should be done to achieve proper in-place air void specification.

3. Clean-up

   a. Covering should be removed as soon as the threat of imported materials entering the system is reduced and prior to a storm event.

   b. After pavement has cooled, sweep gutters to remove loose aggregate.

4. Documentation

   a. Record location and date on the maintenance database and map

STREETS/STORM DRAIN – Crack Seal

1. Preparation

   a. Cover Manholes and catch basins to prevent oil and materials from getting inside the structures or system.

   b. Remove weeds from the road

   c. Air-blast the cracks to remove sediments from the crack to allow for proper adhesion.

   d. Ensure that surface is clean and dry.

2. Process

   a. Proper temperature of material should be maintained.

   b. Sufficient material is applied to form the specified configuration.

3. Clean-up

   a. Excessive sealant application or spills are removed.

   b. Sweep all loose debris from the pavement and dispose of it in the local landfill.

4. Documentation

   a. Record location and date on the maintenance database and map

STREETS/STORM DRAIN – Shouldering and Mowing

1. Preparation
    a. Set up temporary traffic control devices according to part VI of the MUTCD.

2. Process
    a. Place import material as needed and perform grading to achieve proper drainage.
    b. Mulch clippings to help reduce the amount of supplemental fertilizer required

3. Clean-up
    a. Clean any loose material off asphalt or gutter.

4. Documentation
    a. Record location and date on the maintenance database and map

STREETS/STORM DRAIN – Secondary Road Maintenance

1. Preparation

   a. Determine length amount and type of roadbase or gravel that will be needed.

   b. Determine proper equipment to be used and or any safety hazards.

   c. Design proper drainage: slopes, berms etc.

2. Process

   a. Have truck drivers follow a designated route for hauling in the soil (See SOP for transporting Soil and Gravel).

   b. If soil is too dry to achieve compaction, loosen surface material and moisture condition.

   c. Smooth or grade soil with the desired crown or cross-slope.

   d. Compact soil.

3. Clean-up

   a. Replace filter fabric with washed rock (if necessary) on monthly maintenance.

   b. Clean up equipment according to the SOP for Cleaning Equipment

   c. Clean up any debris on traveled roads, and dispose of it in the landfill.

4. Documentation

   a. Fill out daily activity report in log book or journal. Include Date, time, personnel, and location.

STREETS/STORM DRAIN – Concrete Work

1. Preparation

   a. Train employees and contractors in proper concrete waste management.

   b. Store dry and wet materials under cover, away from drainage areas

   c. Remove any damaged concrete that may need to be replaced.

   d. Prepare and compact sub-base.

   e. Set forms and place any reinforcing steel that may be required.

   f. Determine how much new concrete will be needed.

   g. Locate or construct approved concrete washout facility.

2. Process

   a. Install inlet protection as needed.

   a. Avoid mixing excess amounts of fresh concrete on-site.

   b. Moisten subbase just prior to placing new concrete. This helps keep the soil from wicking moisture out of the concrete into the ground.

   c. Place new concrete in forms.

   d. Consolidate new concrete

   e. Screed off surface

   f. Let concrete obtain its initial set

   g. Apply appropriate surface finish

   h. Remove forms when concrete will not slump

3. Clean-up

   a. Perform washout of concrete trucks and equipmet in designated areas only

   b. Do not washout concrete trucks or equipment into stormdrains, open ditches, streets or streams

   c. Cement and concrete dust from grinding activities is swept up and removed from the site.

   d. Remove dirt or debris from street and gutter.

STREETS/STORM DRAIN – Garbage Storage

1. Preparation

   a. Locate dumpsters and trash cans with lids in convenient, easily observable areas.

   b. Provide properly-labeled recycling bins to reduce the amount of garbage disposed.

   c. Provide training to employees to prevent improper disposal of general trash.

2. Process

   a. Inspect garbage bins for leaks regularly, and have repairs made immediately by responsible party.

   b. Locate dumpsters on a flat, impervious surface that does not slope or drain directly into the storm drain system.

   c. Install berms, curbing or vegetation strips around storage areas to control water entering/leaving storage areas.

   d. Keep lids closed when not actively filling dumpster.

3. Clean-up

   a. Keep areas around dumpsters clean of all garbage.

   b. Have garbage bins empted as often as needed to keep from overfilling.

   c. Wash out bins or dumpsters as needed to keep odors from becoming a problem. Wash out in properly designated areas only.

STREETS/STORM DRAIN – Snow Removal and De-icing

1. Preparation

   a. Store de-icing material under a covered storage area or in an area where water coming off the de-icing materials is collected and delivered to the sanitary sewer or reused as salt brine.

   b. Slope loading area away from storm drain inlets

   c. Design drainage from loading area to collect runoff before entering storm water system

   d. Wash out vehicles (if necessary) in approved washout area before preparing them for snow removal.

   e. Calibrate spreaders to minimize amount of de-icing material used and still be effective

   f. Provide vehicles with spill cleanup kits in case of hydraulic line rupture or other spills

   g. Train employees in spill cleanup procedures and proper handling and storage of de-icing materials

2. Process

   a. Load material into trucks carefully to minimize spillage

   b. Periodically dry sweep loading area to reduce the amount of de-icing materials exposed to runoff

   c. Distribute the minimum amount of de-icing material to be effective on roads

   d. Do not allow spreaders to idle while distributing de-icing materials.

   e. Park trucks loaded with de-icing material inside when possible

3. Cleanup

   a. Sweep up all spilled de-icing material around loading area

   b. Clean out trucks after snow removal duty in approved washout area

   c. Provide maintenance for vehicles in covered area

   d. If sand is used in de-icing operations, sweep up residual sand from streets when weather permits

STREETS/STORM DRAIN – Street Sweeping

4. Preparation

   a. Prioritize cleaning routes to use at the highest frequency in areas with the highest pollutant loading.

   b. Restrict street parking prior to and during sweeping using regulations as necessary

   c. Increase sweeping frequency just before the rainy season, unless sweeping occurs continuously throughout the year.

   d. Perform preventative maintenance and services on sweepers to increase and maintain their efficiency

5. Process

   a. Streets are to be swept as needed or specified by the city. Street maps are used to ensure all streets are swept at a specified interval

   b. Drive street sweeper safely and pickup debris

   c. When full, take the sweeper to an approved street sweeper cleaning station.

6. Clean-up

   a. Street sweepers are to be cleaned out in an approved street sweeper cleaning station

   b. Street sweeping cleaning stations shall separate the solids from the liquids.

   c. Once solids have dried out, haul them to the local landfill

   d. Decant water is to be collected and routed to an approved wastewater collection system area only.

   e. Haul all dumped material to the landfill.

7. Documentation

   a. Keep accurate logs to track streets swept and streets still requiring sweeping.

   b. Log the amount of debris collected and hauled off.

STREETS/STORM DRAIN – Transporting Soil and Gravel

1. Preparation

   a. Dry out wet materials before transporting.

   b. Spray down dusty materials to keep from blowing.

   c. Make sure you know and understand the SWPPP requirements for the site you will be working at.

   d. Determine the location that the truck and other equipment will be cleaned afterwards

2. Process

   a. Use a stabilized construction entrance to access or leave the site where materials are being transported to/from.

   b. Cover truck bed with a secured tarp before transporting.

   c. Follow the SWPPP requirements for the specific site to/from which the materials are being hauled.

   d. Make sure not to overfill materials when loading trucks.

3. Clean up

   a. Use sweeper to clean up any materials tracked out on the roads from site.

   b. Wash out truck and other equipment when needed in properly designated areas.

4. Documentation

   a. Keep records of any material that is tracked out of site and what was done to clean it up and how long it took to clean up and what the weather conditions were at the time.

VEHICLES – Fueling

1. Preparation

    a. Train employees on proper fueling methods and spill cleanup techniques.

    b. Install a canopy or roof over aboveground storage tanks and fuel transfer areas.

    c. Absorbent spill clean-up materials and spill kits shall be available in fueling areas and on mobile fueling vehicles and shall be disposed of properly after use.

2. Process

    a. Shut off the engine.

    b. Ensure that the fuel is the proper type of fuel for the vehicle.

    c. Nozzles used in vehicle and equipment fueling shall be equipped with an automatic shut off to prevent overfill.

    d. Fuel vehicle carefully to minimize drips to the ground.

    e. Fuel tanks shall not be 'topped off'.

    f. Mobile fueling shall be minimized. Whenever practical, vehicles and equipment shall be transported to the designated fueling area in the Facilities area.

    g. When fueling small equipment from portable containers, fuel in an area away from storm drains and water bodies.

3. Clean Up

    a. Immediately clean up spills using dry absorbent (e.g., kitty litter, sawdust, etc.) sweep up absorbent material and properly dispose of contaminated clean up materials.

    b. Large spills shall be contained as best as possible and the HazMat team should be notified ASAP.

4. Records

    a. Comply with underground storage tank records and monitoring requirements.

    b. Document training of employees.

VEHICLES – Vehicle and Equipment Storage

1. Preparation

   a. Inspect parking areas for stains/leaks on a regular basis.

   b. Provide drip pans or adsorbents for leaking vehicles.

2. Process

   a. Whenever possible, store vehicles inside where floor drains have been connected to sanitary sewer system.

   b. When inside storage is not available, Vehicles and equipment will be parked in the approved designated areas.

   c. Maintain vehicles to prevent leaks as much as possible.

   d. Address any known leaks or drips as soon as possible. When a leak is detected a drip pan will be placed under the leaking vehicle to collect the drip.

   e. The shop will provide a labeled location to empty and store drip pans.

   f. If any leaks are discovered, a drip pan will be used to collect the fluids and vehicle will be scheduled for repairs.

   g. Clean up all spills using dry methods.

   h. Never store leaking vehicles over a storm drain.

3. Clean Up

   a. Any leaks that are spilled on the asphalt will be cleaned up with dry absorbent; the dry absorbent will be swept up and disposed of in the garbage.

   b. The paved surfaces around the building will be swept every two weeks, weather permitting.

VEHICLES – Washing

1. Preparation

    a. Provide wash areas for small vehicles inside the maintenance building that has a drain system which is attached to the sanitary sewer system.

    b. Provide wash areas for large vehicles on an approved outside wash pad that has a drain system which is attached to the sanitary sewer system.

    c. No vehicle washing will be done where the drain system is connected to the storm sewer system.

2. Process

    a. Minimize water and soap use when washing vehicles inside the shop building.

    b. Soap should not be used when washing vehicles outside the shop building. Water Only.

    c. Use hoses with automatic shut off nozzles to minimize water usage.

    d. When washing outside the building, it is the operators' responsibility to make sure all wash water is contained on the wash pad and does not have access to the storm drain.

    e. Never wash vehicles over or a storm drain.

3. Clean Up

    a. Sweep wash areas after every washing to collect what solids can be collected to prevent them from washing down the drain system.

    b. Clean solids from the settling pits on an as needed basis.

WATER – Planned Waterline Excavation Repair/Replacement

1. Preparation
    a. Determine where discharge flow will go
    b. Place inlet protection at nearest downstream storm drain inlet
    c. Clean Gutters leading to inlet
    d. Isolate waterline to be worked on
    e. Neutralize any chlorine residual before discharging water

2. Process
    a. Make efforts to keep water from pipeline from entering the excavation
    b. Direct any discharge to pre-determined area
    c. Backfill and compact excavation
    d. Haul of excavated material or stock pile nearby

3. Clean up
    a. Clear gutter/waterway where water flowed
    b. Clean up all areas around excavation
    c. Clean up travel path of trucked material

4. Documentation
    a. Complete paperwork

WATER – Unplanned Waterline Excavation Repair/Replacement

1. Preparation
    a. Make sure service trucks have wattles, gravel bags, or other materials for inlet protection.

2. Process
    a. Slow the discharge.
    b. Inspect flow path of discharged water
    c. Protect water inlet areas
    d. Follow planned repair procedures.
    e. Haul off spoils of excavation
    f. Consider use of silt filter bags on pumps

3. Clean-up
    a. Repair eroded areas as needed
    b. Follow planned repair procedures
    c. Clean up the travel path of trucked excavated material

WATER – Transporting Dry Excavated Materials & Spoils

1. Preparation
    a. Utilize truck with proper containment of materials
    b. Determine disposal site of excavated materials

2. Process
    a. Load
    b. Check truck after loading for possible spillage
    c. Transport in manner to eliminate spillage & tracking
    d. Utilize one route for transporting

3. Clean-up
    a. Clean loading area
    b. Clean transporting route
    c. Wash off truck and other equipment in a designated equipment cleaning area

WATER – Transporting Wet Excavated Materials & Spoils

1. Preparation
    a. Utilize truck with containment for material
    b. Determine disposal site of excavated material

2. Process
    a. Load and Transport in manner to minimize spillage & tracking of material
    b. Check truck for spillage
    c. Utilize one route of transport

3. Clean-up
    a. Clean route of transport to provide cleaning of any spilled material
    b. Wash out equipment truck and other equipment in designated wash area

WATER – Waterline Flushing for Routine Maintenance

1. Preparation
    a. Determine flow path of discharge to inlet of waterway.
    b. Determine chlorine residual
    c. Neutralize chlorine residual

2. Process
    a. Clean flow path.
    b. Protect inlet structures.
    c. Use diffuser to dissipate pressure to reduce erosion possibilities.

3. Clean-up
    a. Clean flow path
    b. Remove inlet protection .

4. Documentation
    a. Residual tests of discharge water.

WATER – Waterline Flushing after Construction/System Disinfection with Discharge to Storm Drain

1. Preparation

    a. Determine chlorine content of discharged water, and select de-chlorination equipment to be used.

    b. Determine flow path of discharge.

2. Process

    a. Protect inlets in flow path

    b. Install de-chlorination equipment

    c. Sweep and clean flow path

    d. Use diffuser to reduce velocities

3. Clean-up

    a. Pick up inlet protection

    b. Clean flow paths

    c. Remove equipment from flush point

4. Documentation

    a. Residual test of discharged water

WATER – Waterline Flushing after Construction/System Disinfection with Discharge with Haul Off (Used for Dust Control/Compaction)

1. Preparation
    a. Determine chlorine content of discharged water
    b. Determine appropriate construction activity for treatment

2. Process
    a. Flush to tanker for disposal on unpaved construction activity for dust control or compaction
    b. Conform that application of water is in appropriate location

3. Clean-up
    a. Remove equipment from flush point

4. Documentation
    a. Residual test of discharged water
    b. Location of water discharged

WATER – Chemical Handling/Transporting and Spill Response

1. Preparation
   a. Understand MSDS sheets for handling of product
   b. Determine proper place of handling
   c. Have necessary containment and spill kits at handling place

2. Process
   a. Begin transfer process
   b. Discontinue operations if spill levels occurs
   c. Disconnect and store handling equipment

3. Clean-up
   a. Clean up spills with proper material
   b. Dispose of contaminated material at appropriate facility

4. Documentation
   a. Report spills to Davis County

      5 gallons of hydro fluoride acid

      Work hours 451-3296

      After hours 451-4151 Davis County dispatch



CITY OF HOKES BLUFF



Building and Grounds Maintenance Checklist

Name: City of Hokes Bluff

Room or Area: Millpond Date Completed: Jan 2023

Signature:

Instructions

1. Read the *IAQ Backgrounder* and the Background Information for this checklist.
2. Keep the Background Information and make a copy of the checklist for future reference.
3. Complete the Checklist.
   - Check the "yes," "no," or "not applicable" box beside each item. (A "no" response requires further attention.)
   - Make comments in the "Notes" section as necessary.
4. Return the checklist portion of this document to the IAQ Coordinator.

1. BUILDING MAINTENANCE SUPPLIES

		Yes	No	N/A
1a	Developed appropriate procedures and stocked supplies for spill control	☑	☐	☐
1b.	Reviewed supply labels	☑	☐	☐
1c.	Ensured that air from chemical and trash storage areas vents to the outdoors	☑	☐	☐
1d.	Stored chemical products and supplies in sealed, clearly labeled containers	☑	☐	☐
1e.	Researched and selected the safest products available	☑	☐	☐
1f.	Ensured that supplies are being used according to manufacturers' instructions	☑	☐	☐
1g.	Ensured that chemicals, chemical-containing wastes, and containers are disposed of according to manufacturers' instructions	☑	☐	☐
1h.	Substituted less- or non-hazardous materials (where possible)	☑	☐	☐
1i.	Scheduled work involving odorous or hazardous chemicals for periods when the Area is unoccupied	☑	☐	☐
1j.	Ventilated affected areas during and after the use of odorous or hazardous chemicals	☑	☐	☐

2. GROUNDS MAINTENANCE SUPPLIES

2a.	Stored grounds maintenance supplies in appropriate area(s)	☑	☐	☐
2b.	Ensured that supplies are used and stored according to manufacturers' instructions	☑	☐	☐
2c.	Established and followed procedures to minimize exposure to fumes from supplies	☑	☐	☐
2d.	Reviewed and followed manufacturers' guidelines for maintenance	☑	☐	☐
2e.	Replaced portable gas cans with low-emission cans	☑	☐	☐
2f.	Stored chemical products and supplies in sealed, clearly-labeled containers	☑	☐	☐
2g.	Ensured that chemicals, chemical-containing wastes, and containers are disposed of according to manufacturers' instructions	☑	☐	☐

3. DUST CONTROL

3a.	Installed and maintained barrier mats for entrances	☑	☐	☐
3b.	Used high efficiency vacuum bags	☑	☐	☐
3c.	Used proper dusting techniques	☑	☐	☐
3d.	Wrapped feather dusters with a dust cloth	☑	☐	☐
3e.	Cleaned air return grilles and air supply vents	☑	☐	☐

4. FLOOR CLEANING

	Yes	No	N/A
4a. Established and followed schedule for vacuuming and mopping floors	☑	☐	☐
4b. Cleaned spills on floors promptly (as necessary)	☑	☐	☐
4c. Performed restorative maintenance (as necessary)	☑	☐	☐



5. DRAIN TRAPS

5a. Poured water down floor drains once per week (about 1 quart of water)	☑	☐	☐
5b. Ran water in sinks at least once per week (about 2 cups of water)	☑	☐	☐
5c. Flushed toilets once each week (if not used regularly)	☑	☐	☐

6. MOISTURE, LEAKS, AND SPILLS

6a. Checked for moldy odors	☑	☐	☐
6b. Inspected ceiling tiles, floors, and walls for leaks or discoloration (may indicate periodic leaks)	☑	☐	☐
6c. Checked areas where moisture is commonly generated (e.g., kitchens, locker rooms, and bathrooms)	☑	☐	☐
6d. Checked that windows, windowsills, and window frames are free of condensate	☑	☐	☐
6e. Checked that indoor surfaces of exterior walls and cold water pipes are free of condensate	☑	☐	☐
6f. Ensured the following areas are free from signs of leaks and water damage:			
Indoor areas near known roof or wall leaks	☑	☐	☐
Walls around leaky or broken windows	☑	☐	☐
Floors and ceilings under plumbing	☑	☐	☐
Duct interiors near humidifiers, cooling coils, and outdoor air intakes	☐	☐	☐

7. COMBUSTION APPLIANCES

7a. Checked for odors from combustion appliances	☑	☐	☐
7b. Checked appliances for backdrafting (using chemical smoke)	☑	☐	☐
7c. Inspected exhaust components for leaks, disconnections, or deterioration	☑	☐	☐
7d. Inspected flue components for corrosion and soot	☑	☐	☐

8. PEST CONTROL

8a. Completed the *Integrated Pest Management Checklist*	☑	☐	☐

NOTES

Hokes Bluff Municipal Good Housekeeping Training Sign - In Sheet

Date: 5/23/22

Wade Reed	Wade Reed
Chance Ford	Chance Ford
Phillip Griffith	Phillip Griffith
Jimmy Hester	
Dane Driskell	
Adrian Waldrop	
Kevin Jenkins	
Phillip Smith P	P. Phillip B. Smith
Harry James	Harry James

MO-7	Municipal Operation **PARK AND LANDSCAPE MAINTENANCE**	

Description



Figure 1. A yellow "Caution" sign alerts patrons to a recent pesticide application at this municipal park.

A community may own or control as much as 10% of all the land within a subwatershed, when all the parks, schools, golf courses, rights-of-way, easements, open space and municipal buildings are combined. It is not uncommon for these areas to be managed as vast expanses of turf (Figure 1). The maintenance of these areas frequently includes mowing, fertilization, pesticide application, and supplemental irrigation. Poor turf management and landscaping practices have the potential to create stormwater pollution, particularly in urban areas where soils are compacted and infiltration is minimized. Potential pollutants generated by landscape and park maintenance include nutrients, herbicides, organic debris, and sediment. Because of their large size and ownership, municipal lands are good candidates for pollution prevention/good housekeeping techniques such as riparian reforestation and integrated pest management.

Investigating and Improving the Operation

Improving the way that park and landscape maintenance activities are conducted within your community can reduce the amount of stormwater pollution that is conveyed into local aquatic resources. It requires you to examine your existing park and landscape maintenance operations and identify the improvements that can be used to reduce the amount of stormwater pollution they create. This can be accomplished within the context of the seven-step program planning and development process (Chapter 2), as described below.

Step 1: Identify Existing Municipal Operations

Recall that the first step in the process is to identify the municipal operations that are conducted within your community. In terms of municipal park and landscape maintenance, this means determining whether or not your community conducts any of these activities on publicly owned properties greater than one acre in size. If it does, the next step in the process is to collect some basic information about those maintenance activities. If not, you should begin investigating the other municipal operations that are conducted within your community.

Step 2: Collect Information About Each Operation

Once you have determined that your community does conduct park and landscape maintenance, the next step in the process is to collect some basic information about how those activities. Basic information to collect about the park and landscape maintenance activities conducted in your community includes:

- Narrative description of park and landscape maintenance activities
- Locations of park and landscape maintenance activities
    - Name
    - Street address
    - Watershed and subwatershed address
    - Geospatial coordinates (e.g. latitude, longitude)
    - Parcel size
- Map showing locations of park and landscape maintenance activities
- Operation manager name
- Operation manager contact information

This information should be added to the simple database or binder that contains the information about all of the municipal operations conducted in your community.

As you collect some basic information about the park and landscape maintenance activities conducted within your community, you should begin communicating with the individuals who oversee or manage those activities. This is an ideal time to inform these individuals about the community's pollution prevention/good housekeeping efforts and the purpose of the community's municipal pollution prevention/good housekeeping program. It is also a good time to educate them about the influence that park and landscape maintenance can have on water quality and how pollution prevention/good housekeeping practices can be used to reduce the amount of stormwater pollution that these activities create.

Step 3: Complete the Municipal Operations Analysis (MOA)

The next step in the process is to use the basic information that you have collected about the park and landscape maintenance activities conducted in your community to complete Section 7 of the MOA. This section of the MOA asks a series of questions about the nature, scope and distribution of the park and landscape maintenance activities conducted within your community. In some cases, you will be able to answer all of the questions using only the information that you have already collected about these activities. In most cases, however, answering the questions will require additional input from the individuals who manage or oversee each of the operations as well as site visits to the locations or areas where the activities are being conducted.

Once you have answered all of the questions presented within Section 7 of the MOA, you should calculate your score to determine how well your community is currently managing its park and landscape maintenance activities. When you have completed the entire MOA, you should also compare the score that you received in Section 7 with the scores you received in each of the other sections of the analysis. This will help you focus your pollution prevention/good

housekeeping efforts on the municipal operations that have the greatest influence on water quality in your community.

Step 4: Focus Pollution Prevention/Good Housekeeping Efforts

The next step in the process is to use the results of the MOA, as well as information about local subwatershed restoration goals and objectives, to develop a list of the municipal operations in the order in which they will be further investigated and improved. This list, known as the prioritized municipal operations list, can be used to guide your local pollution prevention/good housekeeping efforts and ensure that you are using your resources on improving the operations that have the greatest influence on water quality in your community. The operations at the top of the prioritized municipal operations list should be those that you will address first, while those at the bottom should be those that you will address over time.

If park and landscape maintenance comes out on top of your prioritized municipal operations list, the next step in the process is to further investigate the way that these activities are conducted within your community to determine the pollution prevention/good housekeeping practices that can be used to reduce the amount of stormwater pollution they create. If it does not, you should begin investigating the operation that is located at the top of your list. The other profile sheets presented in this chapter provide additional information about investigating each of the other municipal operations.

Step 5: Investigate Municipal Operations and Select Pollution Prevention/Good Housekeeping Practices

Step 5.1: Collect Additional Information About Park and Landscape Maintenance Activities

Once you have determined that park and landscape maintenance will be the focus of your pollution prevention/good housekeeping efforts, the next step in the process is to collect some additional information about this operation to determine how it can be improved to reduce the amount of stormwater pollution they create. To collect this additional information, you should coordinate with the individuals who manage or oversee the park and landscape maintenance activities conducted in your community. These individuals will be able to answer questions about the park and landscape maintenance activities and help you determine where improvements can be made. It is also a good opportunity for them to learn more about how park and landscape maintenance can influence stormwater quality. Table 2 provides a list of example questions that can be used to collect additional information from the individuals who manage or oversee the park and landscape maintenance activities conducted in your community.

Table 2: Example Discussion Questions

- Are you familiar with our pollution prevention/good housekeeping efforts and the purpose of our municipal pollution prevention/good housekeeping program?
- Do you understand how routine park and landscape maintenance activities can influence water quality?
- Are pesticides and fertilizers regularly used at the properties that you maintain? If so, do you use any procedures to ensure that you are applying the appropriate amount of these chemicals?
- Do the properties that you maintain have permanent and/or temporary irrigation

Table 2: Example Discussion Questions
systems? • How are landscaping debris and grass clippings disposed of on the properties that you maintain? • Does the list consider performance on erosion and sediment control and stormwater management? • What additional resources would you need to improve the community's existing park and landscape maintenance program? • Do you provide regular stormwater pollution prevention training to employees who are involved with park and landscape maintenance activities?

Begin your follow-up investigation by interviewing the community's urban forester, if one exists. Working in conjunction with the community's urban forester and other community forestry staff will be key to improving the way that park and landscape maintenance activities are conducted within your community.

When collecting addition information about the park and landscape maintenance activities conducted in your community, you should strive to identify the specific activities that are conducted, how frequently these activities are carried out and the pollution prevention/good housekeeping practices that may already be in place to control the stormwater pollution that they create. In particular, you should evaluate:

- Fertilizer application timing and rates
- Pesticide/herbicide application timing and rates
- Irrigation practices
- Turf management practices
- Native landscaping/tree planting efforts

Step 5.2: Conduct Field Investigations

The next step in the process is to investigate each publicly owned property greater than one acre in size to identify subwatershed restoration and pollution prevention/good housekeeping opportunities. These investigations can be completed using the Pervious Area Assessment (PAA) and Hotspot Site Investigation (HSI) and Unified Stream Assessment (USA).

The PAA evaluates the feasibility of conducting reforestation or other revegetation efforts on large pervious areas. The PAA can be used to identify and prioritize reforestation projects at golf courses, parks and schools that will provide significant water quality and water quantity benefits and will help address subwatershed restoration goals and objectives. Manual 11 contains additional information about conducting the PAA.

The HSI can be used to systematically evaluate six categories of pollution-generating activities that commonly contribute to stormwater quality problems:

- Outdoor Materials Handling
- Physical Plant Maintenance
- Stormwater Infrastructure
- Turf/Landscape Management
- Vehicle Operations
- Waste Management

When conducting the HSI, you should focus your attention on the turf/landscape management activities. Doing so will help you quickly identify the pollution prevention/good housekeeping practices that can be used to improve the way that these activities are conducted. Manual 11 contains additional information about conducting the HSI.

The USA can be used to assess and evaluate park and landscape maintenance procedures and subwatershed restoration opportunities within the stream corridor. The USA should be completed for all streams that pass through the publicly owned lands in your community. The results of the USA can be used to identify opportunities for riparian reforestation, as well as other subwatershed restoration opportunities that are not directly related to park and landscape maintenance (e.g. streambank stabilization, illicit discharge detection and elimination and trash removal). Manual 10 contains additional information about conducting the USA.

Step 5.3: Prescribe Pollution Prevention/Good Housekeeping Practices

Once you have completed your field investigations, the next step in the process is to identify some pollution prevention/good housekeeping practices that can be used to improve the park and landscape maintenance activities conducted within your community. You can also use this step to identify some subwatershed restoration practices that can be implemented on the publicly owned properties found within your community. In most cases, pollution prevention/good housekeeping and subwatershed restoration practices can be developed using the information that was gathered during the initial field investigation. In a few cases, however, additional site visits may be required.

A wide range of pollution prevention/good housekeeping practices can be used to improve the way that park and landscape maintenance activities are conducted within a community. Some of the most commonly used practices are listed in Table 3.

Table 3: Pollution Prevention/Good Housekeeping Practices Commonly Used to Improve Park and Landscape Maintenance Operations

Activity	Pollution Prevention/Good Housekeeping Practices
Turf Reduction	• Plant trees and/or other native vegetation in suitable areas • Consider turf alternatives, such as native or low-water, cool-season turf grass • Allow natural regeneration in suitable areas
Turf Management	• Sweep any grass clippings away from paved surfaces after mowing • Use mulching type mowers or dispose of at local composting facility • Use erosion control measures when soils are exposed • Place stockpiled materials away from storm drains
Native Plantings	• Provide native and naturalized landscaping guidance and plant lists • Require use of appropriate native and naturalized landscaping on municipally-owned properties
Landscape Management	• Collect landscape waste (including grass clippings) and dispose of at a local yard waste recycling/composting facility • Do not use leaf blowers to blow waste into streets, storm drains or ditches
Pesticide/Herbicide Application	• Develop an integrated pest management plan that uses pesticides only as a last resort • Apply only when rain is not expected • Do not prepare herbicides or pesticides for application near storm drains • Use manual and/or mechanical methods to remove weeds rather than

Table 3: Pollution Prevention/Good Housekeeping Practices Commonly Used to Improve Park and Landscape Maintenance Operations	
Activity	**Pollution Prevention/Good Housekeeping Practices**
	herbicides • Consider a low or no pesticide approach to maintaining landscaped areas
Fertilizer Application	• Never apply fertilizers or pesticides within five feet of pavement, 25 feet of a storm drain inlet, or 50 feet of a stream or water body • Consider a low or no fertilizer approach to maintain turf • Apply only when rain is not expected • Perform a soil test to determine actual fertilization needs and application rate • Calibrate fertilizer spreaders to avoid excessive application
Irrigation	• Employ shutoff devices to prevent irrigation after precipitation or if a pressure drop occurs due to broken sprinkler heads or lines • Design irrigation systems specific to each landscaped area's water requirements • Select native plant species whenever possible and group together plants with similar water requirements in order to reduce excess irrigation • Use soaker hoses not sprinklers and irrigate in the morning or evening to conserve water
Employee Training	• Train employees on the use and appropriate application of pesticides, herbicides and fertilizers • Ensure that designated no mow areas are well advertised • Educate staff on the benefits of trees and native and naturalized species

Step 5.4: Develop Implementation Plan

The next step in the process is to develop a brief implementation plan. The implementation plan should summarize the results of assessment and field investigations, the specific pollution-generating activities associated with each publicly-owned property and the pollution prevention/good housekeeping practices that will be used to address each of these activities. Implementation plans should also include a schedule that describes some implementation milestones for the prescribed pollution prevention/good housekeeping practices. The contents of each implementation plan should be developed in cooperation with the individuals responsible for managing or overseeing each of the park and landscape maintenance activities.

A key element of each implementation plan is an estimate of the budget required to implement the recommended pollution prevention/good housekeeping practices. Although providing detailed cost information about all of the pollution prevention/good housekeeping practices that can be used to address the specific pollution-generating activities associated with municipal park and landscape maintenance activities is beyond the scope of this manual, there are some useful resources that can be used to gather this information, including Manual 8 and U.S. EPA's *National Menu of Stormwater Management Best Management Practices*, which is available online at: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm.

Step 6: Implement Pollution Prevention/Good Housekeeping Practices

Once your existing park and landscaping activities have been investigated and assessed, the next step in the process is implementing the prescribed pollution prevention/good housekeeping practices. Although it may be tempting to hand the responsibility for implementation over to the

local parks department or individual who manages or oversees the park and landscape maintenance activities conducted in your community, it is important to work with them during the implementation phase to get the recommended improvements "in the ground."

Step 7: Evaluate Progress in Implementation

The last step in the process involves evaluating the process made in implementing the prescribed pollution prevention/good housekeeping practices. Measurable performance goals and implementation milestones will be needed to evaluate progress in implementation and track success in addressing local water quality issues and subwatershed restoration goals and objectives. Some example *output-based* measurable goals and implementation milestones are presented in Table 4. They can be thought of as activities that need to be completed in order to improve the way that municipal stormwater hotspot facilities are managed in your community.

Table 4: Measurable Goals and Implementation Milestones for Improving Municipal Park and Landscape Maintenance Operations[1]

Example Measurable Goals	Timeframe	Priority
Goals related to program startup		
Identify and collect basic information about current municipal park and landscape maintenance operations	Complete shortly after program startup; update regularly after that	●
Add the information about park and maintenance activities to the simple database or binder that contains basic information about each municipal operation		●
Develop a digital (e.g. GIS) or hard copy map showing the location of all current municipal park and landscape maintenance activities		◉
Complete Section 7 of the Municipal Operations Analysis (MOA)	Year 1; repeat every 5 years	●
Prioritize local pollution prevention/good housekeeping efforts based on the results of the MOA and other factors, such as local pollutants of concern		●
Goals related to preventing or reducing stormwater pollution		
Collect additional information about the way that park and landscape maintenance activities are conducted within your community	Year 1	●
Prescribe pollution prevention/good housekeeping practices to address deficiencies and improve the way that the parks and landscaped areas are maintained within your community		●
Develop implementation plan for prescribed pollution prevention/good housekeeping practices		●
Secure funding and resources to implement prescribed pollution prevention/good housekeeping practices	Begin in Year 1	●
Implement prescribed pollution prevention/good housekeeping practices	Begin in Year 2	●
Goals related to program evaluation		
Develop measurable performance goals and implementation milestones	Complete shortly after program startup; update	●

Table 4: Measurable Goals and Implementation Milestones for Improving Municipal Park and Landscape Maintenance Operations[1]		
Example Measurable Goals	**Timeframe**	**Priority**
Evaluate progress in meeting measurable goals and implementation milestones	regularly after that	●
Evaluate progress in implementing prescribed pollution prevention/good housekeeping practices	End of Year 1 and each year after that	●
Notes 1) Assumes that park and landscape maintenance is as the top of the prioritized municipal operations list. *Key* ● = Essential ◉ = Optional but Recommended		

The methods used to evaluate success in meeting these measurable performance goals and implementation milestones can be as simple as semi-annual or annual inspections used to identify the pollution prevention/good housekeeping practices that have been put in place and the improvements that still need to be made.

Scoping the Required Level of Effort

The level of effort required to improve the way that municipal park and landscape maintenance activities are conducted varies greatly from one community to the next. It depends on the type of landscape and maintenance activities that are conducted within the community, the frequency and scope of those activities and on the number and type of pollution prevention/good housekeeping practices that are needed to improve those activities. Basic guidance on scoping the level of effort required to improve local park and landscape maintenance operations is provided in Table 5. Communities can use this information to scope the level of effort required to improve their own park and landscape maintenance activities.

Table 5: Scoping the Level of Effort Required to Improve Municipal Park and Landscape Maintenance Operations[1]	
Step	**Staff Hours**
Step 1: Identify Existing Municipal Operations	4-8[1]
Step 2: Collect Information About Park and Landscape Maintenance Activities	4-8
Step 3: Complete Section 7 of the Municipal Operations Analysis (MOA)	10-20
Step 4: Focus Pollution Prevention/Good Housekeeping Efforts	4-8[1]
Step 5: Investigate Municipal Operations and Select Pollution Prevention/Good Housekeeping Practices	120-240
Step 5.1: Collect Additional Information About Park and Landscape Maintenance Activities	20-40
Step 5.2: Conduct Field Investigations (two staff per team)	
USA	8/stream mile
PAA	1/site
HSI	2/site
Post-Processing	40-60
Step 5.3: Prescribe Pollution Prevention/Good Housekeeping Practices	20-40
Step 5.4: Develop Implementation Plan	20-40
Step 6: Implement Pollution Prevention/Good Housekeeping Practices	Varies[2]
Step 7: Evaluate Progress in Implementation	20-40/evaluation[1]

Table 5: Scoping the Level of Effort Required to Improve Municipal Park and Landscape Maintenance Operations[1]
Notes 1: Represents total level of effort required to complete step for all municipal operations. 2: Varies according to the extent and type of improvements required.

Resources

Urban Watershed Forestry Manual Part 1: Methods for Increasing Forest Cover in a Watershed http://www.cwp.org/forestry/index.htm

Urban Subwatershed Restoration Manual 8: Pollution Source Control Practices http://www.cwp.org/PublicationStore/USRM.htm

Urban Subwatershed Restoration Manual 10: Unified Stream Assessment http://www.cwp.org/PublicationStore/USRM.htm

Urban Subwatershed Restoration Manual 11: Unified Subwatershed Site Reconnaissance http://www.cwp.org/PublicationStore/USRM.htm

The Smart Watershed Benchmarking Tool http://cwp.org.master.com/texis/master/search/+/form/Smart_Watershed.html

California Stormwater Best Management Practice Handbook Fact Sheet: Landscape Maintenance http://www.cabmphandbooks.com/Documents/Municipal/SC-73.pdf

U.S. EPA National Menu of Stormwater Best Management Practices for Stormwater Phase II: Municipal Landscaping Fact Sheet http://cfpub1.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=1

Alameda Countywide Clean Water Program. School Facility Best Management Practices (BMPs) http://www.cleanwaterprogram.org/uploads/BMP_Booklet_Final-removed_crop_marks.pdf

Audubon Cooperative Sanctuary Program for Golf Courses http://www.audubonintl.org/programs/acss/golf.htm

Bellevue Parks and Community Services. Environmental Best Management Practices and Design Standards Manual http://bellevuewa.gov/Parks_Env_Best_Mgmt_Practices.htm

California Stormwater Best Management Practice Handbook Fact Sheet: Landscape Maintenance http://www.cabmphandbooks.com/Documents/Municipal/SC-73.pdf

Forest Conservancy District Board for Baltimore County. Schoolyard Reforestation Wildlife Habitat Program http://www.bcfb.sailorsite.net/Education/EducationSchoolYard.htm